SEQUENCE LISTING

<110> THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA

<120> Subfamily E Simian Adenoviruses A1302, A1320, A1331 and A1337 and Uses Thereof

<130> SG5108A

<150> US 61/649,007
<151> 2012-05-18

<150> US 61/784,142
<151> 2013-03-14

<160> 410

<170> PatentIn version 3.5

<210> 1
<211> 36430
<212> DNA
<213> Unknown

<220>
<223> Simian adenovirus A1302

<220>
<221> CDS
<222> (1590)..(2168)
<223> E1b\19K

<220>
<221> misc_feature
<222> (3983)..(5604)
<223> IVa2 complement (3983..5313,5593..5604)

<220>
<221> misc_feature
<222> (5593)..(13883)
<223> pol complement (5593..8652,13825..13883)

<220>
<221> misc_feature
<222> (6483)..(6483)
<223> is g or c

<220>
<221> misc_feature
<222> (8560)..(13833)
<223> pTP complement (8560..10391,13825..13833)

<220>
<221> CDS
<222> (10828)..(12006)
<223> 52K

<220>
<221> CDS
<222> (12033)..(13790)
<223> pIIIa

<220>
<221> CDS
<222> (13873)..(15456)
<223> penton

<220>

<221> CDS
<222> (16092)..(17123)
<223> V

<220>
<221> CDS
<222> (17149)..(17379)
<223> pX

<220>
<221> CDS
<222> (17451)..(18173)
<223> pVI

<220>
<221> CDS
<222> (18217)..(21066)
<223> hexon

<220>
<221> CDS
<222> (21085)..(21711)
<223> protease

<220>
<221> misc_feature
<222> (21796)..(23328)
<223> DBP complement (21796..23328)

<220>
<221> CDS
<222> (23354)..(25744)
<223> 100K

<220>
<221> misc_feature
<222> (25720)..(25720)
<223> is a or g

<220>
<221> CDS
<222> (26367)..(27047)
<223> pVIII

<220>
<221> CDS
<222> (27051)..(27368)
<223> E3\12.5K

<220>
<221> CDS
<222> (27930)..(28457)
<223> E3\gp19K

<220>
<221> CDS
<222> (28490)..(29083)
<223> E3\CR1-beta

<220>
<221> CDS
<222> (29099)..(29707)
<223> E3\CR1-gamma

<220>
<221> CDS
<222> (29725)..(30597)
<223> E3\CR1-delta

<220>
<221> CDS
<222> (30889)..(31317)
<223> E3\RID-beta

<220>
<221> CDS
<222> (32014)..(33333)
<223> fiber

<220>
<221> misc_feature
<222> (32502)..(32502)
<223> is a or c

<220>
<221> misc_feature
<222> (33431)..(34764)
<223> E4\orf6/7 complement (33431..33681,34414..34764)

<220>
<221> misc_feature
<222> (33682)..(34584)
<223> E4\orf6 complement (33682..34584)

<220>
<221> misc_feature
<222> (34493)..(34855)
<223> E4\orf4 complement (34493..34855)

<220>
<221> misc_feature
<222> (34868)..(35218)
<223> E4\orf3 complement (34868..35218)

<220>
<221> misc_feature
<222> (35218)..(35604)
<223> E4\orf2 complement (35218..35604)

<400> 1
catcatcaat aatatacctc aaacttttg tgcgtgttaa tatgcaaatg aggcgtttga 60

atttggggct gcggggctgt gattggctgc gggagcggcg accgttaggg gcggggcggg 120

tgacgtttcg atgacgtgac gtgaggcgga gccggtttgc aagttctcgt gggaaaagtg 180

acgtcaaacg aggtgtggtt tgaacacgga aatactcaat tttcccgcgc tctctgacag 240

gaaatgaggt gtttctgggc ggatgcaagt gaaaacgggc cattttcgcg cgaaaactaa 300

atgaggaagt gaaaatctga gtaattccgc gtttatggca gggaggagta tttgccgagg 360

gccgagtaga ctttgaccga ttacgtgggg gtttcgatta ccgtattttt cacctaaatt 420

tccgcgtacg gtgtcaaagt ccggtgtttt tacgtaggcg tcagctgatc gccagggtat 480

ttaaacctgc gctctctagt caagaggcca ctcttgagtg ccagcgagta gagttttctc 540

ctccgcgccg cgagtcagat ctacactttg aaagatgagg cacctgagag acctgcccgg 600

taatgttttc ctggctactg ggaacgagat tctggaactg gtggtggacg ccatgatggg 660

tgacgaccct cctgagcccc ctaccccatt tgaggcgcct tcgctgtacg atttgtatga 720

tctggaggtg gatgtgcccg agaacgaccc caacgaggag gcggtgaatg atttgtttag 780

cgatgccgcg ctgctggctg ccgagcaggc taatacggac tctggctcag acagcgattc 840

```
ttctctccat accccgagac ctggcagagg tgagaaaaag attcccgagc ttaaagggga      900

agagctggac ctgcgctgct atgaggaatg cttgcctccg agcgatgatg aggaggacga      960

ggaggcgatc cgagctgcgg cgaaccaggg agtgaaagct gcgggcgaga gctttagcct     1020

ggactgtcct actctgcccg gacacggctg taagtcttgt gaatttcatc gcatgaatac     1080

tggagataag aatgtgatgt gtgccctgtg ctatatgaga gcttacaacc attgtgttta     1140

cagtaagtgt gattaacttt agttgggaag gcagagggtg actgggtgct gactggttta     1200

tttatgtata tgtttttta tgtgtaggtc ccgtctctga cgtagatgag acccccactt     1260

cagagtgcat ttcatcaccc ccagaaattg gcgaggaacc gcccgaagat attattcata     1320

gaccagttgc agtgagagtc accgggcgta gagcagctgt ggagagtttg gatgacttgc     1380

tacagggtgg ggatgaacct ttggacttgt gtacccggaa acgccccagg cactaagtgc     1440

cacacatgtg tgtttactta aggtgatgtc agtatttata gggtgtggag tgcaataaaa     1500

tccgtgttga ctttaagtgc gtggtttatg actcaggggt gggtatataa gcaggtgcag     1560

acctgtgtgg tcagttcaga gcaggactc atg gag atc tgg acg gtc ttg gaa        1613
                               Met Glu Ile Trp Thr Val Leu Glu
                               1               5

gac ttt cac cag act aga cag ctg cta gag aac tca tcg gag gaa gtc       1661
Asp Phe His Gln Thr Arg Gln Leu Leu Glu Asn Ser Ser Glu Glu Val
    10                  15                  20

tct tac ctg tgg aga ttt tgc ttc ggt ggg gct cta gct aag cta gtc       1709
Ser Tyr Leu Trp Arg Phe Cys Phe Gly Gly Ala Leu Ala Lys Leu Val
25                  30                  35                  40

cat agg gcc aaa cag gat tat aag gat caa ttt gag gat att ttg aga       1757
His Arg Ala Lys Gln Asp Tyr Lys Asp Gln Phe Glu Asp Ile Leu Arg
                45                  50                  55

gag tgt cct ggt att ttt gac tct ctc aac ttg ggc cat cag tct cac       1805
Glu Cys Pro Gly Ile Phe Asp Ser Leu Asn Leu Gly His Gln Ser His
            60                  65                  70

ttt aac cag agt att ctg aga gcc ctt gac ttt tct act cct ggc aga       1853
Phe Asn Gln Ser Ile Leu Arg Ala Leu Asp Phe Ser Thr Pro Gly Arg
        75                  80                  85

act acc gcc gcg gta gcc ttt ttt gcc ttt att ctt gac aaa tgg agt       1901
Thr Thr Ala Ala Val Ala Phe Phe Ala Phe Ile Leu Asp Lys Trp Ser
    90                  95                  100

caa gaa acc cat ttc agc agg gat tac cgt ctg gac tgc tta gca gta       1949
Gln Glu Thr His Phe Ser Arg Asp Tyr Arg Leu Asp Cys Leu Ala Val
105                 110                 115                 120

gct ttg tgg aga aca tgg agg tgc cag cgc ctg aat gca atc tcc ggc       1997
Ala Leu Trp Arg Thr Trp Arg Cys Gln Arg Leu Asn Ala Ile Ser Gly
                125                 130                 135

tac ttg cca gta cag ccg gta gac acg ctg agg atc ctg agt ctc cag       2045
Tyr Leu Pro Val Gln Pro Val Asp Thr Leu Arg Ile Leu Ser Leu Gln
            140                 145                 150

tca ccc cag gaa cac caa cgc cgc cag cag ccg cag cag gag cag cag       2093
Ser Pro Gln Glu His Gln Arg Arg Gln Gln Pro Gln Gln Glu Gln Gln
        155                 160                 165

caa gag gag gag gag gag gac cga gaa gag aac ccg aga gcc ggt ctg       2141
```

```
Gln Glu Glu Glu Glu Glu Asp Arg Glu Glu Asn Pro Arg Ala Gly Leu
    170                 175                 180

gac cct ccg gtg gcg gag gag gag gag tagctgactt gtttcccgag            2188
Asp Pro Pro Val Ala Glu Glu Glu Glu
185                 190

ctgcgccggg tgctgactag gtcttccagt ggacgggaga gggggattaa gcgggagagg    2248

catgaggaga ctagtcacag aactgaactg actgtcagtc tgatgagccg caggcgccca    2308

gaatcggtgt ggtggcatga ggtgcagtcg caggggatag atgaggtctc agtgatgcat    2368

gagaaatatt ccctagaaca agtcaagact tgttggttgg agcccgagga tgattgggag    2428

gtagccatca ggaattatgc caagctggct ctgaagccag acaagaagta caagattacc    2488

aaactgatta atatcagaaa ttcctgctac atttcaggga atggggccga ggtggagatc    2548

agtacccagg agagggtggc cttcagatgc tgcatgatga atatgtaccc gggggtggtg    2608

ggcatggagg gagtcacctt tatgaacgcg aggttcaggg gcgatgggta taatggggtg    2668

gtctttatgg ccaacaccaa gctgacagtg cacggatgct ccttctttgg cttcaataac    2728

atgtgcatcg aggcctgggg cagtgtttca gtgaggggat gcagctttc agccaactgg     2788

atgggggtcg tgggcagaac caagagcaag gtgtcagtga agaaatgcct gttcgagagg    2848

tgccacatgg gggtgatgag cgagggcgaa gccaaagtca aacactgcgc ctctaccgag    2908

acgggctgct ttgtgctgat caagggcaat gcccaagtca agcataacat gatctgtggg    2968

gcctcggatg agcgcggcta ccagatgctg acctgtgccg gtgggaacag ccatatgctg    3028

gccaccgtgc atgtggcctc gcacccccgc aagacatggc ccgagttcga gcataacgtc    3088

atgacccgct gcaatgtgca cctgggctcc cgccgaggca tgttcatgcc ctaccagtgc    3148

aacatgcaat ttgtgaaggt gctgctggag cccgatgcca tgtccagagt gagtctgacg    3208

ggggtgtttg acatgaatgt ggagatgtgg aaaattctga gatatgatga atccaagacc    3268

aggtgccggg cctgcgaatg cggaggcaaa cacgccaggc ttcagcccgt gtgtgtggag    3328

gtgacggagg acctgcgacc cgatcatttg gtgttgtcct gcaacgggac ggagttcggc    3388

tccagcgggg aagaatctga ctagagtgag tagtgtttgg ggctgggtgg gagcctgcat    3448

gatgggcaga atgactaaaa tctgtgtttt tctgcgcagc atcatgagcg gaagcgcctc    3508

ctttgaggga ggggtattca gcccttatct gacggggcgt ctcccctcct gggcgggagt    3568

gcgtcagaat gtgatgggat ccacggtgga cggccggccc gtgcagcccg cgaactcttc    3628

aaccctgacc tacgcgaccc tgagctcctc gtccgtagac gcagctgccg ccgcagctgc    3688

tgcttccgcc gccagcgccg tgcgcggaat ggccctgggc gccggctact acagctctct    3748

ggtggccaac tcgagttcca ccaataatcc cgccagcctg aacgaggaga agctgctgct    3808

gctgatggcc cagctcgagg ccctgaccca gcgcctgggc gagctgaccc agcaggtggc    3868

tcagctgcag gcggagacgc gggccgcggt tgccacggtg aaaaccaaat aaaaaatgaa    3928

tcaataaata aacggagacg gttgttgatt ttaacacaga gtcttgaatc tttatttgat    3988

ttttcgcgcg cggtaggccc tggaccaccg gtctcgatca ttgagcaccc ggtggatttt    4048
```

ttccaggacc cggtagaggt gggcttggat gttgaggtac atgggcatga gcccgtcccg 4108

ggggtggagg tagctccatt gcagggcctc gtgctcgggg gtggtgttgt aaatcaccca 4168

gtcatagcag gggcgcaggg cgtggtgctg cacgatgtcc ttgaggagga gactgatggc 4228

cacgggcagc cccttggtgt aggtgttgac gaacctgttg agctgggagg gatgcatgcg 4288

gggggagatg agatgcatct tggcctggat cttgagattg gcgatgttcc cgcccagatc 4348

ccgccggggg ttcatgttgt gcaggaccac cagcacggtg tatccggtgc acttggggaa 4408

tttgtcatgc aacttggaag ggaaggcgtg aaagaatttg gagacgccct tgtgaccgcc 4468

caggttttcc atgcactcat ccatgatgat ggcgatgggc ccgtgggcgg cggcctgggc 4528

aaagacgttt cgggggtcgg acacatcgta gttgtggtcc tgggtgagct cgtcataggc 4588

cattttaatg aatttggggc ggagggtgcc cgactggggg acaaaggtgc cctcgatccc 4648

gggggcgtag tttccctcgc agatctgcat ctcccaggcc ttgagctcgg agggggggat 4708

catgtccacc tgcggggcga tgaaaaaaac ggtttccggg gcgggggaga tgagctgggc 4768

cgaaagcagg ttccggagca gctgggactt gccgcagccg gtggggccgt agatgacccc 4828

gatgaccggc tgcaggtggt agttgaggga gagacagctg ccgtcctcgc ggaggagggg 4888

ggccacctcg ttcatcatct cgcgcacatg catgttctcg cgcacgagtt ccgccaggag 4948

gcgctcgccc cccagcgaga ggagctcttg cagcgaggcg aagtttttca gcggtttgag 5008

cccgtcggcc atgggcattt tggagagggt ctgttgcaag agttccagac ggtcccagag 5068

ctcggtgatg tgctctaggg catctcgatc cagcagacct cctcgtttcg cgggttgggg 5128

cgactgcggg agtagggcac caggcgatgg gcgtccagcg aggccagggt ccggtccttc 5188

caggggcgca gggtccgcgt cagcgtggtc tccgtcacgg tgaaggggtg cgcgccgggc 5248

tgggcgcttg cgagggtgcg cttcaggctc atccggctgg tcgagaaccg ctcccggtcg 5308

gcgccctgcg cgtcggccag gtagcaattg agcatgagtt cgtagttgag cgcctcggcc 5368

gcgtggccct tggcgcggag cttacctttg gaagtgtgtc cgcagacggg acagaggagg 5428

gacttgaggg cgtagagctt gggggcgagg aagacggact cgggggcgta ggcgtccgcg 5488

ccgcagctgg cgcagacggt ctcgcactcc acgagccagg tgaggtcggg gcggtcgggg 5548

tcaaaaacga ggtttcctcc gtgctttttg atgcgtttct tacctctggt ctccatgagc 5608

tcgtgtcccc gctgggtgac aaagaggctg tccgtgtccc cgtagaccga ctttatgggc 5668

cggtcctcga gcggggtgcc gcggtcctcg tcgtagagga accccgccca ctccgagacg 5728

aaggcccggg tccaggccag cacgaaggag gccacgtggg aggggtagcg gtcgttgtcc 5788

accagcgggt ccaccttctc cagggtatgc aagcacatgt ccccctcgtc cacatccagg 5848

aaggtgattg gcttgtaagt gtaggccacg tgaccggggg tcccggccgg gggggtataa 5908

aaggggcgcgg gcccctgctc gtcctcactg tcttccggat cgctgtccag gagcgccagc 5968

tgttggggta ggtattccct ctcgaaggcg ggcatgacct cggcactcag gttgtcagtt 6028

tctagaaacg aggaggattt gatattgacg gtgccgttgg agacgccttt catgagcccc 6088

tcgtccatct ggtcagaaaa gacgatcttt ttgttgtcga gcttggtggc gaaggagccg 6148

tagagggcat tggagaggag cttggcgatg gagcgcatgg tctggttctt ttccttgtcg 6208

gcgcgctcct tggcggcgat gttgagctgc acgtactcgc gcgccacgca cttccattcg 6268

gggaagacgg tggtgagctc gtcgggcacg attctgaccc gccagccgcg gttgtgcagg 6328

gtgatgaggt ccacgctggt ggccacctcg ccgcgcaggg gctcgttggt ccagcagagg 6388

cgcccgccct tgcgcgagca gaaggggggc agcgggtcca gcatgagctc gtcgggggg 6448

tcggcgtcca cggtgaagat gccgggcagg agctcggggt cgaagtagct gatgcaggtg 6508

cccagatcgt ccagcgccgc ttgccagtcg cgcacggcca gcgcgcgctc gtaggggctg 6568

aggggcgtgc cccagggcat ggggtgcgtg agcgcggagg cgtacatgcc gcagatgtcg 6628

tagacgtaga ggggctcctc gaggacgccg atgtaggtgg ggtagcagcg ccccccgcgg 6688

atgctggcgc gcacgtagtc gtacagctcg tgcgagggcg cgaggagccc cgcgccgagg 6748

ttggagcgct gcggctttc ggcgcggtag acgatctggc ggaagatggc gtgggagttg 6808

gaggagatgg tgggcctctg gaagatgttg aagtgggcgt ggggcaggcc gaccgagtcc 6868

ctgatgaagt gggcgtagga gtcctgcagc ttggcgacga gctcggcggt gacgaggacg 6928

tccagggcgc agtagtcgag ggtctcttgg atgatgtcgt acttgagctg gcccttctgc 6988

ttccacagct cgcggttgag aaggaactct tcgcggtcct tccagtactc ttcgaggggg 7048

aacccgtcct gatcggcacg gtaagagccc accatgtaga actggttgac ggccttgtag 7108

gcgcagcagc ccttctccac ggggagggca taagcttgcg cggccttgcg cagggaggtg 7168

tgggtgaggg cgaaggtgtc gcgcaccatg accttgagga actggtgctt gaagtcgagg 7228

tcgtcgcagc cgccctgctc ccagagttgg aagtccgtgc gcttcttgta ggcggggttg 7288

ggcaaagcga aagtaacatc gttgaagagg atcttgcccg cgcggggcat gaagttgcga 7348

gtgatgcgga aaggctgggg cacctcggcc cggttgttga tgacctgggc ggcgaggacg 7408

atctcgtcga agccgttgat gttgtgcccg acgatgtaga gttccacgaa tcgcgggcgg 7468

cccttgacgt ggggcagctt cttgagctcg tcgtaggtga gctcggcggg gtcgctgagt 7528

ccgtgctgct caagggccca gtcggcgacg tgggggttgg cgctgaggaa ggaagtccag 7588

agatccacgg ccagggcggt ttgcaagcgg tcccggtact gacggaactg ctggcccacg 7648

gccatttttt cgggggtgat gcagtagaag gtgcgggggt cgccgtgcca gcggtcccac 7708

ttgagctgga gggcgaggtc gtgggcgagc tcgacgagcg gcgggtcccc ggagagtttc 7768

atgaccagca tgaaggggac gagctgcttg ccgaaggacc ccatccaggt gtaggtttcc 7828

acatcgtagg tgaggaagag cctttcggtg cgaggatgcg agccgatggg gaagaactgg 7888

atctcctgcc accagttgga ggaatggctg ttgatgtgat ggaagtagaa atgccgacgg 7948

cgcgccgagc actcgtgctt gtgtttatac aagcgtccgc agtgctcgca acgctgcacg 8008

ggatgcacgt gctgcacgag ctgtacctga gttcctttga cgaggaattt cagtgggcag 8068

tggagcgctg gcggctgcat ctggtgctgt actacgtcct ggccatcggc gtggccatcg 8128

tctgcctcga tggtggtcat gctgacgagc ccgcgcggga ggcaggtcca gacctcgact 8188

cggacgggtc ggagagcgag gacgagggcg cgcaggccgg agctgtccag ggtcctgaga 8248

cgctgcggag tcaggtcagt gggcagcggc ggcgcgcggt tgacttgcag gagcttttcc 8308

agggcgcgcg ggaggtccag atggtacttg atctccacgg cgccgttggt ggcgacgtcc 8368

acggcttgca gggtcccgtg cccctggggc gccaccaccg tgccccgttt cttcttgggc 8428

gctggcgttg gcgctgcttc catgtcggtc agaagcggcg gcgaggacgc gcgccgggcg 8488

gcaggggcgg ctcggggccc ggaggcaggg gcggcagggg cacgtcggcg ccgcgcgcgg 8548

gcaggttctg gtactgcgcc cggagaagac tggcgtgagc gacgacgcga cggttgacgt 8608

cctggatctg acgcctctgg gtgaaggcca cgggacccgt gagtttgaac ctgaaagaga 8668

gttcgacaga atcaatctcg gtatcgttga cggcggcctg ccgcaggatc tcttgcacgt 8728

cgcccgagtt gtcctggtag gcgatctcgg tcatgaactg ctcgatctcc tcctcctgaa 8788

ggtctccgcg gccggcgcgc tccacggtgg ccgcgaggtc gttggagatg cggcccatga 8848

gctgcgagaa ggcgttcatg cccgcctcgt tccagacgcg gctgtagacc acgacgccct 8908

cgggatcgcg ggcgcgcatg accacctggg cgaggttgag ctccacgtgg cgcgtgaaga 8968

ccgcgtagtt gcagaggcgc tggtagaggt agttgagcgt ggtggcgatg tgctcggtga 9028

cgaagaaata catgatccag cggcggagcg gcatctcgct gacgtcgccc agcgcctcca 9088

agcgttccat ggcctcgtaa aagtccacgg cgaagttgaa aaactgggag ttgcgcgccg 9148

agacggtcaa ctcctcctcc agaagacgga tgagctcggc gatggtggcg cgcacctcgc 9208

gctcgaaggc ccccgggagt tcctccactt cctcttcttc ttcctcctcc actaacatct 9268

cttctacttc ctcctcaggc ggtggtggcg ggggaggggg cctgcgtcgc cggcggcgca 9328

cgggcagacg gtcgatgaag cgctcgatgg tctcgccgcg ccggcgtcgc atggtctcgg 9388

tgacggcgcg cccgtcctcg cggggccgca gcgtgaagac gccgccgcgc atctccaggt 9448

ggccgggggg gtccccgttg ggcagggaga gggcgctgac gatgcatctt atcaattgcc 9508

ccgtagggac tccgcgcaag gacctgagcg tctcgagatc cacgggatct gaaaaccgtt 9568

gaacgaaggc ttcgagccag tcgcagtcgc aaggtaggct gagcacggtt tcttctggcg 9628

ggtcatgttg gttggaggga gcggggcggg cgatgctgct ggtgatgaag ttgaaatagg 9688

cggttctgag acggcggatg gtggcgagga gcaccaggtc tttgggcccg gcttgctgga 9748

tgcgcagacg gtcggccatg ccccaggcgt ggtcctgaca cctggccagg tccttgtagt 9808

agtcctgcat gagccgctcc acgggcacct cctcctcgcc cgcgcggccg tgcatgcgcg 9868

tgagcccgaa cccgcgctgc ggctggacga gcgccaggtc ggcgacgacg cgctcggcga 9928

ggatggcctg ctggatctgg gtgagggtgg tctggaagtc gtcaaagtcg acgaagcggt 9988

ggtaggctcc ggtgttgatg gtgtaggagc agttggccat gacggaccag ttgacggtct 10048

ggtggcccgg acgcacgagc tcgtggtact tgaggcgcga gtaggcgcgc gtgtcgaaga 10108

tgtagtcgtt gcaggtgcgc accaggtatt ggtagccgat gaggaagtgc ggcggcggct 10168

ggcggtagag cggccatcgc tcggtggcgg gggcgccggg cgcgaggtcc tcgagcatga 10228

ggcggtggta gccgtagatg tacctggaca tccaggtgat gccggcggcg gtggtggagg 10288

```
cgcgcgggaa ctcgcggacg cggttccaga tgttgcgcag cggcaggaag tagttcatgg    10348

tggccgcggt ctggcccgtg aggcgcgcgc agtcgtggat gctctagaca tacgggcaaa    10408

aacgaaagcg gtcagcggct cgactccgtg gcctggaggc taagcgaacg ggttgggctg    10468

cgcgtgtacc ccggttcgaa tctcgaatca ggctggagcc gcagctaacg tggtactggc    10528

actcccgtct cgacccaagc ctgctaacga aacctccagg atacggaggc gggtcgtttt    10588

ggcatttttc gtcaggccgg aaatgaaact agtaagcgcg gaaagcggcc gaccgcgatg    10648

gctcgctgcc gtagtctgga gaagaatcgc cagggttgcg ttgcggtgtg ccccggttcg    10708

aggccggccg gattccgcgg ctaacgaggg cgtggctgcc ccgtcgtttc caagacccct    10768

agccagccga cttctccagt tacggagcga gcccctcttt tgttttttgt ttttgccag     10827

atg cat ccc gta ctg cgg cag atg cgc ccc cac cac cct cca ccg caa      10875
Met His Pro Val Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln
    195                 200                 205

caa cag ccc cct cca cag ccg gcg ctt ctg ccc ccg ccc cag cag cag      10923
Gln Gln Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln
210                 215                 220                 225

cag caa ctt cca gcc acg acc gcc gcg gcc gcc gtg agc ggg gct gga      10971
Gln Gln Leu Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly
                230                 235                 240

cag agt tat gac cac cag ctg gcc ttg gaa gag ggc gag ggg ctg gcg      11019
Gln Ser Tyr Asp His Gln Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala
            245                 250                 255

cgg ctg ggg gcg tcg tcg ccg gag cgg cac ccg cgc gtg cag atg aaa      11067
Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys
        260                 265                 270

agg gac gct cgc gag gcc tac gtg ccc aag cag aac ctg ttc aga gac      11115
Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp
    275                 280                 285

agg agc ggc gag gag ccc gag gag atg cgc gcc tcc cgc ttc cac gcg      11163
Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ser Arg Phe His Ala
290                 295                 300                 305

ggg cgg gag ctg cgg cgc ggc ctg gac cga aag cgg gtg ctg agg gac      11211
Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp
                310                 315                 320

gag gat ttc gag gcg gac gag ctg acg ggg atc agc ccc gcg cgc gcg      11259
Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala
            325                 330                 335

cac gtg gcc gcg gcc aac ctg gtc acg gcg tac gag cag acc gtg aag      11307
His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys
        340                 345                 350

gag gag agc aac ttc caa aaa tcc ttc aac aac cac gtg cgc acc ttg      11355
Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu
    355                 360                 365

atc gcg cgc gag gag gtg acc ctg ggc ctg atg cac ctg tgg gac ctg      11403
Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu
370                 375                 380                 385

ctg gag gcc atc gtg cag aac ccc acg agc aag ccg ctg acg gcg cag      11451
Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln
```

```
                390                 395                 400

ctg ttt ctg gtg gtg cag cac agt cgg gac aac gag acg ttc agg gag      11499
Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Thr Phe Arg Glu
            405                 410                 415

gcg ctg ctg aat atc acc gag ccc gag ggc cgt tgg ctc ctg gac ctg      11547
Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu
        420                 425                 430

gtg aac att ctg cag agc atc gtg gtg cag gag cgc ggg ctg ccg ctg      11595
Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu
    435                 440                 445

tcc gag aag ctg gcg gcc atc aac ttc tcg gtg ctg agc ctg ggc aag      11643
Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys
450                 455                 460                 465

tac tac gct agg aag atc tac aag acc ccg tac gtg ccc ata gac aag      11691
Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys
                470                 475                 480

gag gtg aag atc gat ggg ttt tac atg cgc atg acc ctg aaa gtg ctg      11739
Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu
            485                 490                 495

acc ctg agc gac gat ctg ggg gtg tac cgc aac gac agg atg cac cgc      11787
Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg
        500                 505                 510

gcg gtg agc gcc agc cgc cgg cgc gag ctg agc gac cag gag ctg atg      11835
Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met
    515                 520                 525

cac agc ctg cag cgg gcc ctg acc ggg gcc ggg acc gag ggg gag agc      11883
His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser
530                 535                 540                 545

tac ttt gac atg ggc gcg gac ctg cgc tgg cag ccc agc cgc cgg gcc      11931
Tyr Phe Asp Met Gly Ala Asp Leu Arg Trp Gln Pro Ser Arg Arg Ala
                550                 555                 560

ttg gaa gct gcc ggc ggc gtg ccc tac gtg gag gag gtg gac gat gag      11979
Leu Glu Ala Ala Gly Gly Val Pro Tyr Val Glu Glu Val Asp Asp Glu
            565                 570                 575

gag gag gag ggc gag tac ctg gaa gac tgatggcgcg accgtatttt tgctag     12032
Glu Glu Glu Gly Glu Tyr Leu Glu Asp
        580                 585

atg cag caa cag cca ccg cct cct gat ccc gcg atg cgg gcg gcg ctg      12080
Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu
            590                 595                 600

cag agc cag ccg tcc ggc att aac tcc tcg gac gat tgg acc cag gcc      12128
Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala
        605                 610                 615

atg caa cgc atc atg gcg ctg acg acc cgc aat ccc gaa gcc ttt aga      12176
Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg
    620                 625                 630

cag cag cct cag gcc aac cgg ctc tcg gcc atc ctg gag gcc gtg gtg      12224
Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val
635                 640                 645                 650

ccc tcg cgc tcg aac ccc acg cac gag aag gtg ctg gcc atc gtg aac      12272
Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn
                655                 660                 665
```

```
gcg ctg gtg gag aac aag gcc atc cgc ggc gac gag gcc ggg ctg gtg      12320
Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val
            670                 675                 680

tac aac gcg ctg ctg gag cgc gtg gcc cgc tac aac agc acc aac gtg      12368
Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val
        685                 690                 695

cag acg aac ctg gac cgc atg gtg acc gac gtg cgc gag gcg gtg tcg      12416
Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser
    700                 705                 710

cag cgc gag cgg ttc cac cgc gag tcg aac ctg ggc tcc atg gtg gcg      12464
Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala
715                 720                 725                 730

ctg aac gcc ttc ctg agc acg cag ccc gcc aac gtg ccc cgg ggc cag      12512
Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln
                735                 740                 745

gag gac tac acc aac ttc atc agc gcg ctg cgg ctg atg gtg gcc gag      12560
Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu
            750                 755                 760

gtg ccc cag agc gag gtg tac cag tcg ggg ccg gac tac ttc ttc cag      12608
Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln
        765                 770                 775

acc agt cgc cag ggc ttg cag acc gtg aac ctg agc cag gct ttc aag      12656
Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys
    780                 785                 790

aac ttg cag gga ctg tgg ggc gtg cag gcc ccg gtc ggg gac cgc gcg      12704
Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala
795                 800                 805                 810

acg gtg tcg agc ctg ctg acg ccg aac tcg cgc ctg ctg ctg ctg ctg      12752
Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu
                815                 820                 825

gtg gcg ccc ttc acg gac agc ggc agc gtg agc cgc gac tcg tac ctg      12800
Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu
            830                 835                 840

ggc tac ctg ctt aac ctg tac cgc gag gcc atc ggg cag gcg cac gtg      12848
Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val
        845                 850                 855

gac gag cag acc tac cag gag atc acc cac gtg agc cgc gcg ctg ggg      12896
Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly
    860                 865                 870

cag gag gac ccg ggc aac ctg gag gcc acc ctg aac ttc ctg ctg acc      12944
Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr
875                 880                 885                 890

aac cgg tcg cag aag atc ccg ccc cag tac gcg ctg agc acc gag gag      12992
Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu
                895                 900                 905

gag cgc atc ctg cgc tac gtg cag cag agc gtg ggg ctg ttc ctg atg      13040
Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met
            910                 915                 920

cag gag ggg gcc acg ccc agc gcc gcg ctc gac atg acc gcg cgc aac      13088
Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn
        925                 930                 935
```

```
atg gag ccc agc atg tac gcc cgc aac cgc ccg ttc atc aat aag ctg      13136
Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu
    940                 945                 950

atg gac tac ttg cat cgg gcg gcc gcc atg aac tcg gac tac ttt acc      13184
Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr
955                 960                 965                 970

aac gcc atc ttg aac ccg cac tgg ctc ccg ccg ccc ggg ttc tac acg      13232
Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr
                975                 980                 985

ggc gag tac gac atg ccc gac ccc aac gac ggg ttc ctg tgg  gac gac     13280
Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp  Asp Asp
            990                 995                 1000

gtg gac agc  agc gtg ttc tcg ccg  cgc ccc acc acc acc  gtg tgg       13325
Val Asp Ser  Ser Val Phe Ser Pro  Arg Pro Thr Thr Thr  Val Trp
        1005                1010                1015

aag aaa gag  ggc ggg gac cgg cgg  ccg tcc tcg gcg ctg  tcc ggt       13370
Lys Lys Glu  Gly Gly Asp Arg Arg  Pro Ser Ser Ala Leu  Ser Gly
        1020                1025                1030

cgc gcg ggt  gct gcc gcg gcg gtg  ccc gag gcc gcc agc  ccc ttc       13415
Arg Ala Gly  Ala Ala Ala Ala Val  Pro Glu Ala Ala Ser  Pro Phe
        1035                1040                1045

ccg agc ctg  ccc ttt tcg ctg aac  agc gtg cgc agc agc  gag ctg       13460
Pro Ser Leu  Pro Phe Ser Leu Asn  Ser Val Arg Ser Ser  Glu Leu
        1050                1055                1060

ggt cgg ctg  acg cgg ccg cgc ctg  ctg ggc gag gag gag  tac ctg       13505
Gly Arg Leu  Thr Arg Pro Arg Leu  Leu Gly Glu Glu Glu  Tyr Leu
        1065                1070                1075

aac gac tcc  ttg ttg agg ccc gag  cgc gag aaa aac ttc  ccc aat       13550
Asn Asp Ser  Leu Leu Arg Pro Glu  Arg Glu Lys Asn Phe  Pro Asn
        1080                1085                1090

aac ggg ata  gag agc ctg gtg gac  aag atg agc cgc tgg  aag acg       13595
Asn Gly Ile  Glu Ser Leu Val Asp  Lys Met Ser Arg Trp  Lys Thr
        1095                1100                1105

tac gcg cac  gag cac agg gac gag  ccc cga gct agc agc  agc acc       13640
Tyr Ala His  Glu His Arg Asp Glu  Pro Arg Ala Ser Ser  Ser Thr
        1110                1115                1120

ggc gcc cgt  aga cgc cag cgg cac  gac agg cag cgg gga  ctg gtg       13685
Gly Ala Arg  Arg Arg Gln Arg His  Asp Arg Gln Arg Gly  Leu Val
        1125                1130                1135

tgg gac gat  gag gat tcc gcc gac  gac agc agc gtg ttg  gac ttg       13730
Trp Asp Asp  Glu Asp Ser Ala Asp  Asp Ser Ser Val Leu  Asp Leu
        1140                1145                1150

ggt ggg agt  ggt ggt ggt aac ccg  ttc gct cac ctg cgc  ccc cgt       13775
Gly Gly Ser  Gly Gly Gly Asn Pro  Phe Ala His Leu Arg  Pro Arg
        1155                1160                1165

atc ggg cgc  ctg atg taagaatctg aaaaaataaa aaaacggtac tcaccaaggc     13830
Ile Gly Arg  Leu Met
        1170

catggcgacc agcgtgcgtt cttctctgtt gtttgtagta gt atg atg agg  cgc      13884
                                              Met Met Arg  Arg
                                                    1175

gtg tac ccg gag  ggt cct cct ccc tcg  tac gag agc gtg atg  cag       13929
```

```
Val Tyr Pro Glu  Gly Pro Pro Pro Ser  Tyr Glu Ser Val Met  Gln
            1180                1185                1190

cag gcg gtg gcg  gcg gcg atg cag ccc  ccg ctg gag gcg cct  tac       13974
Gln Ala Val Ala  Ala Ala Met Gln Pro  Pro Leu Glu Ala Pro  Tyr
            1195                1200                1205

gtg ccc ccg cgg  tac ctg gcg cct acg  gag ggg cgg aac agc  att       14019
Val Pro Pro Arg  Tyr Leu Ala Pro Thr  Glu Gly Arg Asn Ser  Ile
            1210                1215                1220

cgt tac tcg gag  ctg gca ccc ttg tac  gat acc acc cgg ttg  tac       14064
Arg Tyr Ser Glu  Leu Ala Pro Leu Tyr  Asp Thr Thr Arg Leu  Tyr
            1225                1230                1235

ctg gtg gac aac  aag tcg gcg gac atc  gcc tcg ctg aac tac  cag       14109
Leu Val Asp Asn  Lys Ser Ala Asp Ile  Ala Ser Leu Asn Tyr  Gln
            1240                1245                1250

aac gac cac agc  aac ttc ctg acc acc  gtg gtg cag aac aac  gat       14154
Asn Asp His Ser  Asn Phe Leu Thr Thr  Val Val Gln Asn Asn  Asp
            1255                1260                1265

ttc acc ccc acg  gag gcc agc acc cag  acc atc aac ttt gac  gag       14199
Phe Thr Pro Thr  Glu Ala Ser Thr Gln  Thr Ile Asn Phe Asp  Glu
            1270                1275                1280

cgc tcg cgg tgg  ggc ggc cag ctg aaa  acc atc atg cac acc  aac       14244
Arg Ser Arg Trp  Gly Gly Gln Leu Lys  Thr Ile Met His Thr  Asn
            1285                1290                1295

atg ccc aac gtg  aac gag ttc atg tac  agc aac aag ttc aag  gcg       14289
Met Pro Asn Val  Asn Glu Phe Met Tyr  Ser Asn Lys Phe Lys  Ala
            1300                1305                1310

cgg gtg atg gtc  tcg cgc aag acc ccc  aac ggg gtc aca gta  aca       14334
Arg Val Met Val  Ser Arg Lys Thr Pro  Asn Gly Val Thr Val  Thr
            1315                1320                1325

gat ggt agt cag  gac gag ctg acc tac  gag tgg gtg gag ttt  gag       14379
Asp Gly Ser Gln  Asp Glu Leu Thr Tyr  Glu Trp Val Glu Phe  Glu
            1330                1335                1340

ctg ccc gag ggc  aac ttc tcg gtg acc  atg acc atc gat ctg  atg       14424
Leu Pro Glu Gly  Asn Phe Ser Val Thr  Met Thr Ile Asp Leu  Met
            1345                1350                1355

aac aac gcc atc  atc gac aac tac ttg  gcg gtg gga cgg cag  aac       14469
Asn Asn Ala Ile  Ile Asp Asn Tyr Leu  Ala Val Gly Arg Gln  Asn
            1360                1365                1370

ggg gtg ctg gag  agc gac atc ggc gtg  aag ttc gac acg cgc  aac       14514
Gly Val Leu Glu  Ser Asp Ile Gly Val  Lys Phe Asp Thr Arg  Asn
            1375                1380                1385

ttc cgg ctg ggc  tgg gac ccc gtg acc  gag ctg gtg atg ccg  ggc       14559
Phe Arg Leu Gly  Trp Asp Pro Val Thr  Glu Leu Val Met Pro  Gly
            1390                1395                1400

gtg tac acc aac  gag gcc ttc cac ccc  gac att gtc ctg ctg  ccc       14604
Val Tyr Thr Asn  Glu Ala Phe His Pro  Asp Ile Val Leu Leu  Pro
            1405                1410                1415

ggc tgc ggc gtg  gac ttc acc gag agc  cgc ctc agc aac ctg  ctg       14649
Gly Cys Gly Val  Asp Phe Thr Glu Ser  Arg Leu Ser Asn Leu  Leu
            1420                1425                1430

ggc atc cgc aag  cgg cag ccc ttc cag  gag ggc ttc cag atc  ctg       14694
Gly Ile Arg Lys  Arg Gln Pro Phe Gln  Glu Gly Phe Gln Ile  Leu
```

```
            1435                1440                1445

tac gag gac ctg  gag ggg ggc aac atc  ccc gcg ctg ctg gac  gtg       14739
Tyr Glu Asp Leu  Glu Gly Gly Asn Ile  Pro Ala Leu Leu Asp  Val
            1450                1455                1460

gac gcc tac gag  aaa agc aag gag gag  agc gcc gcc gcg gcg  acc       14784
Asp Ala Tyr Glu  Lys Ser Lys Glu Glu  Ser Ala Ala Ala Ala  Thr
            1465                1470                1475

gca gcc gtg gcc  acc gcc tct acc gag  gtg cgg ggc gat aat  ttt       14829
Ala Ala Val Ala  Thr Ala Ser Thr Glu  Val Arg Gly Asp Asn  Phe
            1480                1485                1490

gct agc gcc gcg  gca gtg gcc gag gcg  gct gaa acc gaa agt  aag       14874
Ala Ser Ala Ala  Ala Val Ala Glu Ala  Ala Glu Thr Glu Ser  Lys
            1495                1500                1505

ata gtg atc cag  ccg gtg gag aag gac  agc aag gac agg agc  tac       14919
Ile Val Ile Gln  Pro Val Glu Lys Asp  Ser Lys Asp Arg Ser  Tyr
            1510                1515                1520

aac gtg ctc gcg  gac aag aaa aac acc  gcc tac cgc agc tgg  tac       14964
Asn Val Leu Ala  Asp Lys Lys Asn Thr  Ala Tyr Arg Ser Trp  Tyr
            1525                1530                1535

ctg gcc tac aac  tac ggc gac ccc gag  aag ggc gtg cgc tcc  tgg       15009
Leu Ala Tyr Asn  Tyr Gly Asp Pro Glu  Lys Gly Val Arg Ser  Trp
            1540                1545                1550

acg ctg ctc acc  acc tcg gac gtc acc  tgc ggc gtg gag caa  gtc       15054
Thr Leu Leu Thr  Thr Ser Asp Val Thr  Cys Gly Val Glu Gln  Val
            1555                1560                1565

tac tgg tcg ctg  ccc gac atg atg caa  gac ccg gtc acc ttc  cgc       15099
Tyr Trp Ser Leu  Pro Asp Met Met Gln  Asp Pro Val Thr Phe  Arg
            1570                1575                1580

tcc acg cga caa  gtt agc aac tac ccg  gtg gtg ggc gcc gag  ctc       15144
Ser Thr Arg Gln  Val Ser Asn Tyr Pro  Val Val Gly Ala Glu  Leu
            1585                1590                1595

ctg ccc gtc tac  tcc aag agc ttc ttc  aac gag cag gcc gtc  tac       15189
Leu Pro Val Tyr  Ser Lys Ser Phe Phe  Asn Glu Gln Ala Val  Tyr
            1600                1605                1610

tcg cag cag ctg  cgc gcc ttc acc tcg  ctc acg cac gtc ttc  aac       15234
Ser Gln Gln Leu  Arg Ala Phe Thr Ser  Leu Thr His Val Phe  Asn
            1615                1620                1625

cgc ttc ccc gag  aac cag atc ctc gtc  cgc ccg ccc gcg ccc  acc       15279
Arg Phe Pro Glu  Asn Gln Ile Leu Val  Arg Pro Pro Ala Pro  Thr
            1630                1635                1640

att acc acc gtc  agt gaa aac gtt cct  gct ctc aca gat cac  ggg       15324
Ile Thr Thr Val  Ser Glu Asn Val Pro  Ala Leu Thr Asp His  Gly
            1645                1650                1655

acc ctg ccg ctg  cgc agc agt atc cgg  gga gtc cag cgc gtg  acc       15369
Thr Leu Pro Leu  Arg Ser Ser Ile Arg  Gly Val Gln Arg Val  Thr
            1660                1665                1670

gtc act gac gcc  aga cgc cgc acc tgc  ccc tac gtc tac aag  gcc       15414
Val Thr Asp Ala  Arg Arg Arg Thr Cys  Pro Tyr Val Tyr Lys  Ala
            1675                1680                1685

ctg ggc gta gtc  gcg ccg cgc gtc ctc  tcg agc cgc acc ttc           15456
Leu Gly Val Val  Ala Pro Arg Val Leu  Ser Ser Arg Thr Phe
            1690                1695                1700
```

```
taaaaaatgt ccattctcat ctcgcccagt aataacaccg gttggggcct gcgcgcgccc    15516

agcaagatgt acggaggcgc tcgccaacgc tccacgcaac accccgtgcg cgtgcgcggg    15576

cacttccgcg ctccctgggg cgccctcaag ggtcgcgtgc gctcgcgcac caccgtcgac    15636

gacgtgatcg accaggtggt ggccgacgcg cgcaactaca cgcccgccgc cgcgcccgcc    15696

tccaccgtgg acgccgtcat cgacagcgtg gtggccgacg cgcgccggta cgcccgcgcc    15756

aagagccggc ggcggcgcat cgcccggcgg caccggagca cccccgccat gcgcgcggcg    15816

cgagccttgc tgcgcagggc caggcgcacg ggacgcaggg ccatgctcag ggcggccaga    15876

cgcgcggcct ccggcagcag cagcgccggc aggacccgca gacgcgcggc cacggcggcg    15936

gcggcggcca tcgccagcat gtcccgcccg cggcgcggca acgtgtactg ggtgcgcgac    15996

gccgccaccg gtgtgcgcgt gcccgtgcgc acccgccccc ctcgcacttg aagatgctga    16056

cttcgcgatg ttgatgtgtc ccagcggcga ggagg atg tcc aag cgc aaa  ttc      16109
                                        Met Ser Lys Arg Lys  Phe
                                                           1705

aag gaa gag atg  ctc cag gtc atc gcg  cct gag atc tac ggc  ccc      16154
Lys Glu Glu Met  Leu Gln Val Ile Ala  Pro Glu Ile Tyr Gly  Pro
            1710                1715                1720

gcg gcg gcg gtg  aag gag gaa aga aag  ccc cgc aaa ctg aag  cgg      16199
Ala Ala Ala Val  Lys Glu Glu Arg Lys  Pro Arg Lys Leu Lys  Arg
            1725                1730                1735

gtc aaa aag gac  aaa aag gaa gaa gat  gtg gac gat atg gtg  gag      16244
Val Lys Lys Asp  Lys Lys Glu Glu Asp  Val Asp Asp Met Val  Glu
            1740                1745                1750

ttt gtg cgc gag  ttc gcc ccc cgg cgg  cgc gtg cag tgg cgc  ggg      16289
Phe Val Arg Glu  Phe Ala Pro Arg Arg  Arg Val Gln Trp Arg  Gly
            1755                1760                1765

cgg aag gtg cgc  ccg gtg ctg aga ccc  ggc acc acg gtg gtc  ttc      16334
Arg Lys Val Arg  Pro Val Leu Arg Pro  Gly Thr Thr Val Val  Phe
            1770                1775                1780

acg ccc gga gag  cgc tct ggc acc gcc  tcc aag cgc tcc tac  gac      16379
Thr Pro Gly Glu  Arg Ser Gly Thr Ala  Ser Lys Arg Ser Tyr  Asp
            1785                1790                1795

gag gtg tac ggg  gat gat gat att ctg  gag cag gcg gcc gag  cgc      16424
Glu Val Tyr Gly  Asp Asp Asp Ile Leu  Glu Gln Ala Ala Glu  Arg
            1800                1805                1810

ctg ggc gag ttt  gct tac ggc aag cgc  agc cgc ccc gcg ccc  ttg      16469
Leu Gly Glu Phe  Ala Tyr Gly Lys Arg  Ser Arg Pro Ala Pro  Leu
            1815                1820                1825

aaa gag gag gcg  gtg tcc atc ccg ctg  gac cac ggc aac ccc  acg      16514
Lys Glu Glu Ala  Val Ser Ile Pro Leu  Asp His Gly Asn Pro  Thr
            1830                1835                1840

ccg agc ctg aag  ccg gtg acc ctg cag  cag gtg ctg cca gcc  gcg      16559
Pro Ser Leu Lys  Pro Val Thr Leu Gln  Gln Val Leu Pro Ala  Ala
            1845                1850                1855

gcg ccg cgc cgg  ggg ttc aag cgc gag  ggc gag gat ctg tac  ccc      16604
Ala Pro Arg Arg  Gly Phe Lys Arg Glu  Gly Glu Asp Leu Tyr  Pro
            1860                1865                1870
```

```
acc atg cag ctg  atg gtg ccc aag cgc  cag aag ctg gag gac  gtg       16649
Thr Met Gln Leu  Met Val Pro Lys Arg  Gln Lys Leu Glu Asp  Val
            1875                 1880                 1885

ctg gag cac atg  aag gtg gac ccg gac  gtg cag ccc gag gtc  aag       16694
Leu Glu His Met  Lys Val Asp Pro Asp  Val Gln Pro Glu Val  Lys
            1890                 1895                 1900

gtg cgg ccc atc  aag cag gtg gcc ccg  ggc ctg ggc gtg cag  acc       16739
Val Arg Pro Ile  Lys Gln Val Ala Pro  Gly Leu Gly Val Gln  Thr
            1905                 1910                 1915

gtg gac atc aag  atc ccc acg gag ccc  atg gaa acg cag act  gag       16784
Val Asp Ile Lys  Ile Pro Thr Glu Pro  Met Glu Thr Gln Thr  Glu
            1920                 1925                 1930

ccc gtg aag ccc  agc acc agc acc atg  gag gtg cag acg gat  ccc       16829
Pro Val Lys Pro  Ser Thr Ser Thr Met  Glu Val Gln Thr Asp  Pro
            1935                 1940                 1945

tgg atg cca gcg  gct tcc acc acc act  cgc cga aga cgc aag  tac       16874
Trp Met Pro Ala  Ala Ser Thr Thr Thr  Arg Arg Arg Arg Lys  Tyr
            1950                 1955                 1960

ggc gcg gcc agc  ctg ctg atg ccc aac  tac gcg ctg cat cct  tcc       16919
Gly Ala Ala Ser  Leu Leu Met Pro Asn  Tyr Ala Leu His Pro  Ser
            1965                 1970                 1975

atc atc ccc acg  ccg ggc tac cgc ggc  acg cgc ttc tac cgc  ggc       16964
Ile Ile Pro Thr  Pro Gly Tyr Arg Gly  Thr Arg Phe Tyr Arg  Gly
            1980                 1985                 1990

tac acc agc agc  cgc cgc cgc aag acc  acc acc cgc cgc cgc  cgt       17009
Tyr Thr Ser Ser  Arg Arg Arg Lys Thr  Thr Thr Arg Arg Arg  Arg
            1995                 2000                 2005

cgt cgc agc cgc  cgc agc agc acc gcg  act tcc gcc ttg gtg  cgg       17054
Arg Arg Ser Arg  Arg Ser Ser Thr Ala  Thr Ser Ala Leu Val  Arg
            2010                 2015                 2020

aga gtg tac cgc  agc ggg cgc gag cct  ctg acc ctg ccg cgc  gcg       17099
Arg Val Tyr Arg  Ser Gly Arg Glu Pro  Leu Thr Leu Pro Arg  Ala
            2025                 2030                 2035

cgc tac cac ccg  agc atc gcc att taactaccgc ctcctacttg cagat atg     17151
Arg Tyr His Pro  Ser Ile Ala Ile                             Met
            2040                                             2045

gcc ctc aca tgc cgc  ctc cgc gtc ccc att  acg ggc tac cga gga       17196
Ala Leu Thr Cys Arg  Leu Arg Val Pro Ile  Thr Gly Tyr Arg Gly
                2050                 2055                 2060

aga aag ccg cgc cgt  aga agg ctg acg ggg  aac ggg ctg cgt cgc       17241
Arg Lys Pro Arg Arg  Arg Arg Leu Thr Gly  Asn Gly Leu Arg Arg
                2065                 2070                 2075

cat cac cac cgg cgg  cgg cgc gcc atc agc  aag cgg ttg ggg gga       17286
His His His Arg Arg  Arg Arg Ala Ile Ser  Lys Arg Leu Gly Gly
                2080                 2085                 2090

ggc ttc ctg ccc gcg  ctg atc ccc atc atc  gcc gcg gcg atc ggg       17331
Gly Phe Leu Pro Ala  Leu Ile Pro Ile Ile  Ala Ala Ala Ile Gly
                2095                 2100                 2105

gcg atc ccc ggc ata  gct tcc gtg gcg gtg  cag gcc tct cag cgc       17376
Ala Ile Pro Gly Ile  Ala Ser Val Ala Val  Gln Ala Ser Gln Arg
                2110                 2115                 2120

cac tgagacacag cttggaaaat ttgtaataaa aaatggactg acgctcctgg          17429
```

```
His

tcctgtgatg tgtgttttta g atg gaa gac atc  aat ttt tcg tcc ctg  gca    17480
                        Met Glu Asp Ile  Asn Phe Ser Ser Leu  Ala
                                    2125                 2130

ccg cga cac ggc  acg cgg ccg ttt atg  ggc acc tgg agc gac  atc       17525
Pro Arg His Gly  Thr Arg Pro Phe Met  Gly Thr Trp Ser Asp  Ile
            2135                 2140                 2145

ggc aac agc caa  ctg aac ggg ggc gcc  ttc aat tgg agc agt  ctc       17570
Gly Asn Ser Gln  Leu Asn Gly Gly Ala  Phe Asn Trp Ser Ser  Leu
            2150                 2155                 2160

tgg agc ggg ctt  aag aat ttc ggg tcc  acg ctc aaa acc tat  ggc       17615
Trp Ser Gly Leu  Lys Asn Phe Gly Ser  Thr Leu Lys Thr Tyr  Gly
            2165                 2170                 2175

aac aag gcg tgg  aac agc agc aca ggg  cag gcg ctg agg gaa  aag       17660
Asn Lys Ala Trp  Asn Ser Ser Thr Gly  Gln Ala Leu Arg Glu  Lys
            2180                 2185                 2190

ctg aaa gag cag  aac ttc cag cag aag  gtg gtc gat ggc ctg  gcc       17705
Leu Lys Glu Gln  Asn Phe Gln Gln Lys  Val Val Asp Gly Leu  Ala
            2195                 2200                 2205

tcg ggc atc aac  ggg gtg gtg gac ctg  gcc aac cag gcc gtg  cag       17750
Ser Gly Ile Asn  Gly Val Val Asp Leu  Ala Asn Gln Ala Val  Gln
            2210                 2215                 2220

aaa cag atc aac  agc cgc ctg gac gcg  gtc ccg ccc gcg ggg  tcc       17795
Lys Gln Ile Asn  Ser Arg Leu Asp Ala  Val Pro Pro Ala Gly  Ser
            2225                 2230                 2235

gtg gac atg ccc  cag gtg gag gag gag  ctg cct ccc ctg gac  aag       17840
Val Asp Met Pro  Gln Val Glu Glu Glu  Leu Pro Pro Leu Asp  Lys
            2240                 2245                 2250

cgc ggc gac aag  cga ccg cgt ccc gac  gct gag gag acg ctg  ctg       17885
Arg Gly Asp Lys  Arg Pro Arg Pro Asp  Ala Glu Glu Thr Leu  Leu
            2255                 2260                 2265

acg cac acg gac  gag ccg ccc ccg tac  gag gag gcg gtg aaa  ctg       17930
Thr His Thr Asp  Glu Pro Pro Pro Tyr  Glu Glu Ala Val Lys  Leu
            2270                 2275                 2280

ggt ctg ccc acc  acg cgg ccc gtg gcg  cct ctg gcc acc ggg  gtg       17975
Gly Leu Pro Thr  Thr Arg Pro Val Ala  Pro Leu Ala Thr Gly  Val
            2285                 2290                 2295

ctg aaa ccc agc  agc agc agc agc cag  ccc gcg acc ctg gac  ttg       18020
Leu Lys Pro Ser  Ser Ser Ser Ser Gln  Pro Ala Thr Leu Asp  Leu
            2300                 2305                 2310

cct cca cct cgc  ccc tcc aca gtg gct  aag ccc ctg ccg ccg  gtg       18065
Pro Pro Pro Arg  Pro Ser Thr Val Ala  Lys Pro Leu Pro Pro  Val
            2315                 2320                 2325

gcc gtc gcg tcg  cgc gcc ccc cga ggc  cgc ccc cag gcg aac  tgg       18110
Ala Val Ala Ser  Arg Ala Pro Arg Gly  Arg Pro Gln Ala Asn  Trp
            2330                 2335                 2340

cag agc act ctg  aac agc atc gtg ggt  ctg gga gtg cag agt  gtg       18155
Gln Ser Thr Leu  Asn Ser Ile Val Gly  Leu Gly Val Gln Ser  Val
            2345                 2350                 2355

aag cgc cgc cgc  tgc tat taaaagacac tgtagcgctt aacttgcttg            18203
Lys Arg Arg Arg  Cys Tyr
```

```
           2360

tctgtgtgtg tat atg tat gtc  cgc cga cca gaa gga  gga aga ggc gcg     18252
               Met Tyr Val  Arg Arg Pro Glu Gly  Gly Arg Gly Ala
                           2365                2370

tcg  ccg agt tgc aag atg  gcc acc cca tcg atg  ctg ccc cag tgg       18297
Ser  Pro Ser Cys Lys Met  Ala Thr Pro Ser Met  Leu Pro Gln Trp
2375                 2380                2385

gcg  tac atg cac atc gcc  gga cag gac gct tcg  gag tac ctg agt       18342
Ala  Tyr Met His Ile Ala  Gly Gln Asp Ala Ser  Glu Tyr Leu Ser
2390                 2395                2400

ccg  ggt ctg gtg cag ttc  gcc cgc gcc aca gac  acc tac ttc agt       18387
Pro  Gly Leu Val Gln Phe  Ala Arg Ala Thr Asp  Thr Tyr Phe Ser
2405                 2410                2415

ctg  ggg aac aag ttt agg  aac ccc acg gtg gcg  ccc acg cac gat       18432
Leu  Gly Asn Lys Phe Arg  Asn Pro Thr Val Ala  Pro Thr His Asp
2420                 2425                2430

gtg  acc acc gac cgc agc  cag cgg ctg acg ctg  cgc ttc gtg ccc       18477
Val  Thr Thr Asp Arg Ser  Gln Arg Leu Thr Leu  Arg Phe Val Pro
2435                 2440                2445

gtg  gac cgc gag gac aac  acc tac tcg tac aaa  gtg cgc tac acg       18522
Val  Asp Arg Glu Asp Asn  Thr Tyr Ser Tyr Lys  Val Arg Tyr Thr
2450                 2455                2460

ctg  gcc gtg ggc gac aac  cgc gtg ctg gac atg  gcc agc acc tac       18567
Leu  Ala Val Gly Asp Asn  Arg Val Leu Asp Met  Ala Ser Thr Tyr
2465                 2470                2475

ttt  gac atc cgc ggc gtg  ctg gat cgg ggc ccc  agc ttc aaa ccc       18612
Phe  Asp Ile Arg Gly Val  Leu Asp Arg Gly Pro  Ser Phe Lys Pro
2480                 2485                2490

tac  tcc ggc acc gcc tac  aac agc ctg gct ccc  aag gga gcg ccc       18657
Tyr  Ser Gly Thr Ala Tyr  Asn Ser Leu Ala Pro  Lys Gly Ala Pro
2495                 2500                2505

aac  acc tca caa tgg ata  acc aaa gac aag aca  tac agt ttt gga       18702
Asn  Thr Ser Gln Trp Ile  Thr Lys Asp Lys Thr  Tyr Ser Phe Gly
2510                 2515                2520

aat  gct cca gtc aga gga  ttg gac att aca gaa  gag ggt ctc caa       18747
Asn  Ala Pro Val Arg Gly  Leu Asp Ile Thr Glu  Glu Gly Leu Gln
2525                 2530                2535

ata  gta acc gat gag tca  ggg ggt gaa agc aag  aaa att ttt gca       18792
Ile  Val Thr Asp Glu Ser  Gly Gly Glu Ser Lys  Lys Ile Phe Ala
2540                 2545                2550

gac  aaa acc tat cag cct  gaa cct cag ctt gga  gat gag gaa tgg       18837
Asp  Lys Thr Tyr Gln Pro  Glu Pro Gln Leu Gly  Asp Glu Glu Trp
2555                 2560                2565

cat  gat act att gga gct  gaa gac aag tat gga  ggc aga gcg ctt       18882
His  Asp Thr Ile Gly Ala  Glu Asp Lys Tyr Gly  Gly Arg Ala Leu
2570                 2575                2580

aaa  cct gcc acc aac atg  aaa ccc tgc tat ggg  tct ttc gcc aag       18927
Lys  Pro Ala Thr Asn Met  Lys Pro Cys Tyr Gly  Ser Phe Ala Lys
2585                 2590                2595

cca  act aat gct aag gga  ggt cag gct aaa agc  aga acc aag gac       18972
Pro  Thr Asn Ala Lys Gly  Gly Gln Ala Lys Ser  Arg Thr Lys Asp
2600                 2605                2610
```

```
gat  ggc act act gag cct  gat att gac atg gcc  ttt ttt gac gat       19017
Asp  Gly Thr Thr Glu Pro  Asp Ile Asp Met Ala  Phe Phe Asp Asp
2615                 2620                 2625

cgc  agt cag caa gct agt  ttc agt cca gaa ctt  gtt ttg tat act       19062
Arg  Ser Gln Gln Ala Ser  Phe Ser Pro Glu Leu  Val Leu Tyr Thr
2630                 2635                 2640

gag  aat gtc gat ctg gac  acc ccg gat acc cac  att att tac aaa       19107
Glu  Asn Val Asp Leu Asp  Thr Pro Asp Thr His  Ile Ile Tyr Lys
2645                 2650                 2655

cct  ggc act gat gaa aca  agt tct tct ttc aac  ttg ggt cag cag       19152
Pro  Gly Thr Asp Glu Thr  Ser Ser Ser Phe Asn  Leu Gly Gln Gln
2660                 2665                 2670

tcc  atg ccc aac aga ccc  aat tac att ggc ttc  aga gac aac ttt       19197
Ser  Met Pro Asn Arg Pro  Asn Tyr Ile Gly Phe  Arg Asp Asn Phe
2675                 2680                 2685

atc  gga ctc atg tac tac  aac agc act ggc aat  atg ggt gta ctg       19242
Ile  Gly Leu Met Tyr Tyr  Asn Ser Thr Gly Asn  Met Gly Val Leu
2690                 2695                 2700

gct  gga cag gcc tcc cag  ctg aat gct gtg gtg  gac ttg cag gac       19287
Ala  Gly Gln Ala Ser Gln  Leu Asn Ala Val Val  Asp Leu Gln Asp
2705                 2710                 2715

aga  aac acc gaa ctg tcc  tac cag ctc ttg ctt  gac tct ctg ggc       19332
Arg  Asn Thr Glu Leu Ser  Tyr Gln Leu Leu Leu  Asp Ser Leu Gly
2720                 2725                 2730

gac  aga acc agg tat ttc  agt atg tgg aat cag  gcg gtg gac agc       19377
Asp  Arg Thr Arg Tyr Phe  Ser Met Trp Asn Gln  Ala Val Asp Ser
2735                 2740                 2745

tat  gac ccc gat gtg cgc  att att gaa aat cac  ggt gtg gag gat       19422
Tyr  Asp Pro Asp Val Arg  Ile Ile Glu Asn His  Gly Val Glu Asp
2750                 2755                 2760

gaa  ctt ccc aac tat tgc  ttc cct ttg aat ggt  gtg ggc ttt aca       19467
Glu  Leu Pro Asn Tyr Cys  Phe Pro Leu Asn Gly  Val Gly Phe Thr
2765                 2770                 2775

gat  tca ttc cag gga att  aag gtt aaa act acc  aat aac gga aca       19512
Asp  Ser Phe Gln Gly Ile  Lys Val Lys Thr Thr  Asn Asn Gly Thr
2780                 2785                 2790

gca  aac gct aca gag tgg  gaa tct gat acc tct  gtc aat aat gct       19557
Ala  Asn Ala Thr Glu Trp  Glu Ser Asp Thr Ser  Val Asn Asn Ala
2795                 2800                 2805

aat  gag att gcc aag ggc  aat cct ttc gcc atg  gag atc aac atc       19602
Asn  Glu Ile Ala Lys Gly  Asn Pro Phe Ala Met  Glu Ile Asn Ile
2810                 2815                 2820

cag  gcc aac ctg tgg cgg  aac ttc ctc tac gcg  aac gtg gcg ctg       19647
Gln  Ala Asn Leu Trp Arg  Asn Phe Leu Tyr Ala  Asn Val Ala Leu
2825                 2830                 2835

tac  ctg ccc gac tcc tac  aag tac acg ccg gcc  aac atc acg ctg       19692
Tyr  Leu Pro Asp Ser Tyr  Lys Tyr Thr Pro Ala  Asn Ile Thr Leu
2840                 2845                 2850

ccc  acc aac acc aac acc  tac gat tac atg aac  ggc cgc gtg gtg       19737
Pro  Thr Asn Thr Asn Thr  Tyr Asp Tyr Met Asn  Gly Arg Val Val
2855                 2860                 2865
```

```
gcg  ccc tcg ctg gtg gac  gcc tac atc aac atc  ggg gcg cgc tgg       19782
Ala  Pro Ser Leu Val Asp  Ala Tyr Ile Asn Ile  Gly Ala Arg Trp
2870                 2875                 2880

tcg  ctg gac ccc atg gac  aac gtc aac ccc ttc  aac cac cac cgc       19827
Ser  Leu Asp Pro Met Asp  Asn Val Asn Pro Phe  Asn His His Arg
2885                 2890                 2895

aac  gcg ggc ctg cga tac  cgc tcc atg ctc ctg  ggc aac ggg cgc       19872
Asn  Ala Gly Leu Arg Tyr  Arg Ser Met Leu Leu  Gly Asn Gly Arg
2900                 2905                 2910

tac  gtg ccc ttc cac atc  cag gtg ccc caa aag  ttt ttc gcc atc       19917
Tyr  Val Pro Phe His Ile  Gln Val Pro Gln Lys  Phe Phe Ala Ile
2915                 2920                 2925

aag  agc ctc ctg ctc ctg  ccc ggg tcc tac acc  tac gag tgg aac       19962
Lys  Ser Leu Leu Leu Leu  Pro Gly Ser Tyr Thr  Tyr Glu Trp Asn
2930                 2935                 2940

ttc  cgc aag gac gtc aac  atg atc ctg cag agc  tcc ctc ggc aac       20007
Phe  Arg Lys Asp Val Asn  Met Ile Leu Gln Ser  Ser Leu Gly Asn
2945                 2950                 2955

gac  ctg cgc acg gac ggg  gcc tcc atc tcc ttc  acc agc atc aac       20052
Asp  Leu Arg Thr Asp Gly  Ala Ser Ile Ser Phe  Thr Ser Ile Asn
2960                 2965                 2970

ctc  tac gcc acc ttc ttc  ccc atg gcg cac aac  acg gcc tcc acg       20097
Leu  Tyr Ala Thr Phe Phe  Pro Met Ala His Asn  Thr Ala Ser Thr
2975                 2980                 2985

ctc  gag gcc atg ctg cgc  aac gac acc aac gac  cag tcc ttc aac       20142
Leu  Glu Ala Met Leu Arg  Asn Asp Thr Asn Asp  Gln Ser Phe Asn
2990                 2995                 3000

gac  tac ctc tcg gcg gcc  aac atg ctc tac ccc  atc ccg gcc aac       20187
Asp  Tyr Leu Ser Ala Ala  Asn Met Leu Tyr Pro  Ile Pro Ala Asn
3005                 3010                 3015

gcc  acc aac gtg ccc atc  tcc atc ccc tcg cgc  aac tgg gcc gcc       20232
Ala  Thr Asn Val Pro Ile  Ser Ile Pro Ser Arg  Asn Trp Ala Ala
3020                 3025                 3030

ttc  cgc ggc tgg tcc ttc  acg cgt ctc aag acc  aag gag acg ccc       20277
Phe  Arg Gly Trp Ser Phe  Thr Arg Leu Lys Thr  Lys Glu Thr Pro
3035                 3040                 3045

tcg  ctg ggc tcc ggg ttc  gac ccc tac ttc gtc  tac tcg ggc tcc       20322
Ser  Leu Gly Ser Gly Phe  Asp Pro Tyr Phe Val  Tyr Ser Gly Ser
3050                 3055                 3060

atc  ccc tac ctc gac ggc  acc ttc tac ctc aac  cac acc ttc aag       20367
Ile  Pro Tyr Leu Asp Gly  Thr Phe Tyr Leu Asn  His Thr Phe Lys
3065                 3070                 3075

aag  gtc tcc atc acc ttc  gac tcc tcc gtc agc  tgg ccc ggc aac       20412
Lys  Val Ser Ile Thr Phe  Asp Ser Ser Val Ser  Trp Pro Gly Asn
3080                 3085                 3090

gac  cgc ctc ctg acg ccc  aac gag ttc gaa atc  aag cgc acc gtc       20457
Asp  Arg Leu Leu Thr Pro  Asn Glu Phe Glu Ile  Lys Arg Thr Val
3095                 3100                 3105

gac  gga gag ggg tac aac  gtg gcc cag tgc aac  atg acc aag gac       20502
Asp  Gly Glu Gly Tyr Asn  Val Ala Gln Cys Asn  Met Thr Lys Asp
3110                 3115                 3120

tgg  ttc ctg gtc cag atg  ctg gcc cac tac aac  atc ggc tac cag       20547
```

```
Trp  Phe Leu Val Gln Met  Leu Ala His Tyr Asn  Ile Gly Tyr Gln
3125                3130                3135

ggc  ttc tac gtg ccc gag  ggc tac aag gac cgc  atg tac tcc ttc       20592
Gly  Phe Tyr Val Pro Glu  Gly Tyr Lys Asp Arg  Met Tyr Ser Phe
3140                3145                3150

ttc  cgc aac ttc cag ccc  atg agc cgc cag gtc  gtg gac gag gtc       20637
Phe  Arg Asn Phe Gln Pro  Met Ser Arg Gln Val  Val Asp Glu Val
3155                3160                3165

aac  tac aag gac tac cag  gcc gtc acc ctg gcc  tac cag cac aac       20682
Asn  Tyr Lys Asp Tyr Gln  Ala Val Thr Leu Ala  Tyr Gln His Asn
3170                3175                3180

aac  tcg ggc ttc gtc ggc  tac ctc gcg ccc acc  atg cgc cag ggg       20727
Asn  Ser Gly Phe Val Gly  Tyr Leu Ala Pro Thr  Met Arg Gln Gly
3185                3190                3195

cag  ccc tac ccc gcc aac  tac ccg tac ccg ctc  atc ggc aag agc       20772
Gln  Pro Tyr Pro Ala Asn  Tyr Pro Tyr Pro Leu  Ile Gly Lys Ser
3200                3205                3210

gcc  gtc acc agc gtc acc  cag aaa aag ttc ctc  tgc gac cgg gtc       20817
Ala  Val Thr Ser Val Thr  Gln Lys Lys Phe Leu  Cys Asp Arg Val
3215                3220                3225

atg  tgg cgc atc ccc ttc  tcc agc aac ttc atg  tcc atg ggc gcg       20862
Met  Trp Arg Ile Pro Phe  Ser Ser Asn Phe Met  Ser Met Gly Ala
3230                3235                3240

ctc  acc gac ctc ggc cag  aac atg ctc tat gcc  aac tcc gcc cac       20907
Leu  Thr Asp Leu Gly Gln  Asn Met Leu Tyr Ala  Asn Ser Ala His
3245                3250                3255

gcg  cta gac atg aat ttc  gaa gtc gac ccc atg  gat gag tcc acc       20952
Ala  Leu Asp Met Asn Phe  Glu Val Asp Pro Met  Asp Glu Ser Thr
3260                3265                3270

ctt  ctc tat gtt gtc ttc  gaa gtc ttc gac gtc  gtc cga gtg cac       20997
Leu  Leu Tyr Val Val Phe  Glu Val Phe Asp Val  Val Arg Val His
3275                3280                3285

cag  ccc cac cgc ggc gtc  atc gag gcc gtc tac  ctg cgc acc ccc       21042
Gln  Pro His Arg Gly Val  Ile Glu Ala Val Tyr  Leu Arg Thr Pro
3290                3295                3300

ttc  tcg gcc ggt aac gcc  acc acc taagctcttg cttcttgc atg atg       21090
Phe  Ser Ala Gly Asn Ala  Thr Thr                     Met Met
3305                3310

gct  gag ccc acg ggc tcc  ggc gag cag gag ctc  agg gcc atc atc       21135
Ala  Glu Pro Thr Gly Ser  Gly Glu Gln Glu Leu  Arg Ala Ile Ile
3315                3320                3325

cgc  gac ctg ggc tgc ggg  ccc tac ttc ctg ggc  acc ttc gat aag       21180
Arg  Asp Leu Gly Cys Gly  Pro Tyr Phe Leu Gly  Thr Phe Asp Lys
3330                3335                3340

cgc  ttc ccg gga ttc atg  gcc ccg cac aag ctg  gcc tgc gcc atc       21225
Arg  Phe Pro Gly Phe Met  Ala Pro His Lys Leu  Ala Cys Ala Ile
3345                3350                3355

gtc  aac acg gcc ggt cgc  gag acc ggg ggc gag  cac tgg ctg gcc       21270
Val  Asn Thr Ala Gly Arg  Glu Thr Gly Gly Glu  His Trp Leu Ala
3360                3365                3370

ttc  gcc tgg aac ccg cgc  tcg aac acc tgc tac  ctc ttc gac ccc       21315
Phe  Ala Trp Asn Pro Arg  Ser Asn Thr Cys Tyr  Leu Phe Asp Pro
```

```
3375                 3380                 3385

ttc  ggg ttc tcg gac gag  cgc ctc aag cag atc  tac cag ttc gag       21360
Phe  Gly Phe Ser Asp Glu  Arg Leu Lys Gln Ile  Tyr Gln Phe Glu
3390                 3395                 3400

tac  gag ggc ctg ctg cgc  cgc agc gcc ctg gcc  acc gag gac cgc       21405
Tyr  Glu Gly Leu Leu Arg  Arg Ser Ala Leu Ala  Thr Glu Asp Arg
3405                 3410                 3415

tgc  gtc acc ctg gaa aag  tcc acc cag acc gtg  cag ggt ccg cgc       21450
Cys  Val Thr Leu Glu Lys  Ser Thr Gln Thr Val  Gln Gly Pro Arg
3420                 3425                 3430

tcg  gcc gcc tgc ggg ctc  ttc tgc tgc atg ttc  ctg cac gcc ttc       21495
Ser  Ala Ala Cys Gly Leu  Phe Cys Cys Met Phe  Leu His Ala Phe
3435                 3440                 3445

gtg  cac tgg ccc gac cgc  ccc atg gac aag aac  ccc acc atg aac       21540
Val  His Trp Pro Asp Arg  Pro Met Asp Lys Asn  Pro Thr Met Asn
3450                 3455                 3460

ttg  ctg acg ggg gtg ccc  aac ggc atg ctc cag  tcg ccc cag gtg       21585
Leu  Leu Thr Gly Val Pro  Asn Gly Met Leu Gln  Ser Pro Gln Val
3465                 3470                 3475

gaa  ccc acc ctg cgc cgc  aac cag gag gcg ctc  tac cgc ttc ctc       21630
Glu  Pro Thr Leu Arg Arg  Asn Gln Glu Ala Leu  Tyr Arg Phe Leu
3480                 3485                 3490

aac  gcc cac tcc gcc tac  ttt cgc tcc cac cgc  gcg cgc atc gag       21675
Asn  Ala His Ser Ala Tyr  Phe Arg Ser His Arg  Ala Arg Ile Glu
3495                 3500                 3505

aag  gcc acc gcc ttc gac  cgc atg aat caa gac  atg taaaccgtgt       21721
Lys  Ala Thr Ala Phe Asp  Arg Met Asn Gln Asp  Met
3510                 3515                 3520

gtgtatgtga atgctttatt cataataaac agcacatgtt tatgccacct tctctgaggc    21781

tctgacttta tttagaaatc gaaggggttc tgccggctct cggcgtgccc cgcgggcagg    21841

gatacgttgc ggaactggta cttgggcagc cacttgaact cggggatcag cagcttcggc    21901

acggggaggt cggggaacga gtcgctccac agcttgcgcg tgagttgcag ggcgcccagc    21961

aggtcgggcg cggagatctt gaaatcgcag ttgggacccg cgttctgcgc gcgagagttg    22021

cggtacacgg ggttgcagca ctggaacacc atcagggccg ggtgcttcac gctcgccagc    22081

accgtcgcgt cggtgatgcc ctccacgtcc agatcctcgg cgttggccat cccgaagggg    22141

gtcatcttgc aggtctgccg ccccatgctg ggcacgcagc cgggcttgtg gttgcaatcg    22201

cagtgcaggg ggatcagcat catctgggcc tgctcggagc tcatgcccgg gtacatggcc    22261

ttcatgaaag cctccagctg gcggaaggcc tgctgcgcct tgccgccctc ggtgaagaag    22321

accccgcagg acttgctaga gaactggttg gtagcgcagc ccgcgtcgtg cacgcagcag    22381

cgcgcgtcgt tgttggccag ctgcaccacg ctgcgccccc agcggttctg ggtgatcttg    22441

gcccggtcgg ggttctcctt cagcgcgcgc tgcccgttct cgctcgccac atccatctcg    22501

atcgtgtgct ccttctggat catcacggtc ccgtgcaggc accgcagctt gccctcggcc    22561

tcggtgcagc cgtgcagcca cagcgcgcag ccggtgctct cccagttctt gtgggcgatc    22621

tgggagtgcg agtgcacgaa gccctgcagg aagcggccca tcatcgcggt cagggtcttg    22681
```

```
ttgctggtga aggtcagcgg gatgccgcgg tgctcctcgt tcacatacag gtggcagatg    22741

cggcggtaca cctcgccctg ctcgggcatc agctggaagg cggacttcag gtcgctctcc    22801

acgcggtacc gctccatcag cagcgtcatc acttccatgc ccttctccca ggccgaaacg    22861

atcggcaggc tcaggggtt cttcaccgtc atcttagtcg ccgccgccga ggtcaggggg    22921

tcgttctcgt ccagggtctc aaacactcgc ttgccgtcct tctcggtgat gcgcacgggg    22981

gggaaggcga agcccacggc cgccagctcc tcctcggcct gcctttcgtc ctcgctgtcc    23041

tggctgatgt cttgcaaagg cacatgcttg gtcttgcggg gtttcttttt gggcggcaga    23101

ggcggcggcg gagacgtgct gggcgagcgc gagttctcgc tcaccacgac tatttcttct    23161

tcttggccgt cgtccgagac cacgcggcgg taggcatgcc tcttctgggg cagaggcgga    23221

ggcgacgggc tctcgcggtt cgacgggcgg ctggcagagc cccttccgcg ttcgggggtg    23281

cgctcctggc ggcgctgctc tgactgactt cctccgcggc cggccattgt gttctcctag    23341

ggagcaacaa gc atg gag act cag  cca tcg tcg cca aca  tcg cca tct      23389
             Met Glu Thr Gln  Pro Ser Ser Pro Thr  Ser Pro Ser
                         3525                 3530

gcc ccc  gcc gcc gcc gac gag  aac cag cag cag cag  aat gaa agc      23434
Ala Pro  Ala Ala Ala Asp Glu  Asn Gln Gln Gln Gln  Asn Glu Ser
    3535                 3540                 3545

tta acc  gcc ccg ccg ccc agc  ccc acc tcc gac gcc  gcc gca gcc      23479
Leu Thr  Ala Pro Pro Pro Ser  Pro Thr Ser Asp Ala  Ala Ala Ala
    3550                 3555                 3560

cca gac  atg caa gag atg gag  gaa tcc atc gag att  gac ctg ggc      23524
Pro Asp  Met Gln Glu Met Glu  Glu Ser Ile Glu Ile  Asp Leu Gly
    3565                 3570                 3575

tac gtg  acg ccc gcg gag cac  gag gag gag ctg gca  gcg cgc ttt      23569
Tyr Val  Thr Pro Ala Glu His  Glu Glu Glu Leu Ala  Ala Arg Phe
    3580                 3585                 3590

tca gcc  ccg gaa gag aac cac  caa gag cag cca gag  cag gaa gca      23614
Ser Ala  Pro Glu Glu Asn His  Gln Glu Gln Pro Glu  Gln Glu Ala
    3595                 3600                 3605

gag agc  gag cag cag cag gct  ggg ctc gag cat ggc  gac tac ctg      23659
Glu Ser  Glu Gln Gln Gln Ala  Gly Leu Glu His Gly  Asp Tyr Leu
    3610                 3615                 3620

agc ggg  gca gag gac gtg ctc  atc aag cat ctg gcc  cgc caa tgc      23704
Ser Gly  Ala Glu Asp Val Leu  Ile Lys His Leu Ala  Arg Gln Cys
    3625                 3630                 3635

atc atc  gtc aag gac gcg ctg  ctc gac cgc gcc gag  gtg ccc ctc      23749
Ile Ile  Val Lys Asp Ala Leu  Leu Asp Arg Ala Glu  Val Pro Leu
    3640                 3645                 3650

agc gtg  gcg gag ctc agc cgc  gcc tac gag cgc aac  ctc ttc tcg      23794
Ser Val  Ala Glu Leu Ser Arg  Ala Tyr Glu Arg Asn  Leu Phe Ser
    3655                 3660                 3665

ccg cgc  gtg ccc ccc aag cgc  cag ccc aac ggc acc  tgc gag ccc      23839
Pro Arg  Val Pro Pro Lys Arg  Gln Pro Asn Gly Thr  Cys Glu Pro
    3670                 3675                 3680

aac ccg  cgc ctc aac ttc tac  ccg gtc ttc gcg gtg  ccc gag gcc      23884
Asn Pro  Arg Leu Asn Phe Tyr  Pro Val Phe Ala Val  Pro Glu Ala
```

```
    3685                3690                3695

ctg gcc  acc tac cac ctc ttt  ttc aag aac caa agg  atc ccc gtc       23929
Leu Ala  Thr Tyr His Leu Phe  Phe Lys Asn Gln Arg  Ile Pro Val
    3700                3705                3710

tcc tgc  cgc gcc aac cgc acc  cgc gcc gac gcc ctg  ctc aac ctg       23974
Ser Cys  Arg Ala Asn Arg Thr  Arg Ala Asp Ala Leu  Leu Asn Leu
    3715                3720                3725

ggc ccc  ggc gcc cgc cta cct  gat atc gcc tcc ttg  gaa gag gtt       24019
Gly Pro  Gly Ala Arg Leu Pro  Asp Ile Ala Ser Leu  Glu Glu Val
    3730                3735                3740

ccc aag  atc ttc gag ggt ctg  ggc agc gac gag act  cgg gcc gcg       24064
Pro Lys  Ile Phe Glu Gly Leu  Gly Ser Asp Glu Thr  Arg Ala Ala
    3745                3750                3755

aac gct  ctg caa gga agc gga  gag gag cat gag cac  cac agc gcc       24109
Asn Ala  Leu Gln Gly Ser Gly  Glu Glu His Glu His  His Ser Ala
    3760                3765                3770

ctg gtg  gag ttg gaa ggc gac  aac gcg cgc ctg gcg  gtc ctc aag       24154
Leu Val  Glu Leu Glu Gly Asp  Asn Ala Arg Leu Ala  Val Leu Lys
    3775                3780                3785

cgc acg  gtc gag ctg acc cac  ttc gcc tac cca gcg  ctc aac ctg       24199
Arg Thr  Val Glu Leu Thr His  Phe Ala Tyr Pro Ala  Leu Asn Leu
    3790                3795                3800

ccc ccc  aag gtc atg agc gcc  gtc atg gac cag gtg  ctc atc aag       24244
Pro Pro  Lys Val Met Ser Ala  Val Met Asp Gln Val  Leu Ile Lys
    3805                3810                3815

cgc gcc  tcg ccc ctc tcg gag  gag gag atg cag gac  ccc gag agc       24289
Arg Ala  Ser Pro Leu Ser Glu  Glu Glu Met Gln Asp  Pro Glu Ser
    3820                3825                3830

tcg gac  gag ggc aag ccc gtg  gtc agc gac gag cag  ctg gcg cgc       24334
Ser Asp  Glu Gly Lys Pro Val  Val Ser Asp Glu Gln  Leu Ala Arg
    3835                3840                3845

tgg ctg  gga gcg agt agc acc  ccc cag agc ctg gaa  gag cgg cgc       24379
Trp Leu  Gly Ala Ser Ser Thr  Pro Gln Ser Leu Glu  Glu Arg Arg
    3850                3855                3860

aag ctc  atg atg gcc gtg gtc  ctg gtg acc gtg gag  ctg gag tgt       24424
Lys Leu  Met Met Ala Val Val  Leu Val Thr Val Glu  Leu Glu Cys
    3865                3870                3875

ctg cgc  cgc ttc ttt gcc gac  gcg gag acc ctg cgc  aag gtc gag       24469
Leu Arg  Arg Phe Phe Ala Asp  Ala Glu Thr Leu Arg  Lys Val Glu
    3880                3885                3890

gag aac  ctg cac tac ctc ttc  agg cac ggg ttc gtg  cgc cag gcc       24514
Glu Asn  Leu His Tyr Leu Phe  Arg His Gly Phe Val  Arg Gln Ala
    3895                3900                3905

tgc aag  atc tcc aac gtg gag  ctg acc aac ctg gtc  tcc tac atg       24559
Cys Lys  Ile Ser Asn Val Glu  Leu Thr Asn Leu Val  Ser Tyr Met
    3910                3915                3920

ggc atc  ctg cac gag aac cgc  ctg ggg cag aac gtg  ctg cac acc       24604
Gly Ile  Leu His Glu Asn Arg  Leu Gly Gln Asn Val  Leu His Thr
    3925                3930                3935

acc ctg  cgc ggg gag gcc cgc  cgc gac tac atc cgc  gac tgc gtc       24649
Thr Leu  Arg Gly Glu Ala Arg  Arg Asp Tyr Ile Arg  Asp Cys Val
    3940                3945                3950
```

```
tac ctg  tac ctc tgc cac acc  tgg cag acg ggc atg  ggc gtg tgg       24694
Tyr Leu  Tyr Leu Cys His Thr  Trp Gln Thr Gly Met  Gly Val Trp
    3955                 3960                 3965

cag cag  tgc ctg gag gag cag  aac ctg aaa gag ctc  tgc aag ctc       24739
Gln Gln  Cys Leu Glu Glu Gln  Asn Leu Lys Glu Leu  Cys Lys Leu
    3970                 3975                 3980

ctg cag  aag aac ctc aag gcc  ctg tgg acc ggg ttc  gac gag cgc       24784
Leu Gln  Lys Asn Leu Lys Ala  Leu Trp Thr Gly Phe  Asp Glu Arg
    3985                 3990                 3995

acc acc  gcc tcg gac ctg gcc  gac ctc atc ttc ccc  gag cgc ctg       24829
Thr Thr  Ala Ser Asp Leu Ala  Asp Leu Ile Phe Pro  Glu Arg Leu
    4000                 4005                 4010

cgg ctg  acg ctg cgc aac ggg  ctg ccc gac ttt atg  agc caa agc       24874
Arg Leu  Thr Leu Arg Asn Gly  Leu Pro Asp Phe Met  Ser Gln Ser
    4015                 4020                 4025

atg ttg  caa aac ttt cgc tct  ttc atc ctc gaa cgc  tcc ggg atc       24919
Met Leu  Gln Asn Phe Arg Ser  Phe Ile Leu Glu Arg  Ser Gly Ile
    4030                 4035                 4040

ctg ccc  gcc acc tgc tcc gca  ctg ccc tcg gac ttc  gtg ccg ctg       24964
Leu Pro  Ala Thr Cys Ser Ala  Leu Pro Ser Asp Phe  Val Pro Leu
    4045                 4050                 4055

acc ttc  cgc gag tgc ccc ccg  ccg ctc tgg agc cac  tgc tac ctg       25009
Thr Phe  Arg Glu Cys Pro Pro  Pro Leu Trp Ser His  Cys Tyr Leu
    4060                 4065                 4070

ctg cgc  ctg gcc aac tac ctg  gcc tac cac tcg gac  gtg atc gag       25054
Leu Arg  Leu Ala Asn Tyr Leu  Ala Tyr His Ser Asp  Val Ile Glu
    4075                 4080                 4085

gac gtc  agc ggc gag ggt ctg  ctc gag tgc cac tgc  cgc tgc aac       25099
Asp Val  Ser Gly Glu Gly Leu  Leu Glu Cys His Cys  Arg Cys Asn
    4090                 4095                 4100

ctc tgc  acg ccg cac cgc tcc  ctg gcc tgc aac ccc  cag ctg ctg       25144
Leu Cys  Thr Pro His Arg Ser  Leu Ala Cys Asn Pro  Gln Leu Leu
    4105                 4110                 4115

agc gag  acc cag atc atc ggc  acc ttc gag ttg caa  ggg ccc ggt       25189
Ser Glu  Thr Gln Ile Ile Gly  Thr Phe Glu Leu Gln  Gly Pro Gly
    4120                 4125                 4130

gac ggc  aag ggg ggt ctg aaa  ctc acc ccg ggg ctg  tgg acc tcg       25234
Asp Gly  Lys Gly Gly Leu Lys  Leu Thr Pro Gly Leu  Trp Thr Ser
    4135                 4140                 4145

gcc tac  ttg cgc aag ttc gtg  ccc gag gac tac cat  ccc ttc gag       25279
Ala Tyr  Leu Arg Lys Phe Val  Pro Glu Asp Tyr His  Pro Phe Glu
    4150                 4155                 4160

atc agg  ttc tac gag gac caa  tcc cag ccg ccc aag  gcc gag ctg       25324
Ile Arg  Phe Tyr Glu Asp Gln  Ser Gln Pro Pro Lys  Ala Glu Leu
    4165                 4170                 4175

tcg gcc  tgc gtc atc acc cag  ggg gcc atc ctg gcc  caa ttg caa       25369
Ser Ala  Cys Val Ile Thr Gln  Gly Ala Ile Leu Ala  Gln Leu Gln
    4180                 4185                 4190

gcc atc  cag aaa tcc cgc caa  gaa ttt ctg ctg aaa  aag ggc cac       25414
Ala Ile  Gln Lys Ser Arg Gln  Glu Phe Leu Leu Lys  Lys Gly His
    4195                 4200                 4205
```

```
ggg gtc  tac ctg gac ccc cag  acc gga gag gag ctc  aac ccc agc       25459
Gly Val  Tyr Leu Asp Pro Gln  Thr Gly Glu Glu Leu  Asn Pro Ser
    4210                 4215                 4220

ttc ccc  cag gat gcc ccg agg  aag cag caa gaa gct  gaa agt gga       25504
Phe Pro  Gln Asp Ala Pro Arg  Lys Gln Gln Glu Ala  Glu Ser Gly
    4225                 4230                 4235

gct gcc  gcc gga gga ttt gga  gga aga ctg gga gag  cag tca ggc       25549
Ala Ala  Ala Gly Gly Phe Gly  Gly Arg Leu Gly Glu  Gln Ser Gly
    4240                 4245                 4250

aga gga  gat gga aga ctg gga  cag cac tca ggc aga  gga gga cag       25594
Arg Gly  Asp Gly Arg Leu Gly  Gln His Ser Gly Arg  Gly Gly Gln
    4255                 4260                 4265

cct gca  aga cag tct gga aga  cga ggt gga gga gga  ggc aga gga       25639
Pro Ala  Arg Gln Ser Gly Arg  Arg Gly Gly Gly Gly  Gly Arg Gly
    4270                 4275                 4280

aga agc  agc cgc cgc cag acc  gtc gtc ctc ggc gga  gga gga gaa       25684
Arg Ser  Ser Arg Arg Gln Thr  Val Val Leu Gly Gly  Gly Gly Glu
    4285                 4290                 4295

agc aag  cag cac gga tac cat  ctc cgc tcc ggg tcr  ggg tcg cgg       25729
Ser Lys  Gln His Gly Tyr His  Leu Arg Ser Gly Xaa  Gly Ser Arg
    4300                 4305                 4310

cgg ccg  ggc cca cag taggtgggac gagaccgggc gcttcccgaa ccccaccacc    25784
Arg Pro  Gly Pro Gln
    4315

cagaccggta agaaggagcg gcagggatac aagtcctggc gggggcacaa aaacgccatc    25844

gtctcctgct tgcaagcctg cgggggcaac atctccttca cccggcgcta cctgctcttc    25904

caccgcgggg tgaacttccc ccgcaacatc ttgcattact accgtcacct ccacagcccc    25964

tactactgtt tccaagaaga ggcagaaacc cagcagcagc agaaaaccag cggcagctag    26024

aaaatccaca gcggcggcgg caggtggact gaggatcgcg gcgaacgagc cggcgcagac    26084

ccgggagctg aggaaccgga tctttcccac cctctatgcc atcttccagc agagtcgggg    26144

gcaggagcag gaactgaaag tcaagaaccg ttctctgcgc tcgctcaccc gcagttgtct    26204

gtatcacaag agcgaagacc aacttcagcg cactctcgag gacgccgagg ctctcttcaa    26264

caagtactgc gcgctcactc ttaaagagta gcccgcgccc gcccacacac ggaaaaaggc    26324

gggaattacg tcaccacctg cgcccttcgc ccgaccatca tc atg agc  aaa gag      26378
                                              Met Ser  Lys Glu
                                                   4320

att ccc acg  cct tac atg tgg agc  tac cag ccc cag atg  ggc ctg       26423
Ile Pro Thr  Pro Tyr Met Trp Ser  Tyr Gln Pro Gln Met  Gly Leu
        4325                 4330                 4335

gcc gcc ggc  gcc gcc cag gac tac  tcc acc cgc atg aac  tgg ctc       26468
Ala Ala Gly  Ala Ala Gln Asp Tyr  Ser Thr Arg Met Asn  Trp Leu
        4340                 4345                 4350

agt gcc ggg  ccc gcg atg atc tca  cgg gtg aat gac atc  cgc gcc       26513
Ser Ala Gly  Pro Ala Met Ile Ser  Arg Val Asn Asp Ile  Arg Ala
        4355                 4360                 4365

cac cga aac  cag ata ctc cta gaa  cag tca gcg atc acc  gcc acg       26558
His Arg Asn  Gln Ile Leu Leu Glu  Gln Ser Ala Ile Thr  Ala Thr
        4370                 4375                 4380
```

```
ccc cgc cat  cac ctt aat ccg cgt  aat tgg ccc gcc gcc  ctg gtg       26603
Pro Arg His  His Leu Asn Pro Arg  Asn Trp Pro Ala Ala  Leu Val
        4385                 4390                 4395

tac cag gaa  att ccc cag ccc acg  acc gta cta ctt ccg  cga gac       26648
Tyr Gln Glu  Ile Pro Gln Pro Thr  Thr Val Leu Leu Pro  Arg Asp
        4400                 4405                 4410

gcc cag gcc  gaa gtc cag ctg act  aac tca ggt gtc cag  ctg gcc       26693
Ala Gln Ala  Glu Val Gln Leu Thr  Asn Ser Gly Val Gln  Leu Ala
        4415                 4420                 4425

ggc ggc gcc  acc ctg tgt cgt cac  cgc ccc gct cag ggt  ata aag       26738
Gly Gly Ala  Thr Leu Cys Arg His  Arg Pro Ala Gln Gly  Ile Lys
        4430                 4435                 4440

cgg ctg gtg  atc cga ggc aga ggc  aca cag ctc aac gac  gag gtg       26783
Arg Leu Val  Ile Arg Gly Arg Gly  Thr Gln Leu Asn Asp  Glu Val
        4445                 4450                 4455

gtg agc tct  tcg ctg ggt ctg cga  cct gac gga gtc ttc  caa ctc       26828
Val Ser Ser  Ser Leu Gly Leu Arg  Pro Asp Gly Val Phe  Gln Leu
        4460                 4465                 4470

gcc gga tcg  ggg aga tct tcc ttc  acg cct cgt cag gcc  gtc ctg       26873
Ala Gly Ser  Gly Arg Ser Ser Phe  Thr Pro Arg Gln Ala  Val Leu
        4475                 4480                 4485

act ttg gag  agt tcg tcc tca cag  ccc cgc tcg ggc ggc  atc ggc       26918
Thr Leu Glu  Ser Ser Ser Ser Gln  Pro Arg Ser Gly Gly  Ile Gly
        4490                 4495                 4500

act ctc cag  ttc gtg gag gag ttc  act ccc tcg gtc tac  ttc aac       26963
Thr Leu Gln  Phe Val Glu Glu Phe  Thr Pro Ser Val Tyr  Phe Asn
        4505                 4510                 4515

ccc ttc tcc  ggc tcc ccc ggc cac  tac ccg gac gag ttc  atc ccg       27008
Pro Phe Ser  Gly Ser Pro Gly His  Tyr Pro Asp Glu Phe  Ile Pro
        4520                 4525                 4530

aac ttc gac  gcc atc agc gag tcg  gtg gac ggc tac gat  tga atg       27053
Asn Phe Asp  Ala Ile Ser Glu Ser  Val Asp Gly Tyr Asp      Met
        4535                 4540                 4545

tcc cat ggt ggc  gtg gct gac cta gct  cgg ctt cga cac ctg  gac       27098
Ser His Gly Gly  Val Ala Asp Leu Ala  Arg Leu Arg His Leu  Asp
            4550                 4555                 4560

cac tgc cgc cgc  ttc cgc tgc ttc gct  cgg gat ctc gcc gag  ttt       27143
His Cys Arg Arg  Phe Arg Cys Phe Ala  Arg Asp Leu Ala Glu  Phe
            4565                 4570                 4575

gcc tac ttt gag  ctg ccc gag gag cac  cct cag ggc ccg gcc  cac       27188
Ala Tyr Phe Glu  Leu Pro Glu Glu His  Pro Gln Gly Pro Ala  His
            4580                 4585                 4590

gga gtg cgg atc  atc gtc gaa ggg ggt  ctc gac tcc cac ctg  ctt       27233
Gly Val Arg Ile  Ile Val Glu Gly Gly  Leu Asp Ser His Leu  Leu
            4595                 4600                 4605

cgg atc ttc agc  cag cga ccg atc ctg  gtc gag cgc gag caa  gga       27278
Arg Ile Phe Ser  Gln Arg Pro Ile Leu  Val Glu Arg Glu Gln  Gly
            4610                 4615                 4620

cag acc cgt ctg  acc ctg tac tgc atc  tgc aac cac ccc ggc  ctg       27323
Gln Thr Arg Leu  Thr Leu Tyr Cys Ile  Cys Asn His Pro Gly  Leu
            4625                 4630                 4635
```

```
cat gaa agt ctt  tgt tgt ctg ctg tgt  act gag tat aat aaa  agc       27368
His Glu Ser Leu  Cys Cys Leu Leu Cys  Thr Glu Tyr Asn Lys  Ser
            4640                 4645                 4650

tgagatcagc gactactccg gactcgattg tggtgttcct gctatcaacc agtccctgtt    27428

cttcaccggg aacgagaccg agctccagct ccagtgtaag ccccacaaga agtatctcac    27488

ctggctgttc cagggctccc cgatcgccgt tgtcaaccac tgcgacaacg acggagtcct    27548

gctgagcggc cctgccaacc ttacttttc cacccgcaga agcaagctcc agctcttcca    27608

acccttcctc cccgggacct atcagtgcgt ctcgggaccc tgccatcaca ccttccacct    27668

gatcccgaat accacagcgc cgctccccgc tactaacaac caaactaccc accaacgcca    27728

ccgtcgcgac ctttcctctg aatctaatac cactaccgga ggtgagctcc gaggtcgacc    27788

aacctctggg atttactacg gcccctggga ggtggtgggg ttaatagcgc taggcctagt    27848

tgtgggtggg cttttggctc tctgctacct atacctccct tgctgttcgt acttagtggt    27908

gctgtgttgc tggtttaaga a atg ggg cag atc  acc cta gtg agc tgc  ggt    27959
                       Met Gly Gln Ile  Thr Leu Val Ser Cys  Gly
                                   4655                 4660

gtg ctg gtg gcg  gtg ctt tcg att gtg  gga ctg ggc ggc gcg  gct       28004
Val Leu Val Ala  Val Leu Ser Ile Val  Gly Leu Gly Gly Ala  Ala
            4665                 4670                 4675

gta gtg aag gag  gag aag gcc gat ccc  tgc ttg cat ttc aat  ccc       28049
Val Val Lys Glu  Glu Lys Ala Asp Pro  Cys Leu His Phe Asn  Pro
            4680                 4685                 4690

gac aaa tgc cag  ctg agt ttt cag ccc  gat ggc aat cgg tgc  gcg       28094
Asp Lys Cys Gln  Leu Ser Phe Gln Pro  Asp Gly Asn Arg Cys  Ala
            4695                 4700                 4705

gtg ctg atc aag  tgc gga tgg gaa tgc  gag aac gtg aga atc  gag       28139
Val Leu Ile Lys  Cys Gly Trp Glu Cys  Glu Asn Val Arg Ile  Glu
            4710                 4715                 4720

tac aat aac aag  act cgg aac aat act  ctc gcg tcc gtg tgg  cag       28184
Tyr Asn Asn Lys  Thr Arg Asn Asn Thr  Leu Ala Ser Val Trp  Gln
            4725                 4730                 4735

ccc ggg gac ccc  gag tgg tac acc gtc  tct gtc ccc ggt gct  gac       28229
Pro Gly Asp Pro  Glu Trp Tyr Thr Val  Ser Val Pro Gly Ala  Asp
            4740                 4745                 4750

ggc tcc ccg cgc  acc gtg aac aat act  ttc att ttt gcg cac  atg       28274
Gly Ser Pro Arg  Thr Val Asn Asn Thr  Phe Ile Phe Ala His  Met
            4755                 4760                 4765

tgc gac acg gtc  atg tgg atg agc aag  cag tac gat atg tgg  ccc       28319
Cys Asp Thr Val  Met Trp Met Ser Lys  Gln Tyr Asp Met Trp  Pro
            4770                 4775                 4780

ccc acg aag gag  aac atc gtg gtc ttc  tcc atc gct tac agc  ctg       28364
Pro Thr Lys Glu  Asn Ile Val Val Phe  Ser Ile Ala Tyr Ser  Leu
            4785                 4790                 4795

tgc acg gtg cta  atc acc gct atc gtg  tgc ctg agc att cac  atg       28409
Cys Thr Val Leu  Ile Thr Ala Ile Val  Cys Leu Ser Ile His  Met
            4800                 4805                 4810

ctc atc gct att  cgc ccc aga aat aat  gcc gaa aaa gaa aaa  cag       28454
Leu Ile Ala Ile  Arg Pro Arg Asn Asn  Ala Glu Lys Glu Lys  Gln
            4815                 4820                 4825
```

```
cca taacacgttt tttcacacac ctttttcaga cc atg gcc tct  gtt aaa ttt     28507
Pro                                     Met Ala Ser  Val Lys Phe
                                                4830

ttg ctt  tta ttt gcc agt ctc  att act gtt ata agt  aat gag aaa       28552
Leu Leu  Leu Phe Ala Ser Leu  Ile Thr Val Ile Ser  Asn Glu Lys
    4835                 4840                 4845

ctc act  att tac att ggc act  aac cac act cta gaa  gga att cca       28597
Leu Thr  Ile Tyr Ile Gly Thr  Asn His Thr Leu Glu  Gly Ile Pro
    4850                 4855                 4860

aaa tcc  tca tgg tat tgc tat  ttt gat caa gat cca  gac tta act       28642
Lys Ser  Ser Trp Tyr Cys Tyr  Phe Asp Gln Asp Pro  Asp Leu Thr
    4865                 4870                 4875

ata gaa  ctg tgt ggt aac aat  gga caa aat aca agc  att cat tta       28687
Ile Glu  Leu Cys Gly Asn Asn  Gly Gln Asn Thr Ser  Ile His Leu
    4880                 4885                 4890

att aac  ttt aaa tgc gga gac  gat ttg aaa tta att  aat atc act       28732
Ile Asn  Phe Lys Cys Gly Asp  Asp Leu Lys Leu Ile  Asn Ile Thr
    4895                 4900                 4905

aaa gag  tat gga ggt atg tat  tac tat gtt gca gaa  aat aac aac       28777
Lys Glu  Tyr Gly Gly Met Tyr  Tyr Tyr Val Ala Glu  Asn Asn Asn
    4910                 4915                 4920

atg cag  ttt tat gaa gtt act  gta act aat ccc acc  aca cct aga       28822
Met Gln  Phe Tyr Glu Val Thr  Val Thr Asn Pro Thr  Thr Pro Arg
    4925                 4930                 4935

aca aca  aca acc acc aca aaa  act aca cct gtt acc  act atg cag       28867
Thr Thr  Thr Thr Thr Thr Lys  Thr Thr Pro Val Thr  Thr Met Gln
    4940                 4945                 4950

ctc gct  acc aat aac att ttt  gcc atg cgt caa atg  gtc aac aat       28912
Leu Ala  Thr Asn Asn Ile Phe  Ala Met Arg Gln Met  Val Asn Asn
    4955                 4960                 4965

agc act  caa ccc acc cca ccc  agt gag gaa att ccc  aaa tcc atg       28957
Ser Thr  Gln Pro Thr Pro Pro  Ser Glu Glu Ile Pro  Lys Ser Met
    4970                 4975                 4980

att ggc  att att gtt gct gta  gtg gtg tgc atg ttg  atc atc gcc       29002
Ile Gly  Ile Ile Val Ala Val  Val Val Cys Met Leu  Ile Ile Ala
    4985                 4990                 4995

ttg tgc  atg gtg tac tat gcc  ttc tgc tac aga aag  cac aga ctg       29047
Leu Cys  Met Val Tyr Tyr Ala  Phe Cys Tyr Arg Lys  His Arg Leu
    5000                 5005                 5010

aac gac  aag ctg gaa cac tta  cta agt gtt gaa ttt  taatttttta       29093
Asn Asp  Lys Leu Glu His Leu  Leu Ser Val Glu Phe
    5015                 5020                 5025

gaacc atg aag atc cta ggc  ctt tta gtt ttt tct  atc att acc tct     29140
      Met Lys Ile Leu Gly  Leu Leu Val Phe Ser  Ile Ile Thr Ser
                      5030                 5035

gct  ctt tgt gaa tca gtg  gat aaa gat gtt act  att acc act ggt       29185
Ala  Leu Cys Glu Ser Val  Asp Lys Asp Val Thr  Ile Thr Thr Gly
5040                 5045                 5050

tct  aac tat aca ctg aaa  ggg cca ccc tca ggt  atg ctt tcg tgg       29230
Ser  Asn Tyr Thr Leu Lys  Gly Pro Pro Ser Gly  Met Leu Ser Trp
5055                 5060                 5065
```

```
tat  tgc tat ttt gga aat  gac gca gag caa act  gag ctt tgc aat       29275
Tyr  Cys Tyr Phe Gly Asn  Asp Ala Glu Gln Thr  Glu Leu Cys Asn
5070                 5075                 5080

gca  atg aaa ggc caa atg  cca acc aca aaa att  aaa cat aaa tgt       29320
Ala  Met Lys Gly Gln Met  Pro Thr Thr Lys Ile  Lys His Lys Cys
5085                 5090                 5095

gat  ggt agt gat cta ata  cta ctc aat gtc acg  aaa gca tat ggt       29365
Asp  Gly Ser Asp Leu Ile  Leu Leu Asn Val Thr  Lys Ala Tyr Gly
5100                 5105                 5110

ggc  agt tat tca tgc cct  gct gcc aac act gag  gat atg att ttt       29410
Gly  Ser Tyr Ser Cys Pro  Ala Ala Asn Thr Glu  Asp Met Ile Phe
5115                 5120                 5125

tac  aaa gtg gaa gtg gtt  gat ccc act act cca  cca ccc acc acc       29455
Tyr  Lys Val Glu Val Val  Asp Pro Thr Thr Pro  Pro Pro Thr Thr
5130                 5135                 5140

aca  act act cac acc aca  cac aca gaa caa acc  aca gca gag gag       29500
Thr  Thr Thr His Thr Thr  His Thr Glu Gln Thr  Thr Ala Glu Glu
5145                 5150                 5155

gca  gca aag tta gcc ttg  cag gtc caa gac agt  tca ttt gtt ggc       29545
Ala  Ala Lys Leu Ala Leu  Gln Val Gln Asp Ser  Ser Phe Val Gly
5160                 5165                 5170

att  acc cct aca ccc gat  cag cgg tgt ccg ggg  ctg ctc gtc agc       29590
Ile  Thr Pro Thr Pro Asp  Gln Arg Cys Pro Gly  Leu Leu Val Ser
5175                 5180                 5185

ggc  att gtc ggt gtg ctt  tcg gga tta gca gtc  ata atc atc tgc       29635
Gly  Ile Val Gly Val Leu  Ser Gly Leu Ala Val  Ile Ile Ile Cys
5190                 5195                 5200

atg  ttc att ttt gct tgc  tgc tat aga agg ctt  tac cga caa aaa       29680
Met  Phe Ile Phe Ala Cys  Cys Tyr Arg Arg Leu  Tyr Arg Gln Lys
5205                 5210                 5215

tca  gac cca ctg ctg aac  ctc tat gtt taatttttc cagagcc atg aag     29730
Ser  Asp Pro Leu Leu Asn  Leu Tyr Val                   Met Lys
5220                 5225                                   5230

gca gtt agc act cta  att ttt tgt tct ttg  att ggc act gtt ttt       29775
Ala Val Ser Thr Leu  Ile Phe Cys Ser Leu  Ile Gly Thr Val Phe
                5235                 5240                 5245

agt gtt agc ttt ttg  aaa caa att aat gtt  act gag ggg gaa aat       29820
Ser Val Ser Phe Leu  Lys Gln Ile Asn Val  Thr Glu Gly Glu Asn
                5250                 5255                 5260

gtg aca ctg gta ggc  gta gaa ggt gct caa  aat acc acc tgg aca       29865
Val Thr Leu Val Gly  Val Glu Gly Ala Gln  Asn Thr Thr Trp Thr
                5265                 5270                 5275

aaa tac cac ctc gat  ggg tgg aaa gat att  tgc aat tgg agt gtc       29910
Lys Tyr His Leu Asp  Gly Trp Lys Asp Ile  Cys Asn Trp Ser Val
                5280                 5285                 5290

att act tac aca tgt  gag gga gtt aat ttg  acc ata gtc aat gcc       29955
Ile Thr Tyr Thr Cys  Glu Gly Val Asn Leu  Thr Ile Val Asn Ala
                5295                 5300                 5305

agc caa aat cag aag  ggt tgg att aaa ggg  caa tct gtt agt gtt       30000
Ser Gln Asn Gln Lys  Gly Trp Ile Lys Gly  Gln Ser Val Ser Val
                5310                 5315                 5320

acc agc cag ggg tac  tat acc cag cat act  ctt att tat gac att       30045
```

```
Thr Ser Gln Gly Tyr  Tyr Thr Gln His Thr  Leu Ile Tyr Asp Ile
                5325                5330                5335

gta gtt ata ccg ctg  cca acg cct agc cca  cct agc acc act aca        30090
Val Val Ile Pro Leu  Pro Thr Pro Ser Pro  Pro Ser Thr Thr Thr
                5340                5345                5350

caa aca acc cac act  aca cag aca acc aca  tac agt aca tca aat        30135
Gln Thr Thr His Thr  Thr Gln Thr Thr Thr  Tyr Ser Thr Ser Asn
                5355                5360                5365

caa cct acc acc act  aca gca gca gag gtt  gcc agc tcg tct ggg        30180
Gln Pro Thr Thr Thr  Thr Ala Ala Glu Val  Ala Ser Ser Ser Gly
                5370                5375                5380

gtc cga gtg gca ttt  ttg tta ttg gcc cca  tct agc agt ccc act        30225
Val Arg Val Ala Phe  Leu Leu Leu Ala Pro  Ser Ser Ser Pro Thr
                5385                5390                5395

gct agt acc aat gag  cag act act gat ttt  ttg tcc act gtc gag        30270
Ala Ser Thr Asn Glu  Gln Thr Thr Asp Phe  Leu Ser Thr Val Glu
                5400                5405                5410

agc cac acc aca gct  acc tcg agt gcc ttc  tct agc acc gcc aat        30315
Ser His Thr Thr Ala  Thr Ser Ser Ala Phe  Ser Ser Thr Ala Asn
                5415                5420                5425

ctc tcc tcg ctt tcc  tct aca cca atc agt  ccc gct act act cct        30360
Leu Ser Ser Leu Ser  Ser Thr Pro Ile Ser  Pro Ala Thr Thr Pro
                5430                5435                5440

agc ccc gct cct ctt  ccc act ccc ctg aag  caa aca gac ggc ggc        30405
Ser Pro Ala Pro Leu  Pro Thr Pro Leu Lys  Gln Thr Asp Gly Gly
                5445                5450                5455

atg caa tgg cag atc  acc ctg ctc att gtg  atc ggg ttg gtc atc        30450
Met Gln Trp Gln Ile  Thr Leu Leu Ile Val  Ile Gly Leu Val Ile
                5460                5465                5470

ctg gcc gtg ttg ctc  tac tac atc ttc tgc  cgc cgc att ccc aac        30495
Leu Ala Val Leu Leu  Tyr Tyr Ile Phe Cys  Arg Arg Ile Pro Asn
                5475                5480                5485

gcg cac cgc aag ccg  gcc tac aag ccc atc  gtt atc ggg cag ccg        30540
Ala His Arg Lys Pro  Ala Tyr Lys Pro Ile  Val Ile Gly Gln Pro
                5490                5495                5500

gag ccg ctt cag gtg  gaa ggg ggt cta agg  aat ctt ctc ttc tct        30585
Glu Pro Leu Gln Val  Glu Gly Gly Leu Arg  Asn Leu Leu Phe Ser
                5505                5510                5515

ttt aca gta tgg tgattgaact atgattccta gacaattctt gatcactatt          30637
Phe Thr Val Trp


cttatctgcc tcctccaagt ctgtgccacc ctcgctctgg tggccaacgc cagtccagac    30697

tgtattgggc ccttcgcctc ctacgtgctc tttgccttcg tcacctgcat ctgctgctgt    30757

agcatagtct gcctgcttat caccttcttc cagttcattg actggatctt tgtgcgcatc    30817

gcctacctgc gccaccaccc ccagtaccgc gaccagcgag tggcgcggct gctcaggctc    30877

ctctgataag c atg  cgg gct ctg cta ctt  ctc gcg ctt ctg ctg  tta      30924
            Met  Arg Ala Leu Leu Leu  Leu Ala Leu Leu Leu  Leu
            5520                5525                5530

gtg ctc ccc cgt  ccc gtc gac ccc cgg  tcc ccc act cag tcc  ccc      30969
Val Leu Pro Arg  Pro Val Asp Pro Arg  Ser Pro Thr Gln Ser  Pro
```

```
            5535                5540                5545

gag gag gtc cgc  aaa tgc aaa ttc caa  gaa ccc tgg aaa ttc  ctc       31014
Glu Glu Val Arg  Lys Cys Lys Phe Gln  Glu Pro Trp Lys Phe  Leu
            5550                5555                5560

aaa tgc tac cgc  caa aaa tca gac atg  cat ccc agc tgg atc  atg       31059
Lys Cys Tyr Arg  Gln Lys Ser Asp Met  His Pro Ser Trp Ile  Met
            5565                5570                5575

atc att ggg atc  gtg aac att ctg gcc  tgc acc ctc atc tcc  ttt       31104
Ile Ile Gly Ile  Val Asn Ile Leu Ala  Cys Thr Leu Ile Ser  Phe
            5580                5585                5590

gtg att tac ccc  tac ttt gac ttt ggt  tgg aac tcg cca gag  gcg       31149
Val Ile Tyr Pro  Tyr Phe Asp Phe Gly  Trp Asn Ser Pro Glu  Ala
            5595                5600                5605

ctc tat ctc ccg  cct gaa cct gac aca  cca cca cag caa cct  cag       31194
Leu Tyr Leu Pro  Pro Glu Pro Asp Thr  Pro Pro Gln Gln Pro  Gln
            5610                5615                5620

gca cac gca cta  cca cca cca cag cct  agg cca caa tac atg  ccc       31239
Ala His Ala Leu  Pro Pro Pro Gln Pro  Arg Pro Gln Tyr Met  Pro
            5625                5630                5635

ata tta gac tat  gag gcc gag cca cag  cga ccc atg ctc ccc  gct       31284
Ile Leu Asp Tyr  Glu Ala Glu Pro Gln  Arg Pro Met Leu Pro  Ala
            5640                5645                5650

att agt tac ttc  aat cta acc ggc gga  gat gac tgacccactg             31327
Ile Ser Tyr Phe  Asn Leu Thr Gly Gly  Asp Asp
            5655                5660

gccaacaaca acgtcaacga ccttctcctg gacatggacg gccgcgcctc ggagcagcga    31387

ctcgcccaac ttcgcattcg ccagcagcag gagagagccg tcaaggagct gcaggacggc    31447

atagccatcc accagtgcaa gaaaggcatc ttctgcctgg tgaaacaggc caagatctcc    31507

tacgaggtca cccagaccga ccatcgcctc tcctacgagc tcctgcagca gcgccagaag    31567

ttcacctgcc tggtcggagt caaccccatc gtcatcaccc agcagtcggg agataccaag    31627

gggtgcatcc actgctcctg cgactccccc gactgcgtcc acactctgat caagaccctc    31687

tgcggcctcc gcgacctcct ccccatgaac taatcacccc cttatccagt gaaataaaga    31747

tcatattgat gattaaataa aaaaaataat catttgattt gaaataaaga tacaatcata    31807

ttgatgattt gagtttaata aaaataaaga atcacttact tgaaatctga taccaggtct    31867

ctgtccatgt tttctgccaa caccacttca ctcccctctt cccagctctg gtactgcagg    31927

ccccggcggg ctgcaaactt cctccacacc ctgaagggga tgtcaaattc ctcctgtccc    31987

tcaatcttca ttttatcttc tatcag atg tcc aaa  aag cgc gtc cgg gtg         32037
                           Met Ser Lys  Lys Arg Val Arg Val
                                5665                5670

gat gat gac ttc gac  ccc gtc tac ccc tac  gat gca gac aac gca         32082
Asp Asp Asp Phe Asp  Pro Val Tyr Pro Tyr  Asp Ala Asp Asn Ala
            5675                5680                5685

ccg acc gtg ccc ttc  atc aac ccc ccc ttc  gtc tct tca gat gga         32127
Pro Thr Val Pro Phe  Ile Asn Pro Pro Phe  Val Ser Ser Asp Gly
            5690                5695                5700

ttc caa gag aag ccc  ctg ggg gtg ttg tcc  ctg cga ctg gcc gac         32172
```

```
Phe Gln Glu Lys Pro  Leu Gly Val Leu Ser  Leu Arg Leu Ala Asp
                5705                5710                5715

ccc gtc acc acc aag  aac ggg gaa atc acc  ctc aag ctg gga gag        32217
Pro Val Thr Thr Lys  Asn Gly Glu Ile Thr  Leu Lys Leu Gly Glu
                5720                5725                5730

ggg gtg gac ctc gac  gac tcg gga aaa ctc  atc tcc aaa aat gcc        32262
Gly Val Asp Leu Asp  Asp Ser Gly Lys Leu  Ile Ser Lys Asn Ala
                5735                5740                5745

acc aag gcc act gcc  cct ctc agt att tcc  aac agc acc att tcc        32307
Thr Lys Ala Thr Ala  Pro Leu Ser Ile Ser  Asn Ser Thr Ile Ser
                5750                5755                5760

ctt aac atg gat gcc  cct ctt tac aac aac  aat gga aag tta ggc        32352
Leu Asn Met Asp Ala  Pro Leu Tyr Asn Asn  Asn Gly Lys Leu Gly
                5765                5770                5775

ata aga ata gga gca  cct cta aag gta gta  gac tta cta aac act        32397
Ile Arg Ile Gly Ala  Pro Leu Lys Val Val  Asp Leu Leu Asn Thr
                5780                5785                5790

tta gct gta gcc tat  gga tcg ggt cta ggt  ctc aag aat aat gcc        32442
Leu Ala Val Ala Tyr  Gly Ser Gly Leu Gly  Leu Lys Asn Asn Ala
                5795                5800                5805

ctt aca gtt cag tta  gtt tct cca ctc act  ttt gat aac aaa ggc        32487
Leu Thr Val Gln Leu  Val Ser Pro Leu Thr  Phe Asp Asn Lys Gly
                5810                5815                5820

aat gta aaa att aam  tta ggg aaa ggc cca  tta aca gtt gcg gca        32532
Asn Val Lys Ile Xaa  Leu Gly Lys Gly Pro  Leu Thr Val Ala Ala
                5825                5830                5835

aac cga ctg agt gtt  acc tgc aaa aga ggt  tta tat gtc act act        32577
Asn Arg Leu Ser Val  Thr Cys Lys Arg Gly  Leu Tyr Val Thr Thr
                5840                5845                5850

aca gga gat gca ctc  gaa agc aac ata agc  tgg gct aaa ggt ata        32622
Thr Gly Asp Ala Leu  Glu Ser Asn Ile Ser  Trp Ala Lys Gly Ile
                5855                5860                5865

aga ttt gaa gga aat  gca ata gca gca aat  att ggc aaa ggg ctt        32667
Arg Phe Glu Gly Asn  Ala Ile Ala Ala Asn  Ile Gly Lys Gly Leu
                5870                5875                5880

gaa ttt ggt act act  agt tca gag tca gat  gtc agc aat gct tat        32712
Glu Phe Gly Thr Thr  Ser Ser Glu Ser Asp  Val Ser Asn Ala Tyr
                5885                5890                5895

cct atc caa gta aaa  cta ggt act ggt ctc  acc ttt gac agc aca        32757
Pro Ile Gln Val Lys  Leu Gly Thr Gly Leu  Thr Phe Asp Ser Thr
                5900                5905                5910

ggt gcc att gtt gct  tgg aac aaa gag gat  gac aag ctt aca ttg        32802
Gly Ala Ile Val Ala  Trp Asn Lys Glu Asp  Asp Lys Leu Thr Leu
                5915                5920                5925

tgg acc aca gcc gac  cca tcg cca aat tgc  aaa ata tac tct gaa        32847
Trp Thr Thr Ala Asp  Pro Ser Pro Asn Cys  Lys Ile Tyr Ser Glu
                5930                5935                5940

aag gat gca aaa ctt  aca ctt tgc ttg aca  aag tgt ggt agt caa        32892
Lys Asp Ala Lys Leu  Thr Leu Cys Leu Thr  Lys Cys Gly Ser Gln
                5945                5950                5955

ata ttg ggc act gtg  aca gta ttg gct gtt  aac aat ggg agc tta        32937
Ile Leu Gly Thr Val  Thr Val Leu Ala Val  Asn Asn Gly Ser Leu
```

```
                5960                5965                5970

aac ccc att aca aac  aca gtg agc act gca  att gta tat ctc aag        32982
Asn Pro Ile Thr Asn  Thr Val Ser Thr Ala  Ile Val Tyr Leu Lys
                5975                5980                5985

ttt gat gct aat gga  gtc ttg cta agc aac  tca aca cta aac aaa        33027
Phe Asp Ala Asn Gly  Val Leu Leu Ser Asn  Ser Thr Leu Asn Lys
                5990                5995                6000

gaa tat tgg aat ttc  aga aag gga gat gtt  aca cct gcc gaa gca        33072
Glu Tyr Trp Asn Phe  Arg Lys Gly Asp Val  Thr Pro Ala Glu Ala
                6005                6010                6015

tac act aat gct ata  ggt ttt atg cct aac  ata aag gcc tat cct        33117
Tyr Thr Asn Ala Ile  Gly Phe Met Pro Asn  Ile Lys Ala Tyr Pro
                6020                6025                6030

aaa aac aca tct gca  gct tca aaa agt cat  att gtt ggc caa gtt        33162
Lys Asn Thr Ser Ala  Ala Ser Lys Ser His  Ile Val Gly Gln Val
                6035                6040                6045

tac cta aat gga gat  gaa acc aaa cct ctt  atg cta att atc aca        33207
Tyr Leu Asn Gly Asp  Glu Thr Lys Pro Leu  Met Leu Ile Ile Thr
                6050                6055                6060

ttt aat gaa act gat  gat gca acc tgc acc  tac tgc att act ttt        33252
Phe Asn Glu Thr Asp  Asp Ala Thr Cys Thr  Tyr Cys Ile Thr Phe
                6065                6070                6075

caa tgg aaa tgg gat  aat agt aag tac aca  ggt gaa aca ctt gca        33297
Gln Trp Lys Trp Asp  Asn Ser Lys Tyr Thr  Gly Glu Thr Leu Ala
                6080                6085                6090

acc agc tcc ttt ccc  ttc tcc tac att gcc  caa gaa taaaccaccc        33343
Thr Ser Ser Phe Pro  Phe Ser Tyr Ile Ala  Gln Glu
                6095                6100

tgcatgacac cccttgtccc actgctctac aatggaaaac tctgaagcag aaaaataaag    33403

ttcaagtgtt ttattgattc aacagtttta caggactcga gcagttattt ttcctccacc    33463

ctcccaggac atggaataca ccacctctc cccccgcaca gccttgaaca tctgaatgtc    33523

attggtgatg gacatgcttt tggtctccac gttccacaca gtttcagagc gagccagtct    33583

cgggtcggtc agggagatga aaccctccgg gcactcccgc atctgcacct cacagctcaa    33643

cagctgagga ttgtcctcgg tggtcgggat cacggttatc tggaagaagc agaagagcgg    33703

cggtgggaat catagtccgc gaacgggatc ggccggtggt gtcgcatcag gccccgcagc    33763

agtcgctgtc gccgccgctc cgtcaaactg ctgctcaggg ggtccgggtc cagggactcc    33823

ctcagcatga tgcccacggc cctcagcatc agtcgcctgg tgcggcgggc gcagcagcgc    33883

atgcggatct cgctcaggtc gctgcagtac gtgcaacaca ggaccaccag gttgttcaac    33943

agtccatagt tcaacacgct ccagccgaaa ctcatcgcgg gaaggatgct acccacgtgg    34003

ccgtcgtacc agatcctcag gtaaatcaag tggcgctccc tccagaacac gctgcccaca    34063

tacatgatct ccttgggcat gtggcggttc accacctccc ggtaccacat caccctctgg    34123

ttgaacatgc agccccggat gatcctgcgg aaccacaggg ccagcaccgc cccgcccgcc    34183

atgcagcgaa gagaccccgg gtcccggcaa tggcaatgga ggacccaccg ctcgtacccg    34243

tggatcatct gggagctgaa caagtctatg ttggcacagc acaggcacac gctcatgcat    34303
```

ctcttcagca ctctcagctc ctcgggggtc aaaaccatat cccagggcac ggggaactct 34363

tgcaggacag cgaaccccgc agaacagggc aatcctcgca cataacttac attgtgcatg 34423

gacagggtat cgcaatcagg cagcaccggg tgatcctcca ccagagaagc gcgggtctcg 34483

gtttcctcac agcgtggtaa gggggccggc cgatacgggt gatggcggga cgcggctgat 34543

cgtgttctcg accgtgtcat gatgcagttg ctttcggaca ttttcgtact tgctgtagca 34603

gaacctggtc cgggcgctgc acaccgatcg ccggcggcgg tctcggcgct tggaacgctc 34663

ggtgttgaaa ttgtaaaaca gccactctct cagaccgtgc agcagatcta gggcctcagg 34723

agtgatgaag atcccatcat gcctgatggc tctgatcaca tcgaccaccg tggaatgggc 34783

cagacccagc cagatgatgc aattttgttg ggtttcggtg acggcggggg agggaagaac 34843

aggaagaacc atgattaact tttaatccaa acggtctcgg agcacttcaa aatgaaggtc 34903

gcggagatgg cacctctcgc ccccgctgtg ttggtggaaa ataacagcca ggtcaaaggt 34963

gatacggttc tcgagatgtt ccacggtggc ttccagcaaa gcctccacgc gcacatccag 35023

aaacaagaca atagcgaaag cgggagggtt ctctaattcc tcaatcatca tgttacactc 35083

ctgcaccatc cccagataat tttcattttt ccagccttga atgattcgaa ctagttcctg 35143

aggtaaatcc aagccagcca tgataaagag ctcgcgcaga gcgccctcca ccggcattct 35203

taagcacacc ctcataattc caagatattc tgctcctggt tcacctgcag cagattgaca 35263

agcggaatat caaaatctct gccgcgatcc ctgagctcct ccctcagcaa taactgtaag 35323

tactctttca tatcctctcc aaaattttta gccataggac caccaggaat aagattagga 35383

caagccacag tacagataaa ccgaagtcct ccccagtgag cattgccaaa tgcaagactg 35443

ctataagcat gctggctaga cccggtgata tcttccagat aactggacag aaaatcgccc 35503

aggcaatttt taagaaaatc aacaaaagaa aaatcctcca ggtgcacgtt tagagcctcg 35563

ggaacaacga tggagtaaat gcaagcggtg cgttccagca tggttagtta gctgatctgt 35623

agaaaaaaca aaaatgaaca ttaaaccatg ctagcctggc gaacaggtgg gtaaatcgtt 35683

ctctccagca ccaggcaggc cacggggtct ccggcgcgac cctcgtaaaa attgtcgcta 35743

tgattgaaaa ccatcacaga gagacgttcc cggtggccgg cgtggatgat tcgacaagat 35803

gaatacaccc ccggaacatt ggcgtccgcg agtgaaaaaa agcgcccaag gaagcaataa 35863

ggcactacaa tgctcagtct caagtccagc aaagcgatgc catgcggatg aagcacaaaa 35923

ttctcaggtg cgtacaaaat gtaattactc ccctcctgca caggcagcaa agcccccgat 35983

ccctccagat acacatacaa agcctcagcg tccatagctt accgagcagc agcacacaac 36043

aggcgcaaga gtcagagaaa ggctgagctc taacctgtcc acccgctctc tgctcaatat 36103

atagcccaga tctacactga cgtaaaggcc aaagtctaaa aatacccgcc aaataatcac 36163

acacgcccaa cacacgccca gaaaccggtg acacactcag aaaaatacgc gcacttcctc 36223

aaacgcccaa actgccgtca tttccgggtt cccacgctac gtcatcagaa ttcgactttc 36283

aaattccgtc gaccgttaaa aacgtcaccc gccccgcccc taacggtcgc cgctcccgca 36343

gccaatcaca gccccgcagc cccaaattca aacgcctcat ttgcatatta acacgcacaa 36403

aaagtttgag gtatattatt gatgatg 36430

<210> 2
<211> 193
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 2

Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Gln Thr Arg Gln Leu
1 5 10 15

Leu Glu Asn Ser Ser Glu Glu Val Ser Tyr Leu Trp Arg Phe Cys Phe
20 25 30

Gly Gly Ala Leu Ala Lys Leu Val His Arg Ala Lys Gln Asp Tyr Lys
35 40 45

Asp Gln Phe Glu Asp Ile Leu Arg Glu Cys Pro Gly Ile Phe Asp Ser
50 55 60

Leu Asn Leu Gly His Gln Ser His Phe Asn Gln Ser Ile Leu Arg Ala
65 70 75 80

Leu Asp Phe Ser Thr Pro Gly Arg Thr Thr Ala Ala Val Ala Phe Phe
85 90 95

Ala Phe Ile Leu Asp Lys Trp Ser Gln Glu Thr His Phe Ser Arg Asp
100 105 110

Tyr Arg Leu Asp Cys Leu Ala Val Ala Leu Trp Arg Thr Trp Arg Cys
115 120 125

Gln Arg Leu Asn Ala Ile Ser Gly Tyr Leu Pro Val Gln Pro Val Asp
130 135 140

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

Gln Gln Pro Gln Gln Glu Gln Gln Gln Glu Glu Glu Glu Glu Asp Arg
165 170 175

Glu Glu Asn Pro Arg Ala Gly Leu Asp Pro Pro Val Ala Glu Glu Glu
180 185 190

Glu

<210> 3
<211> 393

<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 3

Met His Pro Val Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln
1 5 10 15

Gln Gln Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln
20 25 30

Gln Gln Leu Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly
35 40 45

Gln Ser Tyr Asp His Gln Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala
50 55 60

Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys
65 70 75 80

Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp
85 90 95

Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ser Arg Phe His Ala
100 105 110

Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp
115 120 125

Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala
130 135 140

His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys
145 150 155 160

Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu
165 170 175

Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu
180 185 190

Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln
195 200 205

Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Thr Phe Arg Glu
210 215 220

Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu
225 230 235 240

Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu

245 250 255

Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys
260 265 270

Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys
275 280 285

Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu
290 295 300

Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg
305 310 315 320

Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met
325 330 335

His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser
340 345 350

Tyr Phe Asp Met Gly Ala Asp Leu Arg Trp Gln Pro Ser Arg Arg Ala
355 360 365

Leu Glu Ala Ala Gly Gly Val Pro Tyr Val Glu Glu Val Asp Asp Glu
370 375 380

Glu Glu Glu Gly Glu Tyr Leu Glu Asp
385 390

<210> 4
<211> 586
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 4

Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu
1 5 10 15

Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala
20 25 30

Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg
35 40 45

Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val
50 55 60

Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn
65 70 75 80

```
Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val
                85                  90                  95

Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val
            100                 105                 110

Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser
        115                 120                 125

Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala
    130                 135                 140

Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln
145                 150                 155                 160

Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu
                165                 170                 175

Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln
            180                 185                 190

Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys
        195                 200                 205

Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala
    210                 215                 220

Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu
225                 230                 235                 240

Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu
                245                 250                 255

Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val
            260                 265                 270

Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly
        275                 280                 285

Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr
    290                 295                 300

Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu
305                 310                 315                 320

Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met
                325                 330                 335

Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn
            340                 345                 350

Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu
```

355 360 365

Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr
370 375 380

Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr
385 390 395 400

Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp
405 410 415

Val Asp Ser Ser Val Phe Ser Pro Arg Pro Thr Thr Thr Val Trp Lys
420 425 430

Lys Glu Gly Gly Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly Arg Ala
435 440 445

Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro Ser Leu
450 455 460

Pro Phe Ser Leu Asn Ser Val Arg Ser Ser Glu Leu Gly Arg Leu Thr
465 470 475 480

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

Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu Ser Leu
500 505 510

Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala His Glu His Arg Asp
515 520 525

Glu Pro Arg Ala Ser Ser Ser Thr Gly Ala Arg Arg Arg Gln Arg His
530 535 540

Asp Arg Gln Arg Gly Leu Val Trp Asp Asp Glu Asp Ser Ala Asp Asp
545 550 555 560

Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe Ala
565 570 575

His Leu Arg Pro Arg Ile Gly Arg Leu Met
580 585

<210> 5
<211> 528
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 5

```
Met Met Arg Arg Val Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1               5                  10                  15

Val Met Gln Gln Ala Val Ala Ala Ala Met Gln Pro Pro Leu Glu Ala
            20                  25                  30

Pro Tyr Val Pro Pro Arg Tyr Leu Ala Pro Thr Glu Gly Arg Asn Ser
        35                  40                  45

Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg Leu Tyr
    50                  55                  60

Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr Gln Asn
65                  70                  75                  80

Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp Phe Thr
                85                  90                  95

Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg Ser Arg
            100                 105                 110

Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro Asn Val
        115                 120                 125

Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met Val Ser
    130                 135                 140

Arg Lys Thr Pro Asn Gly Val Thr Val Thr Asp Gly Ser Gln Asp Glu
145                 150                 155                 160

Leu Thr Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly Asn Phe Ser
                165                 170                 175

Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile Asp Asn Tyr
            180                 185                 190

Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp Ile Gly Val
        195                 200                 205

Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro Val Thr Glu
    210                 215                 220

Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His Pro Asp Ile
225                 230                 235                 240

Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser Arg Leu Ser
                245                 250                 255

Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu Gly Phe Gln
            260                 265                 270

Ile Leu Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala Leu Leu Asp
```

275 280 285

Val Asp Ala Tyr Glu Lys Ser Lys Glu Glu Ser Ala Ala Ala Ala Thr
290 295 300

Ala Ala Val Ala Thr Ala Ser Thr Glu Val Arg Gly Asp Asn Phe Ala
305 310 315 320

Ser Ala Ala Ala Val Ala Glu Ala Ala Glu Thr Glu Ser Lys Ile Val
325 330 335

Ile Gln Pro Val Glu Lys Asp Ser Lys Asp Arg Ser Tyr Asn Val Leu
340 345 350

Ala Asp Lys Lys Asn Thr Ala Tyr Arg Ser Trp Tyr Leu Ala Tyr Asn
355 360 365

Tyr Gly Asp Pro Glu Lys Gly Val Arg Ser Trp Thr Leu Leu Thr Thr
370 375 380

Ser Asp Val Thr Cys Gly Val Glu Gln Val Tyr Trp Ser Leu Pro Asp
385 390 395 400

Met Met Gln Asp Pro Val Thr Phe Arg Ser Thr Arg Gln Val Ser Asn
405 410 415

Tyr Pro Val Val Gly Ala Glu Leu Leu Pro Val Tyr Ser Lys Ser Phe
420 425 430

Phe Asn Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg Ala Phe Thr Ser
435 440 445

Leu Thr His Val Phe Asn Arg Phe Pro Glu Asn Gln Ile Leu Val Arg
450 455 460

Pro Pro Ala Pro Thr Ile Thr Thr Val Ser Glu Asn Val Pro Ala Leu
465 470 475 480

Thr Asp His Gly Thr Leu Pro Leu Arg Ser Ser Ile Arg Gly Val Gln
485 490 495

Arg Val Thr Val Thr Asp Ala Arg Arg Arg Thr Cys Pro Tyr Val Tyr
500 505 510

Lys Ala Leu Gly Val Val Ala Pro Arg Val Leu Ser Ser Arg Thr Phe
515 520 525

<210> 6
<211> 344
<212> PRT
<213> Unknown

<220>

<223> Synthetic Construct

<400> 6

```
Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1               5                  10                  15

Glu Ile Tyr Gly Pro Ala Ala Ala Val Lys Glu Glu Arg Lys Pro Arg
            20                  25                  30

Lys Leu Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Asp Val Asp Asp
        35                  40                  45

Met Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln Trp
    50                  55                  60

Arg Gly Arg Lys Val Arg Pro Val Leu Arg Pro Gly Thr Thr Val Val
65                  70                  75                  80

Phe Thr Pro Gly Glu Arg Ser Gly Thr Ala Ser Lys Arg Ser Tyr Asp
                85                  90                  95

Glu Val Tyr Gly Asp Asp Asp Ile Leu Glu Gln Ala Ala Glu Arg Leu
            100                 105                 110

Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Pro Ala Pro Leu Lys Glu
        115                 120                 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
    130                 135                 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Ala Ala Ala Pro Arg Arg
145                 150                 155                 160

Gly Phe Lys Arg Glu Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu Met
                165                 170                 175

Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu His Met Lys Val
            180                 185                 190

Asp Pro Asp Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln Val
        195                 200                 205

Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr Glu
    210                 215                 220

Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr Met
225                 230                 235                 240

Glu Val Gln Thr Asp Pro Trp Met Pro Ala Ala Ser Thr Thr Thr Arg
                245                 250                 255

Arg Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn Tyr Ala
```

260 265 270

Leu His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg Gly Thr Arg Phe
275 280 285

Tyr Arg Gly Tyr Thr Ser Ser Arg Arg Arg Lys Thr Thr Thr Arg Arg
290 295 300

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

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

Arg Tyr His Pro Ser Ile Ala Ile
340

<210> 7
<211> 77
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 7

Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1 5 10 15

Arg Lys Pro Arg Arg Arg Arg Leu Thr Gly Asn Gly Leu Arg Arg His
20 25 30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
35 40 45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
50 55 60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65 70 75

<210> 8
<211> 241
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 8

Met Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg
1 5 10 15

Pro Phe Met Gly Thr Trp Ser Asp Ile Gly Asn Ser Gln Leu Asn Gly
20 25 30

Gly Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly
35 40 45

Ser Thr Leu Lys Thr Tyr Gly Asn Lys Ala Trp Asn Ser Ser Thr Gly
50 55 60

Gln Ala Leu Arg Glu Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val
65 70 75 80

Val Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn
85 90 95

Gln Ala Val Gln Lys Gln Ile Asn Ser Arg Leu Asp Ala Val Pro Pro
100 105 110

Ala Gly Ser Val Asp Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu
115 120 125

Asp Lys Arg Gly Asp Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu
130 135 140

Leu Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu
145 150 155 160

Gly Leu Pro Thr Thr Arg Pro Val Ala Pro Leu Ala Thr Gly Val Leu
165 170 175

Lys Pro Ser Ser Ser Ser Ser Gln Pro Ala Thr Leu Asp Leu Pro Pro
180 185 190

Pro Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val Ala
195 200 205

Ser Arg Ala Pro Arg Gly Arg Pro Gln Ala Asn Trp Gln Ser Thr Leu
210 215 220

Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg Arg Arg Cys
225 230 235 240

Tyr

<210> 9
<211> 950
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 9

Met Tyr Val Arg Arg Pro Glu Gly Gly Arg Gly Ala Ser Pro Ser Cys

```
1               5                   10                  15

Lys Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile
            20                  25                  30

Ala Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe
        35                  40                  45

Ala Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn
    50                  55                  60

Pro Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg
65                  70                  75                  80

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

Tyr Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp
            100                 105                 110

Met Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro
        115                 120                 125

Ser Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys
    130                 135                 140

Gly Ala Pro Asn Thr Ser Gln Trp Ile Thr Lys Asp Lys Thr Tyr Ser
145                 150                 155                 160

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

Gln Ile Val Thr Asp Glu Ser Gly Gly Glu Ser Lys Lys Ile Phe Ala
            180                 185                 190

Asp Lys Thr Tyr Gln Pro Glu Pro Gln Leu Gly Asp Glu Glu Trp His
        195                 200                 205

Asp Thr Ile Gly Ala Glu Asp Lys Tyr Gly Gly Arg Ala Leu Lys Pro
    210                 215                 220

Ala Thr Asn Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys Pro Thr Asn
225                 230                 235                 240

Ala Lys Gly Gly Gln Ala Lys Ser Arg Thr Lys Asp Asp Gly Thr Thr
                245                 250                 255

Glu Pro Asp Ile Asp Met Ala Phe Phe Asp Asp Arg Ser Gln Gln Ala
            260                 265                 270

Ser Phe Ser Pro Glu Leu Val Leu Tyr Thr Glu Asn Val Asp Leu Asp
        275                 280                 285
```

```
Thr Pro Asp Thr His Ile Ile Tyr Lys Pro Gly Thr Asp Glu Thr Ser
    290                 295                 300

Ser Ser Phe Asn Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr
305                 310                 315                 320

Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr
                325                 330                 335

Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val
            340                 345                 350

Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu
        355                 360                 365

Asp Ser Leu Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala
    370                 375                 380

Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His Gly Val
385                 390                 395                 400

Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asn Gly Val Gly Phe
                405                 410                 415

Thr Asp Ser Phe Gln Gly Ile Lys Val Lys Thr Thr Asn Asn Gly Thr
            420                 425                 430

Ala Asn Ala Thr Glu Trp Glu Ser Asp Thr Ser Val Asn Asn Ala Asn
        435                 440                 445

Glu Ile Ala Lys Gly Asn Pro Phe Ala Met Glu Ile Asn Ile Gln Ala
    450                 455                 460

Asn Leu Trp Arg Asn Phe Leu Tyr Ala Asn Val Ala Leu Tyr Leu Pro
465                 470                 475                 480

Asp Ser Tyr Lys Tyr Thr Pro Ala Asn Ile Thr Leu Pro Thr Asn Thr
                485                 490                 495

Asn Thr Tyr Asp Tyr Met Asn Gly Arg Val Val Ala Pro Ser Leu Val
            500                 505                 510

Asp Ala Tyr Ile Asn Ile Gly Ala Arg Trp Ser Leu Asp Pro Met Asp
        515                 520                 525

Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg
    530                 535                 540

Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val
545                 550                 555                 560
```

```
Pro Gln Lys Phe Phe Ala Ile Lys Ser Leu Leu Leu Leu Pro Gly Ser
                565                 570                 575

Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Ile Leu Gln
            580                 585                 590

Ser Ser Leu Gly Asn Asp Leu Arg Thr Asp Gly Ala Ser Ile Ser Phe
        595                 600                 605

Thr Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr
    610                 615                 620

Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser
625                 630                 635                 640

Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala
                645                 650                 655

Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala
            660                 665                 670

Phe Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser
        675                 680                 685

Leu Gly Ser Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro
    690                 695                 700

Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser
705                 710                 715                 720

Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu
                725                 730                 735

Thr Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr
            740                 745                 750

Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met
        755                 760                 765

Leu Ala His Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly
    770                 775                 780

Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser
785                 790                 795                 800

Arg Gln Val Val Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr
                805                 810                 815

Leu Ala Tyr Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro
            820                 825                 830
```

```
Thr Met Arg Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu
        835                 840                 845

Ile Gly Lys Ser Ala Val Thr Ser Val Thr Gln Lys Lys Phe Leu Cys
    850                 855                 860

Asp Arg Val Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met
865                 870                 875                 880

Gly Ala Leu Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala
                885                 890                 895

His Ala Leu Asp Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr
            900                 905                 910

Leu Leu Tyr Val Val Phe Glu Val Phe Asp Val Val Arg Val His Gln
        915                 920                 925

Pro His Arg Gly Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser
    930                 935                 940

Ala Gly Asn Ala Thr Thr
945                 950
```

<210> 10
<211> 209
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 10

```
Met Met Ala Glu Pro Thr Gly Ser Gly Glu Gln Glu Leu Arg Ala Ile
1               5                   10                  15

Ile Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys
            20                  25                  30

Arg Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val
        35                  40                  45

Asn Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala
    50                  55                  60

Trp Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe
65                  70                  75                  80

Ser Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu
                85                  90                  95

Leu Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu
            100                 105                 110
```

Lys Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu
115 120 125

Phe Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro
130 135 140

Met Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly
145 150 155 160

Met Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu
165 170 175

Ala Leu Tyr Arg Phe Leu Asn Ala His Ser Ala Tyr Phe Arg Ser His
180 185 190

Arg Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Gln Asp
195 200 205

Met

<210> 11
<211> 797
<212> PRT
<213> Unknown

<220>
<221> misc_feature
<222> (789)..(789)
<223> The 'Xaa' at location 789 stands for Ser.

<220>
<223> Synthetic Construct

<400> 11

Met Glu Thr Gln Pro Ser Ser Pro Thr Ser Pro Ser Ala Pro Ala Ala
1 5 10 15

Ala Asp Glu Asn Gln Gln Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro
20 25 30

Pro Ser Pro Thr Ser Asp Ala Ala Ala Ala Pro Asp Met Gln Glu Met
35 40 45

Glu Glu Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His
50 55 60

Glu Glu Glu Leu Ala Ala Arg Phe Ser Ala Pro Glu Glu Asn His Gln
65 70 75 80

Glu Gln Pro Glu Gln Glu Ala Glu Ser Glu Gln Gln Gln Ala Gly Leu
85 90 95

Glu His Gly Asp Tyr Leu Ser Gly Ala Glu Asp Val Leu Ile Lys His

```
            100                 105                 110

Leu Ala Arg Gln Cys Ile Ile Val Lys Asp Ala Leu Leu Asp Arg Ala
        115                 120                 125

Glu Val Pro Leu Ser Val Ala Glu Leu Ser Arg Ala Tyr Glu Arg Asn
    130                 135                 140

Leu Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr Cys
145                 150                 155                 160

Glu Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro Glu
                165                 170                 175

Ala Leu Ala Thr Tyr His Leu Phe Phe Lys Asn Gln Arg Ile Pro Val
            180                 185                 190

Ser Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Leu Asn Leu Gly
        195                 200                 205

Pro Gly Ala Arg Leu Pro Asp Ile Ala Ser Leu Glu Glu Val Pro Lys
    210                 215                 220

Ile Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala Leu
225                 230                 235                 240

Gln Gly Ser Gly Glu Glu His Glu His His Ser Ala Leu Val Glu Leu
                245                 250                 255

Glu Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu Leu
            260                 265                 270

Thr His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met Ser
        275                 280                 285

Ala Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Leu Ser Glu
    290                 295                 300

Glu Glu Met Gln Asp Pro Glu Ser Ser Asp Glu Gly Lys Pro Val Val
305                 310                 315                 320

Ser Asp Glu Gln Leu Ala Arg Trp Leu Gly Ala Ser Ser Thr Pro Gln
                325                 330                 335

Ser Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr
            340                 345                 350

Val Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu
        355                 360                 365

Arg Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val
    370                 375                 380
```

```
Arg Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser
385                 390                 395                 400

Tyr Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His
                405                 410                 415

Thr Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val
            420                 425                 430

Tyr Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln
        435                 440                 445

Gln Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln
    450                 455                 460

Lys Asn Leu Lys Ala Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala
465                 470                 475                 480

Ser Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu
                485                 490                 495

Arg Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe
            500                 505                 510

Arg Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser
        515                 520                 525

Ala Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro
    530                 535                 540

Pro Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala
545                 550                 555                 560

Tyr His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu
                565                 570                 575

Cys His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys
            580                 585                 590

Asn Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu
        595                 600                 605

Gln Gly Pro Gly Asp Gly Lys Gly Gly Leu Lys Leu Thr Pro Gly Leu
    610                 615                 620

Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp Tyr His Pro
625                 630                 635                 640

Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro Pro Lys Ala Glu
                645                 650                 655
```

Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu Ala Gln Leu Gln
660 665 670

Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys Gly His Gly
675 680 685

Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn Pro Ser Phe Pro
690 695 700

Gln Asp Ala Pro Arg Lys Gln Gln Glu Ala Glu Ser Gly Ala Ala Ala
705 710 715 720

Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Ser Gly Arg Gly Asp Gly
725 730 735

Arg Leu Gly Gln His Ser Gly Arg Gly Gly Gln Pro Ala Arg Gln Ser
740 745 750

Gly Arg Arg Gly Gly Gly Gly Gly Arg Gly Arg Ser Ser Arg Arg Gln
755 760 765

Thr Val Val Leu Gly Gly Gly Gly Glu Ser Lys Gln His Gly Tyr His
770 775 780

Leu Arg Ser Gly Xaa Gly Ser Arg Arg Pro Gly Pro Gln
785 790 795

<210> 12
<211> 227
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 12

Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1 5 10 15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
20 25 30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala His Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Ile Thr Ala Thr
50 55 60

Pro Arg His His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

```
Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
            100                 105                 110

Thr Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
        115                 120                 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
    130                 135                 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Leu Ala Gly Ser Gly Arg Ser
145                 150                 155                 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
                165                 170                 175

Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
            180                 185                 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
        195                 200                 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
    210                 215                 220

Gly Tyr Asp
225
```

<210> 13
<211> 106
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 13

```
Met Ser His Gly Gly Val Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1               5                   10                  15

His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Ala
            20                  25                  30

Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
        35                  40                  45

Arg Ile Ile Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
    50                  55                  60

Ser Gln Arg Pro Ile Leu Val Glu Arg Glu Gln Gly Gln Thr Arg Leu
65                  70                  75                  80

Thr Leu Tyr Cys Ile Cys Asn His Pro Gly Leu His Glu Ser Leu Cys
```

85 90 95

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
100 105

<210> 14
<211> 176
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 14

Met Gly Gln Ile Thr Leu Val Ser Cys Gly Val Leu Val Ala Val Leu
1 5 10 15

Ser Ile Val Gly Leu Gly Gly Ala Ala Val Val Lys Glu Glu Lys Ala
20 25 30

Asp Pro Cys Leu His Phe Asn Pro Asp Lys Cys Gln Leu Ser Phe Gln
35 40 45

Pro Asp Gly Asn Arg Cys Ala Val Leu Ile Lys Cys Gly Trp Glu Cys
50 55 60

Glu Asn Val Arg Ile Glu Tyr Asn Asn Lys Thr Arg Asn Asn Thr Leu
65 70 75 80

Ala Ser Val Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
85 90 95

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

Ala His Met Cys Asp Thr Val Met Trp Met Ser Lys Gln Tyr Asp Met
115 120 125

Trp Pro Pro Thr Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
130 135 140

Leu Cys Thr Val Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145 150 155 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
165 170 175

<210> 15
<211> 198
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 15

Met Ala Ser Val Lys Phe Leu Leu Leu Phe Ala Ser Leu Ile Thr Val
1 5 10 15

Ile Ser Asn Glu Lys Leu Thr Ile Tyr Ile Gly Thr Asn His Thr Leu
20 25 30

Glu Gly Ile Pro Lys Ser Ser Trp Tyr Cys Tyr Phe Asp Gln Asp Pro
35 40 45

Asp Leu Thr Ile Glu Leu Cys Gly Asn Asn Gly Gln Asn Thr Ser Ile
50 55 60

His Leu Ile Asn Phe Lys Cys Gly Asp Asp Leu Lys Leu Ile Asn Ile
65 70 75 80

Thr Lys Glu Tyr Gly Gly Met Tyr Tyr Tyr Val Ala Glu Asn Asn Asn
85 90 95

Met Gln Phe Tyr Glu Val Thr Val Thr Asn Pro Thr Thr Pro Arg Thr
100 105 110

Thr Thr Thr Thr Thr Lys Thr Thr Pro Val Thr Thr Met Gln Leu Ala
115 120 125

Thr Asn Asn Ile Phe Ala Met Arg Gln Met Val Asn Asn Ser Thr Gln
130 135 140

Pro Thr Pro Pro Ser Glu Glu Ile Pro Lys Ser Met Ile Gly Ile Ile
145 150 155 160

Val Ala Val Val Val Cys Met Leu Ile Ile Ala Leu Cys Met Val Tyr
165 170 175

Tyr Ala Phe Cys Tyr Arg Lys His Arg Leu Asn Asp Lys Leu Glu His
180 185 190

Leu Leu Ser Val Glu Phe
195

<210> 16
<211> 203
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 16

Met Lys Ile Leu Gly Leu Leu Val Phe Ser Ile Ile Thr Ser Ala Leu
1 5 10 15

Cys Glu Ser Val Asp Lys Asp Val Thr Ile Thr Thr Gly Ser Asn Tyr

20 25 30

Thr Leu Lys Gly Pro Pro Ser Gly Met Leu Ser Trp Tyr Cys Tyr Phe
35 40 45

Gly Asn Asp Ala Glu Gln Thr Glu Leu Cys Asn Ala Met Lys Gly Gln
50 55 60

Met Pro Thr Thr Lys Ile Lys His Lys Cys Asp Gly Ser Asp Leu Ile
65 70 75 80

Leu Leu Asn Val Thr Lys Ala Tyr Gly Gly Ser Tyr Ser Cys Pro Ala
85 90 95

Ala Asn Thr Glu Asp Met Ile Phe Tyr Lys Val Glu Val Val Asp Pro
100 105 110

Thr Thr Pro Pro Pro Thr Thr Thr Thr Thr His Thr Thr His Thr Glu
115 120 125

Gln Thr Thr Ala Glu Glu Ala Ala Lys Leu Ala Leu Gln Val Gln Asp
130 135 140

Ser Ser Phe Val Gly Ile Thr Pro Thr Pro Asp Gln Arg Cys Pro Gly
145 150 155 160

Leu Leu Val Ser Gly Ile Val Gly Val Leu Ser Gly Leu Ala Val Ile
165 170 175

Ile Ile Cys Met Phe Ile Phe Ala Cys Cys Tyr Arg Arg Leu Tyr Arg
180 185 190

Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
195 200

<210> 17
<211> 291
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 17

Met Lys Ala Val Ser Thr Leu Ile Phe Cys Ser Leu Ile Gly Thr Val
1 5 10 15

Phe Ser Val Ser Phe Leu Lys Gln Ile Asn Val Thr Glu Gly Glu Asn
20 25 30

Val Thr Leu Val Gly Val Glu Gly Ala Gln Asn Thr Thr Trp Thr Lys
35 40 45

```
Tyr His Leu Asp Gly Trp Lys Asp Ile Cys Asn Trp Ser Val Ile Thr
    50                  55                  60

Tyr Thr Cys Glu Gly Val Asn Leu Thr Ile Val Asn Ala Ser Gln Asn
65                  70                  75                  80

Gln Lys Gly Trp Ile Lys Gly Gln Ser Val Ser Val Thr Ser Gln Gly
                85                  90                  95

Tyr Tyr Thr Gln His Thr Leu Ile Tyr Asp Ile Val Val Ile Pro Leu
            100                 105                 110

Pro Thr Pro Ser Pro Pro Ser Thr Thr Thr Gln Thr Thr His Thr Thr
        115                 120                 125

Gln Thr Thr Thr Tyr Ser Thr Ser Asn Gln Pro Thr Thr Thr Thr Ala
    130                 135                 140

Ala Glu Val Ala Ser Ser Ser Gly Val Arg Val Ala Phe Leu Leu Leu
145                 150                 155                 160

Ala Pro Ser Ser Ser Pro Thr Ala Ser Thr Asn Glu Gln Thr Thr Asp
                165                 170                 175

Phe Leu Ser Thr Val Glu Ser His Thr Thr Ala Thr Ser Ser Ala Phe
            180                 185                 190

Ser Ser Thr Ala Asn Leu Ser Ser Leu Ser Ser Thr Pro Ile Ser Pro
        195                 200                 205

Ala Thr Thr Pro Ser Pro Ala Pro Leu Pro Thr Pro Leu Lys Gln Thr
    210                 215                 220

Asp Gly Gly Met Gln Trp Gln Ile Thr Leu Leu Ile Val Ile Gly Leu
225                 230                 235                 240

Val Ile Leu Ala Val Leu Leu Tyr Tyr Ile Phe Cys Arg Arg Ile Pro
                245                 250                 255

Asn Ala His Arg Lys Pro Ala Tyr Lys Pro Ile Val Ile Gly Gln Pro
            260                 265                 270

Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser Phe
        275                 280                 285

Thr Val Trp
    290
```

<210> 18
<211> 143
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 18

Met Arg Ala Leu Leu Leu Leu Ala Leu Leu Leu Leu Val Leu Pro Arg
1   5   10   15

Pro Val Asp Pro Arg Ser Pro Thr Gln Ser Pro Glu Glu Val Arg Lys
            20   25   30

Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Lys Cys Tyr Arg Gln Lys
        35   40   45

Ser Asp Met His Pro Ser Trp Ile Met Ile Ile Gly Ile Val Asn Ile
    50   55   60

Leu Ala Cys Thr Leu Ile Ser Phe Val Ile Tyr Pro Tyr Phe Asp Phe
65   70   75   80

Gly Trp Asn Ser Pro Glu Ala Leu Tyr Leu Pro Pro Glu Pro Asp Thr
                85   90   95

Pro Pro Gln Gln Pro Gln Ala His Ala Leu Pro Pro Pro Gln Pro Arg
            100   105   110

Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala Glu Pro Gln Arg Pro
        115   120   125

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

<210> 19
<211> 440
<212> PRT
<213> Unknown

<220>
<221> misc_feature
<222> (163)..(163)
<223> The 'Xaa' at location 163 stands for Lys, or Asn.

<220>
<223> Synthetic Construct

<400> 19

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
1   5   10   15

Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
            20   25   30

Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
        35   40   45

Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu

```
    50                  55                  60

Lys Leu Gly Glu Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser
65                  70                  75                  80

Lys Asn Ala Thr Lys Ala Thr Ala Pro Leu Ser Ile Ser Asn Ser Thr
                85                  90                  95

Ile Ser Leu Asn Met Asp Ala Pro Leu Tyr Asn Asn Asn Gly Lys Leu
            100                 105                 110

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

Leu Ala Val Ala Tyr Gly Ser Gly Leu Gly Leu Lys Asn Asn Ala Leu
    130                 135                 140

Thr Val Gln Leu Val Ser Pro Leu Thr Phe Asp Asn Lys Gly Asn Val
145                 150                 155                 160

Lys Ile Xaa Leu Gly Lys Gly Pro Leu Thr Val Ala Ala Asn Arg Leu
                165                 170                 175

Ser Val Thr Cys Lys Arg Gly Leu Tyr Val Thr Thr Thr Gly Asp Ala
            180                 185                 190

Leu Glu Ser Asn Ile Ser Trp Ala Lys Gly Ile Arg Phe Glu Gly Asn
        195                 200                 205

Ala Ile Ala Ala Asn Ile Gly Lys Gly Leu Glu Phe Gly Thr Thr Ser
    210                 215                 220

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

Thr Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile Val Ala Trp Asn Lys
                245                 250                 255

Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala Asp Pro Ser Pro Asn
            260                 265                 270

Cys Lys Ile Tyr Ser Glu Lys Asp Ala Lys Leu Thr Leu Cys Leu Thr
        275                 280                 285

Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Thr Val Leu Ala Val Asn
    290                 295                 300

Asn Gly Ser Leu Asn Pro Ile Thr Asn Thr Val Ser Thr Ala Ile Val
305                 310                 315                 320

Tyr Leu Lys Phe Asp Ala Asn Gly Val Leu Leu Ser Asn Ser Thr Leu
                325                 330                 335
```

Asn Lys Glu Tyr Trp Asn Phe Arg Lys Gly Asp Val Thr Pro Ala Glu
340 345 350

Ala Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn Ile Lys Ala Tyr Pro
355 360 365

Lys Asn Thr Ser Ala Ala Ser Lys Ser His Ile Val Gly Gln Val Tyr
370 375 380

Leu Asn Gly Asp Glu Thr Lys Pro Leu Met Leu Ile Ile Thr Phe Asn
385 390 395 400

Glu Thr Asp Asp Ala Thr Cys Thr Tyr Cys Ile Thr Phe Gln Trp Lys
405 410 415

Trp Asp Asn Ser Lys Tyr Thr Gly Glu Thr Leu Ala Thr Ser Ser Phe
420 425 430

Pro Phe Ser Tyr Ile Ala Gln Glu
435 440

<210> 20
<211> 31740
<212> DNA
<213> Unknown

<220>
<223> Simian adenovirus A1302

<220>
<221> CDS
<222> (1895)..(3409)
<223> E1b\55K

<220>
<221> CDS
<222> (25470)..(26021)
<223> 22K

<220>
<221> CDS
<222> (27325)..(27945)
<223> E3\CR1-alpha

<220>
<221> CDS
<222> (31313)..(31717)
<223> E3\14.7K

<400> 20
catcatcaat aatatacctc aaacttttg tgcgtgttaa tatgcaaatg aggcgtttga 60

atttggggct gcggggctgt gattggctgc gggagcggcg accgttaggg gcggggcggg 120

tgacgtttcg atgacgtgac gtgaggcgga gccggtttgc aagttctcgt gggaaaagtg 180

acgtcaaacg aggtgtggtt tgaacacgga aatactcaat tttcccgcgc tctctgacag 240

gaaatgaggt gtttctgggc ggatgcaagt gaaaacgggc cattttcgcg cgaaaactaa 300

```
atgaggaagt gaaaatctga gtaattccgc gtttatggca gggaggagta tttgccgagg      360

gccgagtaga ctttgaccga ttacgtgggg gtttcgatta ccgtattttt cacctaaatt      420

tccgcgtacg gtgtcaaagt ccggtgtttt tacgtaggcg tcagctgatc gccagggtat      480

ttaaacctgc gctctctagt caagaggcca ctcttgagtg ccagcgagta gagttttctc      540

ctccgcgccg cgagtcagat ctacactttg aaagatgagg cacctgagag acctgcccgg      600

taatgttttc ctggctactg ggaacgagat tctggaactg gtggtggacg ccatgatggg      660

tgacgaccct cctgagcccc ctaccccatt tgaggcgcct tcgctgtacg atttgtatga      720

tctggaggtg gatgtgcccg agaacgaccc caacgaggag gcggtgaatg atttgtttag      780

cgatgccgcg ctgctggctg ccgagcaggc taatacggac tctggctcag acagcgattc      840

ttctctccat accccgagac ctggcagagg tgagaaaaag attcccgagc ttaaagggga      900

agagctggac ctgcgctgct atgaggaatg cttgcctccg agcgatgatg aggaggacga      960

ggaggcgatc cgagctgcgg cgaaccaggg agtgaaagct gcgggcgaga gctttagcct     1020

ggactgtcct actctgcccg gacacggctg taagtcttgt gaatttcatc gcatgaatac     1080

tggagataag aatgtgatgt gtgccctgtg ctatatgaga gcttacaacc attgtgttta     1140

cagtaagtgt gattaacttt agttgggaag gcagagggtg actgggtgct gactggttta     1200

tttatgtata tgtttttta tgtgtaggtc ccgtctctga cgtagatgag acccccactt     1260

cagagtgcat ttcatcaccc ccagaaattg gcgaggaacc gcccgaagat attattcata     1320

gaccagttgc agtgagagtc accgggcgta gagcagctgt ggagagtttg gatgacttgc     1380

tacagggtgg ggatgaacct ttggacttgt gtacccggaa acgccccagg cactaagtgc     1440

cacacatgtg tgtttactta aggtgatgtc agtatttata gggtgtggag tgcaataaaa     1500

tccgtgttga ctttaagtgc gtggtttatg actcaggggt gggtatataa gcaggtgcag     1560

acctgtgtgg tcagttcaga gcaggactca tggagatctg gacggtcttg gaagactttc     1620

accagactag acagctgcta gagaactcat cggaggaagt ctcttacctg tggagatttt     1680

gcttcggtgg ggctctagct aagctagtcc atagggccaa acaggattat aaggatcaat     1740

ttgaggatat tttgagagag tgtcctggta tttttgactc tctcaacttg ggccatcagt     1800

ctcactttaa ccagagtatt ctgagagccc ttgacttttc tactcctggc agaactaccg     1860

ccgcggtagc ctttttgcc tttattcttg acaa atg gag tca aga aac cca ttt      1915
                                       Met Glu Ser Arg Asn Pro Phe
                                       1               5

cag cag gga tta ccg tct gga ctg ctt agc agt agc ttt gtg gag aac      1963
Gln Gln Gly Leu Pro Ser Gly Leu Leu Ser Ser Ser Phe Val Glu Asn
        10                  15                  20

atg gag gtg cca gcg cct gaa tgc aat ctc cgg cta ctt gcc agt aca      2011
Met Glu Val Pro Ala Pro Glu Cys Asn Leu Arg Leu Leu Ala Ser Thr
    25                  30                  35

gcc ggt aga cac gct gag gat cct gag tct cca gtc acc cca gga aca      2059
Ala Gly Arg His Ala Glu Asp Pro Glu Ser Pro Val Thr Pro Gly Thr
40                  45                  50                  55
```

```
cca acg ccg cca gca gcc gca gca gga gca gca gca aga gga gga gga       2107
Pro Thr Pro Pro Ala Ala Ala Ala Gly Ala Ala Ala Arg Gly Gly Gly
                60                  65                  70

gga gga ccg aga aga gaa ccc gag agc cgg tct gga ccc tcc ggt ggc       2155
Gly Gly Pro Arg Arg Glu Pro Glu Ser Arg Ser Gly Pro Ser Gly Gly
            75                  80                  85

gga gga gga gga gta gct gac ttg ttt ccc gag ctg cgc cgg gtg ctg       2203
Gly Gly Gly Gly Val Ala Asp Leu Phe Pro Glu Leu Arg Arg Val Leu
        90                  95                  100

act agg tct tcc agt gga cgg gag agg ggg att aag cgg gag agg cat       2251
Thr Arg Ser Ser Ser Gly Arg Glu Arg Gly Ile Lys Arg Glu Arg His
    105                 110                 115

gag gag act agt cac aga act gaa ctg act gtc agt ctg atg agc cgc       2299
Glu Glu Thr Ser His Arg Thr Glu Leu Thr Val Ser Leu Met Ser Arg
120                 125                 130                 135

agg cgc cca gaa tcg gtg tgg tgg cat gag gtg cag tcg cag ggg ata       2347
Arg Arg Pro Glu Ser Val Trp Trp His Glu Val Gln Ser Gln Gly Ile
                140                 145                 150

gat gag gtc tca gtg atg cat gag aaa tat tcc cta gaa caa gtc aag       2395
Asp Glu Val Ser Val Met His Glu Lys Tyr Ser Leu Glu Gln Val Lys
            155                 160                 165

act tgt tgg ttg gag ccc gag gat gat tgg gag gta gcc atc agg aat       2443
Thr Cys Trp Leu Glu Pro Glu Asp Asp Trp Glu Val Ala Ile Arg Asn
        170                 175                 180

tat gcc aag ctg gct ctg aag cca gac aag aag tac aag att acc aaa       2491
Tyr Ala Lys Leu Ala Leu Lys Pro Asp Lys Lys Tyr Lys Ile Thr Lys
    185                 190                 195

ctg att aat atc aga aat tcc tgc tac att tca ggg aat ggg gcc gag       2539
Leu Ile Asn Ile Arg Asn Ser Cys Tyr Ile Ser Gly Asn Gly Ala Glu
200                 205                 210                 215

gtg gag atc agt acc cag gag agg gtg gcc ttc aga tgc tgc atg atg       2587
Val Glu Ile Ser Thr Gln Glu Arg Val Ala Phe Arg Cys Cys Met Met
                220                 225                 230

aat atg tac ccg ggg gtg gtg ggc atg gag gga gtc acc ttt atg aac       2635
Asn Met Tyr Pro Gly Val Val Gly Met Glu Gly Val Thr Phe Met Asn
            235                 240                 245

gcg agg ttc agg ggc gat ggg tat aat ggg gtg gtc ttt atg gcc aac       2683
Ala Arg Phe Arg Gly Asp Gly Tyr Asn Gly Val Val Phe Met Ala Asn
        250                 255                 260

acc aag ctg aca gtg cac gga tgc tcc ttc ttt ggc ttc aat aac atg       2731
Thr Lys Leu Thr Val His Gly Cys Ser Phe Phe Gly Phe Asn Asn Met
    265                 270                 275

tgc atc gag gcc tgg ggc agt gtt tca gtg agg gga tgc agc ttt tca       2779
Cys Ile Glu Ala Trp Gly Ser Val Ser Val Arg Gly Cys Ser Phe Ser
280                 285                 290                 295

gcc aac tgg atg ggg gtc gtg ggc aga acc aag agc aag gtg tca gtg       2827
Ala Asn Trp Met Gly Val Val Gly Arg Thr Lys Ser Lys Val Ser Val
                300                 305                 310

aag aaa tgc ctg ttc gag agg tgc cac atg ggg gtg atg agc gag ggc       2875
Lys Lys Cys Leu Phe Glu Arg Cys His Met Gly Val Met Ser Glu Gly
            315                 320                 325

gaa gcc aaa gtc aaa cac tgc gcc tct acc gag acg ggc tgc ttt gtg       2923
```

```
Glu Ala Lys Val Lys His Cys Ala Ser Thr Glu Thr Gly Cys Phe Val
        330                 335                 340

ctg atc aag ggc aat gcc caa gtc aag cat aac atg atc tgt ggg gcc       2971
Leu Ile Lys Gly Asn Ala Gln Val Lys His Asn Met Ile Cys Gly Ala
    345                 350                 355

tcg gat gag cgc ggc tac cag atg ctg acc tgt gcc ggt ggg aac agc       3019
Ser Asp Glu Arg Gly Tyr Gln Met Leu Thr Cys Ala Gly Gly Asn Ser
360                 365                 370                 375

cat atg ctg gcc acc gtg cat gtg gcc tcg cac ccc cgc aag aca tgg       3067
His Met Leu Ala Thr Val His Val Ala Ser His Pro Arg Lys Thr Trp
                380                 385                 390

ccc gag ttc gag cat aac gtc atg acc cgc tgc aat gtg cac ctg ggc       3115
Pro Glu Phe Glu His Asn Val Met Thr Arg Cys Asn Val His Leu Gly
            395                 400                 405

tcc cgc cga ggc atg ttc atg ccc tac cag tgc aac atg caa ttt gtg       3163
Ser Arg Arg Gly Met Phe Met Pro Tyr Gln Cys Asn Met Gln Phe Val
        410                 415                 420

aag gtg ctg ctg gag ccc gat gcc atg tcc aga gtg agt ctg acg ggg       3211
Lys Val Leu Leu Glu Pro Asp Ala Met Ser Arg Val Ser Leu Thr Gly
    425                 430                 435

gtg ttt gac atg aat gtg gag atg tgg aaa att ctg aga tat gat gaa       3259
Val Phe Asp Met Asn Val Glu Met Trp Lys Ile Leu Arg Tyr Asp Glu
440                 445                 450                 455

tcc aag acc agg tgc cgg gcc tgc gaa tgc gga ggc aaa cac gcc agg       3307
Ser Lys Thr Arg Cys Arg Ala Cys Glu Cys Gly Gly Lys His Ala Arg
                460                 465                 470

ctt cag ccc gtg tgt gtg gag gtg acg gag gac ctg cga ccc gat cat       3355
Leu Gln Pro Val Cys Val Glu Val Thr Glu Asp Leu Arg Pro Asp His
            475                 480                 485

ttg gtg ttg tcc tgc aac ggg acg gag ttc ggc tcc agc ggg gaa gaa       3403
Leu Val Leu Ser Cys Asn Gly Thr Glu Phe Gly Ser Ser Gly Glu Glu
        490                 495                 500

tct gac tagagtgagt agtgtttggg gctgggtggg agcctgcatg atgggcagaa        3459
Ser Asp
    505

tgactaaaat ctgtgttttt ctgcgcagca tcatgagcgg aagcgcctcc tttgagggag    3519

gggtattcag cccttatctg acggggcgtc tcccctcctg ggcgggagtg cgtcagaatg    3579

tgatgggatc cacggtggac ggccggcccg tgcagcccgc gaactcttca accctgacct    3639

acgcgaccct gagctcctcg tccgtagacg cagctgccgc cgcagctgct gcttccgccg    3699

ccagcgccgt gcgcggaatg gccctgggcg ccggctacta cagctctctg gtggccaact    3759

cgagttccac caataatccc gccagcctga acgaggagaa gctgctgctg ctgatggccc    3819

agctcgaggc cctgacccag cgcctgggcg agctgaccca gcaggtggct cagctgcagg    3879

cggagacgcg ggccgcggtt gccacggtga aaaccaaata aaaaatgaat caataaataa    3939

acggagacgg ttgttgattt taacacagag tcttgaatct ttatttgatt tttcgcgcgc    3999

ggtaggccct ggaccaccgg tctcgatcat tgagcacccg gtggattttt tccaggaccc    4059

ggtagaggtg ggcttggatg ttgaggtaca tgggcatgag cccgtcccgg gggtggaggt    4119
```

agctccattg cagggcctcg tgctcggggg tggtgttgta aatcacccag tcatagcagg 4179

ggcgcagggc gtggtgctgc acgatgtcct tgaggaggag actgatggcc acgggcagcc 4239

ccttggtgta ggtgttgacg aacctgttga gctgggaggg atgcatgcgg ggggagatga 4299

gatgcatctt ggcctggatc ttgagattgg cgatgttccc gcccagatcc cgccgggggt 4359

tcatgttgtg caggaccacc agcacggtgt atccggtgca cttggggaat ttgtcatgca 4419

acttggaagg gaaggcgtga aagaatttgg agacgccctt gtgaccgccc aggttttcca 4479

tgcactcatc catgatgatg gcgatgggcc cgtgggcggc ggcctgggca aagacgtttc 4539

gggggtcgga cacatcgtag ttgtggtcct gggtgagctc gtcataggcc attttaatga 4599

atttggggcg gagggtgccc gactggggga caaaggtgcc ctcgatcccg ggggcgtagt 4659

ttccctcgca gatctgcatc tcccaggcct tgagctcgga ggggggggatc atgtccacct 4719

gcggggcgat gaaaaaaacg gtttccgggg cgggggagat gagctgggcc gaaagcaggt 4779

tccggagcag ctgggacttg ccgcagccgg tggggccgta gatgaccccg atgaccggct 4839

gcaggtggta gttgagggag agacagctgc cgtcctcgcg gaggaggggg gccacctcgt 4899

tcatcatctc gcgcacatgc atgttctcgc gcacgagttc cgccaggagg cgctcgcccc 4959

ccagcgagag gagctcttgc agcgaggcga agtttttcag cggtttgagc ccgtcggcca 5019

tgggcatttt ggagagggtc tgttgcaaga gttccagacg gtcccagagc tcggtgatgt 5079

gctctagggc atctcgatcc agcagacctc ctcgtttcgc gggttggggc gactgcggga 5139

gtagggcacc aggcgatggg cgtccagcga ggccagggtc cggtccttcc aggggcgcag 5199

ggtccgcgtc agcgtggtct ccgtcacggt gaaggggtgc gcgccgggct gggcgcttgc 5259

gagggtgcgc ttcaggctca tccggctggt cgagaaccgc tcccggtcgg cgccctgcgc 5319

gtcggccagg tagcaattga gcatgagttc gtagttgagc gcctcggccg cgtggccctt 5379

ggcgcggagc ttacctttgg aagtgtgtcc gcagacggga cagaggaggg acttgagggc 5439

gtagagcttg ggggcgagga agacggactc gggggcgtag gcgtccgcgc cgcagctggc 5499

gcagacggtc tcgcactcca cgagccaggt gaggtcgggg cggtcggggt caaaaacgag 5559

gtttcctccg tgctttttga tgcgtttctt acctctggtc tccatgagct cgtgtccccg 5619

ctgggtgaca aagaggctgt ccgtgtcccc gtagaccgac tttatgggcc ggtcctcgag 5679

cggggtgccg cggtcctcgt cgtagaggaa ccccgcccac tccgagacga aggcccgggt 5739

ccaggccagc acgaaggagg ccacgtggga ggggtagcgg tcgttgtcca ccagcgggtc 5799

caccttctcc agggtatgca agcacatgtc cccctcgtcc acatccagga aggtgattgg 5859

cttgtaagtg taggccacgt gaccgggggt cccggccggg ggggtataaa agggggcggg 5919

cccctgctcg tcctcactgt cttccggatc gctgtccagg agcgccagct gttggggtag 5979

gtattccctc tcgaaggcgg gcatgacctc ggcactcagg ttgtcagttt ctagaaacga 6039

ggaggatttg atattgacgg tgccgttgga gacgcctttc atgagcccct cgtccatctg 6099

gtcagaaaag acgatctttt tgttgtcgag cttggtggcg aaggagccgt agagggcatt 6159

ggagaggagc ttggcgatgg agcgcatggt ctggttcttt tccttgtcgg cgcgctcctt 6219

ggcggcgatg ttgagctgca cgtactcgcg cgccacgcac ttccattcgg ggaagacggt 6279

ggtgagctcg tcgggcacga ttctgacccg ccagccgcgg ttgtgcaggg tgatgaggtc 6339

cacgctggtg gccacctcgc cgcgcagggg ctcgttggtc cagcagaggc gcccgccctt 6399

gcgcgagcag aaggggggca gcgggtccag catgagctcg tcgggggggt cggcgtccac 6459

ggtgaagatg ccgggcagga gctcggggtc gaagtagctg atgcaggtgc ccagatcgtc 6519

cagcgccgct tgccagtcgc gcacggccag cgcgcgctcg taggggctga ggggcgtgcc 6579

ccagggcatg gggtgcgtga gcgcggaggc gtacatgccg cagatgtcgt agacgtagag 6639

gggctcctcg aggacgccga tgtaggtggg gtagcagcgc cccccgcgga tgctggcgcg 6699

cacgtagtcg tacagctcgt gcgagggcgc gaggagcccc gcgccgaggt tggagcgctg 6759

cggcttttcg gcgcggtaga cgatctggcg gaagatggcg tgggagttgg aggagatggt 6819

gggcctctgg aagatgttga agtgggcgtg gggcaggccg accgagtccc tgatgaagtg 6879

ggcgtaggag tcctgcagct tggcgacgag ctcggcggtg acgaggacgt ccagggcgca 6939

gtagtcgagg gtctcttgga tgatgtcgta cttgagctgg cccttctgct tccacagctc 6999

gcggttgaga aggaactctt cgcggtcctt ccagtactct tcgaggggga acccgtcctg 7059

atcggcacgg taagagccca ccatgtagaa ctggttgacg gccttgtagg cgcagcagcc 7119

cttctccacg gggagggcat aagcttgcgc ggccttgcgc agggaggtgt gggtgagggc 7179

gaaggtgtcg cgcaccatga ccttgaggaa ctggtgcttg aagtcgaggt cgtcgcagcc 7239

gccctgctcc cagagttgga agtccgtgcg cttcttgtag gcggggttgg gcaaagcgaa 7299

agtaacatcg ttgaagagga tcttgcccgc gcggggcatg aagttgcgag tgatgcggaa 7359

aggctggggc acctcggccc ggttgttgat gacctgggcg gcgaggacga tctcgtcgaa 7419

gccgttgatg ttgtgcccga cgatgtagag ttccacgaat cgcgggcggc ccttgacgtg 7479

gggcagcttc ttgagctcgt cgtaggtgag ctcggcgggg tcgctgagtc cgtgctgctc 7539

aagggcccag tcggcgacgt gggggttggc gctgaggaag gaagtccaga gatccacggc 7599

cagggcggtt tgcaagcggt cccggtactg acggaactgc tggcccacgg ccatttttc 7659

gggggtgatg cagtagaagg tgcgggggtc gccgtgccag cggtcccact tgagctggag 7719

ggcgaggtcg tgggcgagct cgacgagcgg cgggtccccg gagagtttca tgaccagcat 7779

gaaggggacg agctgcttgc cgaaggaccc catccaggtg taggtttcca catcgtaggt 7839

gaggaagagc ctttcggtgc gaggatgcga gccgatgggg aagaactgga tctcctgcca 7899

ccagttggag gaatggctgt tgatgtgatg gaagtagaaa tgccgacggc gcgccgagca 7959

ctcgtgcttg tgtttataca agcgtccgca gtgctcgcaa cgctgcacgg gatgcacgtg 8019

ctgcacgagc tgtacctgag ttcctttgac gaggaatttc agtgggcagt ggagcgctgg 8079

cggctgcatc tggtgctgta ctacgtcctg gccatcggcg tggccatcgt ctgcctcgat 8139

ggtggtcatg ctgacgagcc cgcgcgggag gcaggtccag acctcgactc ggacgggtcg 8199

gagagcgagg acgagggcgc gcaggccgga gctgtccagg gtcctgagac gctgcggagt 8259

caggtcagtg ggcagcggcg gcgcgcggtt gacttgcagg agcttttcca gggcgcgcgg 8319

gaggtccaga tggtacttga tctccacggc gccgttggtg gcgacgtcca cggcttgcag 8379

ggtcccgtgc ccctggggcg ccaccaccgt gccccgtttc ttcttgggcg ctggcgttgg 8439

cgctgcttcc atgtcggtca gaagcggcgg cgaggacgcg cgccgggcgg caggggcggc 8499

tcggggcccg gaggcagggg cggcaggggc acgtcggcgc cgcgcgcggg caggttctgg 8559

tactgcgccc ggagaagact ggcgtgagcg acgacgcgac ggttgacgtc ctggatctga 8619

cgcctctggg tgaaggccac gggacccgtg agtttgaacc tgaaagagag ttcgacagaa 8679

tcaatctcgg tatcgttgac ggcggcctgc cgcaggatct cttgcacgtc gcccgagttg 8739

tcctggtagg cgatctcggt catgaactgc tcgatctcct cctcctgaag gtctccgcgg 8799

ccggcgcgct ccacggtggc cgcgaggtcg ttggagatgc ggcccatgag ctgcgagaag 8859

gcgttcatgc ccgcctcgtt ccagacgcgg ctgtagacca cgacgccctc gggatcgcgg 8919

gcgcgcatga ccacctgggc gaggttgagc tccacgtggc gcgtgaagac cgcgtagttg 8979

cagaggcgct ggtagaggta gttgagcgtg gtggcgatgt gctcggtgac gaagaaatac 9039

atgatccagc ggcggagcgg catctcgctg acgtcgccca gcgcctccaa gcgttccatg 9099

gcctcgtaaa agtccacggc gaagttgaaa aactgggagt tgcgcgccga gacggtcaac 9159

tcctcctcca gaagacggat gagctcggcg atggtggcgc gcacctcgcg ctcgaaggcc 9219

cccgggagtt cctccacttc ctcttcttct tcctcctcca ctaacatctc ttctacttcc 9279

tcctcaggcg gtggtggcgg gggaggggc ctgcgtcgcc ggcggcgcac gggcagacgg 9339

tcgatgaagc gctcgatggt ctcgccgcgc cggcgtcgca tggtctcggt gacggcgcgc 9399

ccgtcctcgc ggggccgcag cgtgaagacg ccgccgcgca tctccaggtg gccgggggg 9459

tccccgttgg gcagggagag ggcgctgacg atgcatctta tcaattgccc cgtagggact 9519

ccgcgcaagg acctgagcgt ctcgagatcc acgggatctg aaaaccgttg aacgaaggct 9579

tcgagccagt cgcagtcgca aggtaggctg agcacggttt cttctggcgg gtcatgttgg 9639

ttggagggag cggggcgggc gatgctgctg gtgatgaagt tgaaataggc ggttctgaga 9699

cggcggatgg tggcgaggag caccaggtct ttgggcccgg cttgctggat gcgcagacgg 9759

tcggccatgc cccaggcgtg gtcctgacac ctggccaggt ccttgtagta gtcctgcatg 9819

agccgctcca cgggcacctc ctcctcgccc gcgcggccgt gcatgcgcgt gagcccgaac 9879

ccgcgctgcg gctggacgag cgccaggtcg gcgacgacgc gctcggcgag gatggcctgc 9939

tggatctggg tgagggtggt ctggaagtcg tcaaagtcga cgaagcggtg gtaggctccg 9999

gtgttgatgg tgtaggagca gttggccatg acggaccagt tgacggtctg gtggcccgga 10059

cgcacgagct cgtggtactt gaggcgcgag taggcgcgcg tgtcgaagat gtagtcgttg 10119

caggtgcgca ccaggtattg gtagccgatg aggaagtgcg gcggcggctg gcggtagagc 10179

ggccatcgct cggtggcggg ggcgccgggc gcgaggtcct cgagcatgag gcggtggtag 10239

ccgtagatgt acctggacat ccaggtgatg ccggcggcgg tggtggaggc gcgcgggaac 10299

tcgcggacgc ggttccagat gttgcgcagc ggcaggaagt agttcatggt ggccgcggtc 10359

tggcccgtga ggcgcgcgca gtcgtggatg ctctagacat acgggcaaaa acgaaagcgg 10419
tcagcggctc gactccgtgg cctggaggct aagcgaacgg gttgggctgc gcgtgtaccc 10479
cggttcgaat ctcgaatcag gctggagccg cagctaacgt ggtactggca ctcccgtctc 10539
gacccaagcc tgctaacgaa acctccagga tacggaggcg ggtcgttttg gcatttttcg 10599
tcaggccgga aatgaaacta gtaagcgcgg aaagcggccg accgcgatgg ctcgctgccg 10659
tagtctggag aagaatcgcc agggttgcgt tgcggtgtgc cccggttcga ggccggccgg 10719
attccgcggc taacgagggc gtggctgccc cgtcgtttcc aagaccccta gccagccgac 10779
ttctccagtt acggagcgag cccctctttt gttttttgtt tttgccagat gcatcccgta 10839
ctgcggcaga tgcgccccca ccaccctcca ccgcaacaac agccccctcc acagccggcg 10899
cttctgcccc cgccccagca gcagcagcaa cttccagcca cgaccgccgc ggccgccgtg 10959
agcggggctg gacagagtta tgaccaccag ctggccttgg aagagggcga ggggctggcg 11019
cggctggggg cgtcgtcgcc ggagcggcac ccgcgcgtgc agatgaaaag ggacgctcgc 11079
gaggcctacg tgcccaagca gaacctgttc agagacagga gcggcgagga gcccgaggag 11139
atgcgcgcct cccgcttcca cgcggggcgg gagctgcggc gcggcctgga ccgaaagcgg 11199
gtgctgaggg acgaggattt cgaggcggac gagctgacgg ggatcagccc cgcgcgcgcg 11259
cacgtggccg cggccaacct ggtcacggcg tacgagcaga ccgtgaagga ggagagcaac 11319
ttccaaaaat ccttcaacaa ccacgtgcgc accttgatcg cgcgcgagga ggtgaccctg 11379
ggcctgatgc acctgtggga cctgctggag gccatcgtgc agaaccccac gagcaagccg 11439
ctgacggcgc agctgtttct ggtggtgcag cacagtcggg acaacgagac gttcagggag 11499
gcgctgctga atatcaccga gcccgagggc cgttggctcc tggacctggt gaacattctg 11559
cagagcatcg tggtgcagga gcgcgggctg ccgctgtccg agaagctggc ggccatcaac 11619
ttctcggtgc tgagcctggg caagtactac gctaggaaga tctacaagac cccgtacgtg 11679
cccatagaca aggaggtgaa gatcgatggg ttttacatgc gcatgaccct gaaagtgctg 11739
accctgagcg acgatctggg ggtgtaccgc aacgacagga tgcaccgcgc ggtgagcgcc 11799
agccgccggc gcgagctgag cgaccaggag ctgatgcaca gcctgcagcg ggccctgacc 11859
ggggccggga ccgaggggga gagctacttt gacatgggcg cggacctgcg ctggcagccc 11919
agccgccggg ccttggaagc tgccggcggc gtgccctacg tggaggaggt ggacgatgag 11979
gaggaggagg gcgagtacct ggaagactga tggcgcgacc gtatttttgc tagatgcagc 12039
aacagccacc gcctcctgat cccgcgatgc gggcggcgct gcagagccag ccgtccggca 12099
ttaactcctc ggacgattgg acccaggcca tgcaacgcat catggcgctg acgacccgca 12159
atcccgaagc ctttagacag cagcctcagg ccaaccggct ctcggccatc ctggaggccg 12219
tggtgccctc gcgctcgaac cccacgcacg agaaggtgct ggccatcgtg aacgcgctgg 12279
tggagaacaa ggccatccgc ggcgacgagg ccgggctggt gtacaacgcg ctgctggagc 12339
gcgtggcccg ctacaacagc accaacgtgc agacgaacct ggaccgcatg gtgaccgacg 12399

tgcgcgaggc ggtgtcgcag cgcgagcggt tccaccgcga gtcgaacctg ggctccatgg 12459

tggcgctgaa cgccttcctg agcacgcagc ccgccaacgt gccccggggc caggaggact 12519

acaccaactt catcagcgcg ctgcggctga tggtggccga ggtgccccag agcgaggtgt 12579

accagtcggg gccggactac ttcttccaga ccagtcgcca gggcttgcag accgtgaacc 12639

tgagccaggc tttcaagaac ttgcagggac tgtggggcgt gcaggccccg gtcggggacc 12699

gcgcgacggt gtcgagcctg ctgacgccga actcgcgcct gctgctgctg ctggtggcgc 12759

ccttcacgga cagcggcagc gtgagccgcg actcgtacct gggctacctg cttaacctgt 12819

accgcgaggc catcgggcag gcgcacgtgg acgagcagac ctaccaggag atcacccacg 12879

tgagccgcgc gctggggcag gaggacccgg gcaacctgga ggccaccctg aacttcctgc 12939

tgaccaaccg gtcgcagaag atcccgcccc agtacgcgct gagcaccgag gaggagcgca 12999

tcctgcgcta cgtgcagcag agcgtggggc tgttcctgat gcaggagggg gccacgccca 13059

gcgccgcgct cgacatgacc gcgcgcaaca tggagcccag catgtacgcc cgcaaccgcc 13119

cgttcatcaa taagctgatg gactacttgc atcgggcggc cgccatgaac tcggactact 13179

ttaccaacgc catcttgaac ccgcactggc tcccgccgcc cgggttctac acgggcgagt 13239

acgacatgcc cgaccccaac gacgggttcc tgtgggacga cgtggacagc agcgtgttct 13299

cgccgcgccc caccaccacc gtgtggaaga aagagggcgg ggaccggcgg ccgtcctcgg 13359

cgctgtccgg tcgcgcgggt gctgccgcgg cggtgcccga ggccgccagc cccttcccga 13419

gcctgccctt ttcgctgaac agcgtgcgca gcagcgagct gggtcggctg acgcggccgc 13479

gcctgctggg cgaggaggag tacctgaacg actccttgtt gaggcccgag cgcgagaaaa 13539

acttccccaa taacgggata gagagcctgg tggacaagat gagccgctgg aagacgtacg 13599

cgcacgagca cagggacgag ccccgagcta gcagcagcac cggcgcccgt agacgccagc 13659

ggcacgacag gcagcgggga ctggtgtggg acgatgagga ttccgccgac gacagcagcg 13719

tgttggactt gggtgggagt ggtggtggta acccgttcgc tcacctgcgc ccccgtatcg 13779

ggcgcctgat gtaagaatct gaaaaaataa aaaaacggta ctcaccaagg ccatggcgac 13839

cagcgtgcgt tcttctctgt tgtttgtagt agtatgatga ggcgcgtgta cccggagggt 13899

cctcctccct cgtacgagag cgtgatgcag caggcggtgg cggcggcgat gcagcccccg 13959

ctggaggcgc cttacgtgcc cccgcggtac ctggcgccta cggaggggcg gaacagcatt 14019

cgttactcgg agctggcacc cttgtacgat accacccggt tgtacctggt ggacaacaag 14079

tcggcggaca tcgcctcgct gaactaccag aacgaccaca gcaacttcct gaccaccgtg 14139

gtgcagaaca acgatttcac ccccacggag gccagcaccc agaccatcaa ctttgacgag 14199

cgctcgcggt ggggcggcca gctgaaaacc atcatgcaca ccaacatgcc caacgtgaac 14259

gagttcatgt acagcaacaa gttcaaggcg cgggtgatgg tctcgcgcaa gacccccaac 14319

ggggtcacag taacagatgg tagtcaggac gagctgacct acgagtgggt ggagtttgag 14379

ctgcccgagg gcaacttctc ggtgaccatg accatcgatc tgatgaacaa cgccatcatc 14439

gacaactact tggcggtggg acggcagaac ggggtgctgg agagcgacat cggcgtgaag 14499

ttcgacacgc gcaacttccg gctgggctgg gaccccgtga ccgagctggt gatgccgggc 14559
gtgtacacca acgaggcctt ccaccccgac attgtcctgc tgcccggctg cggcgtggac 14619
ttcaccgaga gccgcctcag caacctgctg ggcatccgca agcggcagcc cttccaggag 14679
ggcttccaga tcctgtacga ggacctggag gggggcaaca tccccgcgct gctggacgtg 14739
gacgcctacg agaaaagcaa ggaggagagc gccgccgcgg cgaccgcagc cgtggccacc 14799
gcctctaccg aggtgcgggg cgataatttt gctagcgccg cggcagtggc cgaggcggct 14859
gaaaccgaaa gtaagatagt gatccagccg gtggagaagg acagcaagga caggagctac 14919
aacgtgctcg cggacaagaa aaacaccgcc taccgcagct ggtacctggc ctacaactac 14979
ggcgaccccg agaagggcgt gcgctcctgg acgctgctca ccacctcgga cgtcacctgc 15039
ggcgtggagc aagtctactg gtcgctgccc gacatgatgc aagacccggt caccttccgc 15099
tccacgcgac aagttagcaa ctacccggtg gtgggcgccg agctcctgcc cgtctactcc 15159
aagagcttct tcaacgagca ggccgtctac tcgcagcagc tgcgcgcctt cacctcgctc 15219
acgcacgtct tcaaccgctt ccccgagaac cagatcctcg tccgcccgcc cgcgcccacc 15279
attaccaccg tcagtgaaaa cgttcctgct ctcacagatc acgggaccct gccgctgcgc 15339
agcagtatcc ggggagtcca gcgcgtgacc gtcactgacg ccagacgccg cacctgcccc 15399
tacgtctaca aggccctggg cgtagtcgcg ccgcgcgtcc tctcgagccg caccttctaa 15459
aaaatgtcca ttctcatctc gcccagtaat aacaccggtt ggggcctgcg cgcgcccagc 15519
aagatgtacg gaggcgctcg ccaacgctcc acgcaacacc ccgtgcgcgt gcgcgggcac 15579
ttccgcgctc cctggggcgc cctcaagggt cgcgtgcgct cgcgcaccac cgtcgacgac 15639
gtgatcgacc aggtggtggc cgacgcgcgc aactacacgc ccgccgccgc gcccgcctcc 15699
accgtggacg ccgtcatcga cagcgtggtg gccgacgcgc gccggtacgc ccgcgccaag 15759
agccggcggc ggcgcatcgc ccggcggcac cggagcaccc ccgccatgcg cgcggcgcga 15819
gccttgctgc gcagggccag gcgcacggga cgcagggcca tgctcagggc ggccagacgc 15879
gcggcctccg gcagcagcag cgccggcagg acccgcagac gcgcggccac ggcggcggcg 15939
gcggccatcg ccagcatgtc ccgcccgcgg cgcggcaacg tgtactgggt gcgcgacgcc 15999
gccaccggtg tgcgcgtgcc cgtgcgcacc cgccccccctc gcacttgaag atgctgactt 16059
cgcgatgttg atgtgtccca gcggcgagga ggatgtccaa gcgcaaattc aaggaagaga 16119
tgctccaggt catcgcgcct gagatctacg gccccgcggc ggcggtgaag gaggaaagaa 16179
agccccgcaa actgaagcgg gtcaaaaagg acaaaaagga agaagatgtg gacgatatgg 16239
tggagtttgt gcgcgagttc gccccccggc ggcgcgtgca gtggcgcggg cggaaggtgc 16299
gcccggtgct gagacccggc accacggtgg tcttcacgcc cggagagcgc tctggcaccg 16359
cctccaagcg ctcctacgac gaggtgtacg gggatgatga tattctggag caggcggccg 16419
agcgcctggg cgagtttgct tacggcaagc gcagccgccc cgcgcccttg aaagaggagg 16479
cggtgtccat cccgctggac cacggcaacc ccacgccgag cctgaagccg gtgaccctgc 16539

agcaggtgct gccagccgcg gcgccgcgcc gggggttcaa gcgcgagggc gaggatctgt 16599

accccaccat gcagctgatg gtgcccaagc gccagaagct ggaggacgtg ctggagcaca 16659

tgaaggtgga cccggacgtg cagcccgagg tcaaggtgcg gcccatcaag caggtggccc 16719

cgggcctggg cgtgcagacc gtggacatca agatccccac ggagcccatg gaaacgcaga 16779

ctgagcccgt gaagcccagc accagcacca tggaggtgca gacggatccc tggatgccag 16839

cggcttccac caccactcgc cgaagacgca agtacggcgc ggccagcctg ctgatgccca 16899

actacgcgct gcatccttcc atcatcccca cgccgggcta ccgcggcacg cgcttctacc 16959

gcggctacac cagcagccgc cgccgcaaga ccaccacccg ccgccgccgt cgtcgcagcc 17019

gccgcagcag caccgcgact tccgccttgg tgcggagagt gtaccgcagc gggcgcgagc 17079

ctctgaccct gccgcgcgcg cgctaccacc cgagcatcgc catttaacta ccgcctccta 17139

cttgcagata tggccctcac atgccgcctc cgcgtcccca ttacgggcta ccgaggaaga 17199

aagccgcgcc gtagaaggct gacggggaac gggctgcgtc gccatcacca ccggcggcgg 17259

cgcgccatca gcaagcggtt ggggggaggc ttcctgcccg cgctgatccc catcatcgcc 17319

gcggcgatcg gggcgatccc cggcatagct tccgtggcgg tgcaggcctc tcagcgccac 17379

tgagacacag cttggaaaat ttgtaataaa aaatggactg acgctcctgg tcctgtgatg 17439

tgtgttttta gatggaagac atcaattttt cgtccctggc accgcgacac ggcacgcggc 17499

cgtttatggg cacctggagc gacatcggca acagccaact gaacgggggc gccttcaatt 17559

ggagcagtct ctggagcggg cttaagaatt tcgggtccac gctcaaaacc tatggcaaca 17619

aggcgtggaa cagcagcaca gggcaggcgc tgagggaaaa gctgaaagag cagaacttcc 17679

agcagaaggt ggtcgatggc ctggcctcgg gcatcaacgg ggtggtggac ctggccaacc 17739

aggccgtgca gaaacagatc aacagccgcc tggacgcggt cccgcccgcg gggtccgtgg 17799

acatgcccca ggtggaggag gagctgcctc ccctggacaa gcgcggcgac aagcgaccgc 17859

gtcccgacgc tgaggagacg ctgctgacgc acacggacga gccgcccccg tacgaggagg 17919

cggtgaaact gggtctgccc accacgcggc ccgtggcgcc tctggccacc ggggtgctga 17979

aacccagcag cagcagcagc cagcccgcga ccctggactt gcctccacct cgcccctcca 18039

cagtggctaa gcccctgccg ccggtggccg tcgcgtcgcg cgccccccga ggccgccccc 18099

aggcgaactg gcagagcact ctgaacagca tcgtgggtct gggagtgcag agtgtgaagc 18159

gccgccgctg ctattaaaag acactgtagc gcttaacttg cttgtctgtg tgtgtatatg 18219

tatgtccgcc gaccagaagg aggaagaggc gcgtcgccga gttgcaagat ggccacccca 18279

tcgatgctgc cccagtgggc gtacatgcac atcgccggac aggacgcttc ggagtacctg 18339

agtccgggtc tggtgcagtt cgcccgcgcc acagacacct acttcagtct ggggaacaag 18399

tttaggaacc ccacggtggc gcccacgcac gatgtgacca ccgaccgcag ccagcggctg 18459

acgctgcgct tcgtgcccgt ggaccgcgag gacaacacct actcgtacaa agtgcgctac 18519

acgctggccg tgggcgacaa ccgcgtgctg gacatggcca gcacctactt tgacatccgc 18579

ggcgtgctgg atcggggccc cagcttcaaa ccctactccg gcaccgccta caacagcctg 18639

gctcccaagg gagcgcccaa cacctcacaa tggataacca aagacaagac atacagtttt 18699
ggaaatgctc cagtcagagg attggacatt acagaagagg gtctccaaat agtaaccgat 18759
gagtcagggg gtgaaagcaa gaaaattttt gcagacaaaa cctatcagcc tgaacctcag 18819
cttggagatg aggaatggca tgatactatt ggagctgaag acaagtatgg aggcagagcg 18879
cttaaacctg ccaccaacat gaaaccctgc tatgggtctt tcgccaagcc aactaatgct 18939
aagggaggtc aggctaaaag cagaaccaag gacgatggca ctactgagcc tgatattgac 18999
atggcctttt ttgacgatcg cagtcagcaa gctagtttca gtccagaact tgttttgtat 19059
actgagaatg tcgatctgga caccccggat acccacatta tttacaaacc tggcactgat 19119
gaaacaagtt cttctttcaa cttgggtcag cagtccatgc ccaacagacc caattacatt 19179
ggcttcagag acaactttat cggactcatg tactacaaca gcactggcaa tatgggtgta 19239
ctggctggac aggcctccca gctgaatgct gtggtggact tgcaggacag aaacaccgaa 19299
ctgtcctacc agctcttgct tgactctctg ggcgacagaa ccaggtattt cagtatgtgg 19359
aatcaggcgg tggacagcta tgaccccgat gtgcgcatta ttgaaaatca cggtgtggag 19419
gatgaacttc ccaactattg cttccctttg aatggtgtgg gctttacaga ttcattccag 19479
ggaattaagg ttaaaactac caataacgga acagcaaacg ctacagagtg ggaatctgat 19539
acctctgtca ataatgctaa tgagattgcc aagggcaatc ctttcgccat ggagatcaac 19599
atccaggcca acctgtggcg gaacttcctc tacgcgaacg tggcgctgta cctgcccgac 19659
tcctacaagt acacgccggc caacatcacg ctgcccacca acaccaacac ctacgattac 19719
atgaacggcc gcgtggtggc gccctcgctg gtggacgcct acatcaacat cggggcgcgc 19779
tggtcgctgg accccatgga caacgtcaac cccttcaacc accaccgcaa cgcgggcctg 19839
cgataccgct ccatgctcct gggcaacggg cgctacgtgc ccttccacat ccaggtgccc 19899
caaaagtttt tcgccatcaa gagcctcctg ctcctgcccg ggtcctacac ctacgagtgg 19959
aacttccgca aggacgtcaa catgatcctg cagagctccc tcggcaacga cctgcgcacg 20019
gacggggcct ccatctcctt caccagcatc aacctctacg ccaccttctt ccccatggcg 20079
cacaacacgg cctccacgct cgaggccatg ctgcgcaacg acaccaacga ccagtccttc 20139
aacgactacc tctcggcggc caacatgctc taccccatcc cggccaacgc caccaacgtg 20199
cccatctcca tcccctcgcg caactgggcc gccttccgcg gctggtcctt cacgcgtctc 20259
aagaccaagg agacgccctc gctgggctcc gggttcgacc cctacttcgt ctactcgggc 20319
tccatcccct acctcgacgg caccttctac ctcaaccaca ccttcaagaa ggtctccatc 20379
accttcgact cctccgtcag ctggcccggc aacgaccgcc tcctgacgcc caacgagttc 20439
gaaatcaagc gcaccgtcga cggagagggg tacaacgtgg cccagtgcaa catgaccaag 20499
gactggttcc tggtccagat gctggcccac tacaacatcg gctaccaggg cttctacgtg 20559
cccgagggct acaaggaccg catgtactcc ttcttccgca acttccagcc catgagccgc 20619
caggtcgtgg acgaggtcaa ctacaaggac taccaggccg tcaccctggc ctaccagcac 20679

aacaactcgg gcttcgtcgg ctacctcgcg cccaccatgc gccaggggca gccctacccc 20739

gccaactacc cgtacccgct catcggcaag agcgccgtca ccagcgtcac ccagaaaaag 20799

ttcctctgcg accgggtcat gtggcgcatc cccttctcca gcaacttcat gtccatgggc 20859

gcgctcaccg acctcggcca gaacatgctc tatgccaact ccgcccacgc gctagacatg 20919

aatttcgaag tcgaccccat ggatgagtcc acccttctct atgttgtctt cgaagtcttc 20979

gacgtcgtcc gagtgcacca gccccaccgc ggcgtcatcg aggccgtcta cctgcgcacc 21039

cccttctcgg ccggtaacgc caccacctaa gctcttgctt cttgcatgat ggctgagccc 21099

acgggctccg gcgagcagga gctcagggcc atcatccgcg acctgggctg cgggccctac 21159

ttcctgggca ccttcgataa gcgcttcccg ggattcatgg ccccgcacaa gctggcctgc 21219

gccatcgtca acacggccgg tcgcgagacc gggggcgagc actggctggc cttcgcctgg 21279

aacccgcgct cgaacacctg ctacctcttc gaccccttcg ggttctcgga cgagcgcctc 21339

aagcagatct accagttcga gtacgagggc ctgctgcgcc gcagcgccct ggccaccgag 21399

gaccgctgcg tcaccctgga aaagtccacc cagaccgtgc agggtccgcg ctcggccgcc 21459

tgcgggctct tctgctgcat gttcctgcac gccttcgtgc actggcccga ccgccccatg 21519

gacaagaacc ccaccatgaa cttgctgacg ggggtgccca acggcatgct ccagtcgccc 21579

caggtggaac ccaccctgcg ccgcaaccag gaggcgctct accgcttcct caacgcccac 21639

tccgcctact ttcgctccca ccgcgcgcgc atcgagaagg ccaccgcctt cgaccgcatg 21699

aatcaagaca tgtaaaccgt gtgtgtatgt gaatgcttta ttcataataa acagcacatg 21759

tttatgccac cttctctgag gctctgactt tatttagaaa tcgaaggggt tctgccggct 21819

ctcggcgtgc cccgcgggca gggatacgtt gcggaactgg tacttgggca gccacttgaa 21879

ctcggggatc agcagcttcg gcacggggag gtcggggaac gagtcgctcc acagcttgcg 21939

cgtgagttgc agggcgccca gcaggtcggg cgcggagatc ttgaaatcgc agttgggacc 21999

cgcgttctgc gcgcgagagt tgcggtacac ggggttgcag cactggaaca ccatcagggc 22059

cgggtgcttc acgctcgcca gcaccgtcgc gtcggtgatg ccctccacgt ccagatcctc 22119

ggcgttggcc atcccgaagg gggtcatctt gcaggtctgc cgccccatgc tgggcacgca 22179

gccgggcttg tggttgcaat cgcagtgcag ggggatcagc atcatctggg cctgctcgga 22239

gctcatgccc gggtacatgg ccttcatgaa agcctccagc tggcggaagg cctgctgcgc 22299

cttgccgccc tcggtgaaga agaccccgca ggacttgcta gagaactggt tggtagcgca 22359

gcccgcgtcg tgcacgcagc agcgcgcgtc gttgttggcc agctgcacca cgctgcgccc 22419

ccagcggttc tgggtgatct tggcccggtc ggggttctcc ttcagcgcgc gctgcccgtt 22479

ctcgctcgcc acatccatct cgatcgtgtg ctccttctgg atcatcacgg tcccgtgcag 22539

gcaccgcagc ttgccctcgg cctcggtgca gccgtgcagc cacagcgcgc agccggtgct 22599

ctcccagttc ttgtgggcga tctgggagtg cgagtgcacg aagccctgca ggaagcggcc 22659

catcatcgcg gtcagggtct tgttgctggt gaaggtcagc gggatgccgc ggtgctcctc 22719

gttcacatac aggtggcaga tgcggcggta cacctcgccc tgctcgggca tcagctggaa 22779

ggcggacttc aggtcgctct ccacgcggta ccgctccatc agcagcgtca tcacttccat 22839

gcccttctcc caggccgaaa cgatcggcag gctcaggggg ttcttcaccg tcatcttagt 22899

cgccgccgcc gaggtcaggg ggtcgttctc gtccagggtc tcaaacactc gcttgccgtc 22959

cttctcggtg atgcgcacgg gggggaaggc gaagcccacg gccgccagct cctcctcggc 23019

ctgcctttcg tcctcgctgt cctggctgat gtcttgcaaa ggcacatgct tggtcttgcg 23079

gggtttcttt ttgggcggca gaggcggcgg cggagacgtg ctgggcgagc gcgagttctc 23139

gctcaccacg actatttctt cttcttggcc gtcgtccgag accacgcggc ggtaggcatg 23199

cctcttctgg ggcagaggcg gaggcgacgg gctctcgcgg ttcgacgggc ggctggcaga 23259

gcccttccg cgttcggggg tgcgctcctg gcggcgctgc tctgactgac ttcctccgcg 23319

gccggccatt gtgttctcct agggagcaac aagcatggag actcagccat cgtcgccaac 23379

atcgccatct gcccccgccg ccgccgacga gaaccagcag cagcagaatg aaagcttaac 23439

cgccccgccg cccagcccca cctccgacgc cgccgcagcc ccagacatgc aagagatgga 23499

ggaatccatc gagattgacc tgggctacgt gacgcccgcg gagcacgagg aggagctggc 23559

agcgcgcttt tcagccccgg aagagaacca ccaagagcag ccagagcagg aagcagagag 23619

cgagcagcag caggctgggc tcgagcatgg cgactacctg agcggggcag aggacgtgct 23679

catcaagcat ctggcccgcc aatgcatcat cgtcaaggac gcgctgctcg accgcgccga 23739

ggtgcccctc agcgtggcgg agctcagccg cgcctacgag cgcaacctct tctcgccgcg 23799

cgtgcccccc aagcgccagc ccaacggcac ctgcgagccc aacccgcgcc tcaacttcta 23859

cccggtcttc gcggtgcccg aggccctggc cacctaccac ctcttttca agaaccaaag 23919

gatccccgtc tcctgccgcg ccaaccgcac ccgcgccgac gccctgctca acctgggccc 23979

cggcgcccgc ctacctgata tcgcctcctt ggaagaggtt cccaagatct tcgagggtct 24039

gggcagcgac gagactcggg ccgcgaacgc tctgcaagga agcggagagg agcatgagca 24099

ccacagcgcc ctggtggagt tggaaggcga caacgcgcgc ctggcggtcc tcaagcgcac 24159

ggtcgagctg acccacttcg cctacccagc gctcaacctg ccccccaagg tcatgagcgc 24219

cgtcatggac caggtgctca tcaagcgcgc ctcgcccctc tcggaggagg agatgcagga 24279

ccccgagagc tcggacgagg gcaagcccgt ggtcagcgac gagcagctgg cgcgctggct 24339

gggagcgagt agcacccccc agagcctgga agagcggcgc aagctcatga tggccgtggt 24399

cctggtgacc gtggagctgg agtgtctgcg ccgcttcttt gccgacgcgg agaccctgcg 24459

caaggtcgag gagaacctgc actacctctt caggcacggg ttcgtgcgcc aggcctgcaa 24519

gatctccaac gtggagctga ccaacctggt ctcctacatg ggcatcctgc acgagaaccg 24579

cctggggcag aacgtgctgc acaccaccct gcgcggggag gcccgccgcg actacatccg 24639

cgactgcgtc tacctgtacc tctgccacac ctggcagacg ggcatgggcg tgtggcagca 24699

gtgcctggag gagcagaacc tgaaagagct ctgcaagctc ctgcagaaga acctcaaggc 24759

cctgtggacc gggttcgacg agcgcaccac cgcctcggac ctggccgacc tcatcttccc 24819

```
cgagcgcctg cggctgacgc tgcgcaacgg gctgcccgac tttatgagcc aaagcatgtt    24879

gcaaaacttt cgctctttca tcctcgaacg ctccgggatc ctgcccgcca cctgctccgc    24939

actgccctcg gacttcgtgc cgctgacctt ccgcgagtgc cccccgccgc tctggagcca    24999

ctgctacctg ctgcgcctgg ccaactacct ggcctaccac tcggacgtga tcgaggacgt    25059

cagcggcgag ggtctgctcg agtgccactg ccgctgcaac ctctgcacgc cgcaccgctc    25119

cctggcctgc aacccccagc tgctgagcga gacccagatc atcggcacct tcgagttgca    25179

agggcccggt gacggcaagg ggggtctgaa actcaccccg gggctgtgga cctcggccta    25239

cttgcgcaag ttcgtgcccg aggactacca tcccttcgag atcaggttct acgaggacca    25299

atcccagccg cccaaggccg agctgtcggc ctgcgtcatc acccaggggg ccatcctggc    25359

ccaattgcaa gccatccaga aatcccgcca agaatttctg ctgaaaaagg gccacggggt    25419

ctacctggac ccccagaccg gagaggagct caaccccagc ttcccccagg atg ccc       25475
                                                          Met Pro

cga gga agc agc aag aag ctg aaa gtg gag ctg ccg ccg gag gat ttg      25523
Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Pro Glu Asp Leu
        510                 515                 520

gag gaa gac tgg gag agc agt cag gca gag gag atg gaa gac tgg gac      25571
Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Met Glu Asp Trp Asp
    525                 530                 535

agc act cag gca gag gag gac agc ctg caa gac agt ctg gaa gac gag      25619
Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu Glu Asp Glu
540                 545                 550                 555

gtg gag gag gag gca gag gaa gaa gca gcc gcc gcc aga ccg tcg tcc      25667
Val Glu Glu Glu Ala Glu Glu Glu Ala Ala Ala Ala Arg Pro Ser Ser
                560                 565                 570

tcg gcg gag gag gag aaa gca agc agc acg gat acc atc tcc gct ccg      25715
Ser Ala Glu Glu Glu Lys Ala Ser Ser Thr Asp Thr Ile Ser Ala Pro
            575                 580                 585

ggt crg ggt cgc ggc ggc cgg gcc cac agt agg tgg gac gag acc ggg      25763
Gly Xaa Gly Arg Gly Gly Arg Ala His Ser Arg Trp Asp Glu Thr Gly
        590                 595                 600

cgc ttc ccg aac ccc acc acc cag acc ggt aag aag gag cgg cag gga      25811
Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu Arg Gln Gly
    605                 610                 615

tac aag tcc tgg cgg ggg cac aaa aac gcc atc gtc tcc tgc ttg caa      25859
Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser Cys Leu Gln
620                 625                 630                 635

gcc tgc ggg ggc aac atc tcc ttc acc cgg cgc tac ctg ctc ttc cac      25907
Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu Leu Phe His
                640                 645                 650

cgc ggg gtg aac ttc ccc cgc aac atc ttg cat tac tac cgt cac ctc      25955
Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr Arg His Leu
            655                 660                 665

cac agc ccc tac tac tgt ttc caa gaa gag gca gaa acc cag cag cag      26003
His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala Glu Thr Gln Gln Gln
        670                 675                 680

cag aaa acc agc ggc agc tagaaaatcc acagcggcgg cggcaggtgg             26051
```

```
Gln Lys Thr Ser Gly Ser
    685

actgaggatc gcggcgaacg agccggcgca gacccgggag ctgaggaacc ggatctttcc    26111

caccctctat gccatcttcc agcagagtcg ggggcaggag caggaactga aagtcaagaa    26171

ccgttctctg cgctcgctca cccgcagttg tctgtatcac aagagcgaag accaacttca    26231

gcgcactctc gaggacgccg aggctctctt caacaagtac tgcgcgctca ctcttaaaga    26291

gtagcccgcg cccgcccaca cacggaaaaa ggcgggaatt acgtcaccac ctgcgccctt    26351

cgcccgacca tcatcatgag caaagagatt cccacgcctt acatgtggag ctaccagccc    26411

cagatgggcc tggccgccgg cgccgcccag gactactcca cccgcatgaa ctggctcagt    26471

gccgggcccg cgatgatctc acgggtgaat gacatccgcg cccaccgaaa ccagatactc    26531

ctagaacagt cagcgatcac cgccacgccc cgccatcacc ttaatccgcg taattggccc    26591

gccgccctgg tgtaccagga aattccccag cccacgaccg tactacttcc gcgagacgcc    26651

caggccgaag tccagctgac taactcaggt gtccagctgg ccggcggcgc caccctgtgt    26711

cgtcaccgcc ccgctcaggg tataaagcgg ctggtgatcc gaggcagagg cacacagctc    26771

aacgacgagg tggtgagctc ttcgctgggt ctgcgacctg acggagtctt ccaactcgcc    26831

ggatcgggga gatcttcctt cacgcctcgt caggccgtcc tgactttgga gagttcgtcc    26891

tcacagcccc gctcgggcgg catcggcact ctccagttcg tggaggagtt cactccctcg    26951

gtctacttca acccccttctc cggctccccc ggccactacc cggacgagtt catcccgaac    27011

ttcgacgcca tcagcgagtc ggtggacggc tacgattgaa tgtcccatgg tggcgtggct    27071

gacctagctc ggcttcgaca cctggaccac tgccgccgct tccgctgctt cgctcgggat    27131

ctcgccgagt ttgcctactt tgagctgccc gaggagcacc ctcagggccc ggcccacgga    27191

gtgcggatca tcgtcgaagg gggtctcgac tcccacctgc ttcggatctt cagccagcga    27251

ccgatcctgg tcgagcgcga gcaaggacag acccgtctga ccctgtactg catctgcaac    27311

caccccggcc tgc atg aaa gtc ttt gtt gtc tgc tgt gta ctg agt ata        27360
              Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile
              690                 695                 700

ata aaa gct gag atc agc gac tac tcc gga ctc gat tgt ggt gtt cct      27408
Ile Lys Ala Glu Ile Ser Asp Tyr Ser Gly Leu Asp Cys Gly Val Pro
            705                 710                 715

gct atc aac cag tcc ctg ttc ttc acc ggg aac gag acc gag ctc cag      27456
Ala Ile Asn Gln Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln
        720                 725                 730

ctc cag tgt aag ccc cac aag aag tat ctc acc tgg ctg ttc cag ggc      27504
Leu Gln Cys Lys Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly
    735                 740                 745

tcc ccg atc gcc gtt gtc aac cac tgc gac aac gac gga gtc ctg ctg      27552
Ser Pro Ile Ala Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu
750                 755                 760                 765

agc ggc cct gcc aac ctt act ttt tcc acc cgc aga agc aag ctc cag      27600
Ser Gly Pro Ala Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln
                770                 775                 780
```

```
ctc ttc caa ccc ttc ctc ccc ggg acc tat cag tgc gtc tcg gga ccc      27648
Leu Phe Gln Pro Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro
            785                 790                 795

tgc cat cac acc ttc cac ctg atc ccg aat acc aca gcg ccg ctc ccc      27696
Cys His His Thr Phe His Leu Ile Pro Asn Thr Thr Ala Pro Leu Pro
        800                 805                 810

gct act aac aac caa act acc cac caa cgc cac cgt cgc gac ctt tcc      27744
Ala Thr Asn Asn Gln Thr Thr His Gln Arg His Arg Arg Asp Leu Ser
    815                 820                 825

tct gaa tct aat acc act acc gga ggt gag ctc cga ggt cga cca acc      27792
Ser Glu Ser Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr
830                 835                 840                 845

tct ggg att tac tac ggc ccc tgg gag gtg gtg ggg tta ata gcg cta      27840
Ser Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu
                850                 855                 860

ggc cta gtt gtg ggt ggg ctt ttg gct ctc tgc tac cta tac ctc cct      27888
Gly Leu Val Val Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro
            865                 870                 875

tgc tgt tcg tac tta gtg gtg ctg tgt tgc tgg ttt aag aaa tgg ggc      27936
Cys Cys Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly
        880                 885                 890

aga tca ccc tagtgagctg cggtgtgctg gtggcggtgc tttcgattgt              27985
Arg Ser Pro
    895

gggactgggc ggcgcggctg tagtgaagga ggagaaggcc gatccctgct tgcatttcaa    28045

tcccgacaaa tgccagctga gttttcagcc cgatggcaat cggtgcgcgg tgctgatcaa    28105

gtgcggatgg gaatgcgaga acgtgagaat cgagtacaat aacaagactc ggaacaatac    28165

tctcgcgtcc gtgtggcagc ccggggaccc cgagtggtac accgtctctg tccccggtgc    28225

tgacggctcc ccgcgcaccg tgaacaatac tttcattttt gcgcacatgt gcgacacggt    28285

catgtggatg agcaagcagt acgatatgtg gccccccacg aaggagaaca tcgtggtctt    28345

ctccatcgct tacagcctgt gcacggtgct aatcaccgct atcgtgtgcc tgagcattca    28405

catgctcatc gctattcgcc ccagaaataa tgccgaaaaa gaaaaacagc cataacacgt    28465

ttttcacac acctttttca gaccatggcc tctgttaaat ttttgctttt atttgccagt    28525

ctcattactg ttataagtaa tgagaaactc actatttaca ttggcactaa ccacactcta    28585

gaaggaattc caaaatcctc atggtattgc tattttgatc aagatccaga cttaactata    28645

gaactgtgtg gtaacaatgg acaaaataca agcattcatt taattaactt taaatgcgga    28705

gacgatttga aattaattaa tatcactaaa gagtatggag gtatgtatta ctatgttgca    28765

gaaaataaca acatgcagtt ttatgaagtt actgtaacta atcccaccac acctagaaca    28825

acaacaacca ccacaaaaac tacacctgtt accactatgc agctcgctac caataacatt    28885

tttgccatgc gtcaaatggt caacaatagc actcaaccca ccccacccag tgaggaaatt    28945

cccaaatcca tgattggcat tattgttgct gtagtggtgt gcatgttgat catcgccttg    29005

tgcatggtgt actatgcctt ctgctacaga aagcacagac tgaacgacaa gctggaacac    29065

ttactaagtg ttgaatttta atttttaga accatgaaga tcctaggcct tttagttttt    29125
```

tctatcatta cctctgctct ttgtgaatca gtggataaag atgttactat taccactggt 29185
tctaactata cactgaaagg gccaccctca ggtatgcttt cgtggtattg ctattttgga 29245
aatgacgcag agcaaactga gctttgcaat gcaatgaaag gccaaatgcc aaccacaaaa 29305
attaaacata aatgtgatgg tagtgatcta atactactca atgtcacgaa agcatatggt 29365
ggcagttatt catgccctgc tgccaacact gaggatatga ttttttacaa agtggaagtg 29425
gttgatccca ctactccacc acccaccacc acaactactc acaccacaca cacagaacaa 29485
accacagcag aggaggcagc aaagttagcc ttgcaggtcc aagacagttc atttgttggc 29545
attaccccta cacccgatca gcggtgtccg gggctgctcg tcagcggcat tgtcggtgtg 29605
ctttcgggat tagcagtcat aatcatctgc atgttcattt ttgcttgctg ctatagaagg 29665
ctttaccgac aaaaatcaga cccactgctg aacctctatg tttaattttt tccagagcca 29725
tgaaggcagt tagcactcta atttttgtt ctttgattgg cactgttttt agtgttagct 29785
ttttgaaaca aattaatgtt actgaggggg aaaatgtgac actggtaggc gtagaaggtg 29845
ctcaaaatac cacctggaca aaataccacc tcgatgggtg gaaagatatt tgcaattgga 29905
gtgtcattac ttacacatgt gagggagtta atttgaccat agtcaatgcc agccaaaatc 29965
agaagggttg gattaaaggg caatctgtta gtgttaccag ccaggggtac tatacccagc 30025
atactcttat ttatgacatt gtagttatac cgctgccaac gcctagccca cctagcacca 30085
ctacacaaac aacccacact acacagacaa ccacatacag tacatcaaat caacctacca 30145
ccactacagc agcagaggtt gccagctcgt ctggggtccg agtggcattt ttgttattgg 30205
ccccatctag cagtcccact gctagtacca atgagcagac tactgatttt ttgtccactg 30265
tcgagagcca caccacagct acctcgagtg ccttctctag caccgccaat ctctcctcgc 30325
tttcctctac accaatcagt cccgctacta ctcctagccc cgctcctctt cccactcccc 30385
tgaagcaaac agacggcggc atgcaatggc agatcaccct gctcattgtg atcgggttgg 30445
tcatcctggc cgtgttgctc tactacatct tctgccgccg cattcccaac gcgcaccgca 30505
agccggccta caagcccatc gttatcgggc agccggagcc gcttcaggtg gaaggggtc 30565
taaggaatct tctcttctct tttacagtat ggtgattgaa ctatgattcc tagacaattc 30625
ttgatcacta ttcttatctg cctcctccaa gtctgtgcca ccctcgctct ggtggccaac 30685
gccagtccag actgtattgg gcccttcgcc tcctacgtgc tctttgcctt cgtcacctgc 30745
atctgctgct gtagcatagt ctgcctgctt atcaccttct tccagttcat tgactggatc 30805
tttgtgcgca tcgcctacct gcgccaccac ccccagtacc gcgaccagcg agtggcgcgg 30865
ctgctcaggc tcctctgata agcatgcggg ctctgctact tctcgcgctt ctgctgttag 30925
tgctcccccg tcccgtcgac ccccggtccc ccactcagtc ccccgaggag gtccgcaaat 30985
gcaaattcca agaaccctgg aaattcctca aatgctaccg ccaaaaatca gacatgcatc 31045
ccagctggat catgatcatt gggatcgtga acattctggc ctgcaccctc atctcctttg 31105
tgatttaccc ctactttgac tttggttgga actcgccaga ggcgctctat ctcccgcctg 31165

```
aacctgacac accaccacag caacctcagg cacacgcact accaccacca cagcctaggc    31225

cacaatacat gcccatatta gactatgagg ccgagccaca gcgacccatg ctccccgcta    31285

ttagttactt caatctaacc ggcggag atg act gac cca ctg gcc aac aac aac    31339
                            Met Thr Asp Pro Leu Ala Asn Asn Asn
                                          900                 905

gtc aac gac ctt ctc ctg gac atg gac ggc cgc gcc tcg gag cag cga      31387
Val Asn Asp Leu Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln Arg
                910                 915                 920

ctc gcc caa ctt cgc att cgc cag cag cag gag aga gcc gtc aag gag      31435
Leu Ala Gln Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys Glu
            925                 930                 935

ctg cag gac ggc ata gcc atc cac cag tgc aag aaa ggc atc ttc tgc      31483
Leu Gln Asp Gly Ile Ala Ile His Gln Cys Lys Lys Gly Ile Phe Cys
        940                 945                 950

ctg gtg aaa cag gcc aag atc tcc tac gag gtc acc cag acc gac cat      31531
Leu Val Lys Gln Ala Lys Ile Ser Tyr Glu Val Thr Gln Thr Asp His
    955                 960                 965

cgc ctc tcc tac gag ctc ctg cag cag cgc cag aag ttc acc tgc ctg      31579
Arg Leu Ser Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe Thr Cys Leu
970                 975                 980                 985

gtc gga gtc aac ccc atc gtc atc acc cag cag tcg gga gat acc  aag     31627
Val Gly Val Asn Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr  Lys
                990                 995                 1000

ggg tgc atc cac  tgc tcc tgc gac tcc  ccc gac tgc gtc cac  act       31672
Gly Cys Ile His  Cys Ser Cys Asp Ser  Pro Asp Cys Val His  Thr
            1005                1010                1015

ctg atc aag acc  ctc tgc ggc ctc cgc  gac ctc ctc ccc atg  aac       31717
Leu Ile Lys Thr  Leu Cys Gly Leu Arg  Asp Leu Leu Pro Met  Asn
            1020                1025                1030

taatcacccc cttatccagt gaa                                           31740


<210>  21
<211>  505
<212>  PRT
<213>  Unknown

<220>
<223>  Synthetic Construct

<400>  21

Met Glu Ser Arg Asn Pro Phe Gln Gln Gly Leu Pro Ser Gly Leu Leu
1               5                   10                  15


Ser Ser Ser Phe Val Glu Asn Met Glu Val Pro Ala Pro Glu Cys Asn
            20                  25                  30


Leu Arg Leu Leu Ala Ser Thr Ala Gly Arg His Ala Glu Asp Pro Glu
        35                  40                  45


Ser Pro Val Thr Pro Gly Thr Pro Thr Pro Pro Ala Ala Ala Ala Gly
    50                  55                  60
```

```
Ala Ala Ala Arg Gly Gly Gly Gly Gly Pro Arg Arg Glu Pro Glu Ser
65                  70                  75                  80

Arg Ser Gly Pro Ser Gly Gly Gly Gly Gly Gly Val Ala Asp Leu Phe
                85                  90                  95

Pro Glu Leu Arg Arg Val Leu Thr Arg Ser Ser Ser Gly Arg Glu Arg
            100                 105                 110

Gly Ile Lys Arg Glu Arg His Glu Glu Thr Ser His Arg Thr Glu Leu
        115                 120                 125

Thr Val Ser Leu Met Ser Arg Arg Arg Pro Glu Ser Val Trp Trp His
    130                 135                 140

Glu Val Gln Ser Gln Gly Ile Asp Glu Val Ser Val Met His Glu Lys
145                 150                 155                 160

Tyr Ser Leu Glu Gln Val Lys Thr Cys Trp Leu Glu Pro Glu Asp Asp
                165                 170                 175

Trp Glu Val Ala Ile Arg Asn Tyr Ala Lys Leu Ala Leu Lys Pro Asp
            180                 185                 190

Lys Lys Tyr Lys Ile Thr Lys Leu Ile Asn Ile Arg Asn Ser Cys Tyr
        195                 200                 205

Ile Ser Gly Asn Gly Ala Glu Val Glu Ile Ser Thr Gln Glu Arg Val
    210                 215                 220

Ala Phe Arg Cys Cys Met Met Asn Met Tyr Pro Gly Val Val Gly Met
225                 230                 235                 240

Glu Gly Val Thr Phe Met Asn Ala Arg Phe Arg Gly Asp Gly Tyr Asn
                245                 250                 255

Gly Val Val Phe Met Ala Asn Thr Lys Leu Thr Val His Gly Cys Ser
            260                 265                 270

Phe Phe Gly Phe Asn Asn Met Cys Ile Glu Ala Trp Gly Ser Val Ser
        275                 280                 285

Val Arg Gly Cys Ser Phe Ser Ala Asn Trp Met Gly Val Val Gly Arg
    290                 295                 300

Thr Lys Ser Lys Val Ser Val Lys Lys Cys Leu Phe Glu Arg Cys His
305                 310                 315                 320

Met Gly Val Met Ser Glu Gly Glu Ala Lys Val Lys His Cys Ala Ser
                325                 330                 335

Thr Glu Thr Gly Cys Phe Val Leu Ile Lys Gly Asn Ala Gln Val Lys
```

```
            340                 345                 350

His Asn Met Ile Cys Gly Ala Ser Asp Glu Arg Gly Tyr Gln Met Leu
        355                 360                 365

Thr Cys Ala Gly Gly Asn Ser His Met Leu Ala Thr Val His Val Ala
    370                 375                 380

Ser His Pro Arg Lys Thr Trp Pro Glu Phe Glu His Asn Val Met Thr
385                 390                 395                 400

Arg Cys Asn Val His Leu Gly Ser Arg Arg Gly Met Phe Met Pro Tyr
                405                 410                 415

Gln Cys Asn Met Gln Phe Val Lys Val Leu Leu Glu Pro Asp Ala Met
            420                 425                 430

Ser Arg Val Ser Leu Thr Gly Val Phe Asp Met Asn Val Glu Met Trp
        435                 440                 445

Lys Ile Leu Arg Tyr Asp Glu Ser Lys Thr Arg Cys Arg Ala Cys Glu
    450                 455                 460

Cys Gly Gly Lys His Ala Arg Leu Gln Pro Val Cys Val Glu Val Thr
465                 470                 475                 480

Glu Asp Leu Arg Pro Asp His Leu Val Leu Ser Cys Asn Gly Thr Glu
                485                 490                 495

Phe Gly Ser Ser Gly Glu Glu Ser Asp
            500                 505


<210>  22
<211>  184
<212>  PRT
<213>  Unknown

<220>
<221>  misc_feature
<222>  (84)..(84)
<223>  The 'Xaa' at location 84 stands for Arg, or Gln.

<220>
<223>  Synthetic Construct

<400>  22

Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Pro Glu
1               5                   10                  15

Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Met Glu Asp
            20                  25                  30

Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu Glu
        35                  40                  45
```

```
Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala Ala Ala Arg Pro
    50                  55                  60

Ser Ser Ser Ala Glu Glu Glu Lys Ala Ser Ser Thr Asp Thr Ile Ser
65                  70                  75                  80

Ala Pro Gly Xaa Gly Arg Gly Gly Arg Ala His Ser Arg Trp Asp Glu
                85                  90                  95

Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu Arg
            100                 105                 110

Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser Cys
        115                 120                 125

Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu Leu
    130                 135                 140

Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr Arg
145                 150                 155                 160

His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala Glu Thr Gln
                165                 170                 175

Gln Gln Gln Lys Thr Ser Gly Ser
            180
```

<210> 23
<211> 207
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 23

```
Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1               5                   10                  15

Ile Ser Asp Tyr Ser Gly Leu Asp Cys Gly Val Pro Ala Ile Asn Gln
            20                  25                  30

Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys
        35                  40                  45

Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala
    50                  55                  60

Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala
65                  70                  75                  80

Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro
                85                  90                  95
```

```
Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr
            100                 105                 110

Phe His Leu Ile Pro Asn Thr Thr Ala Pro Leu Pro Ala Thr Asn Asn
        115                 120                 125

Gln Thr Thr His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn
    130                 135                 140

Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr
145                 150                 155                 160

Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Val
                165                 170                 175

Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr
            180                 185                 190

Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
        195                 200                 205
```

<210> 24
<211> 135
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 24

```
Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp Leu Leu Leu Asp
1               5                   10                  15

Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg
            20                  25                  30

Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Gly Ile Ala Ile
        35                  40                  45

His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile
    50                  55                  60

Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser Tyr Glu Leu Leu
65                  70                  75                  80

Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val
                85                  90                  95

Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys
            100                 105                 110

Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu
```

115 120 125

Arg Asp Leu Leu Pro Met Asn
130 135

<210> 25
<211> 36603
<212> DNA
<213> Unknown

<220>
<223> Simian adenovirus A1320

<220>
<221> CDS
<222> (1599)..(2174)
<223> E1b\19K

<220>
<221> misc_feature
<222> (3989)..(5610)
<223> IVa2 complement (3989..5319,5599..5610)

<220>
<221> misc_feature
<222> (5599)..(13864)
<223> pol complement (5599..8661,13856..13864)

<220>
<221> misc_feature
<222> (6489)..(6489)
<223> is c or g

<220>
<221> misc_feature
<222> (8469)..(13864)
<223> pTP complement (8469..10406,13856..13864)

<220>
<221> CDS
<222> (10862)..(12034)
<223> 52K

<220>
<221> CDS
<222> (12061)..(13821)
<223> pIIIa

<220>
<221> CDS
<222> (13904)..(15529)
<223> penton

<220>
<221> CDS
<222> (15536)..(16117)
<223> pVII

<220>
<221> CDS
<222> (16165)..(17208)
<223> V

<220>
<221> CDS
<222> (17236)..(17466)

<223> pX

<220>
<221> CDS
<222> (17539)..(18270)
<223> pVI

<220>
<221> CDS
<222> (18377)..(21205)
<223> hexon

<220>
<221> CDS
<222> (21227)..(21850)
<223> protease

<220>
<221> misc_feature
<222> (21935)..(23470)
<223> DBP   complement (21935..23470)

<220>
<221> CDS
<222> (23499)..(25892)
<223> 100K

<220>
<221> CDS
<222> (26518)..(27198)
<223> pVIII

<220>
<221> CDS
<222> (27202)..(27519)
<223> E3\12.5K

<220>
<221> CDS
<222> (28081)..(28608)
<223> E3\gp19K

<220>
<221> CDS
<222> (28641)..(29240)
<223> E3\CR1-beta

<220>
<221> CDS
<222> (29257)..(29868)
<223> E3\CR1-gamma

<220>
<221> CDS
<222> (29886)..(30761)
<223> E3\CR1-delta

<220>
<221> CDS
<222> (31053)..(31481)
<223> E3\RID-beta

<220>
<221> CDS
<222> (32178)..(33512)
<223> fiber

<220>
<221> misc_feature

<222> (33605)..(34938)
<223> E4\orf6/7 complement (33605..33855,34588..34938)

<220>
<221> misc_feature
<222> (33856)..(34758)
<223> E4\orf6 complement (33856..34758)

<220>
<221> misc_feature
<222> (34667)..(35029)
<223> E4\orf4 complement (34667..35029)

<220>
<221> misc_feature
<222> (34919)..(34938)
<223> end of E4\orf6/7

<400> 25
catcatcaat aatatacctc aaacttttg tgcgcgttaa tatgcaaatg aggcgtttga 60

atttggggat gcggggcggt gattggctgt gggaaaggcg accgttaggg gcggggcggg 120

tgacgttttg atgacgtgtt tgtgaggcgg agccggtttg caagttctcg tgggaaaagt 180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca 240

ggaaatgagg tgtttctggg cggatgcaag tgaaaacggg ccattttcgc gcgaaaactg 300

aatgaggaag tgaaaatctg agtaatttcg cgtttatggc agggaggagt atttgccgag 360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtgtttt tcacctaaat 420

ttccgcgtac ggtgtcaaag tccggtgttt ttacgtaggt gtcagctgat cgccagggta 480

tttaaacctg cgctctccag tcaagaggcc actcttgagt gccagcgaga agagttttct 540

cctccgcgcc gcgagtcaga tctacacttt gaaagatgag gcacctgaga gacctgcccg 600

gtaatgtttt cctggctact gggaacgaga ttctggaact ggtggtggac gccatgatgg 660

gtgacgaccc tcctgagccc cctaccccat ttgaggcgcc ttcgctgtac gatttgtatg 720

atctggaggt ggatgtgccc gagaacgacc ccaacgagga ggcggtgaat gatttgttta 780

gcgatgccgc gctgctggcc gccgagcagg ctaatacgga ctctggctca gacagcgatt 840

cctctctcca taccacgaga cccggcagag gtgagaaaaa gatccccgag cttaaagggg 900

aagagctcga cctgcgctgc tatgaggaat gcttgcctcc gagcgatgat gaggaggacg 960

aggaggcgat tcgagctgca gcgagcgagg gagtgaaagc tgcgggcgag agctttagcc 1020

tggactgtcc tactctgccc ggacacggct gtaagtcttg tgaatttcat cgcatgaata 1080

ctggagataa gaatgtgatg tgtgccctgt gctatatgag agcttacaac cattgtgttt 1140

acagtaagtg tgattaactt tagctgggaa ggcagagggt gactgggtgc tgactggttt 1200

atttatgtat gtattcttta tgtgtaggtc ccgtctctga cgtagatgag acccccactt 1260

cagagtgcat ttcatcaccc ccagaaattg gcgaggaacc gcccgaagat attattcata 1320

gaccagttgc agtgagagtc accgggcgga gagcagctgt ggagagtttg gatgacttgc 1380

tacagggtgg ggatgaacct ttggacttgt gtacccggaa acgccccagg cactaagtgc 1440

cacacatgtg tgtttactta aggtgatgtc agtatttata gggtgtggag tgcaataaaa 1500

```
tccgtgttga ctttaagtgc gtggtttatg actcaggggt ggggactgtg ggtatataag     1560

caggtgcaga cctgtgtggt cagttcagag caggactc atg gag atc tgg acg gtc     1616
                                        Met Glu Ile Trp Thr Val
                                        1               5

ttg gaa gac ttt cac cag act aga cag ctg cta gag aac tca tcg gag       1664
Leu Glu Asp Phe His Gln Thr Arg Gln Leu Leu Glu Asn Ser Ser Glu
            10                  15                  20

gga gtc tct tac ctg tgg aga ttc tgc ttc ggt ggg cct cta gct aag       1712
Gly Val Ser Tyr Leu Trp Arg Phe Cys Phe Gly Gly Pro Leu Ala Lys
        25                  30                  35

cta gtc tat agg gcc aaa cag gat tat aag gat caa ttt gag gat att       1760
Leu Val Tyr Arg Ala Lys Gln Asp Tyr Lys Asp Gln Phe Glu Asp Ile
    40                  45                  50

ttg aga gag tgt cct gat att ttt gac tct ctc aac ttg ggc cat cag       1808
Leu Arg Glu Cys Pro Asp Ile Phe Asp Ser Leu Asn Leu Gly His Gln
55                  60                  65                  70

tct cac ttt aac cag agt att ctg aga gcc ctt gac ttt tct act cct       1856
Ser His Phe Asn Gln Ser Ile Leu Arg Ala Leu Asp Phe Ser Thr Pro
                75                  80                  85

ggc aga act acc gcc gcg gta gcc ttt ttt gcc ttt atc ctt gac aaa       1904
Gly Arg Thr Thr Ala Ala Val Ala Phe Phe Ala Phe Ile Leu Asp Lys
            90                  95                  100

tgg agt caa gaa acc cat ttc agc agg gat tac cgt ctg gac tgc tta       1952
Trp Ser Gln Glu Thr His Phe Ser Arg Asp Tyr Arg Leu Asp Cys Leu
        105                 110                 115

gca gta gct ttg tgg aga aca tgg agg tgc cag cgc ctg aat gca atc       2000
Ala Val Ala Leu Trp Arg Thr Trp Arg Cys Gln Arg Leu Asn Ala Ile
    120                 125                 130

tcc ggc tac ttg cca gta cag ccg gta gac acg ctg agg atc ctg agt       2048
Ser Gly Tyr Leu Pro Val Gln Pro Val Asp Thr Leu Arg Ile Leu Ser
135                 140                 145                 150

ctc cag tca ccc cag gaa cac caa cgc cgc cag cag ccg cag cag gag       2096
Leu Gln Ser Pro Gln Glu His Gln Arg Arg Gln Gln Pro Gln Gln Glu
                155                 160                 165

cag cag caa gag gag gag gag gac cga gaa gag aac ccg aga gcc ggt       2144
Gln Gln Gln Glu Glu Glu Glu Asp Arg Glu Glu Asn Pro Arg Ala Gly
            170                 175                 180

ctg gac cct ccg gtg gcg gag gag gag gag tagctgactt gtttcccgag         2194
Leu Asp Pro Pro Val Ala Glu Glu Glu Glu
        185                 190

ctgcgccggg tgctgactag gtcttccagt ggacgggaga gggggattaa gcgggagagg     2254

catgaggaga ctagtcacag aactgaactg actgtcagtc tgatgagccg caggcgccca     2314

gaatcggtgt ggtggcatga ggttcagtcg caggggatag atgaggtctc ggtaatgcat     2374

gagaaatatt ccctagaaca agtcaagact tgttggttgg agcccgagga tgattgggag     2434

gtagccatca ggaattatgc caagttggct ctgaagccag acaagaagta caagattacc     2494

aagttgatta atatcagaaa ttcctgctac atttcgggga atggggccga ggtggagatc     2554

agtacccagg agagggtggc cttcagatgc tgcatgatga atatgtaccc gggggtggtg     2614

ggcatggagg gagttacctt tatgaacgcg aggtttaggg gtgatgggta taatggggtg     2674
```

gtctttatgg ccaacaccaa gctgacagtg cacggatgct ccttctttgg cttcaataac 2734

atgtgcatcg aggcctgggg cagtgtttca gtgaggggat gcagcttttc agccaactgg 2794

atgggggtcg tgggcagaac caagagcaag gtgtcagtga agaaatgcct gttcgagagg 2854

tgccacctgg gggtgatgag cgagggcgaa gccaaagtta aacactgcgc ctctaccgag 2914

acgggctgct ttgtgctgat caagggcaat gcccaagtca agcataacat gatctgtggg 2974

gcctcggatg agcgcggcta ccagatgctg acctgcgccg gtgggaacag ccatatgctg 3034

gccaccgtgc atgtggcctc gcacccccgc aagacatggc ccgagttcga gcacaacgtc 3094

atgacccgct gcaatgtgca cctgggctcc cgccgaggca tgttcatgcc ataccagtgc 3154

aacatgcaat ttgtgaaggt gctgctggag cccgatgcca tgtccagagt gagcctgacg 3214

ggggtgtttg acatgaatgt ggagctgtgg aaaattctga gatatgatga atccaagacc 3274

aggtgccggg cctgcgaatg cggaggcaag cacgccaggc ttcagcccgt gtgtgtggag 3334

gtgacggagg acctgcgacc cgatcatttg gtgttgtcct gcaacgggac ggagttcggc 3394

tccagcgggg aagaatctga ctagagtgag tagtgtttgg gggtgggtgg gagcctgcat 3454

gatgggcaga atgactaaaa tctgtgtttt tctgcgcagc agcatgagcg gaagcgcctc 3514

ctttgaggga ggggtattca gcccttatct gacggggcgt ctcccctcct gggctggagt 3574

gcgtcagaat gtgatgggat ccacggtgga cggccggccc gtgcagcccg cgaactcttc 3634

aaccctgacc tacgcgaccc tgagctcctc gtccgtggac gcagctgccg ccgcagctgc 3694

tgcttccgcc gccagcgccg tgcgcggaat ggccctgggt gccggctact acagctctct 3754

ggtggccaac tcgagttccg ccaataatcc cgccagcctg aacgaggaga agctgctgct 3814

gctgatggcc cagctcgagg ccctgaccca gcgcctgggc gagctgaccc agcaggtggc 3874

tcagctgcag gcggagacgc gggccgcggt tgccacggtg aaaaccaaat aaaaaatgaa 3934

tcaataaata aacggaaacg gttgttgatt ttaacacaga gtcttgaatc tttatttgat 3994

ttttcgcgcg cggtaggccc tggaccaccg gtctcgatca ttgagcaccc ggtggatctt 4054

ttccaggacc cggtagaggt gggcttggat gttgaggtac atgggcatga gcccgtcccg 4114

ggggtggagg tagctccact gcagggcctc gtgctcgggg gtggtgttgt aaatcaccca 4174

gtcatagcag gggcgcaggg cgtggtgctg cacgatgtcc ttgaggagga gactgatggc 4234

cacgggcagt cccttggtgt aggtgttgac gaacctgttg agctgggagg gatgcatgcg 4294

gggggagatg agatgcatct tggcctggat cttgagattg gcgatgttcc cacccagatc 4354

ccgccggggg ttcatgttgt gcaggaccac cagcacggtg tatccggtgc acttggggaa 4414

tttgtcatgc aacttggaag ggaaggcgtg aaagaatttg gagacgccct tgtgaccgcc 4474

caggttttcc atgcactcat ccatgatgat ggcgatgggc ccgtgggcgg cggcctgggc 4534

aaagacgttt cgggggtcgg acacatcgta gttgtggtcc tgggtgagct cgtcataggc 4594

cattttaatg aatttggggc ggagggtgcc cgactggggg acaaaggtgc cctcgatccc 4654

gggggcgtag ttgccctcgc agatctgcat ctcccaggcc ttgagctcgg agggggggat 4714

catgtccacc tgcggggcga tgaaaaaaac ggtttccggg gcgggggaga tgagctgggc 4774

cgaaagcagg ttccggagca gctgggactt gccgcagccg gtggggccgt agatgacccc 4834

gatgaccggc tgcaggtggt agttgaggga gagacagctg ccgtcctcgc ggaggagggg 4894

ggccacctcg ttcatcatct cgcgcacatg catgttctcg cgcacgagtt ccgccaggag 4954

gcgctcgccc cccagcgaga ggagctcttg cagcgaggcg aagttttca gcggcttgag 5014

tccgtcggcc atgggcattt tggagagggt ctgttgcaag agttccagac ggtcccagag 5074

ctcggtgatg tgctctaggg catctcgatc cagcagacct cctcgtttcg cgggttgggg 5134

cggctgcggg agtagggcac caggcgatgg gcgtccagcg aggccagggt ccggtccttc 5194

cagggtcgca gggtccgcgt cagcgtggtc tccgtcacgg tgaaggggtg cgcgccgggc 5254

tgggcgcttg cgagggtgcg cttcaggctc atccggctgg tcgagaaccg ctcccggtcg 5314

gtgccctgcg cgtcggccag gtagcaattg agcatgagtt cgtagttgag cgcctcggcc 5374

gcgtggccct tggcgcggag cttacctttg gaagtgtgtc cgcagacggg acagaggagg 5434

gacttgaggg cgtagagctt gggggcgagg aagacggact cgggggcgta ggcgtccgcg 5494

ccgcagctgg cgcagacggt ctcgcactcc acgagccagg tgaggtcggg gcggtcgggg 5554

tcaaaaacga ggtttcctcc gtgctttttg atgcgtttct tacctctggt ctccatgagc 5614

tcgtgtcccc gctgggtgac aaagaggctg tccgtgtccc cgtagaccga ctttatgggc 5674

cggtcctcga gcggggtgcc gcggtcctcg tcgtagagga accccgccca ctccgagacg 5734

aaggcccggg tccaggccag cacgaaggag gccacgtggg aggggtagcg gtcgttgtcc 5794

accagcgggt ccaccttctc cagggtatgc aagcacatgt ccccctcgtc cacatccagg 5854

aaggtgattg gcttgtaagt gtaggccacg tgaccggggg tcccggccgg gggggtataa 5914

aaggggggcgg gcccctgctc gtcctcactg tcttccggat cgctgtccag gagcgccagc 5974

tgttggggta ggtattccct ctcgaaggcg ggcatgacct cggcactcag gttgtcagtt 6034

tctagaaacg aggaggattt gatattgacg gtgccgttgg agacgccttt catgagcccc 6094

tcgtccatct ggtcagaaaa gacgatcttt ttgttgtcga gcttggtggc gaaggagccg 6154

tagagggcat tggagaggag cttggcgatg gagcgcatgg tctggttctt ttccttgtcg 6214

gcgcgctcct tggcggcgat gttgagctgc acgtactcgc gcgccacgca cttccattcg 6274

gggaagacgg tggtgagctc gtcgggcacg attctgaccc gccagccgcg gttgtgcagg 6334

gtgatgaggt ccacgctggt ggccacctcg ccgcgcaggg gctcgttggt ccagcagagg 6394

cgcccgccct tgcgcgagca gaaggggggc agcgggtcca gcatgagctc gtcgggggggg 6454

tcggcgtcca cggtgaagat gccgggcagg agctcggggt cgaagtagct gatgcaggtg 6514

cccagatcgt ccagcgccgc ttgccagtcg cgcacggcca gcgcgcgctc gtaggggctg 6574

aggggcgtgc cccagggcat ggggtgcgtg agcgcggagg cgtacatgcc gcagatgtcg 6634

tagacgtaga ggggctcctc gaggacgccg atgtaggtgg ggtagcagcg ccccccgcgg 6694

atgctggcgc gcacgtagtc gtacagctcg tgcgagggcg cgaggagccc cgcgccgagg 6754

ttggagcgct gcggctttc ggcgcggtag acgatctggc ggaagatggc gtgggagttg 6814

gaggagatgg tgggcctctg gaagatgttg aagtgggcgt ggggcaggcc gaccgagtcc 6874

ctgatgaagt gggcgtagga gtcctgcagc ttggcgacga gctcggcggt gacgaggacg 6934

tccagggcgc agtagtcgag ggtctcttgg atgatgtcgt acttgagctg gcccttctgc 6994

ttccacagct cgcggttgag aaggaactct tcgcggtcct tccagtactc ttcgaggggg 7054

aacccgtcct gatcggcacg gtaagagccc accatgtaga actggttgac ggccttgtag 7114

gcgcagcagc ccttctccac ggggagggca taagcttgcg cggccttgcg cagggaggtg 7174

tgggtgaggg cgaaggtgtc gcgcaccatg accttgagga actggtgctt gaagtcgagg 7234

tcgtcgcagc cgccctgctc ccagagttgg aagtccgtgc gcttcttgta ggcggggttg 7294

ggcaaagcga aagtaacatc gttgaagagg atcttgcccg cgcggggcat gaagttgcga 7354

gtgatgcgga aaggctgggg cacctcggcc cggttgttga tgacctgggc ggcgaggacg 7414

atctcgtcga agccgttgat gttgtgcccg acgatgtaga gttccacgaa tcgcgggcgg 7474

cccttgacgt ggggcagctt cttgagctcg tcgtaggtga gctcggcggg gtcgctgagt 7534

ccgtgctgct caagggccca gtcggcgacg tgggggttgg cgctgaggaa ggaagtccag 7594

agatccacgg ccagggcggt ttgcaagcgg tcccggtact gacggaactg ctggcccacg 7654

gccatttttt cgggggtgat gcagtagaag gtgcgggggt cgccgtgcca gcggtcccac 7714

ttgagctgga gggcgaggtc gtgggcgagc tcgacaagcg gcgggtcccc ggagagtttc 7774

atgaccagca tgaaggggac gagctgcttg ccgaaggacc ccatccaggt gtaggtttcc 7834

acatcgtagg tgaggaagag cctttcggtg cgaggatgcg agccgatggg gaagaactgg 7894

atctcctgcc accagttgga ggaatggctg ttgatgtgat ggaagtagaa atgccgacgg 7954

cgcgccgagc actcgtgctt gtgtttatac aagcgtccgc agtgctcgca acgctgcacg 8014

ggatgcacgt gctgcacgag ctgtacctga gttcctttga cgaggaattt cagtgggcag 8074

tggagcgctg gcggctgcat ctggtgctgt actacgtcct ggccatcggc gtggccatcg 8134

tctgcctcga tggtggtcat gctgacgagc ccgcgcggga ggcaggtcca gacctcggct 8194

cggacgggtc ggagagcgag gacgagggcg cgcaggccgg agctgtccag ggtcctgaga 8254

cgctgcggag tcaggtcagt gggcagcggc ggcgcgcggt tgacttgcag gagcttttcc 8314

agggcgcgcg ggaggtccag atggtacttg atctccacgg cgccgttggt ggcgacgtcc 8374

acggcttgca gggtcccgtg cccctggggc gccaccaccg tgccccgttt cttcttgggc 8434

gctggcggcg ttggcgctgg ttccatgtcg gtcagaagcg gcggcgagga cgcgcgccgg 8494

gcggcagggg cggctcgggg cccggaggca ggggcggcag gggcacgtcg gcgccgcgcg 8554

cgggcaggtt ctggtactgc gcccggagaa gactggcgtg agcgacgacg cgacggttga 8614

cgtcctggat ctgacgcctc tgggtgaagg ccacgggacc cgtgagtttg aacctgaaag 8674

agagttcgac agaatcaatc tcggtatcgt tgacggcggc ctgccgcagg atctcttgca 8734

cgtcgcccga gttgtcctgg taggcgatct cggtcatgaa ctgctcgatc tcctcctcct 8794

gaaggtctcc gcggccggcg cgctcgacgg tggccgcgag gtcgttggag atgcgggcca 8854

```
tgagctgcga gaaggcgttc atgccggcct cgttccagac gcggctgtag accacggctc     8914
cgtcggggtc gcgcgcgcgc atgaccacct gggcaaggtt gagctcgacg tggcgcgtga     8974
agaccgcgta gttgcagagg cgctggtaga ggtagttgag cgtggtggcg atgtgctcgg     9034
tgacgaagaa gtacatgatc cagcggcgga gcggcatctc gctgacgtcg cccagggctt     9094
ccaagcgctc catggcctcg tagaagtcca cggcgaagtt gaaaaactgg gagttgcgcg     9154
ccgagacggt caactcctcc tccagaagac ggatgagctc tgcgatggtg gcgcgcacct     9214
cgcgctcgaa ggccccgggg ggctcctctt cttccatctc ctcctcctct tcctcctcca     9274
ctaacatctc ttctacttcc tcctcaggcg gtggtggcgg gggaggggggc ctgcgtcgcc     9334
ggcggcgcac gggcagacgg tcgatgaagc gctcgatggt ctcgccgcgc cggcgtcgca     9394
tggtctcggt gacggcgcgc ccgtcctcgc ggggccgcag cgtgaagacg ccgccgcgca     9454
tctccaggtg gccgggggggg tccccgttgg gcagggagag ggcgctgacg atgcatctta     9514
tcaattgccc cgtagggact ccgcgcaagg acctgagcgt ctcgagatcc acgggatctg     9574
aaaaccgttg aacgaaggct tcgagccagt cgcagtcgca aggtaggctg agcacggttt     9634
cttctggcgg gtcatgttgg ttggagggag cggggcgggc gatgctgctg gtgatgaagt     9694
tgaaataggc ggttctgaga cggcggatgg tggcgaggag caccaggtct ttgggcccgg     9754
cttgctggat gcgcagacgg tcggccatgc cccaggcgtg gtcctgacac ctggccaggt     9814
ccttgtagta gtcctgcatg agccgctcca cgggcacctc ctcctcgccc gcgcggccgt     9874
gcatgcgcgt gagcccgaag ccgcgctggg gctggacgag cgccaggtcg gcgacgacgc     9934
gctcggcgag gatggcctgc tggacctggg tgagggtggt ctggaagtcg tcgaagtcga     9994
cgaagcggtg gtaggctccg gtgttgatgg tgtaggagca gttggccatg acggaccagt    10054
tgacggtctg gtggccgggg cgcacgagct cgtggtactt gaggcgcgag taggcgcgcg    10114
tgtcgaagat gtagtcgttg caggtgcgca cgaggtactg gtatccgacg aggaagtgcg    10174
gcggcggctg gcggtagagc ggccatcgct cggtggcggg ggcgccgggc gcgaggtcct    10234
cgagcatgag gcggtggtag ccgtagatgt acctggacat ccaggtgatg ccggcggcgg    10294
tggtggaggc gcgcgggaac tcgcggacgc ggttccagat gttgcgcagc ggcaggaagt    10354
agttcatggt ggccgcggtc tggcccgtga ggcgcgcgca gtcgtggatg ctctagacat    10414
acgggcaaaa acgaaagcgg tcagcggctc gactccgtgg cctggaggct aagcgaacgg    10474
gttgggctgc gcgtgtaccc cggttcgagt ctctgctcga atcaggctgg agccgcagct    10534
aacgtggtac tggcactccc gtctcgaccc aagcctgcta acgaaacctc caggatacgg    10594
aggcgggtcg ttttttggcc ttggtcactg gtcatgaaaa actagtaagc gcggaaagcg    10654
gccgcccgcg atggctcgct gccgtagtct ggagaaagaa tcgccagggt tgcgttgcgg    10714
tgtgccccgg ttcgagactc agcgctcggc gccggccgga ttccgcggct aacgtgggcg    10774
tggctgcccc gtcgtttcca agacccctta gccagccgac ttctccagtt acggagcgag    10834
cccctctttt tcttgtgttt ttgccag atg cat ccc gta ctg cgg cag atg cgc    10888
                              Met His Pro Val Leu Arg Gln Met Arg
                                      195                 200
```

```
ccc cac cct cca cca caa ccg ccc cta ccg ccg cag cag cag caa cag      10936
Pro His Pro Pro Pro Gln Pro Pro Leu Pro Pro Gln Gln Gln Gln Gln
            205                 210                 215

ccg gcg ctt ctg ccc ccg ccc cag cag cag cca gcc act acc gcg gcg      10984
Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln Pro Ala Thr Thr Ala Ala
        220                 225                 230

gcc gcc gtg agc gga gcc ggc gtt cag tat gac ctg gcc ttg gaa gag      11032
Ala Ala Val Ser Gly Ala Gly Val Gln Tyr Asp Leu Ala Leu Glu Glu
    235                 240                 245

ggc gag ggg ctg gcg cgg ctg ggg gcg tcg tcg ccg gag cgg cac ccg      11080
Gly Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro
250                 255                 260                 265

cgc gtg cag atg aaa agg gac gct cgc gag gcc tac gtg ccc aag cag      11128
Arg Val Gln Met Lys Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln
                270                 275                 280

aac ctg ttc aga gac agg agc ggc gag gag ccc gag gag atg cgc gcc      11176
Asn Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala
            285                 290                 295

tcc cgc ttc cac gcg ggg cgg gag ctg cgg cgc ggc ctg gac cga aag      11224
Ser Arg Phe His Ala Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys
        300                 305                 310

cgg gtg ctg agg gac gag gat ttc gag gcg gac gag ctg acg ggg atc      11272
Arg Val Leu Arg Asp Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile
    315                 320                 325

agc ccc gcg cgc gcg cac gtg gcc gcg gcc aac ctg gtc acg gcg tac      11320
Ser Pro Ala Arg Ala His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr
330                 335                 340                 345

gag cag acc gtg aag gag gag agc aac ttc caa aaa tcc ttc aac aac      11368
Glu Gln Thr Val Lys Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn
                350                 355                 360

cac gtg cgc acg ctg atc gcg cgc gag gag gtg acc ctg ggc ctg atg      11416
His Val Arg Thr Leu Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met
            365                 370                 375

cat ctg tgg gac ctg ttg gag gcc atc gtg cag aac ccc acg agc aag      11464
His Leu Trp Asp Leu Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys
        380                 385                 390

ccg ctg acg gcg cag ctg ttt ctg gtg gtg cag cac agt cgg gac aac      11512
Pro Leu Thr Ala Gln Leu Phe Leu Val Val Gln His Ser Arg Asp Asn
    395                 400                 405

gag acg ttc agg gag gcg ctg ctg aat atc acc gag ccc gag ggc cgc      11560
Glu Thr Phe Arg Glu Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg
410                 415                 420                 425

tgg ctc ctg gac ctg gtg aac att ctg cag agc atc gtg gtg cag gag      11608
Trp Leu Leu Asp Leu Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu
                430                 435                 440

cgc ggg ctg ccg ctg tcc gag aag ctg gcg gcc atc aac ttc tcg gtg      11656
Arg Gly Leu Pro Leu Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val
            445                 450                 455

ctg agc ctg ggc aag tac tac gct agg aag atc tac aag acc ccg tac      11704
Leu Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr
        460                 465                 470
```

```
gtg ccc ata gac aag gag gtg aag atc gac ggg ttt tac atg cgc atg      11752
Val Pro Ile Asp Lys Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met
    475                 480                 485

acc ctg aaa gtg ctg acc ctg agc gac gat ctg ggg gtg tac cgc aac      11800
Thr Leu Lys Val Leu Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn
490                 495                 500                 505

gac agg atg cac cgc gcg gtg agc gcc agc cgc cgg cgc gag ctg agc      11848
Asp Arg Met His Arg Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser
                510                 515                 520

gac cag gag ctg atg cac agc ctg cag cgg gcc ctg acc ggg gcc ggg      11896
Asp Gln Glu Leu Met His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly
            525                 530                 535

acc gag ggg gag agc tac ttt gac atg ggc gcg gac ctg cgc tgg cag      11944
Thr Glu Gly Glu Ser Tyr Phe Asp Met Gly Ala Asp Leu Arg Trp Gln
        540                 545                 550

ccc agc cgc cgg gct tta gag gca gcc ggc ggc gtg ccc tac gtg gag      11992
Pro Ser Arg Arg Ala Leu Glu Ala Ala Gly Gly Val Pro Tyr Val Glu
    555                 560                 565

gag gtg gac gat gat gag gag gag ggc gag tac ctg gaa gac              12034
Glu Val Asp Asp Asp Glu Glu Glu Gly Glu Tyr Leu Glu Asp
570                 575                 580

tgatggcgcg accgtatttt tgctag atg cag caa cag cca ccg cct cct gat     12087
                             Met Gln Gln Gln Pro Pro Pro Pro Asp
                                 585                 590

ccc gcg atg cgg gcg gcg ctg cag agc cag ccg tcc ggc att aac tcc      12135
Pro Ala Met Arg Ala Ala Leu Gln Ser Gln Pro Ser Gly Ile Asn Ser
        595                 600                 605

tcg gac gat tgg acc cag gcc atg caa cgc atc atg gcg ctg acg acc      12183
Ser Asp Asp Trp Thr Gln Ala Met Gln Arg Ile Met Ala Leu Thr Thr
    610                 615                 620

cgc aat ccc gaa gcc ttt aga cag cag cct cag gcc aac cgg ctc tcg      12231
Arg Asn Pro Glu Ala Phe Arg Gln Gln Pro Gln Ala Asn Arg Leu Ser
625                 630                 635                 640

gcc atc ctg gag gcc gtg gtg ccc tcg cgc tcg aac ccc acg cac gag      12279
Ala Ile Leu Glu Ala Val Val Pro Ser Arg Ser Asn Pro Thr His Glu
                645                 650                 655

aag gtg ctg gcc atc gtg aac gcg ctg gtg gag aac aag gcc atc cgc      12327
Lys Val Leu Ala Ile Val Asn Ala Leu Val Glu Asn Lys Ala Ile Arg
            660                 665                 670

ggc gac gag gcc ggg ctg gtg tac aac gcg ctg ctg gag cgc gtg gcc      12375
Gly Asp Glu Ala Gly Leu Val Tyr Asn Ala Leu Leu Glu Arg Val Ala
        675                 680                 685

cgc tac aac agc acc aac gtg cag acg aac ctg gac cgc atg gtg acc      12423
Arg Tyr Asn Ser Thr Asn Val Gln Thr Asn Leu Asp Arg Met Val Thr
    690                 695                 700

gac gtg cgc gag gcg gtg tcg cag cgc gag cgg ttc cac cgc gag tcg      12471
Asp Val Arg Glu Ala Val Ser Gln Arg Glu Arg Phe His Arg Glu Ser
705                 710                 715                 720

aac ctg ggc tcc atg gtg gcg ctg aac gcc ttc ctg agc acg cag ccc      12519
Asn Leu Gly Ser Met Val Ala Leu Asn Ala Phe Leu Ser Thr Gln Pro
                725                 730                 735

gcc aac gtg ccc cgg ggc cag gag gac tac acc aac ttt atc agc gcg      12567
```

```
Ala Asn Val Pro Arg Gly Gln Glu Asp Tyr Thr Asn Phe Ile Ser Ala
            740                 745                 750

ctg cgg ctg atg gtg gcc gag gtg ccc cag agc gag gtg tac cag tcg      12615
Leu Arg Leu Met Val Ala Glu Val Pro Gln Ser Glu Val Tyr Gln Ser
        755                 760                 765

ggg ccg gac tac ttc ttc cag acc agt cgc cag ggc ttg cag acc gtg      12663
Gly Pro Asp Tyr Phe Phe Gln Thr Ser Arg Gln Gly Leu Gln Thr Val
    770                 775                 780

aac ctg agc cag gct ttc aag aac ttg cag gga ctg tgg ggc gtg cag      12711
Asn Leu Ser Gln Ala Phe Lys Asn Leu Gln Gly Leu Trp Gly Val Gln
785                 790                 795                 800

gcc ccg gtc ggg gac cgc gcg acg gtg tcg agc ctg ctg acg ccg aac      12759
Ala Pro Val Gly Asp Arg Ala Thr Val Ser Ser Leu Leu Thr Pro Asn
                805                 810                 815

tcg cgc ctg ctg ctg ctg ctg gtg gcg ccc ttc acg gac agc ggc agc      12807
Ser Arg Leu Leu Leu Leu Leu Val Ala Pro Phe Thr Asp Ser Gly Ser
            820                 825                 830

gtg agc cgc gac tcg tac ctg ggc tac ctg ctt aac ctg tac cgc gag      12855
Val Ser Arg Asp Ser Tyr Leu Gly Tyr Leu Leu Asn Leu Tyr Arg Glu
        835                 840                 845

gcc atc ggg cag gcg cac gtg gac gag cag acc tac cag gag atc acc      12903
Ala Ile Gly Gln Ala His Val Asp Glu Gln Thr Tyr Gln Glu Ile Thr
    850                 855                 860

cac gtg agc cgc gcg ctg ggc cag gag gac ccg ggc aac ctg gag gcc      12951
His Val Ser Arg Ala Leu Gly Gln Glu Asp Pro Gly Asn Leu Glu Ala
865                 870                 875                 880

acc ctg aac ttc ctg ctg acc aac cgg tcg cag aag atc ccg ccc cag      12999
Thr Leu Asn Phe Leu Leu Thr Asn Arg Ser Gln Lys Ile Pro Pro Gln
                885                 890                 895

tac gcg ctg agc acc gag gag gag cgc atc ctg cgc tac gtg cag cag      13047
Tyr Ala Leu Ser Thr Glu Glu Glu Arg Ile Leu Arg Tyr Val Gln Gln
            900                 905                 910

agc gtg ggg ctg ttc ctg atg cag gag ggg gcc acg ccc agc gcc gcg      13095
Ser Val Gly Leu Phe Leu Met Gln Glu Gly Ala Thr Pro Ser Ala Ala
        915                 920                 925

ctc gac atg acc gcg cgc aac atg gag ccc agc atg tac gcc cgc aac      13143
Leu Asp Met Thr Ala Arg Asn Met Glu Pro Ser Met Tyr Ala Arg Asn
    930                 935                 940

cgc ccg ttc atc aat aag ctg atg gac tac ttg cat cgg gcg gcc gcc      13191
Arg Pro Phe Ile Asn Lys Leu Met Asp Tyr Leu His Arg Ala Ala Ala
945                 950                 955                 960

atg aac tcg gac tac ttt acc aac gcc atc ttg aac ccg cac tgg ctc      13239
Met Asn Ser Asp Tyr Phe Thr Asn Ala Ile Leu Asn Pro His Trp Leu
                965                 970                 975

ccg ccg ccc ggg ttc tac acg ggc gag tac gac atg ccc gac ccc aac      13287
Pro Pro Pro Gly Phe Tyr Thr Gly Glu Tyr Asp Met Pro Asp Pro Asn
            980                 985                 990

gac ggg ttc ctg tgg gac gac gtg  gac agc agc gtg ttc  tcg ccg cgc    13335
Asp Gly Phe Leu Trp Asp Asp Val  Asp Ser Ser Val Phe  Ser Pro Arg
        995                 1000                1005

ccc acc  acc acc gtg tgg aag  aaa gag ggc ggg gac  cgg cgg ccg       13380
Pro Thr  Thr Thr Val Trp Lys  Lys Glu Gly Gly Asp  Arg Arg Pro
```

```
    1010                1015                1020

tcc tcg  gcg ctg tcc ggt cgc  gcg ggt gct gcc gcg  gcg gtg ccc       13425
Ser Ser  Ala Leu Ser Gly Arg  Ala Gly Ala Ala Ala  Ala Val Pro
    1025                1030                1035

gag gcc  gcc agc ccc ttc ccg  agc ctg ccc ttt tcg  ctg aac agc       13470
Glu Ala  Ala Ser Pro Phe Pro  Ser Leu Pro Phe Ser  Leu Asn Ser
    1040                1045                1050

gtg cgc  agc agc gag ctg ggt  cgg ctg acg cgg ccg  cgc ctg ctg       13515
Val Arg  Ser Ser Glu Leu Gly  Arg Leu Thr Arg Pro  Arg Leu Leu
    1055                1060                1065

ggc gag  gag gag tac ctg aac  gac tcc ttg ttg agg  ccc gag cgc       13560
Gly Glu  Glu Glu Tyr Leu Asn  Asp Ser Leu Leu Arg  Pro Glu Arg
    1070                1075                1080

gag aaa  aac ttc ccc aat aac  ggg ata gag agc ctg  gtg gac aag       13605
Glu Lys  Asn Phe Pro Asn Asn  Gly Ile Glu Ser Leu  Val Asp Lys
    1085                1090                1095

atg agc  cgc tgg aag acg tac  gcg cac gag cac agg  gac gag ccc       13650
Met Ser  Arg Trp Lys Thr Tyr  Ala His Glu His Arg  Asp Glu Pro
    1100                1105                1110

cga gct  agc agc agc gcc ggc  gcc acc cgt aga cgc  cag cgg cac       13695
Arg Ala  Ser Ser Ser Ala Gly  Ala Thr Arg Arg Arg  Gln Arg His
    1115                1120                1125

gac agg  cag cgg gga ctg gtg  tgg gac gat gag gat  tcc gcc gac       13740
Asp Arg  Gln Arg Gly Leu Val  Trp Asp Asp Glu Asp  Ser Ala Asp
    1130                1135                1140

gac agc  agc gtg ttg gac ttg  ggt ggg agt ggt ggt  ggt aac ccg       13785
Asp Ser  Ser Val Leu Asp Leu  Gly Gly Ser Gly Gly  Gly Asn Pro
    1145                1150                1155

ttc gct  cac ttg cgc ccc cgt  atc ggg cgc ctg atg  taagaatctg       13831
Phe Ala  His Leu Arg Pro Arg  Ile Gly Arg Leu Met
    1160                1165                1170

aaaaaataaa aaaacggtac tcaccaaggc catggcgacc agcgtgcgtt cttctctgtt    13891

gtttgtagta gt atg atg agg cgc gtg  tac ccg gag ggt cct  cct ccc      13939
              Met Met Arg Arg Val  Tyr Pro Glu Gly Pro  Pro Pro
                                1175                1180

tcg tac gag  agc gtg atg cag cag  gcg gtg gcg gcg gcg  atg cag       13984
Ser Tyr Glu  Ser Val Met Gln Gln  Ala Val Ala Ala Ala  Met Gln
        1185                1190                1195

ccc ccg ctg  gag gcg cct tac gtg  ccc ccg cgg tac ctg  gcg cct       14029
Pro Pro Leu  Glu Ala Pro Tyr Val  Pro Pro Arg Tyr Leu  Ala Pro
        1200                1205                1210

acg gag ggg  cgg aac agc att cgt  tac tcg gag ctg gca  ccc ttg       14074
Thr Glu Gly  Arg Asn Ser Ile Arg  Tyr Ser Glu Leu Ala  Pro Leu
        1215                1220                1225

tac gat acc  acc cgg ttg tac ctg  gtg gac aac aag tcg  gcg gac       14119
Tyr Asp Thr  Thr Arg Leu Tyr Leu  Val Asp Asn Lys Ser  Ala Asp
        1230                1235                1240

atc gcc tcg  ctg aac tac cag aac  gac cac agc aac ttc  ctg acc       14164
Ile Ala Ser  Leu Asn Tyr Gln Asn  Asp His Ser Asn Phe  Leu Thr
        1245                1250                1255

acc gtg gtg  cag aac aac gat ttc  acc ccc acg gag gcc  agc acc       14209
```

```
Thr Val Val  Gln Asn Asn Asp Phe  Thr Pro Thr Glu Ala  Ser Thr
        1260                 1265                 1270

cag acc atc  aac ttt gac gag cgc  tcg cgg tgg ggc ggc  cag ctg       14254
Gln Thr Ile  Asn Phe Asp Glu Arg  Ser Arg Trp Gly Gly  Gln Leu
        1275                 1280                 1285

aaa acc atc  atg cac acc aac atg  ccc aac gtg aac gag  ttc atg       14299
Lys Thr Ile  Met His Thr Asn Met  Pro Asn Val Asn Glu  Phe Met
        1290                 1295                 1300

tac agc aac  aag ttc aag gcg cgg  gtg atg gtc tcg cgc  aag acc       14344
Tyr Ser Asn  Lys Phe Lys Ala Arg  Val Met Val Ser Arg  Lys Thr
        1305                 1310                 1315

ccc aac ggg  gtg acg gtg gat gag  aat tat gat ggt agt  cag gac       14389
Pro Asn Gly  Val Thr Val Asp Glu  Asn Tyr Asp Gly Ser  Gln Asp
        1320                 1325                 1330

gag ctg acc  tac gag tgg gtg gag  ttt gag ctg ccc gag  ggc aac       14434
Glu Leu Thr  Tyr Glu Trp Val Glu  Phe Glu Leu Pro Glu  Gly Asn
        1335                 1340                 1345

ttc tcg gtg  acc atg acc atc gat  ctg atg aac aac gcc  atc atc       14479
Phe Ser Val  Thr Met Thr Ile Asp  Leu Met Asn Asn Ala  Ile Ile
        1350                 1355                 1360

gac aac tac  ttg gcg gtg gga cgg  cag aac ggg gtg ctg  gag agc       14524
Asp Asn Tyr  Leu Ala Val Gly Arg  Gln Asn Gly Val Leu  Glu Ser
        1365                 1370                 1375

gac atc ggc  gtg aag ttc gac acg  cgc aac ttc cgg ctg  ggc tgg       14569
Asp Ile Gly  Val Lys Phe Asp Thr  Arg Asn Phe Arg Leu  Gly Trp
        1380                 1385                 1390

gac ccc gtg  acc gag ctg gtg atg  ccg ggc gtg tac acc  aac gag       14614
Asp Pro Val  Thr Glu Leu Val Met  Pro Gly Val Tyr Thr  Asn Glu
        1395                 1400                 1405

gcc ttc cac  ccc gac atc gtc ctg  ctg ccc ggc tgc ggc  gtg gac       14659
Ala Phe His  Pro Asp Ile Val Leu  Leu Pro Gly Cys Gly  Val Asp
        1410                 1415                 1420

ttc acc gag  agc cgc ctc agc aac  ctg ctg ggc atc cgc  aag cgg       14704
Phe Thr Glu  Ser Arg Leu Ser Asn  Leu Leu Gly Ile Arg  Lys Arg
        1425                 1430                 1435

cag ccc ttc  cag gag ggc ttc cag  atc ctg tac gag gac  ctg gag       14749
Gln Pro Phe  Gln Glu Gly Phe Gln  Ile Leu Tyr Glu Asp  Leu Glu
        1440                 1445                 1450

ggg ggc aac  atc ccc gcg ctg ctg  gac gtc gaa gcc tac  gag aaa       14794
Gly Gly Asn  Ile Pro Ala Leu Leu  Asp Val Glu Ala Tyr  Glu Lys
        1455                 1460                 1465

agc aag gag  gag gcc gcc gca gcg  gcg acc gcg gcc gtg  gct acc       14839
Ser Lys Glu  Glu Ala Ala Ala Ala  Ala Thr Ala Ala Val  Ala Thr
        1470                 1475                 1480

gct gcg acc  acc gat gca gat gca  gct act act acc agg  ggc gat       14884
Ala Ala Thr  Thr Asp Ala Asp Ala  Ala Thr Thr Thr Arg  Gly Asp
        1485                 1490                 1495

aca ttc gcc  acc cag gcg gag gaa  gca gcc gcc cta gcg  gcg acc       14929
Thr Phe Ala  Thr Gln Ala Glu Glu  Ala Ala Ala Leu Ala  Ala Thr
        1500                 1505                 1510

gat gat agt  gaa agt aag ata gtc  atc aag ccg gtg gag  aag gac       14974
Asp Asp Ser  Glu Ser Lys Ile Val  Ile Lys Pro Val Glu  Lys Asp
```

```
        1515                1520                1525

agc aag gac  agg agc tac aac gtt  cta tcg gat gga aag  aac acc       15019
Ser Lys Asp  Arg Ser Tyr Asn Val  Leu Ser Asp Gly Lys  Asn Thr
        1530                1535                1540

gcc tac cgc  agc tgg tac ctg gcc  tac aac tac ggc gac  cct gag       15064
Ala Tyr Arg  Ser Trp Tyr Leu Ala  Tyr Asn Tyr Gly Asp  Pro Glu
        1545                1550                1555

aag ggc gtg  cgc tcc tgg acg ctg  ctc acc acc tcg gac  gtc acc       15109
Lys Gly Val  Arg Ser Trp Thr Leu  Leu Thr Thr Ser Asp  Val Thr
        1560                1565                1570

tgc ggc gtg  gag caa gtc tac tgg  tcg ctg ccc gac atg  atg caa       15154
Cys Gly Val  Glu Gln Val Tyr Trp  Ser Leu Pro Asp Met  Met Gln
        1575                1580                1585

gac ccg gtc  acc ttc cgc tcc acg  cgt caa gtt agc aac  tac ccg       15199
Asp Pro Val  Thr Phe Arg Ser Thr  Arg Gln Val Ser Asn  Tyr Pro
        1590                1595                1600

gtg gtg ggc  gcc gag ctc ctg ccc  gtc tac tcc aag agc  ttc ttc       15244
Val Val Gly  Ala Glu Leu Leu Pro  Val Tyr Ser Lys Ser  Phe Phe
        1605                1610                1615

aac gag cag  gcc gtc tac tcg cag  cag ctg cgc gcc ttc  acc tcg       15289
Asn Glu Gln  Ala Val Tyr Ser Gln  Gln Leu Arg Ala Phe  Thr Ser
        1620                1625                1630

ctc acg cac  gtc ttc aac cgc ttc  ccc gag aac cag atc  ctc gtc       15334
Leu Thr His  Val Phe Asn Arg Phe  Pro Glu Asn Gln Ile  Leu Val
        1635                1640                1645

cgc ccg ccc  gcg ccc acc att acc  acc gtc agt gaa aac  gtt cct       15379
Arg Pro Pro  Ala Pro Thr Ile Thr  Thr Val Ser Glu Asn  Val Pro
        1650                1655                1660

gct ctc aca  gat cac ggg acc ctg  ccg ctg cgc agc agt  atc cgg       15424
Ala Leu Thr  Asp His Gly Thr Leu  Pro Leu Arg Ser Ser  Ile Arg
        1665                1670                1675

gga gtc cag  cgc gtg acc gtc act  gac gcc aga cgc cgc  acc tgc       15469
Gly Val Gln  Arg Val Thr Val Thr  Asp Ala Arg Arg Arg  Thr Cys
        1680                1685                1690

ccc tac gtc  tac aag gcc ctg ggc  gta gtc gcg ccg cgc  gtc ctc       15514
Pro Tyr Val  Tyr Lys Ala Leu Gly  Val Val Ala Pro Arg  Val Leu
        1695                1700                1705

tcg agc cgc  acc ttc taaaaa atg tcc att  ctc atc tcg ccc agt  aat    15562
Ser Ser Arg  Thr Phe        Met Ser Ile  Leu Ile Ser Pro Ser  Asn
        1710                        1715                1720

aac acc ggt tgg  ggc ctg cgc gcg ccc  agc aag atg tac gga  ggc       15607
Asn Thr Gly Trp  Gly Leu Arg Ala Pro  Ser Lys Met Tyr Gly  Gly
            1725                1730                1735

gct cgc caa cgc  tcc acg caa cac ccc  gtg cgc gtg cgc ggg  cac       15652
Ala Arg Gln Arg  Ser Thr Gln His Pro  Val Arg Val Arg Gly  His
            1740                1745                1750

ttc cgc gct ccc  tgg ggc gcc ctc aag  ggc cgc gtg cgc tcg  cgc       15697
Phe Arg Ala Pro  Trp Gly Ala Leu Lys  Gly Arg Val Arg Ser  Arg
            1755                1760                1765

acc acc gtc gac  gac gtg atc gac cag  gtg gtg gcc gac gcg  cgc       15742
Thr Thr Val Asp  Asp Val Ile Asp Gln  Val Val Ala Asp Ala  Arg
            1770                1775                1780
```

```
aac tac acg ccc  gcc gcc gcg ccc gcc  tcc acc gtg gac gcc  gtc       15787
Asn Tyr Thr Pro  Ala Ala Ala Pro Ala  Ser Thr Val Asp Ala  Val
            1785                 1790                 1795

atc gac agc gtg  gtg gcc gac gcg cgc  cgg tac gcc cgc gcc  aag       15832
Ile Asp Ser Val  Val Ala Asp Ala Arg  Arg Tyr Ala Arg Ala  Lys
            1800                 1805                 1810

agc cgg cgg cgg  cgc atc gcc cgg cgg  cac cgg agc acc ccc  gcc       15877
Ser Arg Arg Arg  Arg Ile Ala Arg Arg  His Arg Ser Thr Pro  Ala
            1815                 1820                 1825

atg cgc gcg gcg  cga gcc ttg ctg cgc  agg gcc agg cgc acg  gga       15922
Met Arg Ala Ala  Arg Ala Leu Leu Arg  Arg Ala Arg Arg Thr  Gly
            1830                 1835                 1840

cgc agg gcc atg  ctc agg gcg gcc aga  cgc gcg gcc tcc ggc  agc       15967
Arg Arg Ala Met  Leu Arg Ala Ala Arg  Arg Ala Ala Ser Gly  Ser
            1845                 1850                 1855

agc agc gcc ggc  agg acc cgc aga cgc  gcg gcc acg gcg gcg  gcg       16012
Ser Ser Ala Gly  Arg Thr Arg Arg Arg  Ala Ala Thr Ala Ala  Ala
            1860                 1865                 1870

gcg gcc atc gcc  agc atg tcc cgc ccg  cgg cgc ggc aac gtg  tac       16057
Ala Ala Ile Ala  Ser Met Ser Arg Pro  Arg Arg Gly Asn Val  Tyr
            1875                 1880                 1885

tgg gtg cgc gac  gcc gcc acc ggt gtg  cgc gtg ccc gtg cgc  acc       16102
Trp Val Arg Asp  Ala Ala Thr Gly Val  Arg Val Pro Val Arg  Thr
            1890                 1895                 1900

cgc ccc cct cgc  act tgaagatgct gacttcgcga tgttgatgtg tcccagcggc    16157
Arg Pro Pro Arg  Thr
            1905

gaggagg atg tcc aag cgc  aaa ttc aag gaa gag  atg ctc cag gtc       16203
        Met Ser Lys Arg  Lys Phe Lys Glu Glu  Met Leu Gln Val
                    1910                 1915

atc  gcg cct gag atc tac  ggc ccc gcg gcg gcg  gtg aag gag gaa      16248
Ile  Ala Pro Glu Ile Tyr  Gly Pro Ala Ala Ala  Val Lys Glu Glu
1920                 1925                 1930

aga  aag ccc cgc aaa ctg  aag cgg gtc aaa aag  gac aaa aag gag      16293
Arg  Lys Pro Arg Lys Leu  Lys Arg Val Lys Lys  Asp Lys Lys Glu
1935                 1940                 1945

gag  gaa gat gac gga ctg  gtg gag ttt gtg cgc  gag ttc gcc ccc      16338
Glu  Glu Asp Asp Gly Leu  Val Glu Phe Val Arg  Glu Phe Ala Pro
1950                 1955                 1960

cgg  cgg cgc gtg cag tgg  cgc ggg cgg aaa gtg  aaa ccg gtg ctg      16383
Arg  Arg Arg Val Gln Trp  Arg Gly Arg Lys Val  Lys Pro Val Leu
1965                 1970                 1975

cgg  ccc ggc acc acg gtg  gtc ttc acg ccc ggc  gag cgt tcc ggc      16428
Arg  Pro Gly Thr Thr Val  Val Phe Thr Pro Gly  Glu Arg Ser Gly
1980                 1985                 1990

tcc  gcc tcc aag cgc tcc  tac gac gag gtg tac  ggg gac gag gac      16473
Ser  Ala Ser Lys Arg Ser  Tyr Asp Glu Val Tyr  Gly Asp Glu Asp
1995                 2000                 2005

atc  ctc gag cag gcg gcc  gag cgt ctg ggc gag  ttt gct tac ggc      16518
Ile  Leu Glu Gln Ala Ala  Glu Arg Leu Gly Glu  Phe Ala Tyr Gly
2010                 2015                 2020
```

```
aag  cgc agc cgc ccc gcg  ccc ttg aaa gag gag  gcg gtg tcc atc       16563
Lys  Arg Ser Arg Pro Ala  Pro Leu Lys Glu Glu  Ala Val Ser Ile
2025                 2030                 2035

ccg  ctg gac cac ggc aac  ccc acg ccg agc ctg  aag ccg gtg acc       16608
Pro  Leu Asp His Gly Asn  Pro Thr Pro Ser Leu  Lys Pro Val Thr
2040                 2045                 2050

ctg  cag cag gtg ctg ccg  agc gcg gcg ccg cgc  cgg ggc ttc aag       16653
Leu  Gln Gln Val Leu Pro  Ser Ala Ala Pro Arg  Arg Gly Phe Lys
2055                 2060                 2065

cgc  gag ggc ggc gag gat  ctg tac ccg acc atg  cag ctg atg gtg       16698
Arg  Glu Gly Gly Glu Asp  Leu Tyr Pro Thr Met  Gln Leu Met Val
2070                 2075                 2080

ccc  aag cgc cag aag ctg  gag gac gtg ctg gag  cac atg aag gtg       16743
Pro  Lys Arg Gln Lys Leu  Glu Asp Val Leu Glu  His Met Lys Val
2085                 2090                 2095

gac  ccc gag gtg cag ccc  gag gtc aag gtg cgg  ccc atc aag cag       16788
Asp  Pro Glu Val Gln Pro  Glu Val Lys Val Arg  Pro Ile Lys Gln
2100                 2105                 2110

gtg  gcc ccg ggc ctg ggc  gtg cag acc gtg gac  atc aag atc ccc       16833
Val  Ala Pro Gly Leu Gly  Val Gln Thr Val Asp  Ile Lys Ile Pro
2115                 2120                 2125

acg  gag ccc atg gaa acg  cag acc gag ccc gtg  aag ccc agc acc       16878
Thr  Glu Pro Met Glu Thr  Gln Thr Glu Pro Val  Lys Pro Ser Thr
2130                 2135                 2140

agc  acc atg gag gtg cag  acg gat ccc tgg atg  ccg gcg ccg gct       16923
Ser  Thr Met Glu Val Gln  Thr Asp Pro Trp Met  Pro Ala Pro Ala
2145                 2150                 2155

tcc  acc acc acc acc acc  cgc cga aga cgc aag  tac ggc gcg gcc       16968
Ser  Thr Thr Thr Thr Thr  Arg Arg Arg Arg Lys  Tyr Gly Ala Ala
2160                 2165                 2170

agc  ctg ctg atg ccc aac  tac gcg ctg cat cct  tcc atc atc ccc       17013
Ser  Leu Leu Met Pro Asn  Tyr Ala Leu His Pro  Ser Ile Ile Pro
2175                 2180                 2185

acg  ccg ggc tac cgc ggc  acg cgc ttc tac cgc  ggc tac agc agc       17058
Thr  Pro Gly Tyr Arg Gly  Thr Arg Phe Tyr Arg  Gly Tyr Ser Ser
2190                 2195                 2200

cgc  cgc aag acc acc acc  cgc cgc cgc cgt cgc  cgc acc cgc cgc       17103
Arg  Arg Lys Thr Thr Thr  Arg Arg Arg Arg Arg  Arg Thr Arg Arg
2205                 2210                 2215

agc  acc acc gcg act tcc  gcc gcc gcc ttg gtg  cgg aga gtg tac       17148
Ser  Thr Thr Ala Thr Ser  Ala Ala Ala Leu Val  Arg Arg Val Tyr
2220                 2225                 2230

cgc  agc ggg cgt gag cct  ctg acc ctg ccg cgc  gcg cgc tac cac       17193
Arg  Ser Gly Arg Glu Pro  Leu Thr Leu Pro Arg  Ala Arg Tyr His
2235                 2240                 2245

ccg  agc atc gcc att taactctgcc gtcgcctcct tgcagat atg  gcc ctc      17244
Pro  Ser Ile Ala Ile                                Met  Ala Leu
2250                                                2255

aca tgc cgc  ctc cgc gtc ccc att  acg ggc tac cga gga  aga aag       17289
Thr Cys Arg  Leu Arg Val Pro Ile  Thr Gly Tyr Arg Gly  Arg Lys
       2260                 2265                 2270

ccg cgc cgt  aga agg ctg acg ggg  aac ggg ctg cgt cgc  cat cac       17334
```

```
Pro Arg Arg  Arg Arg Leu Thr Gly  Asn Gly Leu Arg Arg  His His
        2275                 2280                 2285

cac cgg cgg  cgg cgc gcc atc agc  aag cgg ttg ggg gga  ggc ttc       17379
His Arg Arg  Arg Arg Ala Ile Ser  Lys Arg Leu Gly Gly  Gly Phe
        2290                 2295                 2300

ctg ccc gcg  ctg atc ccc atc atc  gcc gcg gcg atc ggg  gcg atc       17424
Leu Pro Ala  Leu Ile Pro Ile Ile  Ala Ala Ala Ile Gly  Ala Ile
        2305                 2310                 2315

ccc ggc ata  gct tcc gtg gcg gtg  cag gcc tct cag cgc  cac           17466
Pro Gly Ile  Ala Ser Val Ala Val  Gln Ala Ser Gln Arg  His
        2320                 2325                 2330

tgagacacag cttggaaaat ttgtaataaa aaaatggact gacgctcctg gtcctgtgat    17526

gtgtgttttt ag atg gaa gac atc  aat ttt tcg tcc ctg  gca ccg cga      17574
              Met Glu Asp Ile  Asn Phe Ser Ser Leu  Ala Pro Arg
                          2335                 2340

cac ggc  acg cgg ccg ttt atg  ggc acc tgg agc gac  atc ggc aac       17619
His Gly  Thr Arg Pro Phe Met  Gly Thr Trp Ser Asp  Ile Gly Asn
    2345                 2350                 2355

agc caa  ctg aac ggg ggc gcc  ttc aat tgg agc agt  ctc tgg agc       17664
Ser Gln  Leu Asn Gly Gly Ala  Phe Asn Trp Ser Ser  Leu Trp Ser
    2360                 2365                 2370

ggg ctt  aag aat ttc ggg tcc  acg ctc aaa acc tat  ggc agc aag       17709
Gly Leu  Lys Asn Phe Gly Ser  Thr Leu Lys Thr Tyr  Gly Ser Lys
    2375                 2380                 2385

gcg tgg  aac agc acc aca ggg  cag gcg ctg agg gat  aag ctg aaa       17754
Ala Trp  Asn Ser Thr Thr Gly  Gln Ala Leu Arg Asp  Lys Leu Lys
    2390                 2395                 2400

gag cag  aac ttc cag cag aag  gtg gtc gat ggg ctc  gct tcg ggc       17799
Glu Gln  Asn Phe Gln Gln Lys  Val Val Asp Gly Leu  Ala Ser Gly
    2405                 2410                 2415

atc aac  ggg gtg gtg gac ctg  gcc aac cag gcc gtg  cag cgg cag       17844
Ile Asn  Gly Val Val Asp Leu  Ala Asn Gln Ala Val  Gln Arg Gln
    2420                 2425                 2430

atc aac  agc cgc ctg gac ccg  gtg ccg ccc gcc ggc  tcc gtg gag       17889
Ile Asn  Ser Arg Leu Asp Pro  Val Pro Pro Ala Gly  Ser Val Glu
    2435                 2440                 2445

atg ccg  cag gtg gag gag gag  ctg cct ccc ctg gac  aag cgg ggc       17934
Met Pro  Gln Val Glu Glu Glu  Leu Pro Pro Leu Asp  Lys Arg Gly
    2450                 2455                 2460

gag aag  cga ccc cgc ccc gac  gcg gag gag acg ctg  ctg acg cac       17979
Glu Lys  Arg Pro Arg Pro Asp  Ala Glu Glu Thr Leu  Leu Thr His
    2465                 2470                 2475

acg gac  gag ccg ccc ccg tac  gag gag gcg gtg aaa  ctg ggt ctg       18024
Thr Asp  Glu Pro Pro Pro Tyr  Glu Glu Ala Val Lys  Leu Gly Leu
    2480                 2485                 2490

ccc acc  acg cgg ccc att gcg  ccc cta gcc acc ggg  gtg ctg aaa       18069
Pro Thr  Thr Arg Pro Ile Ala  Pro Leu Ala Thr Gly  Val Leu Lys
    2495                 2500                 2505

ccc gag  agt aat aag ccc gcg  acc ctg gac ttg cct  cct ccc cag       18114
Pro Glu  Ser Asn Lys Pro Ala  Thr Leu Asp Leu Pro  Pro Pro Gln
    2510                 2515                 2520
```

```
cct tcc  cgc ccc tcc aca gtg  gct aag ccc ctg ccg  ccg gtg gcc       18159
Pro Ser  Arg Pro Ser Thr Val  Ala Lys Pro Leu Pro  Pro Val Ala
    2525                 2530                 2535

gtg gcc  cgc gcg cga ccc ggg  ggc tcc gcc cgc cct  cat gcg aac       18204
Val Ala  Arg Ala Arg Pro Gly  Gly Ser Ala Arg Pro  His Ala Asn
    2540                 2545                 2550

tgg cag  agc act ctg aac agc  atc gtg ggt ctg gga  gtg cag agt       18249
Trp Gln  Ser Thr Leu Asn Ser  Ile Val Gly Leu Gly  Val Gln Ser
    2555                 2560                 2565

gtg aag  cgc cgc cgc tgc tat  taaacctacc gtagcgctta acttgcttgt      18300
Val Lys  Arg Arg Arg Cys Tyr
    2570                 2575

ctgtgtgtgt atgtattatg tcgccgccgc tgtccgccag aaggaggagt gaagaggcgc   18360

gtcgccgagt tgcaag atg gcc acc cca tcg  atg ctg ccc cag tgg  gcg      18409
                  Met Ala Thr Pro Ser  Met Leu Pro Gln Trp  Ala
                                  2580                 2585

tac atg cac atc  gcc gga cag gac gct  tcg gag tac ctg agt  ccg      18454
Tyr Met His Ile  Ala Gly Gln Asp Ala  Ser Glu Tyr Leu Ser  Pro
            2590                 2595                 2600

ggt ctg gtg cag  ttc gcc cgc gcc aca  gac acc tac ttc agt  ctg      18499
Gly Leu Val Gln  Phe Ala Arg Ala Thr  Asp Thr Tyr Phe Ser  Leu
            2605                 2610                 2615

ggg aac aag ttt  agg aac ccc acg gtg  gcg ccc acg cac gat  gtg      18544
Gly Asn Lys Phe  Arg Asn Pro Thr Val  Ala Pro Thr His Asp  Val
            2620                 2625                 2630

acc acc gac cgc  agc cag cgg ctg acg  ctg cgc ttc gtg ccc  gtg      18589
Thr Thr Asp Arg  Ser Gln Arg Leu Thr  Leu Arg Phe Val Pro  Val
            2635                 2640                 2645

gac cgc gag gac  aac acc tac tcg tac  aaa gtg cgc tac acg  ctg      18634
Asp Arg Glu Asp  Asn Thr Tyr Ser Tyr  Lys Val Arg Tyr Thr  Leu
            2650                 2655                 2660

gcc gtg ggc gac  aac cgc gtg ctg gac  atg gcc agc acc tac  ttt      18679
Ala Val Gly Asp  Asn Arg Val Leu Asp  Met Ala Ser Thr Tyr  Phe
            2665                 2670                 2675

gac atc cgc ggc  gtg ctg gac cgg ggc  cct agc ttc aaa ccc  tac      18724
Asp Ile Arg Gly  Val Leu Asp Arg Gly  Pro Ser Phe Lys Pro  Tyr
            2680                 2685                 2690

tcc ggc acc gcc  tac aac agc ctg gct  ccc aag gga gcg ccc  aat      18769
Ser Gly Thr Ala  Tyr Asn Ser Leu Ala  Pro Lys Gly Ala Pro  Asn
            2695                 2700                 2705

tcc agc cag tgg  gag cga gct aag aca  aac aat aac gga gcc  acg      18814
Ser Ser Gln Trp  Glu Arg Ala Lys Thr  Asn Asn Asn Gly Ala  Thr
            2710                 2715                 2720

gaa tct gtt acc  ttt ggt gtg gct gcc  atg ggg ggt ata gat  att      18859
Glu Ser Val Thr  Phe Gly Val Ala Ala  Met Gly Gly Ile Asp  Ile
            2725                 2730                 2735

aca aaa gag ggt  ctc cag att gga act  gat gaa act aaa gct  gat      18904
Thr Lys Glu Gly  Leu Gln Ile Gly Thr  Asp Glu Thr Lys Ala  Asp
            2740                 2745                 2750

agt aaa gaa att  tat gca gac aaa acc  tac caa cct gaa cct  cag      18949
Ser Lys Glu Ile  Tyr Ala Asp Lys Thr  Tyr Gln Pro Glu Pro  Gln
            2755                 2760                 2765
```

```
ata gga gag gag  aac tgg caa gaa aca  ttc tcc tat tat ggc  ggc       18994
Ile Gly Glu Glu  Asn Trp Gln Glu Thr  Phe Ser Tyr Tyr Gly  Gly
            2770                 2775                 2780

aga gct ctt aaa  aaa gat acc aag atg  aag cca tgc tac ggc  tcc       19039
Arg Ala Leu Lys  Lys Asp Thr Lys Met  Lys Pro Cys Tyr Gly  Ser
            2785                 2790                 2795

ttt gct aaa cca  acg aat gtc aaa gga  ggt cag gcc aaa ttt  aaa       19084
Phe Ala Lys Pro  Thr Asn Val Lys Gly  Gly Gln Ala Lys Phe  Lys
            2800                 2805                 2810

gtt cag gac ggt  caa caa act aca gaa  tat gat atc gac tta  gct       19129
Val Gln Asp Gly  Gln Gln Thr Thr Glu  Tyr Asp Ile Asp Leu  Ala
            2815                 2820                 2825

ttc ttt gat att  cca aac tct gga aca  gga ggg aat ggc acg  aat       19174
Phe Phe Asp Ile  Pro Asn Ser Gly Thr  Gly Gly Asn Gly Thr  Asn
            2830                 2835                 2840

gtt aat tat gat  cca gat atg gtc atg  tac act gaa aat gtg  gat       19219
Val Asn Tyr Asp  Pro Asp Met Val Met  Tyr Thr Glu Asn Val  Asp
            2845                 2850                 2855

ttg gag acc cct  gat acc cac att gtt  tac aaa cca ggg act  tcc       19264
Leu Glu Thr Pro  Asp Thr His Ile Val  Tyr Lys Pro Gly Thr  Ser
            2860                 2865                 2870

gat gac agt tct  gaa gca aac ttg ctt  cag cag tcc atg cct  aac       19309
Asp Asp Ser Ser  Glu Ala Asn Leu Leu  Gln Gln Ser Met Pro  Asn
            2875                 2880                 2885

aga ccc aac tat  att ggg ttt aga gac  aac ttt atc ggt ctc  atg       19354
Arg Pro Asn Tyr  Ile Gly Phe Arg Asp  Asn Phe Ile Gly Leu  Met
            2890                 2895                 2900

tac tac aac agt  act ggc aat atg ggt  gtg ctg gct ggt cag  gcc       19399
Tyr Tyr Asn Ser  Thr Gly Asn Met Gly  Val Leu Ala Gly Gln  Ala
            2905                 2910                 2915

tcc cag ctg aat  gct gtg gtc gac ttg  caa gac aga aac acc  gag       19444
Ser Gln Leu Asn  Ala Val Val Asp Leu  Gln Asp Arg Asn Thr  Glu
            2920                 2925                 2930

cta tcc tac cag  ctc ttg ctt gac tct  ctg ggc gat aga acc  cgg       19489
Leu Ser Tyr Gln  Leu Leu Leu Asp Ser  Leu Gly Asp Arg Thr  Arg
            2935                 2940                 2945

tat ttc agt atg  tgg aac cag gcg gtg  gac agt tat gac cct  gat       19534
Tyr Phe Ser Met  Trp Asn Gln Ala Val  Asp Ser Tyr Asp Pro  Asp
            2950                 2955                 2960

gtg cgc att att  gaa aac cat ggt gtg  gaa gat gaa ctt ccc  aac       19579
Val Arg Ile Ile  Glu Asn His Gly Val  Glu Asp Glu Leu Pro  Asn
            2965                 2970                 2975

tat tgc ttc cca  ttg gat gga gct ggt  act aat gct gtc tat  cag       19624
Tyr Cys Phe Pro  Leu Asp Gly Ala Gly  Thr Asn Ala Val Tyr  Gln
            2980                 2985                 2990

ggt gtt aaa gca  aaa act aat gga ggc  gca gcc aat gga gat  tgg       19669
Gly Val Lys Ala  Lys Thr Asn Gly Gly  Ala Ala Asn Gly Asp  Trp
            2995                 3000                 3005

gag caa gat aca  gac gtg tca aac att  aac cag ata tgc aag  ggg       19714
Glu Gln Asp Thr  Asp Val Ser Asn Ile  Asn Gln Ile Cys Lys  Gly
            3010                 3015                 3020
```

```
aac atc tat gcc  atg gaa atc aac ctc  caa gcc aac ctg tgg  aga       19759
Asn Ile Tyr Ala  Met Glu Ile Asn Leu  Gln Ala Asn Leu Trp  Arg
            3025                 3030                 3035

agt ttc ctc tac  tcg aac gtg gcc ctg  tac ctg ccc gat tct  tac       19804
Ser Phe Leu Tyr  Ser Asn Val Ala Leu  Tyr Leu Pro Asp Ser  Tyr
            3040                 3045                 3050

aag tac acg ccg  gcc aac atc acc ttg  ccc acg aat acc aac  acc       19849
Lys Tyr Thr Pro  Ala Asn Ile Thr Leu  Pro Thr Asn Thr Asn  Thr
            3055                 3060                 3065

tat gat tac atg  aat ggg aga gtg gcg  cct ccc tcg ttg gtg  gat       19894
Tyr Asp Tyr Met  Asn Gly Arg Val Ala  Pro Pro Ser Leu Val  Asp
            3070                 3075                 3080

gcc tac atc aac  atc ggg gcg cgc tgg  tcg ctg gac ccc atg  gac       19939
Ala Tyr Ile Asn  Ile Gly Ala Arg Trp  Ser Leu Asp Pro Met  Asp
            3085                 3090                 3095

aac gtc aat ccc  ttc aac cac cac cgc  aac gcg ggg ctg cgc  tac       19984
Asn Val Asn Pro  Phe Asn His His Arg  Asn Ala Gly Leu Arg  Tyr
            3100                 3105                 3110

cgc tcc atg ctt  ctg ggc aac ggg cgc  ttc gtg ccc ttc cac  atc       20029
Arg Ser Met Leu  Leu Gly Asn Gly Arg  Phe Val Pro Phe His  Ile
            3115                 3120                 3125

cag gtg ccc cag  aaa ttt ttc gcc atc  aag agc ctc ctg ctc  ctg       20074
Gln Val Pro Gln  Lys Phe Phe Ala Ile  Lys Ser Leu Leu Leu  Leu
            3130                 3135                 3140

ccc ggg tcc tac  acc tac gag tgg aac  ttc cgc aag gac gtc  aac       20119
Pro Gly Ser Tyr  Thr Tyr Glu Trp Asn  Phe Arg Lys Asp Val  Asn
            3145                 3150                 3155

atg atc ctg cag  agc tcc ctc ggc aac  gac ctg cgc acg gac  ggg       20164
Met Ile Leu Gln  Ser Ser Leu Gly Asn  Asp Leu Arg Thr Asp  Gly
            3160                 3165                 3170

gcc tcc atc tcc  ttc acc agc atc aac  ctc tac gcc acc ttc  ttc       20209
Ala Ser Ile Ser  Phe Thr Ser Ile Asn  Leu Tyr Ala Thr Phe  Phe
            3175                 3180                 3185

ccc atg gcg cac  aac acg gcc tcc acg  ctc gag gcc atg ctg  cgc       20254
Pro Met Ala His  Asn Thr Ala Ser Thr  Leu Glu Ala Met Leu  Arg
            3190                 3195                 3200

aac gac acc aac  gac cag tcc ttc aac  gac tac ctc tcg gcg  gcc       20299
Asn Asp Thr Asn  Asp Gln Ser Phe Asn  Asp Tyr Leu Ser Ala  Ala
            3205                 3210                 3215

aac atg ctc tac  ccc atc cca gcc aac  gcc acc aac gtg ccc  atc       20344
Asn Met Leu Tyr  Pro Ile Pro Ala Asn  Ala Thr Asn Val Pro  Ile
            3220                 3225                 3230

tcc atc ccc tcg  cgc aac tgg gcc gcc  ttc cgc ggc tgg tcc  ttc       20389
Ser Ile Pro Ser  Arg Asn Trp Ala Ala  Phe Arg Gly Trp Ser  Phe
            3235                 3240                 3245

acg cgt ctc aag  acc aag gag acg ccc  tcg ctg ggc tcc ggg  ttc       20434
Thr Arg Leu Lys  Thr Lys Glu Thr Pro  Ser Leu Gly Ser Gly  Phe
            3250                 3255                 3260

gac ccc tac ttc  gtc tac tcg ggc tcc  atc ccc tac ctc gac  ggc       20479
Asp Pro Tyr Phe  Val Tyr Ser Gly Ser  Ile Pro Tyr Leu Asp  Gly
            3265                 3270                 3275

acc ttc tac ctc  aac cac acc ttc aag  aag gtc tcc atc acc  ttc       20524
```

```
Thr Phe Tyr Leu  Asn His Thr Phe Lys  Lys Val Ser Ile Thr  Phe
            3280                3285                3290

gac tcc tcc gtc  agc tgg ccc ggc aac  gac cgg ctc ctg acg  ccc       20569
Asp Ser Ser Val  Ser Trp Pro Gly Asn  Asp Arg Leu Leu Thr  Pro
            3295                3300                3305

aac gag ttc gaa  atc aag cgc acc gtc  gac ggc gag ggc tac  aac       20614
Asn Glu Phe Glu  Ile Lys Arg Thr Val  Asp Gly Glu Gly Tyr  Asn
            3310                3315                3320

gtg gcc cag tgc  aac atg acc aag gac  tgg ttc ctg gtc cag  atg       20659
Val Ala Gln Cys  Asn Met Thr Lys Asp  Trp Phe Leu Val Gln  Met
            3325                3330                3335

ctg gcc cac tac  aac atc ggc tac cag  ggc ttc tac gtg ccc  gag       20704
Leu Ala His Tyr  Asn Ile Gly Tyr Gln  Gly Phe Tyr Val Pro  Glu
            3340                3345                3350

ggc tac aag gac  cgc atg tac tcc ttc  ttc cgc aac ttc cag  ccc       20749
Gly Tyr Lys Asp  Arg Met Tyr Ser Phe  Phe Arg Asn Phe Gln  Pro
            3355                3360                3365

atg agc cgc cag  gtg gtg gac gag gtc  aac tac aag gac tac  cag       20794
Met Ser Arg Gln  Val Val Asp Glu Val  Asn Tyr Lys Asp Tyr  Gln
            3370                3375                3380

gcc gtc acc ctg  gcc tac cag cac aac  aac tcg ggc ttc gtc  ggc       20839
Ala Val Thr Leu  Ala Tyr Gln His Asn  Asn Ser Gly Phe Val  Gly
            3385                3390                3395

tac ctc gcg ccc  acc atg cgc cag ggc  cag ccc tac ccc gcc  aac       20884
Tyr Leu Ala Pro  Thr Met Arg Gln Gly  Gln Pro Tyr Pro Ala  Asn
            3400                3405                3410

tac ccg tac ccg  ctc atc ggc aag agc  gcc gtc acc agc gtc  acc       20929
Tyr Pro Tyr Pro  Leu Ile Gly Lys Ser  Ala Val Thr Ser Val  Thr
            3415                3420                3425

cag aaa aag ttc  ctc tgc gac agg gtc  atg tgg cgc atc ccc  ttc       20974
Gln Lys Lys Phe  Leu Cys Asp Arg Val  Met Trp Arg Ile Pro  Phe
            3430                3435                3440

tcc agc aac ttc  atg tcc atg ggc gcg  ctc acc gac ctc ggc  cag       21019
Ser Ser Asn Phe  Met Ser Met Gly Ala  Leu Thr Asp Leu Gly  Gln
            3445                3450                3455

aac atg ctc tat  gcc aac tcc gcc cac  gcg cta gac atg aat  ttc       21064
Asn Met Leu Tyr  Ala Asn Ser Ala His  Ala Leu Asp Met Asn  Phe
            3460                3465                3470

gaa gtc gac ccc  atg gat gag tcc acc  ctt ctc tat gtt gtc  ttc       21109
Glu Val Asp Pro  Met Asp Glu Ser Thr  Leu Leu Tyr Val Val  Phe
            3475                3480                3485

gaa gtc ttc gac  gtc gtc cga gtg cac  cag ccc cac cgc ggc  gtc       21154
Glu Val Phe Asp  Val Val Arg Val His  Gln Pro His Arg Gly  Val
            3490                3495                3500

atc gag gcc gtc  tac ctg cgc acc ccc  ttc tcg gcc ggt aac  gcc       21199
Ile Glu Ala Val  Tyr Leu Arg Thr Pro  Phe Ser Ala Gly Asn  Ala
            3505                3510                3515

acc acc taagctcttg cttcttgcaa g atg gct  gag ccc acg ggc tcc  ggc    21250
Thr Thr                         Met Ala  Glu Pro Thr Gly Ser  Gly
                                    3520                3525

gag cag gag ctc  agg gcc atc atc cgc  gac ctg ggc tgc ggg  ccc       21295
Glu Gln Glu Leu  Arg Ala Ile Ile Arg  Asp Leu Gly Cys Gly  Pro
```

```
            3530                3535                3540

tac ttc ctg ggc  acc ttc gat aag cgc  ttc ccg gga ttc atg  gcc       21340
Tyr Phe Leu Gly  Thr Phe Asp Lys Arg  Phe Pro Gly Phe Met  Ala
            3545                3550                3555

ccg cac aag ctg  gcc tgc gcc atc gtc  aac acg gcc ggc cgc  gag       21385
Pro His Lys Leu  Ala Cys Ala Ile Val  Asn Thr Ala Gly Arg  Glu
            3560                3565                3570

acc ggg ggc gag  cac tgg ctg gcc ttc  gcc tgg aac ccg cgc  tcg       21430
Thr Gly Gly Glu  His Trp Leu Ala Phe  Ala Trp Asn Pro Arg  Ser
            3575                3580                3585

aac acc tgc tac  ctc ttc gac ccc ttc  ggg ttc tcg gac gag  cgc       21475
Asn Thr Cys Tyr  Leu Phe Asp Pro Phe  Gly Phe Ser Asp Glu  Arg
            3590                3595                3600

ctc aag cag atc  tac cag ttc gag tac  gag ggc ctg ctg cgc  cgc       21520
Leu Lys Gln Ile  Tyr Gln Phe Glu Tyr  Glu Gly Leu Leu Arg  Arg
            3605                3610                3615

agc gcc ctg gcc  acc gag gac cgc tgc  gtc acc ctg gaa aag  tcc       21565
Ser Ala Leu Ala  Thr Glu Asp Arg Cys  Val Thr Leu Glu Lys  Ser
            3620                3625                3630

acc cag acc gtg  cag ggt ccg cgc tcg  gcc gcc tgc ggg ctc  ttt       21610
Thr Gln Thr Val  Gln Gly Pro Arg Ser  Ala Ala Cys Gly Leu  Phe
            3635                3640                3645

tgc tgc atg ttc  ctg cac gcc ttc gtg  cac tgg ccc gac cgc  ccc       21655
Cys Cys Met Phe  Leu His Ala Phe Val  His Trp Pro Asp Arg  Pro
            3650                3655                3660

atg gac aag aac  ccc acc atg aac ttg  ctg acg ggg gtg ccc  aac       21700
Met Asp Lys Asn  Pro Thr Met Asn Leu  Leu Thr Gly Val Pro  Asn
            3665                3670                3675

ggc atg ctc cag  tcg ccc cag gtg gaa  ccc acc ctg cgc cgc  aac       21745
Gly Met Leu Gln  Ser Pro Gln Val Glu  Pro Thr Leu Arg Arg  Asn
            3680                3685                3690

cag gag gcg ctc  tac cgc ttc ctc aac  gcc cac tcc gcc tac  ttt       21790
Gln Glu Ala Leu  Tyr Arg Phe Leu Asn  Ala His Ser Ala Tyr  Phe
            3695                3700                3705

cgc tcc cac cgc  gcg cgc atc gag aag  gcc acc gcc ttc gac  cgc       21835
Arg Ser His Arg  Ala Arg Ile Glu Lys  Ala Thr Ala Phe Asp  Arg
            3710                3715                3720

atg aat caa gac  atg taaaccgtgt gtgtatgtga atgctttatt cataataaac     21890
Met Asn Gln Asp  Met
            3725

agcacatgtt tatgccacct tctctgaggc tctgacttta tttagaaatc gaaggggttc    21950

tgccggctct cggcgtgccc cgcgggcagg gatacgttgc ggaactggta cttgggcagc    22010

cacttgaact cggggatcag cagcttcggc acggggaggt cggggaacga gtcgctccac    22070

agcttgcgcg tgagttgcag ggcgcccagc aggtcgggcg cggagatctt gaaatcgcag    22130

ttgggacccg cgttctgcgc gcgagagttg cggtacacgg ggttgcagca ctggaacacc    22190

atcagggccg ggtgcttcac gctcgccagc accgtcgcgt cggtgatgcc ctccacgtcc    22250

agatcctcgg cgttggccat cccgaagggg gtcatcttgc aggtctgccg ccccatgctg    22310

ggcacgcagc cgggcttgtg gttgcaatcg cagtgcaggg ggatcagcat catctgggcc    22370
```

```
tgctcggagc tcatgcccgg gtacatggcc ttcatgaaag cctccagctg gcggaaggcc    22430

tgctgcgcct tgccgccctc ggtgaagaag accccgcagg acttgctaga gaactggttg    22490

gtagcgcagc ccgcgtcgtg cacgcagcag cgcgcgtcgt tgttggccag ctgcaccacg    22550

ctgcgccccc agcggttctg ggtgatcttg gcccggtcgg ggttctcctt cagcgcgcgc    22610

tgcccgttct cgctcgccac atccatctcg atcgtgtgct ccttctggat catcacggtc    22670

ccgtgcaggc accgcagctt gccctcggcc tcggtgcagc cgtgcagcca cagcgcgcag    22730

ccggtgctct cccagttctt gtgggcgatc tgggagtgcg agtgcacgaa gccctgcagg    22790

aagcggccca tcatcgcggt cagggtcttg ttgctggtga aggtcagcgg gatgccgcgg    22850

tgctcctcgt tcacatacag gtggcagatg cggcggtaca cctcgccctg ctcgggcatc    22910

agctggaagg cggacttcag gtcgctctcc acgcggtacc ggtccatcag cagcgtcatc    22970

acttccatgc ccttctccca ggccgaaacg atcggcaggc tcaggggttt cttcaccgtc    23030

atcttagtcg ccgccgccga agtcaggggg tcgttctcgt ccagggtctc aaacactcgc    23090

ttgccgtcct tctcggtgat gcgcacgggg gggaaggcga agcccacggc cgccagctcc    23150

tcctcggcct gcctttcgtc ctcgctgtcc tggctgatgt cttgcaaagg cacatgcttg    23210

gtcttgcggg gtttcttttt gggcggcaga ggcggcggcg gcggagacgt gctgggcgag    23270

cgcgagttct cgctcaccac gactatttct tcttcttggc cgtcgtccga gaccacgcgg    23330

cggtaggcat gcctcttctg gggcagaggc ggaggcgacg ggctctcgcg gttcggcggg    23390

cggctggcag agcccttcc gcgttcgggg gtgcgctcct ggcggcgctg ctctgactga    23450

cttcctccgc ggccggccat tgtgttctcc tagggagcaa caacaagc atg gag act    23507
                                                      Met Glu Thr

cag  cca tcg tcg cca aca  tcg cca tct gcc ccc  gcc gcc gcc gac      23552
Gln  Pro Ser Ser Pro Thr  Ser Pro Ser Ala Pro  Ala Ala Ala Asp
3730                 3735                 3740

gag  aac cag cag cag cag  aat gaa agc tta acc  gcc ccg ccg ccc      23597
Glu  Asn Gln Gln Gln Gln  Asn Glu Ser Leu Thr  Ala Pro Pro Pro
3745                 3750                 3755

agc  ccc acc tcc gac gcc  gcg gcc cca gac atg  caa gag atg gag      23642
Ser  Pro Thr Ser Asp Ala  Ala Ala Pro Asp Met  Gln Glu Met Glu
3760                 3765                 3770

gaa  tcc atc gag att gac  ctg ggc tac gtg acg  ccc gcg gag cac      23687
Glu  Ser Ile Glu Ile Asp  Leu Gly Tyr Val Thr  Pro Ala Glu His
3775                 3780                 3785

gag  gag gag ctg gca gcg  cgc ttt tca gcc ccg  gaa gag aac cac      23732
Glu  Glu Glu Leu Ala Ala  Arg Phe Ser Ala Pro  Glu Glu Asn His
3790                 3795                 3800

caa  gag cag cca gag cag  gaa gca gag agc gag  cag agc cag gct      23777
Gln  Glu Gln Pro Glu Gln  Glu Ala Glu Ser Glu  Gln Ser Gln Ala
3805                 3810                 3815

ggg  ctc gag cat ggc gac  tac ctg agc ggg gca  gag gac gtg ctc      23822
Gly  Leu Glu His Gly Asp  Tyr Leu Ser Gly Ala  Glu Asp Val Leu
3820                 3825                 3830
```

```
atc  aag cat ctg gcc cgc  caa tgc atc atc gtc  aag gac gcg ctg       23867
Ile  Lys His Leu Ala Arg  Gln Cys Ile Ile Val  Lys Asp Ala Leu
3835                 3840                 3845

ctc  gac cgc gcc gag gtg  ccc ctc agc gtg gcg  gag ctc agc cgc       23912
Leu  Asp Arg Ala Glu Val  Pro Leu Ser Val Ala  Glu Leu Ser Arg
3850                 3855                 3860

gcc  tac gag cgc aac ctc  ttc tcg ccg cgc gtg  ccc ccc aag cgc       23957
Ala  Tyr Glu Arg Asn Leu  Phe Ser Pro Arg Val  Pro Pro Lys Arg
3865                 3870                 3875

cag  ccc aac ggc acc tgc  gag ccc aac ccg cgc  ctc aac ttc tac       24002
Gln  Pro Asn Gly Thr Cys  Glu Pro Asn Pro Arg  Leu Asn Phe Tyr
3880                 3885                 3890

ccg  gtc ttc gcg gtg ccc  gag gcc ctg gcc acc  tac cac ctc ttt       24047
Pro  Val Phe Ala Val Pro  Glu Ala Leu Ala Thr  Tyr His Leu Phe
3895                 3900                 3905

ttc  aag aac caa agg atc  ccc gtc tcc tgc cgc  gcc aac cgc acc       24092
Phe  Lys Asn Gln Arg Ile  Pro Val Ser Cys Arg  Ala Asn Arg Thr
3910                 3915                 3920

cgc  gcc gac gcc ctg ctc  aac ctg ggc ccc ggc  gcc cgc cta cct       24137
Arg  Ala Asp Ala Leu Leu  Asn Leu Gly Pro Gly  Ala Arg Leu Pro
3925                 3930                 3935

gat  atc gcc tcc ttg gaa  gag gtt ccc aag atc  ttc gag ggt ctg       24182
Asp  Ile Ala Ser Leu Glu  Glu Val Pro Lys Ile  Phe Glu Gly Leu
3940                 3945                 3950

ggc  agc gac gag act cgg  gcc gcg aac gct ctg  caa gga agc gga       24227
Gly  Ser Asp Glu Thr Arg  Ala Ala Asn Ala Leu  Gln Gly Ser Gly
3955                 3960                 3965

gag  gag cat gag cac cac  agc gcc ctg gtg gag  ttg gaa ggc gac       24272
Glu  Glu His Glu His His  Ser Ala Leu Val Glu  Leu Glu Gly Asp
3970                 3975                 3980

aac  gcg cgc ctg gcg gtc  ctc aag cgc acg gtc  gag ctg acc cac       24317
Asn  Ala Arg Leu Ala Val  Leu Lys Arg Thr Val  Glu Leu Thr His
3985                 3990                 3995

ttc  gcc tac ccg gcg ctc  aac ctg ccc ccc aag  gtc atg agc gcc       24362
Phe  Ala Tyr Pro Ala Leu  Asn Leu Pro Pro Lys  Val Met Ser Ala
4000                 4005                 4010

gtc  atg gac cag gtg ctc  atc aag cgc gcc tcg  ccc ctc tcg gag       24407
Val  Met Asp Gln Val Leu  Ile Lys Arg Ala Ser  Pro Leu Ser Glu
4015                 4020                 4025

gag  gag atg cag gac ccc  gag agc tcg gac gag  ggc aag ccc gtg       24452
Glu  Glu Met Gln Asp Pro  Glu Ser Ser Asp Glu  Gly Lys Pro Val
4030                 4035                 4040

gtc  agc gac gag cag ctg  gcg cgc tgg ctg gga  acg agt agc acc       24497
Val  Ser Asp Glu Gln Leu  Ala Arg Trp Leu Gly  Thr Ser Ser Thr
4045                 4050                 4055

ccc  cag agt ctg gaa gag  cgg cgc aag ctc atg  atg gcc gtg gtc       24542
Pro  Gln Ser Leu Glu Glu  Arg Arg Lys Leu Met  Met Ala Val Val
4060                 4065                 4070

ctg  gtg acc gtg gag ctt  gag tgt ctg cgc cgc  ttc ttc gcc gac       24587
Leu  Val Thr Val Glu Leu  Glu Cys Leu Arg Arg  Phe Phe Ala Asp
4075                 4080                 4085

gcg  gag acc ctg cgc aag  gtc gag gag aac ctg  cac tac ctc ttc       24632
```

```
Ala  Glu Thr Leu Arg Lys  Val Glu Glu Asn Leu  His Tyr Leu Phe
4090                4095                4100

agg  cac ggg ttc gtg cgc  cag gcc tgc aag atc  tcc aac gtg gag       24677
Arg  His Gly Phe Val Arg  Gln Ala Cys Lys Ile  Ser Asn Val Glu
4105                4110                4115

ctg  acc aac ctg gtc tcc  tac atg ggc atc ctg  cac gag aac cgc       24722
Leu  Thr Asn Leu Val Ser  Tyr Met Gly Ile Leu  His Glu Asn Arg
4120                4125                4130

ctg  ggg cag aac gtg ctg  cac acc acc ctg cgc  ggg gag gcc cgc       24767
Leu  Gly Gln Asn Val Leu  His Thr Thr Leu Arg  Gly Glu Ala Arg
4135                4140                4145

cgc  gac tac atc cgc gac  tgc gtc tac ctg tac  ctc tgc cac acc       24812
Arg  Asp Tyr Ile Arg Asp  Cys Val Tyr Leu Tyr  Leu Cys His Thr
4150                4155                4160

tgg  cag acg ggc atg ggc  gtg tgg cag cag tgc  ctg gag gag cag       24857
Trp  Gln Thr Gly Met Gly  Val Trp Gln Gln Cys  Leu Glu Glu Gln
4165                4170                4175

aac  ctg aaa gag ctc tgc  aag ctc ctg cag aag  aac ctg aag gcc       24902
Asn  Leu Lys Glu Leu Cys  Lys Leu Leu Gln Lys  Asn Leu Lys Ala
4180                4185                4190

ctg  tgg acc ggg ttc gac  gag cgt acc acc gcc  tcg gac ctg gcc       24947
Leu  Trp Thr Gly Phe Asp  Glu Arg Thr Thr Ala  Ser Asp Leu Ala
4195                4200                4205

gac  ctc atc ttc ccc gag  cgc ctg cgg ctg acg  ctg cgc aac ggg       24992
Asp  Leu Ile Phe Pro Glu  Arg Leu Arg Leu Thr  Leu Arg Asn Gly
4210                4215                4220

ctg  ccc gac ttt atg agc  caa agc atg ttg caa  aac ttt cgc tct       25037
Leu  Pro Asp Phe Met Ser  Gln Ser Met Leu Gln  Asn Phe Arg Ser
4225                4230                4235

ttc  atc ctc gaa cgc tcc  ggg atc ctg ccc gcc  acc tgc tcc gcg       25082
Phe  Ile Leu Glu Arg Ser  Gly Ile Leu Pro Ala  Thr Cys Ser Ala
4240                4245                4250

ctg  ccc tcg gac ttc gtg  ccg ctg acc ttc cgc  gag tgc ccc ccg       25127
Leu  Pro Ser Asp Phe Val  Pro Leu Thr Phe Arg  Glu Cys Pro Pro
4255                4260                4265

ccg  ctc tgg agc cac tgc  tac ttg ctg cgc ctg  gcc aac tac ctg       25172
Pro  Leu Trp Ser His Cys  Tyr Leu Leu Arg Leu  Ala Asn Tyr Leu
4270                4275                4280

gcc  tac cac tcg gac gtg  atc gag gac gtc agc  ggc gag ggt ctg       25217
Ala  Tyr His Ser Asp Val  Ile Glu Asp Val Ser  Gly Glu Gly Leu
4285                4290                4295

ctc  gag tgc cac tgc cgc  tgc aac ctc tgc acg  ccg cac cgc tcc       25262
Leu  Glu Cys His Cys Arg  Cys Asn Leu Cys Thr  Pro His Arg Ser
4300                4305                4310

ctg  gcc tgc aac ccc cag  ctg ctg agc gag acc  cag atc atc ggc       25307
Leu  Ala Cys Asn Pro Gln  Leu Leu Ser Glu Thr  Gln Ile Ile Gly
4315                4320                4325

acc  ttc gag ttg caa ggc  ccc ggc gag gag ggc  aag ggg ggt ctg       25352
Thr  Phe Glu Leu Gln Gly  Pro Gly Glu Glu Gly  Lys Gly Gly Leu
4330                4335                4340

aaa  ctc acc ccg ggg ctg  tgg acc tcg gcc tac  ttg cgc aag ttc       25397
Lys  Leu Thr Pro Gly Leu  Trp Thr Ser Ala Tyr  Leu Arg Lys Phe
```

```
4345                4350                4355

gtg  ccc gag gac tac cat  ccc ttc gag atc agg  ttc tac gag gac       25442
Val  Pro Glu Asp Tyr His  Pro Phe Glu Ile Arg  Phe Tyr Glu Asp
4360                4365                4370

caa  tcc cag ccg ccc aag  gcc gag ctg tcg gcc  tgc gtc atc acc       25487
Gln  Ser Gln Pro Pro Lys  Ala Glu Leu Ser Ala  Cys Val Ile Thr
4375                4380                4385

cag  ggg gcc atc ctg gcc  caa ttg caa gcc atc  cag aaa tcc cgc       25532
Gln  Gly Ala Ile Leu Ala  Gln Leu Gln Ala Ile  Gln Lys Ser Arg
4390                4395                4400

caa  gaa ttt ctg ctg aaa  aag ggc cac ggg gtc  tac ttg gac ccc       25577
Gln  Glu Phe Leu Leu Lys  Lys Gly His Gly Val  Tyr Leu Asp Pro
4405                4410                4415

cag  acc gga gag gag ctc  aac ccc agc ttc ccc  cag gat gcc cag       25622
Gln  Thr Gly Glu Glu Leu  Asn Pro Ser Phe Pro  Gln Asp Ala Gln
4420                4425                4430

agg  aag cag caa gaa gct  gaa agt gga gct gcc  gct gcc gcc gga       25667
Arg  Lys Gln Gln Glu Ala  Glu Ser Gly Ala Ala  Ala Ala Ala Gly
4435                4440                4445

gga  ttt gga gga aga ctg  gga gag cag tca ggc  aga gga gga gga       25712
Gly  Phe Gly Gly Arg Leu  Gly Glu Gln Ser Gly  Arg Gly Gly Gly
4450                4455                4460

gat  gga aga ctg gga cag  cac tca ggc aga gga  gga cag cct gca       25757
Asp  Gly Arg Leu Gly Gln  His Ser Gly Arg Gly  Gly Gln Pro Ala
4465                4470                4475

aga  cag tct gga aga cga  ggt gga gga ggc aga  gga aga agc agc       25802
Arg  Gln Ser Gly Arg Arg  Gly Gly Gly Gly Arg  Gly Arg Ser Ser
4480                4485                4490

cgc  cgc cag acc gtc gtc  ctc ggc gga gaa agc  aag cag cac gga       25847
Arg  Arg Gln Thr Val Val  Leu Gly Gly Glu Ser  Lys Gln His Gly
4495                4500                4505

tac  cat ctc cgc tcc ggg  tcg ggg tct cgg cgg  ccg ggc cca cag       25892
Tyr  His Leu Arg Ser Gly  Ser Gly Ser Arg Arg  Pro Gly Pro Gln
4510                4515                4520

tagatgggac gagaccgggc gcttcccgaa ccccaccacc cagaccggta agaaggagcg    25952

gcagggatac aagtcctggc gggggcacaa aaacgccatc gtctcctgct tgcaagcctg    26012

cgggggcaac atctccttca cccggcgcta cctgctcttc caccgcgggg tgaacttccc    26072

ccgcaacatc ttgcattact accgtcacct ccacagcccc tactactgtt tccaagaaga    26132

ggcagaaacc cagcagcagc agaaaaccag cagcagctag aaaatccaca gcggcggcgg    26192

cggcaggtgg actgaggatc gcggcgaacg agccggcgca gacccgggag ctgaggaacc    26252

ggatctttcc caccctctat gccatcttcc agcagagtcg ggggcaggag caggaactga    26312

aagtcaagaa ccgttctctg cgctcgctca cccgcagttg tctgtatcac aagagcgaag    26372

accaacttca gcgcactctc gaggacgccg aggctctctt caacaagtac tgcgcgctca    26432

ctcttaaaga gtagcccgcg cccgcccaca cacggaaaaa ggcgggaatt acgtcaccac    26492

ctgcgcccct cgcccgacca tcatc atg  agc aaa gag att ccc  acg cct tac    26544
                          Met  Ser Lys Glu Ile Pro  Thr Pro Tyr
                          4525                4530
```

```
atg tgg  agc tac cag ccc cag  atg ggc ctg gcc gcc  ggc gcc gcc       26589
Met Trp  Ser Tyr Gln Pro Gln  Met Gly Leu Ala Ala  Gly Ala Ala
    4535                 4540                 4545

cag gac  tac tcc acc cgc atg  aac tgg ctc agt gcc  ggg ccc gcg       26634
Gln Asp  Tyr Ser Thr Arg Met  Asn Trp Leu Ser Ala  Gly Pro Ala
    4550                 4555                 4560

atg atc  tca cgg gtg aat gac  atc cgc gcc cac cga  aac cag ata       26679
Met Ile  Ser Arg Val Asn Asp  Ile Arg Ala His Arg  Asn Gln Ile
    4565                 4570                 4575

ctc cta  gaa cag tca gcg atc  acc gcc acg ccc cgc  cat cac ctt       26724
Leu Leu  Glu Gln Ser Ala Ile  Thr Ala Thr Pro Arg  His His Leu
    4580                 4585                 4590

aat ccg  cgt aat tgg ccc gcc  gcc ctg gtg tac cag  gaa att ccc       26769
Asn Pro  Arg Asn Trp Pro Ala  Ala Leu Val Tyr Gln  Glu Ile Pro
    4595                 4600                 4605

cag ccc  acg acc gta cta ctt  ccg cga gac gcc cag  gcc gaa gtc       26814
Gln Pro  Thr Thr Val Leu Leu  Pro Arg Asp Ala Gln  Ala Glu Val
    4610                 4615                 4620

cag ctg  act aac tca ggt gtc  cag ctg gcc ggc ggc  gcc gcc ctg       26859
Gln Leu  Thr Asn Ser Gly Val  Gln Leu Ala Gly Gly  Ala Ala Leu
    4625                 4630                 4635

tgt cgt  cac cgc ccc gct cag  ggt ata aag cgg ctg  gtg atc cga       26904
Cys Arg  His Arg Pro Ala Gln  Gly Ile Lys Arg Leu  Val Ile Arg
    4640                 4645                 4650

ggc aga  ggc aca cag ctc aac  gac gag gtg gtg agc  tct tcg ctg       26949
Gly Arg  Gly Thr Gln Leu Asn  Asp Glu Val Val Ser  Ser Ser Leu
    4655                 4660                 4665

ggt ctg  cga cct gac gga gtc  ttc caa ctc gcc gga  tcg ggg aga       26994
Gly Leu  Arg Pro Asp Gly Val  Phe Gln Leu Ala Gly  Ser Gly Arg
    4670                 4675                 4680

tct tcc  ttc acg cct cgt cag  gcc gtc ctg act ttg  gag agt tcg       27039
Ser Ser  Phe Thr Pro Arg Gln  Ala Val Leu Thr Leu  Glu Ser Ser
    4685                 4690                 4695

tcc tcg  cag ccc cgc tcg ggt  ggc atc ggc act ctc  cag ttc gtg       27084
Ser Ser  Gln Pro Arg Ser Gly  Gly Ile Gly Thr Leu  Gln Phe Val
    4700                 4705                 4710

gag gag  ttc act ccc tcg gtc  tac ttc aac ccc ttc  tcc ggc tcc       27129
Glu Glu  Phe Thr Pro Ser Val  Tyr Phe Asn Pro Phe  Ser Gly Ser
    4715                 4720                 4725

ccc ggc  cac tac ccg gac gag  ttc atc ccg aac ttc  gac gcc atc       27174
Pro Gly  His Tyr Pro Asp Glu  Phe Ile Pro Asn Phe  Asp Ala Ile
    4730                 4735                 4740

agc gag  tcg gtg gac ggc tac  gat tga atg tcc cat ggt  ggc gcg       27219
Ser Glu  Ser Val Asp Gly Tyr  Asp     Met Ser His Gly  Gly Ala
    4745                 4750                     4755

gct gac cta  gct cgg ctt cga cac  ctg gac cac tgc cgc  cgc ttc       27264
Ala Asp Leu  Ala Arg Leu Arg His  Leu Asp His Cys Arg  Arg Phe
        4760                 4765                 4770

cgc tgc ttc  gct cgg gat ctc gcc  gag ttt gcc tac ttt  gag ctg       27309
Arg Cys Phe  Ala Arg Asp Leu Ala  Glu Phe Ala Tyr Phe  Glu Leu
        4775                 4780                 4785
```

```
ccc gag gag  cac cct cag ggc ccg  gcc cac gga gtg cgg  atc atc       27354
Pro Glu Glu  His Pro Gln Gly Pro  Ala His Gly Val Arg  Ile Ile
        4790                 4795                 4800

gtc gaa ggg  ggc ctc gac tcc cac  ctg ctt cgg atc ttc  agc cag       27399
Val Glu Gly  Gly Leu Asp Ser His  Leu Leu Arg Ile Phe  Ser Gln
        4805                 4810                 4815

cgt ccg atc  ctg gtc gag cgc gag  caa gga cag acc cgt  ctg acc       27444
Arg Pro Ile  Leu Val Glu Arg Glu  Gln Gly Gln Thr Arg  Leu Thr
        4820                 4825                 4830

ctg tac tgc  atc tgc aac cac ccc  ggc ctg cat gaa agt  ctt tgt       27489
Leu Tyr Cys  Ile Cys Asn His Pro  Gly Leu His Glu Ser  Leu Cys
        4835                 4840                 4845

tgt ctg ctg  tgt act gag tat aat  aaa agc tgagatcagc gactactccg      27539
Cys Leu Leu  Cys Thr Glu Tyr Asn  Lys Ser
        4850                 4855

gacttccgtg tgttcctgaa tccatcaacc agtccctgtt cttcaccggg aacgagaccg    27599

agctccagct ccagtgtaag ccccacaaga agtacctcac ctggctgttc cagggctccc    27659

cgatcgccgt tgtcaaccac tgcgacaacg acggagtcct gctgagcggc cctgccaacc    27719

ttacttttc cacccgcaga agcaagctcc agctcttcca acccttcctc cccgggacct     27779

atcagtgcgt ctcgggaccc tgccatcaca ccttccacct gatcccgaat accacagcgt    27839

cgctccccgc tactaacaac caaactaccc accaacgcca ccgtcgcgac ctttcctctg    27899

aatctaatac cactaccgga ggtgagctcc gaggtcgacc aacctctggg atttactacg    27959

gcccctggga ggtggtgggg ttaatagcgc taggcctagt tgtgggtggg cttttggctc    28019

tctgctacct atacctccct tgctgttcgt acttagtggt gctgtgttgc tggtttaaga    28079

a atg ggg cag  atc acc cta gtg agc  tgc ggt gtg ctg gtg  gcg gtg      28125
  Met Gly Gln  Ile Thr Leu Val Ser  Cys Gly Val Leu Val  Ala Val
          4860                 4865                 4870

gtg ctt tcg  att gtg gga ctg ggc  ggc gcg gct gta gtg  aag gag       28170
Val Leu Ser  Ile Val Gly Leu Gly  Gly Ala Ala Val Val  Lys Glu
        4875                 4880                 4885

aag gcc gat  ccc tgc ttg cat ttc  aat ccc gat aaa tgc  cag ctg       28215
Lys Ala Asp  Pro Cys Leu His Phe  Asn Pro Asp Lys Cys  Gln Leu
        4890                 4895                 4900

agt ttt cag  ccc gat ggc aat cgg  tgc gcg gtg ctg atc  aag tgc       28260
Ser Phe Gln  Pro Asp Gly Asn Arg  Cys Ala Val Leu Ile  Lys Cys
        4905                 4910                 4915

gga tgg gaa  tgc gag aac gtg aga  atc gag tac aat aac  aag act       28305
Gly Trp Glu  Cys Glu Asn Val Arg  Ile Glu Tyr Asn Asn  Lys Thr
        4920                 4925                 4930

cgg aac aat  act ctc gcg tcc acg  tgg cag ccc ggg gac  ccc gag       28350
Arg Asn Asn  Thr Leu Ala Ser Thr  Trp Gln Pro Gly Asp  Pro Glu
        4935                 4940                 4945

tgg tac acc  gtc tct gtc ccc ggt  gct gac ggc tcc ccg  cgc acc       28395
Trp Tyr Thr  Val Ser Val Pro Gly  Ala Asp Gly Ser Pro  Arg Thr
        4950                 4955                 4960

gtg aat aat  act ttc att ttt gcg  cac atg tgc gac acg  gtc atg       28440
Val Asn Asn  Thr Phe Ile Phe Ala  His Met Cys Asp Thr  Val Met
        4965                 4970                 4975
```

```
tgg atg agc  aag cag tac gat atg  tgg ccc ccc acg aag  gag aac       28485
Trp Met Ser  Lys Gln Tyr Asp Met  Trp Pro Pro Thr Lys  Glu Asn
        4980                 4985                 4990

atc gtg gtc  ttc tcc atc gct tac  agc ctg tgc acg gtg  cta atc       28530
Ile Val Val  Phe Ser Ile Ala Tyr  Ser Leu Cys Thr Val  Leu Ile
        4995                 5000                 5005

acc gct atc  gtg tgc ctg agc att  cac atg ctc atc gct  att cgc       28575
Thr Ala Ile  Val Cys Leu Ser Ile  His Met Leu Ile Ala  Ile Arg
        5010                 5015                 5020

ccc aga aat  aat gcc gaa aaa gaa  aaa cag cca taacacgttt            28618
Pro Arg Asn  Asn Ala Glu Lys Glu  Lys Gln Pro
        5025                 5030

tttcacacac ctttttcaga cc atg gcc  tct gtt aaa ttt ttg  ctt tta       28667
                          Met Ala  Ser Val Lys Phe Leu  Leu Leu
                               5035                 5040

ttt gcc agt  ctc att act gtt ata  agt aat gag aaa ctc  act att       28712
Phe Ala Ser  Leu Ile Thr Val Ile  Ser Asn Glu Lys Leu  Thr Ile
        5045                 5050                 5055

tac att ggc  act aac cac act cta  gaa gga att cca aaa  tcc tca       28757
Tyr Ile Gly  Thr Asn His Thr Leu  Glu Gly Ile Pro Lys  Ser Ser
        5060                 5065                 5070

tgg tat tgc  tat ttt gat caa gat  cca gac tta act ata  gaa ctg       28802
Trp Tyr Cys  Tyr Phe Asp Gln Asp  Pro Asp Leu Thr Ile  Glu Leu
        5075                 5080                 5085

tgt ggt aac  aag gga caa aat aca  agc att cat tta att  aac ttt       28847
Cys Gly Asn  Lys Gly Gln Asn Thr  Ser Ile His Leu Ile  Asn Phe
        5090                 5095                 5100

aaa tgc gga  gac gat ttg aaa tta  att aat atc act aaa  gag tat       28892
Lys Cys Gly  Asp Asp Leu Lys Leu  Ile Asn Ile Thr Lys  Glu Tyr
        5105                 5110                 5115

gga ggt atg  tat tac tat gtt aca  gaa aat aac aac atg  cag ttt       28937
Gly Gly Met  Tyr Tyr Tyr Val Thr  Glu Asn Asn Asn Met  Gln Phe
        5120                 5125                 5130

tat gaa gtt  act gta act aat ccc  acc acg cct aga aca  aca aca       28982
Tyr Glu Val  Thr Val Thr Asn Pro  Thr Thr Pro Arg Thr  Thr Thr
        5135                 5140                 5145

acc acc aca  aag act aca cct gtt  acc act atg cag ctc  act acc       29027
Thr Thr Thr  Lys Thr Thr Pro Val  Thr Thr Met Gln Leu  Thr Thr
        5150                 5155                 5160

aat aac att  ttt gcc atg cgt cag  aag gcc aac aat agc  acc agc       29072
Asn Asn Ile  Phe Ala Met Arg Gln  Lys Ala Asn Asn Ser  Thr Ser
        5165                 5170                 5175

att caa ccc  ccc cca ccc agt gag  gaa att ccc aaa tcc  atg att       29117
Ile Gln Pro  Pro Pro Pro Ser Glu  Glu Ile Pro Lys Ser  Met Ile
        5180                 5185                 5190

ggc att att  gtt gct gta gtg gtg  tgc atg ttg atc atc  gcc ttg       29162
Gly Ile Ile  Val Ala Val Val Val  Cys Met Leu Ile Ile  Ala Leu
        5195                 5200                 5205

tgc atg gtg  tac tat gcc ttc tgc  tac aga aag cac aga  ctg aac       29207
Cys Met Val  Tyr Tyr Ala Phe Cys  Tyr Arg Lys His Arg  Leu Asn
        5210                 5215                 5220
```

```
gac aag cta  gaa cac tta cta agt  gtt gaa ttt taatttttt agaacc      29256
Asp Lys Leu  Glu His Leu Leu Ser  Val Glu Phe
        5225                 5230

atg aag  atc cta ggc ctt tta  att ttt tct atc att  acc tct gct       29301
Met Lys  Ile Leu Gly Leu Leu  Ile Phe Ser Ile Ile  Thr Ser Ala
    5235                 5240                 5245

cta tgc  aat tct gac aat gag  gac gtt act gtc gtt  gtc gga tca       29346
Leu Cys  Asn Ser Asp Asn Glu  Asp Val Thr Val Val  Val Gly Ser
    5250                 5255                 5260

aat tat  aca ctg aaa ggt cca  gcg aag ggt atg ctt  tcg tgg tat       29391
Asn Tyr  Thr Leu Lys Gly Pro  Ala Lys Gly Met Leu  Ser Trp Tyr
    5265                 5270                 5275

tgc tgg  ttt gga act gac act  gaa caa acc gaa tta  tgc aat ctt       29436
Cys Trp  Phe Gly Thr Asp Thr  Glu Gln Thr Glu Leu  Cys Asn Leu
    5280                 5285                 5290

caa aat  ggc aaa gtt cat aat  tct aaa att tac aat  tat ata tgc       29481
Gln Asn  Gly Lys Val His Asn  Ser Lys Ile Tyr Asn  Tyr Ile Cys
    5295                 5300                 5305

aat ggc  act gat ttg ata ctc  ctc aat atc acg aaa  tca tat gct       29526
Asn Gly  Thr Asp Leu Ile Leu  Leu Asn Ile Thr Lys  Ser Tyr Ala
    5310                 5315                 5320

ggc agt  tat tca tgc cct gga  gat gat gct gac aat  atg att ttt       29571
Gly Ser  Tyr Ser Cys Pro Gly  Asp Asp Ala Asp Asn  Met Ile Phe
    5325                 5330                 5335

tat aaa  ttg caa gtg gtt gat  ccc act act cca cct  cca ccc acc       29616
Tyr Lys  Leu Gln Val Val Asp  Pro Thr Thr Pro Pro  Pro Pro Thr
    5340                 5345                 5350

aca act  act cac acc aca cac  aca gaa caa acc aca  gca gag gag       29661
Thr Thr  Thr His Thr Thr His  Thr Glu Gln Thr Thr  Ala Glu Glu
    5355                 5360                 5365

gcg gca  aag tta gct ttg cag  gtc caa gac agt tca  ttt gtt ggc       29706
Ala Ala  Lys Leu Ala Leu Gln  Val Gln Asp Ser Ser  Phe Val Gly
    5370                 5375                 5380

att acc  cct aca ccc gat cag  cgg tgt ccg ggg ctg  ctc gtc agc       29751
Ile Thr  Pro Thr Pro Asp Gln  Arg Cys Pro Gly Leu  Leu Val Ser
    5385                 5390                 5395

ggc att  gtc ggt gtg ctt tcg  gga tta gca gtt ata  atc atc tgc       29796
Gly Ile  Val Gly Val Leu Ser  Gly Leu Ala Val Ile  Ile Ile Cys
    5400                 5405                 5410

atg ttc  att ttt gct tgc tgc  tat aga agg ctt tac  cga caa aaa       29841
Met Phe  Ile Phe Ala Cys Cys  Tyr Arg Arg Leu Tyr  Arg Gln Lys
    5415                 5420                 5425

tca gac  cca ctg ctg aac ctc  tat gtt taatttttc cagagcc atg aag     29891
Ser Asp  Pro Leu Leu Asn Leu  Tyr Val                   Met Lys
    5430                 5435

gca  gtt agc gct cta gtt  ttt tgt tct ttg att  ggc act gtt ttt       29936
Ala  Val Ser Ala Leu Val  Phe Cys Ser Leu Ile  Gly Thr Val Phe
5440                 5445                 5450

agt  gtt agc ttt tta aaa  caa att aat gtt act  gag ggg gaa aat       29981
Ser  Val Ser Phe Leu Lys  Gln Ile Asn Val Thr  Glu Gly Glu Asn
5455                 5460                 5465

gtg  aca ctg gta ggc gta  gaa ggt gct caa aat  acc acc tgg aca       30026
```

```
Val  Thr Leu Val Gly Val  Glu Gly Ala Gln Asn  Thr Thr Trp Thr
5470                5475                5480

aaa  tac cac ctc gat ggg  tgg aaa gat att tgc  aat tgg agt gtc       30071
Lys  Tyr His Leu Asp Gly  Trp Lys Asp Ile Cys  Asn Trp Ser Val
5485                5490                5495

att  act tac aca tgt gag  gga gtt aat ttg acc  ata gtc aat gcc       30116
Ile  Thr Tyr Thr Cys Glu  Gly Val Asn Leu Thr  Ile Val Asn Ala
5500                5505                5510

agc  caa aat cag aag ggt  tgg att aaa ggg caa  tct gtt agt gtt       30161
Ser  Gln Asn Gln Lys Gly  Trp Ile Lys Gly Gln  Ser Val Ser Val
5515                5520                5525

acc  agt gag ggg tac tat  acc cag cat act ctt  atc tat gac att       30206
Thr  Ser Glu Gly Tyr Tyr  Thr Gln His Thr Leu  Ile Tyr Asp Ile
5530                5535                5540

ata  gtc ata ccg ctg cct  acg cct agc cca cct  agc act acc aca       30251
Ile  Val Ile Pro Leu Pro  Thr Pro Ser Pro Pro  Ser Thr Thr Thr
5545                5550                5555

cag  aca acc cac act aca  caa aca acc aca tac  agt aca tca aat       30296
Gln  Thr Thr His Thr Thr  Gln Thr Thr Thr Tyr  Ser Thr Ser Asn
5560                5565                5570

cag  cct acc acc act aca  aca gca gag gtt gcc  agc tcg tct ggg       30341
Gln  Pro Thr Thr Thr Thr  Thr Ala Glu Val Ala  Ser Ser Ser Gly
5575                5580                5585

gtc  cga gcg gca ttt ttg  atg ttg gcc cca tct  agc agt ccc act       30386
Val  Arg Ala Ala Phe Leu  Met Leu Ala Pro Ser  Ser Ser Pro Thr
5590                5595                5600

gct  agt acc aat gag cag  act act gaa ttt ttg  tcc act gtc gag       30431
Ala  Ser Thr Asn Glu Gln  Thr Thr Glu Phe Leu  Ser Thr Val Glu
5605                5610                5615

agc  cac acc aca gct acc  tcg agt gcc ttc tct  agc acc gcc aat       30476
Ser  His Thr Thr Ala Thr  Ser Ser Ala Phe Ser  Ser Thr Ala Asn
5620                5625                5630

ctc  tcc tcg ctt tcc tct  aca cca atc agt ccc  gct act act act       30521
Leu  Ser Ser Leu Ser Ser  Thr Pro Ile Ser Pro  Ala Thr Thr Thr
5635                5640                5645

acc  ccc gct att ctt ccc  act ccc ctg aag caa  act gag gac agc       30566
Thr  Pro Ala Ile Leu Pro  Thr Pro Leu Lys Gln  Thr Glu Asp Ser
5650                5655                5660

ggc  atg caa tgg cag atc  acc ctg ctc att gtg  atc ggg ttg gtc       30611
Gly  Met Gln Trp Gln Ile  Thr Leu Leu Ile Val  Ile Gly Leu Val
5665                5670                5675

atc  cta gcc gtg ttg ctc  tac tac atc ttc cgc  cgc cgc att ccc       30656
Ile  Leu Ala Val Leu Leu  Tyr Tyr Ile Phe Arg  Arg Arg Ile Pro
5680                5685                5690

aac  gcg cac cgc aag ccg  gtc tac aag ccc atc  att gtc ggg cag       30701
Asn  Ala His Arg Lys Pro  Val Tyr Lys Pro Ile  Ile Val Gly Gln
5695                5700                5705

ccg  gag ccg ctt cag gtg  gaa ggg ggt cta agg  aat ctt ctc ttc       30746
Pro  Glu Pro Leu Gln Val  Glu Gly Gly Leu Arg  Asn Leu Leu Phe
5710                5715                5720

tct  ttt aca gta tgg tgattgaact atgattccta gacaattctt gatcactatt     30801
Ser  Phe Thr Val Trp
```

5725

```
cttatctgcc tcctccaagt ctgtgccacc ctcgctctgg tggccaacgc cagtccagac    30861

tgtattgggc ccttcgcctc ctacgtgctc tttgccttca tcacctgcat ctgctgctgt    30921

agcatagtct gcctgcttat caccttcttc cagttcattg actggatctt tgtgcgcatc    30981

gcctacctgc gccaccaccc ccagtaccgc gaccagcgag tggcgcagct gctcaggctc    31041

ctctgataag c atg  cgg gct ctg cta ctt  ctc gcg ctt ctg ctg  tta      31088
            Met  Arg Ala Leu Leu Leu  Leu Ala Leu Leu Leu  Leu
            5730                5735                5740

gtg ctc ccc cgt  ccc gtt gac ccc cgg  ccc ccc act cag tcc  ccc      31133
Val Leu Pro Arg  Pro Val Asp Pro Arg  Pro Pro Thr Gln Ser  Pro
            5745                5750                5755

gag gag gtc cgc  aaa tgc aaa ttc caa  gaa ccc tgg aaa ttc  ctc      31178
Glu Glu Val Arg  Lys Cys Lys Phe Gln  Glu Pro Trp Lys Phe  Leu
            5760                5765                5770

aaa tgc tac cgc  caa aaa tca gac atg  cat ccc agc tgg atc  atg      31223
Lys Cys Tyr Arg  Gln Lys Ser Asp Met  His Pro Ser Trp Ile  Met
            5775                5780                5785

atc att ggg atc  gtg aac att ctg gcc  tgc acc ctc atc tcc  ttt      31268
Ile Ile Gly Ile  Val Asn Ile Leu Ala  Cys Thr Leu Ile Ser  Phe
            5790                5795                5800

gtg att tac ccc  tgc ttt gac ttt ggt  tgg aac tcg cca gag  gcg      31313
Val Ile Tyr Pro  Cys Phe Asp Phe Gly  Trp Asn Ser Pro Glu  Ala
            5805                5810                5815

ctc tat ctc ccg  cct gaa cct gac aca  cca cca cag caa cct  cag      31358
Leu Tyr Leu Pro  Pro Glu Pro Asp Thr  Pro Pro Gln Gln Pro  Gln
            5820                5825                5830

gca cac gca cta  cca cca cca cag cct  agg cca caa tac atg  ccc      31403
Ala His Ala Leu  Pro Pro Pro Gln Pro  Arg Pro Gln Tyr Met  Pro
            5835                5840                5845

ata tta gac tat  gag gcc gag cca cag  cga ccc atg ctc ccc  gct      31448
Ile Leu Asp Tyr  Glu Ala Glu Pro Gln  Arg Pro Met Leu Pro  Ala
            5850                5855                5860

att agt tac ttc  aat cta acc ggc gga  gat gac tgacccactg           31491
Ile Ser Tyr Phe  Asn Leu Thr Gly Gly  Asp Asp
            5865                5870

gccaacaaca acgtcaacga ccttctcctg gacatggacg gccgcgcctc ggagcagcga    31551

ctcgcccaac ttcgcattcg ccagcagcag gagagagccg tcaaggagct gcaggacggc    31611

atagccatcc accagtgcaa gaaaggcatc ttctgcctgg tgaaacaggc caagatctcc    31671

tacgaggtca cccagaccga ccatcgcctc tcctacgagc tcctgcagca gcgccagaag    31731

ttcacctgcc tggtcggagt caaccccatc gtcatcaccc agcagtcggg cgataccaag    31791

gggtgcatcc actgctcctg cgactccccc gactgcgtcc acactctgat caagaccctc    31851

tgcggcctcc gcgacctcct ccccatgaac taatcacccc cttatccagt gaaataaaga    31911

tcatattgat gattaaataa aaaaaataat catttgattt gaaataaaga tacaatcata    31971

ttgatgattt gagtttaata aaaataaaga atcacttact tgaaatctga taccaggtct    32031

ctgtccatgt tttctgccaa caccacttca ctcccctctt cccagctctg gtactgcagg    32091
```

```
ccccggcggg ctgcaaactt cctccacacc ctgaagggga tgtcaaattc ctcctgtccc    32151

tcaatcttca ttttatcttc tatcag atg tcc aaa  aag cgc gtc cgg gtg        32201
                             Met Ser Lys  Lys Arg Val Arg Val
                                    5875                 5880

gat gat gac ttc gac  ccc gtc tac ccc tac  gat gca gac aac gca        32246
Asp Asp Asp Phe Asp  Pro Val Tyr Pro Tyr  Asp Ala Asp Asn Ala
               5885                 5890                 5895

ccg acc gtg ccc ttc  atc aac ccc ccc ttc  gtc tct tca gat gga        32291
Pro Thr Val Pro Phe  Ile Asn Pro Pro Phe  Val Ser Ser Asp Gly
               5900                 5905                 5910

ttc caa gag aag ccc  ctg ggg gtg ctg tcc  ctg cgt ctg gcc gat        32336
Phe Gln Glu Lys Pro  Leu Gly Val Leu Ser  Leu Arg Leu Ala Asp
               5915                 5920                 5925

ccc gtc acc acc aag  aac ggg gaa atc acc  ctc aag ctg gga gat        32381
Pro Val Thr Thr Lys  Asn Gly Glu Ile Thr  Leu Lys Leu Gly Asp
               5930                 5935                 5940

ggg gtg gac ctc gac  tcc tcg gga aaa ctc  atc tcc aac acg gcc        32426
Gly Val Asp Leu Asp  Ser Ser Gly Lys Leu  Ile Ser Asn Thr Ala
               5945                 5950                 5955

acc aag gcc gcc gcc  cct ctc agt ttt tcc  aac aac acc att tcc        32471
Thr Lys Ala Ala Ala  Pro Leu Ser Phe Ser  Asn Asn Thr Ile Ser
               5960                 5965                 5970

ctt aac atg gat acc  cct ttt tac aac aac  aat gga aag tta ggc        32516
Leu Asn Met Asp Thr  Pro Phe Tyr Asn Asn  Asn Gly Lys Leu Gly
               5975                 5980                 5985

atg aaa gtc act gct  cca ctg aag ata cta  gac aca gac ttg cta        32561
Met Lys Val Thr Ala  Pro Leu Lys Ile Leu  Asp Thr Asp Leu Leu
               5990                 5995                 6000

aaa aca ctt gtt gta  gct tat gga caa ggt  tta gga aca aac acc        32606
Lys Thr Leu Val Val  Ala Tyr Gly Gln Gly  Leu Gly Thr Asn Thr
               6005                 6010                 6015

act ggt gcc ctt gtt  gcc caa cta gca tcc  cca ctt gct ttt gat        32651
Thr Gly Ala Leu Val  Ala Gln Leu Ala Ser  Pro Leu Ala Phe Asp
               6020                 6025                 6030

agc aat agc aaa att  gcc ctt aat tta ggc  aat gga cca ttg aaa        32696
Ser Asn Ser Lys Ile  Ala Leu Asn Leu Gly  Asn Gly Pro Leu Lys
               6035                 6040                 6045

gtg gat gca aat aga  ctg aac atc aat tgc  aat aga gga ctc tat        32741
Val Asp Ala Asn Arg  Leu Asn Ile Asn Cys  Asn Arg Gly Leu Tyr
               6050                 6055                 6060

gtt act acc aca aaa  gat gca ctg gaa gcc  aat ata agt tgg gct        32786
Val Thr Thr Thr Lys  Asp Ala Leu Glu Ala  Asn Ile Ser Trp Ala
               6065                 6070                 6075

aat gct atg aca ttt  ata gga aat gcc atg  ggt gtc aat att gat        32831
Asn Ala Met Thr Phe  Ile Gly Asn Ala Met  Gly Val Asn Ile Asp
               6080                 6085                 6090

aca caa aaa ggc ttg  caa ttt ggc acc act  agt acc gtc gca gat        32876
Thr Gln Lys Gly Leu  Gln Phe Gly Thr Thr  Ser Thr Val Ala Asp
               6095                 6100                 6105

gtt aaa aac gct tac  ccc ata caa atc aaa  ctt gga gct ggt ctc        32921
Val Lys Asn Ala Tyr  Pro Ile Gln Ile Lys  Leu Gly Ala Gly Leu
```

```
                6110                6115                6120

aca ttt gac agc aca  ggt gca att gtt gca  tgg aac aaa gat gat        32966
Thr Phe Asp Ser Thr  Gly Ala Ile Val Ala  Trp Asn Lys Asp Asp
                6125                6130                6135

gac aag ctt aca cta  tgg acc aca gcc gac  ccc tct cca aat tgt        33011
Asp Lys Leu Thr Leu  Trp Thr Thr Ala Asp  Pro Ser Pro Asn Cys
                6140                6145                6150

cac ata tat tct gaa  aag gat gct aag ctt  aca ctt tgc ttg aca        33056
His Ile Tyr Ser Glu  Lys Asp Ala Lys Leu  Thr Leu Cys Leu Thr
                6155                6160                6165

aag tgt ggc agt cag  att ctg ggc act gtt  tcc ctc ata gct gtt        33101
Lys Cys Gly Ser Gln  Ile Leu Gly Thr Val  Ser Leu Ile Ala Val
                6170                6175                6180

gat act ggc agt tta  aat ccc ata aca gga  aca gta acc act gct        33146
Asp Thr Gly Ser Leu  Asn Pro Ile Thr Gly  Thr Val Thr Thr Ala
                6185                6190                6195

ctt gtc tca ctt aaa  ttc gat gca aat gga  gtt ttg caa agc agc        33191
Leu Val Ser Leu Lys  Phe Asp Ala Asn Gly  Val Leu Gln Ser Ser
                6200                6205                6210

tca aca cta gac tca  gac tat tgg aat ttc  aga cag gga gat gtt        33236
Ser Thr Leu Asp Ser  Asp Tyr Trp Asn Phe  Arg Gln Gly Asp Val
                6215                6220                6225

aca cct gct gaa gcc  tat act aat gct ata  ggt ttc atg ccc aat        33281
Thr Pro Ala Glu Ala  Tyr Thr Asn Ala Ile  Gly Phe Met Pro Asn
                6230                6235                6240

cta aaa gca tac cct  aaa aac aca agt gga  gct gca aaa agt cac        33326
Leu Lys Ala Tyr Pro  Lys Asn Thr Ser Gly  Ala Ala Lys Ser His
                6245                6250                6255

att gtt ggg aaa gtg  tac cta cat ggg gat  aca gac aaa cca ctg        33371
Ile Val Gly Lys Val  Tyr Leu His Gly Asp  Thr Asp Lys Pro Leu
                6260                6265                6270

gac ctc att att act  ttc aat gaa aca agt  gat gaa tct tgc act        33416
Asp Leu Ile Ile Thr  Phe Asn Glu Thr Ser  Asp Glu Ser Cys Thr
                6275                6280                6285

tac tgt att aac ttt  caa tgg cag tgg ggg  gct gat caa tat aaa        33461
Tyr Cys Ile Asn Phe  Gln Trp Gln Trp Gly  Ala Asp Gln Tyr Lys
                6290                6295                6300

aat gaa aca ctt gcc  gtc agt tca ttc acc  ttt tcc tat att gct        33506
Asn Glu Thr Leu Ala  Val Ser Ser Phe Thr  Phe Ser Tyr Ile Ala
                6305                6310                6315

aaa gaa taaaccccac tctgtacccc atctctgtct atggaaaaaa ctctgaaaca       33562
Lys Glu

caaaataaaa taaagttcaa gtgttttatt gattcaacag ttttacagga ttcgagcagt    33622

tatttttcct ccaccctccc aggacatgga atacaccacc ctctcccccc gcacagcctt    33682

gaacatctga atgccattgg tgatggacat gcttttggtc tccacgttcc acacagtttc    33742

agagcgagcc agtctcgggt cggtcaggga gatgaaaccc tccgggcact cccgcatctg    33802

cacctcacag ctcaacagct gaggattgtc ctcggtggtc gggatcacgg ttatctggaa    33862

gaagcagaag agcggcggtg ggaatcatag tccgcgaacg ggatcggccg gtggtgtcgc    33922
```

atcaggcccc gcagcagtcg ctgtcgccgc cgctccgtca agctgctgct caggggtcc 33982
gggtccaggg actccctcag catgatgccc acggccctca gcatcagtcg tctggtgcgg 34042
cgggcgcagc agcgcatgcg gatctcgctc aggtcgctgc agtacgtgca acacaggacc 34102
accaggttgt tcaacagtcc atagttcaac acgctccagc cgaaactcat cgcgggaagg 34162
atgctaccca cgtggccgtc gtaccagatc ctcaggtaaa tcaagtggcg ccccctccag 34222
aacacgctgc ccatgtacat gatctccttg ggcatgtggc ggttcaccac ctcccggtac 34282
cacatcaccc tctggttgaa catgcagccc cggatgatcc tgcggaacca cagggccagc 34342
accgccccgc ccgccatgca gcgaagagac cccgggtccc gacaatggca atggaggacc 34402
caccgctcgt acccgtggat catctgggag ctgaacaagt ctatgttggc acagcacagg 34462
catatgctca tgcatctctt cagcactctc agctcctcgg gggtcaaaac catatcccag 34522
ggcacgggga actcttgcag gacagcgaac cccgcagaac agggcaatcc tcgcacataa 34582
cttacattgt gcatggacag ggtatcgcaa tcaggcagca ccgggtgatc ctccaccaga 34642
gaagcgcggg tctcggtctc ctcacagcgt ggtaaggggg ccggccgata cgggtgatgg 34702
cgggacgcgg ctgatcgtgt tcgcgaccgt gtcatgatgc agttgctttc ggacattttc 34762
gtacttgctg tagcagaacc tggtccgggc gctgcacacc gatcgccggc ggcggtcccg 34822
gcgcttggaa cgctcggtgt tgaagttgta aaacagccac tctctcagac cgtgcagcag 34882
atctagggcc tcaggagtga tgaagatccc atcatgcctg atggctctaa tcacatcgac 34942
caccgtggaa tgggccagac ccagccagat gatgcaattt tgttgggttt cggtgacggc 35002
gggggaggga agaacaggaa gaaccatgat taacttttaa tccaaacggt ctcggagcac 35062
ttcaaaatga agatcgcgga gatggcacct ctcgcccccg ctgtgttggt ggaaaataac 35122
agccaggtca aaggtgatac ggttctcgag atgttccacg gtggcttcca gcaaagcctc 35182
cacgcgcaca tccagaaaca agacaatagc gaaagcggga gggttctcta attcctcaat 35242
catcatgtta cactcctgca ccatccccag ataattttca tttttccagc cttgaatgat 35302
tcgaactagt tcctgaggta aatccaagcc agccatgata aagagctcgc gcagagcgcc 35362
ctccaccggc attcttaagc acaccctcat aattccaaga tattctgctc ctggttcacc 35422
tgcagcagat tgacaagcgg aatatcaaaa tctctgccgc gatccctaag ctcctccctc 35482
agcaataact gtaagtactc tttcatatcc tctccgaaat ttttagccat aggaccgcca 35542
ggaatgagat taggacaagc cacattacag ataaaccgaa gtccccccca gtgagcattg 35602
ccaaatgtaa gattgaaata agcatgctgg ctagacccgg tgatatcttc cagataactg 35662
gacagaaaat cgcccaggca atttttaaga aaatcaacaa aagaaaaatc ttccaggtgc 35722
acgtttaggg cctcgggaac aacgatggag taagtgcaag gggtgcgttc cagcatggtt 35782
agttagctga tctgtaaaaa aacaaaaaat aaaacattaa accatgctag cctggcgaac 35842
aggtgggtaa atcgttctct ccagcaccag gcaggccacg gggtctccgg cgcgaccctc 35902
gtaaaaattg tcgctatgat tgaaaaccat cacagagaga cgttcccggt ggccggcgtg 35962

aatgattcga caagatgaat acacccccgg aacattggcg tccgcgagtg aaaaaaagcg 36022

gccgaggaag caataaggca ctacaatgct cagtctcaag tccagcaaag cgatgccatg 36082

cggatgaagc acaaaattct caggtgcgta caaaatgtaa ttactcccct cctgcacagg 36142

cagcaaagcc ccagatccct ccagatacac atacaaagcc tcagcgtcca tagcttaccg 36202

agcagcagca cacaacaggc gcaagagtca gagaaaggct gagctctaac ctgtcccccg 36262

ctctctgctc aatatatagc ccagatctac actgacgtaa aggccaaagt ctaaaaatac 36322

ccgccaaata atcacacacg cccagcacac gcccagaaac cggtgacaca ctcaaaaaaa 36382

tacgcgcact tcctcaaacg cccaaactgc cgtcatttcc gggttcccac gctacgtcat 36442

cagaattcga ctttcaaatc cgtcgaccgt taaacacgtc actcgccccg cccctaacgg 36502

tcgccctcct ctcggccaat cacagccccg catccccaaa ttcaaacgcc tcatttgcat 36562

attaacgcgc acaaaaagtt tgaggtatat tattgatgat g 36603

<210> 26
<211> 192
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 26

Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Gln Thr Arg Gln Leu
1 5 10 15

Leu Glu Asn Ser Ser Glu Gly Val Ser Tyr Leu Trp Arg Phe Cys Phe
20 25 30

Gly Gly Pro Leu Ala Lys Leu Val Tyr Arg Ala Lys Gln Asp Tyr Lys
35 40 45

Asp Gln Phe Glu Asp Ile Leu Arg Glu Cys Pro Asp Ile Phe Asp Ser
50 55 60

Leu Asn Leu Gly His Gln Ser His Phe Asn Gln Ser Ile Leu Arg Ala
65 70 75 80

Leu Asp Phe Ser Thr Pro Gly Arg Thr Thr Ala Ala Val Ala Phe Phe
85 90 95

Ala Phe Ile Leu Asp Lys Trp Ser Gln Glu Thr His Phe Ser Arg Asp
100 105 110

Tyr Arg Leu Asp Cys Leu Ala Val Ala Leu Trp Arg Thr Trp Arg Cys
115 120 125

Gln Arg Leu Asn Ala Ile Ser Gly Tyr Leu Pro Val Gln Pro Val Asp
130 135 140

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

Gln Gln Pro Gln Gln Glu Gln Gln Gln Glu Glu Glu Glu Asp Arg Glu
                165                 170                 175

Glu Asn Pro Arg Ala Gly Leu Asp Pro Pro Val Ala Glu Glu Glu Glu
            180                 185                 190
```

<210> 27
<211> 391
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 27

```
Met His Pro Val Leu Arg Gln Met Arg Pro His Pro Pro Pro Gln Pro
1               5                   10                  15

Pro Leu Pro Pro Gln Gln Gln Gln Gln Pro Ala Leu Leu Pro Pro Pro
            20                  25                  30

Gln Gln Gln Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly
        35                  40                  45

Val Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg Leu
    50                  55                  60

Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys Arg Asp
65                  70                  75                  80

Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp Arg Ser
                85                  90                  95

Gly Glu Glu Pro Glu Glu Met Arg Ala Ser Arg Phe His Ala Gly Arg
            100                 105                 110

Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp Glu Asp
        115                 120                 125

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

Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys Glu Glu
145                 150                 155                 160

Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu Ile Ala
                165                 170                 175

Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu Leu Glu
            180                 185                 190
```

```
Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu Phe
        195                 200                 205

Leu Val Val Gln His Ser Arg Asp Asn Glu Thr Phe Arg Glu Ala Leu
    210                 215                 220

Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu Val Asn
225                 230                 235                 240

Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu Ser Glu
                245                 250                 255

Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys Tyr Tyr
            260                 265                 270

Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu Val
        275                 280                 285

Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu Thr Leu
    290                 295                 300

Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg Ala Val
305                 310                 315                 320

Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met His Ser
                325                 330                 335

Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser Tyr Phe
            340                 345                 350

Asp Met Gly Ala Asp Leu Arg Trp Gln Pro Ser Arg Arg Ala Leu Glu
        355                 360                 365

Ala Ala Gly Gly Val Pro Tyr Val Glu Glu Val Asp Asp Asp Glu Glu
    370                 375                 380

Glu Gly Glu Tyr Leu Glu Asp
385                 390


<210>  28
<211>  587
<212>  PRT
<213>  Unknown

<220>
<223>  Synthetic Construct

<400>  28

Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu
1               5                   10                  15

Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala
            20                  25                  30
```

```
Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg
        35                  40                  45

Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val
    50                  55                  60

Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn
65                  70                  75                  80

Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val
                85                  90                  95

Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val
            100                 105                 110

Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser
        115                 120                 125

Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala
    130                 135                 140

Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln
145                 150                 155                 160

Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu
                165                 170                 175

Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln
            180                 185                 190

Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys
        195                 200                 205

Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala
    210                 215                 220

Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu
225                 230                 235                 240

Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu
                245                 250                 255

Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val
            260                 265                 270

Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly
        275                 280                 285

Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr
    290                 295                 300
```

```
Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu
305                 310                 315                 320

Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met
                325                 330                 335

Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn
            340                 345                 350

Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu
        355                 360                 365

Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr
    370                 375                 380

Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr
385                 390                 395                 400

Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp
                405                 410                 415

Val Asp Ser Ser Val Phe Ser Pro Arg Pro Thr Thr Thr Val Trp Lys
            420                 425                 430

Lys Glu Gly Gly Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly Arg Ala
        435                 440                 445

Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro Ser Leu
    450                 455                 460

Pro Phe Ser Leu Asn Ser Val Arg Ser Ser Glu Leu Gly Arg Leu Thr
465                 470                 475                 480

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

Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu Ser Leu
            500                 505                 510

Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala His Glu His Arg Asp
        515                 520                 525

Glu Pro Arg Ala Ser Ser Ser Ala Gly Ala Thr Arg Arg Arg Gln Arg
    530                 535                 540

His Asp Arg Gln Arg Gly Leu Val Trp Asp Asp Glu Asp Ser Ala Asp
545                 550                 555                 560

Asp Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe
                565                 570                 575
```

```
Ala His Leu Arg Pro Arg Ile Gly Arg Leu Met
            580                 585


<210>  29
<211>  542
<212>  PRT
<213>  Unknown

<220>
<223>  Synthetic Construct

<400>  29

Met Met Arg Arg Val Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1               5                   10                  15


Val Met Gln Gln Ala Val Ala Ala Ala Met Gln Pro Pro Leu Glu Ala
            20                  25                  30


Pro Tyr Val Pro Pro Arg Tyr Leu Ala Pro Thr Glu Gly Arg Asn Ser
        35                  40                  45


Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg Leu Tyr
    50                  55                  60


Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr Gln Asn
65                  70                  75                  80


Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp Phe Thr
                85                  90                  95


Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg Ser Arg
            100                 105                 110


Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro Asn Val
        115                 120                 125


Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met Val Ser
    130                 135                 140


Arg Lys Thr Pro Asn Gly Val Thr Val Asp Glu Asn Tyr Asp Gly Ser
145                 150                 155                 160


Gln Asp Glu Leu Thr Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly
                165                 170                 175


Asn Phe Ser Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile
            180                 185                 190


Asp Asn Tyr Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp
        195                 200                 205


Ile Gly Val Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro
    210                 215                 220
```

```
Val Thr Glu Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His
225                 230                 235                 240

Pro Asp Ile Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser
                245                 250                 255

Arg Leu Ser Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu
            260                 265                 270

Gly Phe Gln Ile Leu Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala
        275                 280                 285

Leu Leu Asp Val Glu Ala Tyr Glu Lys Ser Lys Glu Glu Ala Ala Ala
    290                 295                 300

Ala Ala Thr Ala Ala Val Ala Thr Ala Ala Thr Thr Asp Ala Asp Ala
305                 310                 315                 320

Ala Thr Thr Thr Arg Gly Asp Thr Phe Ala Thr Gln Ala Glu Glu Ala
                325                 330                 335

Ala Ala Leu Ala Ala Thr Asp Asp Ser Glu Ser Lys Ile Val Ile Lys
            340                 345                 350

Pro Val Glu Lys Asp Ser Lys Asp Arg Ser Tyr Asn Val Leu Ser Asp
        355                 360                 365

Gly Lys Asn Thr Ala Tyr Arg Ser Trp Tyr Leu Ala Tyr Asn Tyr Gly
    370                 375                 380

Asp Pro Glu Lys Gly Val Arg Ser Trp Thr Leu Leu Thr Thr Ser Asp
385                 390                 395                 400

Val Thr Cys Gly Val Glu Gln Val Tyr Trp Ser Leu Pro Asp Met Met
                405                 410                 415

Gln Asp Pro Val Thr Phe Arg Ser Thr Arg Gln Val Ser Asn Tyr Pro
            420                 425                 430

Val Val Gly Ala Glu Leu Leu Pro Val Tyr Ser Lys Ser Phe Phe Asn
        435                 440                 445

Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg Ala Phe Thr Ser Leu Thr
    450                 455                 460

His Val Phe Asn Arg Phe Pro Glu Asn Gln Ile Leu Val Arg Pro Pro
465                 470                 475                 480

Ala Pro Thr Ile Thr Thr Val Ser Glu Asn Val Pro Ala Leu Thr Asp
                485                 490                 495
```

```
His Gly Thr Leu Pro Leu Arg Ser Ser Ile Arg Gly Val Gln Arg Val
            500                 505                 510

Thr Val Thr Asp Ala Arg Arg Arg Thr Cys Pro Tyr Val Tyr Lys Ala
        515                 520                 525

Leu Gly Val Val Ala Pro Arg Val Leu Ser Ser Arg Thr Phe
    530                 535                 540
```

<210> 30
<211> 194
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 30

```
Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1               5                   10                  15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
            20                  25                  30

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
        35                  40                  45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
    50                  55                  60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Ala Ser Thr
65                  70                  75                  80

Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
                85                  90                  95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
            100                 105                 110

Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
        115                 120                 125

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ser
    130                 135                 140

Ser Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala
145                 150                 155                 160

Ala Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val
                165                 170                 175

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

Arg Thr

<210> 31
<211> 348
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 31

Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1 5 10 15

Glu Ile Tyr Gly Pro Ala Ala Ala Val Lys Glu Glu Arg Lys Pro Arg
20 25 30

Lys Leu Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Glu Asp Asp Gly
35 40 45

Leu Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln Trp
50 55 60

Arg Gly Arg Lys Val Lys Pro Val Leu Arg Pro Gly Thr Thr Val Val
65 70 75 80

Phe Thr Pro Gly Glu Arg Ser Gly Ser Ala Ser Lys Arg Ser Tyr Asp
85 90 95

Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu Gln Ala Ala Glu Arg Leu
100 105 110

Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Pro Ala Pro Leu Lys Glu
115 120 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
130 135 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Ser Ala Ala Pro Arg Arg
145 150 155 160

Gly Phe Lys Arg Glu Gly Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu
165 170 175

Met Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu His Met Lys
180 185 190

Val Asp Pro Glu Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln
195 200 205

Val Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr
210 215 220

```
Glu Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr
225                 230                 235                 240

Met Glu Val Gln Thr Asp Pro Trp Met Pro Ala Pro Ala Ser Thr Thr
                245                 250                 255

Thr Thr Thr Arg Arg Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met
            260                 265                 270

Pro Asn Tyr Ala Leu His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg
        275                 280                 285

Gly Thr Arg Phe Tyr Arg Gly Tyr Ser Ser Arg Arg Lys Thr Thr Thr
    290                 295                 300

Arg Arg Arg Arg Arg Arg Thr Arg Arg Ser Thr Thr Ala Thr Ser Ala
305                 310                 315                 320

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

Leu Pro Arg Ala Arg Tyr His Pro Ser Ile Ala Ile
            340                 345
```

<210> 32
<211> 77
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 32

```
Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1               5                   10                  15

Arg Lys Pro Arg Arg Arg Arg Leu Thr Gly Asn Gly Leu Arg Arg His
            20                  25                  30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
        35                  40                  45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
    50                  55                  60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65                  70                  75
```

<210> 33
<211> 244
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 33

Met Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg
1 5 10 15

Pro Phe Met Gly Thr Trp Ser Asp Ile Gly Asn Ser Gln Leu Asn Gly
20 25 30

Gly Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly
35 40 45

Ser Thr Leu Lys Thr Tyr Gly Ser Lys Ala Trp Asn Ser Thr Thr Gly
50 55 60

Gln Ala Leu Arg Asp Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val
65 70 75 80

Val Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn
85 90 95

Gln Ala Val Gln Arg Gln Ile Asn Ser Arg Leu Asp Pro Val Pro Pro
100 105 110

Ala Gly Ser Val Glu Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu
115 120 125

Asp Lys Arg Gly Glu Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu
130 135 140

Leu Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu
145 150 155 160

Gly Leu Pro Thr Thr Arg Pro Ile Ala Pro Leu Ala Thr Gly Val Leu
165 170 175

Lys Pro Glu Ser Asn Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Gln
180 185 190

Pro Ser Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val
195 200 205

Ala Arg Ala Arg Pro Gly Gly Ser Ala Arg Pro His Ala Asn Trp Gln
210 215 220

Ser Thr Leu Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg
225 230 235 240

Arg Arg Cys Tyr

<210> 34
<211> 943
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 34

Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65 70 75 80

Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Ser Gln Trp Glu Arg Ala Lys Thr Asn Asn Asn Gly
130 135 140

Ala Thr Glu Ser Val Thr Phe Gly Val Ala Ala Met Gly Gly Ile Asp
145 150 155 160

Ile Thr Lys Glu Gly Leu Gln Ile Gly Thr Asp Glu Thr Lys Ala Asp
165 170 175

Ser Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro Gln Ile
180 185 190

Gly Glu Glu Asn Trp Gln Glu Thr Phe Ser Tyr Tyr Gly Gly Arg Ala
195 200 205

Leu Lys Lys Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys
210 215 220

Pro Thr Asn Val Lys Gly Gly Gln Ala Lys Phe Lys Val Gln Asp Gly
225 230 235 240

```
Gln Gln Thr Thr Glu Tyr Asp Ile Asp Leu Ala Phe Phe Asp Ile Pro
                245                 250                 255

Asn Ser Gly Thr Gly Gly Asn Gly Thr Asn Val Asn Tyr Asp Pro Asp
            260                 265                 270

Met Val Met Tyr Thr Glu Asn Val Asp Leu Glu Thr Pro Asp Thr His
        275                 280                 285

Ile Val Tyr Lys Pro Gly Thr Ser Asp Asp Ser Ser Glu Ala Asn Leu
    290                 295                 300

Leu Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Gly Phe Arg Asp
305                 310                 315                 320

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
                325                 330                 335

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
            340                 345                 350

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Leu Gly Asp
        355                 360                 365

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp
    370                 375                 380

Pro Asp Val Arg Ile Ile Glu Asn His Gly Val Glu Asp Glu Leu Pro
385                 390                 395                 400

Asn Tyr Cys Phe Pro Leu Asp Gly Ala Gly Thr Asn Ala Val Tyr Gln
                405                 410                 415

Gly Val Lys Ala Lys Thr Asn Gly Gly Ala Ala Asn Gly Asp Trp Glu
            420                 425                 430

Gln Asp Thr Asp Val Ser Asn Ile Asn Gln Ile Cys Lys Gly Asn Ile
        435                 440                 445

Tyr Ala Met Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe Leu
    450                 455                 460

Tyr Ser Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Pro
465                 470                 475                 480

Ala Asn Ile Thr Leu Pro Thr Asn Thr Asn Thr Tyr Asp Tyr Met Asn
                485                 490                 495

Gly Arg Val Ala Pro Pro Ser Leu Val Asp Ala Tyr Ile Asn Ile Gly
            500                 505                 510
```

```
Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn Pro Phe Asn His
        515                 520                 525

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
    530                 535                 540

Arg Phe Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
545                 550                 555                 560

Lys Ser Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
                565                 570                 575

Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu
            580                 585                 590

Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala
        595                 600                 605

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
    610                 615                 620

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
625                 630                 635                 640

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
                645                 650                 655

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr
            660                 665                 670

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro
        675                 680                 685

Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
    690                 695                 700

Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser Val
705                 710                 715                 720

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
                725                 730                 735

Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
            740                 745                 750

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly
        755                 760                 765

Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser
    770                 775                 780

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val
```

785 790 795 800

Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn
805 810 815

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln Pro
820 825 830

Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr
835 840 845

Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile
850 855 860

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
865 870 875 880

Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe
885 890 895

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

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
915 920 925

Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
930 935 940

<210> 35
<211> 208
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 35

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

Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys Arg
20 25 30

Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val Asn
35 40 45

Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala Trp
50 55 60

Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe Ser
65 70 75 80

```
Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu Leu
                85                  90                  95

Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu Lys
            100                 105                 110

Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu Phe
        115                 120                 125

Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro Met
    130                 135                 140

Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly Met
145                 150                 155                 160

Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu Ala
                165                 170                 175

Leu Tyr Arg Phe Leu Asn Ala His Ser Ala Tyr Phe Arg Ser His Arg
            180                 185                 190

Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Gln Asp Met
        195                 200                 205
```

<210> 36
<211> 798
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 36

```
Met Glu Thr Gln Pro Ser Ser Pro Thr Ser Pro Ser Ala Pro Ala Ala
1               5                   10                  15

Ala Asp Glu Asn Gln Gln Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro
            20                  25                  30

Pro Ser Pro Thr Ser Asp Ala Ala Ala Pro Asp Met Gln Glu Met Glu
        35                  40                  45

Glu Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His Glu
    50                  55                  60

Glu Glu Leu Ala Ala Arg Phe Ser Ala Pro Glu Glu Asn His Gln Glu
65                  70                  75                  80

Gln Pro Glu Gln Glu Ala Glu Ser Glu Gln Ser Gln Ala Gly Leu Glu
                85                  90                  95

His Gly Asp Tyr Leu Ser Gly Ala Glu Asp Val Leu Ile Lys His Leu
            100                 105                 110
```

```
Ala Arg Gln Cys Ile Ile Val Lys Asp Ala Leu Leu Asp Arg Ala Glu
        115                 120                 125

Val Pro Leu Ser Val Ala Glu Leu Ser Arg Ala Tyr Glu Arg Asn Leu
    130                 135                 140

Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr Cys Glu
145                 150                 155                 160

Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro Glu Ala
                165                 170                 175

Leu Ala Thr Tyr His Leu Phe Phe Lys Asn Gln Arg Ile Pro Val Ser
            180                 185                 190

Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Leu Asn Leu Gly Pro
        195                 200                 205

Gly Ala Arg Leu Pro Asp Ile Ala Ser Leu Glu Glu Val Pro Lys Ile
    210                 215                 220

Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala Leu Gln
225                 230                 235                 240

Gly Ser Gly Glu Glu His Glu His His Ser Ala Leu Val Glu Leu Glu
                245                 250                 255

Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu Leu Thr
            260                 265                 270

His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met Ser Ala
        275                 280                 285

Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Leu Ser Glu Glu
    290                 295                 300

Glu Met Gln Asp Pro Glu Ser Ser Asp Glu Gly Lys Pro Val Val Ser
305                 310                 315                 320

Asp Glu Gln Leu Ala Arg Trp Leu Gly Thr Ser Ser Thr Pro Gln Ser
                325                 330                 335

Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr Val
            340                 345                 350

Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu Arg
        355                 360                 365

Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val Arg
    370                 375                 380
```

```
Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr
385                 390                 395                 400

Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His Thr
                405                 410                 415

Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val Tyr
            420                 425                 430

Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln Gln
        435                 440                 445

Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln Lys
    450                 455                 460

Asn Leu Lys Ala Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala Ser
465                 470                 475                 480

Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu Arg
                485                 490                 495

Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe Arg
            500                 505                 510

Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser Ala
        515                 520                 525

Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro Pro
    530                 535                 540

Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala Tyr
545                 550                 555                 560

His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu Cys
                565                 570                 575

His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys Asn
            580                 585                 590

Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu Gln
        595                 600                 605

Gly Pro Gly Glu Glu Gly Lys Gly Gly Leu Lys Leu Thr Pro Gly Leu
    610                 615                 620

Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp Tyr His Pro
625                 630                 635                 640

Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro Pro Lys Ala Glu
                645                 650                 655

Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu Ala Gln Leu Gln
```

660 665 670

Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys Gly His Gly
675 680 685

Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn Pro Ser Phe Pro
690 695 700

Gln Asp Ala Gln Arg Lys Gln Gln Glu Ala Glu Ser Gly Ala Ala Ala
705 710 715 720

Ala Ala Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Ser Gly Arg Gly
725 730 735

Gly Gly Asp Gly Arg Leu Gly Gln His Ser Gly Arg Gly Gly Gln Pro
740 745 750

Ala Arg Gln Ser Gly Arg Arg Gly Gly Gly Gly Arg Gly Arg Ser Ser
755 760 765

Arg Arg Gln Thr Val Val Leu Gly Gly Glu Ser Lys Gln His Gly Tyr
770 775 780

His Leu Arg Ser Gly Ser Gly Ser Arg Arg Pro Gly Pro Gln
785 790 795

<210> 37
<211> 227
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 37

Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1 5 10 15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
20 25 30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala His Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Ile Thr Ala Thr
50 55 60

Pro Arg His His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

```
Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
            100                 105                 110

Ala Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
        115                 120                 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
    130                 135                 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Leu Ala Gly Ser Gly Arg Ser
145                 150                 155                 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
                165                 170                 175

Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
            180                 185                 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
        195                 200                 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
    210                 215                 220

Gly Tyr Asp
225
```

<210> 38
<211> 106
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 38

```
Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1               5                   10                  15

His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Ala
            20                  25                  30

Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
        35                  40                  45

Arg Ile Ile Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
    50                  55                  60

Ser Gln Arg Pro Ile Leu Val Glu Arg Glu Gln Gly Gln Thr Arg Leu
65                  70                  75                  80

Thr Leu Tyr Cys Ile Cys Asn His Pro Gly Leu His Glu Ser Leu Cys
                85                  90                  95
```

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
100 105

<210> 39
<211> 176
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 39

Met Gly Gln Ile Thr Leu Val Ser Cys Gly Val Leu Val Ala Val Val
1 5 10 15

Leu Ser Ile Val Gly Leu Gly Gly Ala Ala Val Val Lys Glu Lys Ala
20 25 30

Asp Pro Cys Leu His Phe Asn Pro Asp Lys Cys Gln Leu Ser Phe Gln
35 40 45

Pro Asp Gly Asn Arg Cys Ala Val Leu Ile Lys Cys Gly Trp Glu Cys
50 55 60

Glu Asn Val Arg Ile Glu Tyr Asn Asn Lys Thr Arg Asn Asn Thr Leu
65 70 75 80

Ala Ser Thr Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
85 90 95

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

Ala His Met Cys Asp Thr Val Met Trp Met Ser Lys Gln Tyr Asp Met
115 120 125

Trp Pro Pro Thr Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
130 135 140

Leu Cys Thr Val Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145 150 155 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
165 170 175

<210> 40
<211> 200
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 40

```
Met Ala Ser Val Lys Phe Leu Leu Leu Phe Ala Ser Leu Ile Thr Val
1               5                  10                  15

Ile Ser Asn Glu Lys Leu Thr Ile Tyr Ile Gly Thr Asn His Thr Leu
            20                  25                  30

Glu Gly Ile Pro Lys Ser Ser Trp Tyr Cys Tyr Phe Asp Gln Asp Pro
        35                  40                  45

Asp Leu Thr Ile Glu Leu Cys Gly Asn Lys Gly Gln Asn Thr Ser Ile
    50                  55                  60

His Leu Ile Asn Phe Lys Cys Gly Asp Asp Leu Lys Leu Ile Asn Ile
65                  70                  75                  80

Thr Lys Glu Tyr Gly Gly Met Tyr Tyr Tyr Val Thr Glu Asn Asn Asn
                85                  90                  95

Met Gln Phe Tyr Glu Val Thr Val Thr Asn Pro Thr Thr Pro Arg Thr
            100                 105                 110

Thr Thr Thr Thr Thr Lys Thr Thr Pro Val Thr Thr Met Gln Leu Thr
        115                 120                 125

Thr Asn Asn Ile Phe Ala Met Arg Gln Lys Ala Asn Asn Ser Thr Ser
    130                 135                 140

Ile Gln Pro Pro Pro Pro Ser Glu Glu Ile Pro Lys Ser Met Ile Gly
145                 150                 155                 160

Ile Ile Val Ala Val Val Val Cys Met Leu Ile Ile Ala Leu Cys Met
                165                 170                 175

Val Tyr Tyr Ala Phe Cys Tyr Arg Lys His Arg Leu Asn Asp Lys Leu
            180                 185                 190

Glu His Leu Leu Ser Val Glu Phe
        195                 200


<210>  41
<211>  204
<212>  PRT
<213>  Unknown

<220>
<223>  Synthetic Construct

<400>  41

Met Lys Ile Leu Gly Leu Leu Ile Phe Ser Ile Ile Thr Ser Ala Leu
1               5                  10                  15

Cys Asn Ser Asp Asn Glu Asp Val Thr Val Val Val Gly Ser Asn Tyr
            20                  25                  30
```

```
Thr Leu Lys Gly Pro Ala Lys Gly Met Leu Ser Trp Tyr Cys Trp Phe
        35                  40                  45

Gly Thr Asp Thr Glu Gln Thr Glu Leu Cys Asn Leu Gln Asn Gly Lys
    50                  55                  60

Val His Asn Ser Lys Ile Tyr Asn Tyr Ile Cys Asn Gly Thr Asp Leu
65                  70                  75                  80

Ile Leu Leu Asn Ile Thr Lys Ser Tyr Ala Gly Ser Tyr Ser Cys Pro
                85                  90                  95

Gly Asp Asp Ala Asp Asn Met Ile Phe Tyr Lys Leu Gln Val Val Asp
            100                 105                 110

Pro Thr Thr Pro Pro Pro Pro Thr Thr Thr Thr His Thr Thr His Thr
        115                 120                 125

Glu Gln Thr Thr Ala Glu Glu Ala Ala Lys Leu Ala Leu Gln Val Gln
    130                 135                 140

Asp Ser Ser Phe Val Gly Ile Thr Pro Thr Pro Asp Gln Arg Cys Pro
145                 150                 155                 160

Gly Leu Leu Val Ser Gly Ile Val Gly Val Leu Ser Gly Leu Ala Val
                165                 170                 175

Ile Ile Ile Cys Met Phe Ile Phe Ala Cys Cys Tyr Arg Arg Leu Tyr
            180                 185                 190

Arg Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
        195                 200
```

<210> 42
<211> 292
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 42

```
Met Lys Ala Val Ser Ala Leu Val Phe Cys Ser Leu Ile Gly Thr Val
1               5                   10                  15

Phe Ser Val Ser Phe Leu Lys Gln Ile Asn Val Thr Glu Gly Glu Asn
            20                  25                  30

Val Thr Leu Val Gly Val Glu Gly Ala Gln Asn Thr Thr Trp Thr Lys
        35                  40                  45

Tyr His Leu Asp Gly Trp Lys Asp Ile Cys Asn Trp Ser Val Ile Thr
    50                  55                  60
```

```
Tyr Thr Cys Glu Gly Val Asn Leu Thr Ile Val Asn Ala Ser Gln Asn
65                  70                  75                  80

Gln Lys Gly Trp Ile Lys Gly Gln Ser Val Ser Val Thr Ser Glu Gly
                85                  90                  95

Tyr Tyr Thr Gln His Thr Leu Ile Tyr Asp Ile Ile Val Ile Pro Leu
            100                 105                 110

Pro Thr Pro Ser Pro Pro Ser Thr Thr Thr Gln Thr Thr His Thr Thr
        115                 120                 125

Gln Thr Thr Thr Tyr Ser Thr Ser Asn Gln Pro Thr Thr Thr Thr Thr
    130                 135                 140

Ala Glu Val Ala Ser Ser Ser Gly Val Arg Ala Ala Phe Leu Met Leu
145                 150                 155                 160

Ala Pro Ser Ser Ser Pro Thr Ala Ser Thr Asn Glu Gln Thr Thr Glu
                165                 170                 175

Phe Leu Ser Thr Val Glu Ser His Thr Thr Ala Thr Ser Ser Ala Phe
            180                 185                 190

Ser Ser Thr Ala Asn Leu Ser Ser Leu Ser Ser Thr Pro Ile Ser Pro
        195                 200                 205

Ala Thr Thr Thr Thr Pro Ala Ile Leu Pro Thr Pro Leu Lys Gln Thr
    210                 215                 220

Glu Asp Ser Gly Met Gln Trp Gln Ile Thr Leu Leu Ile Val Ile Gly
225                 230                 235                 240

Leu Val Ile Leu Ala Val Leu Leu Tyr Tyr Ile Phe Arg Arg Arg Ile
                245                 250                 255

Pro Asn Ala His Arg Lys Pro Val Tyr Lys Pro Ile Ile Val Gly Gln
            260                 265                 270

Pro Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser
        275                 280                 285

Phe Thr Val Trp
    290
```

<210> 43
<211> 143
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 43

Met Arg Ala Leu Leu Leu Leu Ala Leu Leu Leu Leu Val Leu Pro Arg
1 5 10 15

Pro Val Asp Pro Arg Pro Pro Thr Gln Ser Pro Glu Glu Val Arg Lys
20 25 30

Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Lys Cys Tyr Arg Gln Lys
35 40 45

Ser Asp Met His Pro Ser Trp Ile Met Ile Ile Gly Ile Val Asn Ile
50 55 60

Leu Ala Cys Thr Leu Ile Ser Phe Val Ile Tyr Pro Cys Phe Asp Phe
65 70 75 80

Gly Trp Asn Ser Pro Glu Ala Leu Tyr Leu Pro Pro Glu Pro Asp Thr
85 90 95

Pro Pro Gln Gln Pro Gln Ala His Ala Leu Pro Pro Pro Gln Pro Arg
100 105 110

Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala Glu Pro Gln Arg Pro
115 120 125

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

<210> 44
<211> 445
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 44

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
1 5 10 15

Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
20 25 30

Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
35 40 45

Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
50 55 60

Lys Leu Gly Asp Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
65 70 75 80

```
Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
                85                  90                  95

Ile Ser Leu Asn Met Asp Thr Pro Phe Tyr Asn Asn Asn Gly Lys Leu
            100                 105                 110

Gly Met Lys Val Thr Ala Pro Leu Lys Ile Leu Asp Thr Asp Leu Leu
        115                 120                 125

Lys Thr Leu Val Val Ala Tyr Gly Gln Gly Leu Gly Thr Asn Thr Thr
    130                 135                 140

Gly Ala Leu Val Ala Gln Leu Ala Ser Pro Leu Ala Phe Asp Ser Asn
145                 150                 155                 160

Ser Lys Ile Ala Leu Asn Leu Gly Asn Gly Pro Leu Lys Val Asp Ala
                165                 170                 175

Asn Arg Leu Asn Ile Asn Cys Asn Arg Gly Leu Tyr Val Thr Thr Thr
            180                 185                 190

Lys Asp Ala Leu Glu Ala Asn Ile Ser Trp Ala Asn Ala Met Thr Phe
        195                 200                 205

Ile Gly Asn Ala Met Gly Val Asn Ile Asp Thr Gln Lys Gly Leu Gln
    210                 215                 220

Phe Gly Thr Thr Ser Thr Val Ala Asp Val Lys Asn Ala Tyr Pro Ile
225                 230                 235                 240

Gln Ile Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile
                245                 250                 255

Val Ala Trp Asn Lys Asp Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala
            260                 265                 270

Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Glu Lys Asp Ala Lys Leu
        275                 280                 285

Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser
    290                 295                 300

Leu Ile Ala Val Asp Thr Gly Ser Leu Asn Pro Ile Thr Gly Thr Val
305                 310                 315                 320

Thr Thr Ala Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Val Leu Gln
                325                 330                 335

Ser Ser Ser Thr Leu Asp Ser Asp Tyr Trp Asn Phe Arg Gln Gly Asp
            340                 345                 350

Val Thr Pro Ala Glu Ala Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn
```

```
        355                 360                 365

Leu Lys Ala Tyr Pro Lys Asn Thr Ser Gly Ala Ala Lys Ser His Ile
    370                 375                 380

Val Gly Lys Val Tyr Leu His Gly Asp Thr Asp Lys Pro Leu Asp Leu
385                 390                 395                 400

Ile Ile Thr Phe Asn Glu Thr Ser Asp Glu Ser Cys Thr Tyr Cys Ile
                405                 410                 415

Asn Phe Gln Trp Gln Trp Gly Ala Asp Gln Tyr Lys Asn Glu Thr Leu
            420                 425                 430

Ala Val Ser Ser Phe Thr Phe Ser Tyr Ile Ala Lys Glu
        435                 440                 445


<210>  45
<211>  31900
<212>  DNA
<213>  Unknown

<220>
<223>  Simian adenovirus A1320


<220>
<221>  CDS
<222>  (1904)..(3415)
<223>  E1b\55K

<220>
<221>  CDS
<222>  (25615)..(26169)
<223>  22K

<220>
<221>  CDS
<222>  (27476)..(28096)
<223>  E3\CR1-alpha

<220>
<221>  CDS
<222>  (31477)..(31881)
<223>  E3\14.7K

<400>  45
catcatcaat aatatacctc aaacttttg tgcgcgttaa tatgcaaatg aggcgtttga       60

atttggggat gcggggcggt gattggctgt gggaaaggcg accgttaggg gcggggcggg      120

tgacgttttg atgacgtgtt tgtgaggcgg agccggtttg caagttctcg tgggaaaagt      180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca      240

ggaaatgagg tgtttctggg cggatgcaag tgaaaacggg ccattttcgc gcgaaaactg      300

aatgaggaag tgaaaatctg agtaatttcg cgtttatggc agggaggagt atttgccgag      360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtgtttt tcacctaaat      420

ttccgcgtac ggtgtcaaag tccggtgttt ttacgtaggt gtcagctgat cgccagggta      480
```

```
tttaaacctg cgctctccag tcaagaggcc actcttgagt gccagcgaga agagttttct      540

cctccgcgcc gcgagtcaga tctacacttt gaaagatgag gcacctgaga gacctgcccg      600

gtaatgtttt cctggctact gggaacgaga ttctggaact ggtggtggac gccatgatgg      660

gtgacgaccc tcctgagccc cctaccccat ttgaggcgcc ttcgctgtac gatttgtatg      720

atctggaggt ggatgtgccc gagaacgacc ccaacgagga ggcggtgaat gatttgttta      780

gcgatgccgc gctgctggcc gccgagcagg ctaatacgga ctctggctca gacagcgatt      840

cctctctcca taccacgaga cccggcagag gtgagaaaaa gatccccgag cttaaagggg      900

aagagctcga cctgcgctgc tatgaggaat gcttgcctcc gagcgatgat gaggaggacg      960

aggaggcgat tcgagctgca gcgagcgagg gagtgaaagc tgcgggcgag agctttagcc     1020

tggactgtcc tactctgccc ggacacggct gtaagtcttg tgaatttcat cgcatgaata     1080

ctggagataa gaatgtgatg tgtgccctgt gctatatgag agcttacaac cattgtgttt     1140

acagtaagtg tgattaactt tagctgggaa ggcagagggt gactgggtgc tgactggttt     1200

atttatgtat gtattcttta tgtgtaggtc ccgtctctga cgtagatgag acccccactt     1260

cagagtgcat ttcatcaccc ccagaaattg gcgaggaacc gcccgaagat attattcata     1320

gaccagttgc agtgagagtc accgggcgga gagcagctgt ggagagtttg gatgacttgc     1380

tacagggtgg ggatgaacct ttggacttgt gtacccggaa acgccccagg cactaagtgc     1440

cacacatgtg tgtttactta aggtgatgtc agtatttata gggtgtggag tgcaataaaa     1500

tccgtgttga ctttaagtgc gtggtttatg actcaggggt ggggactgtg ggtatataag     1560

caggtgcaga cctgtgtggt cagttcagag caggactcat ggagatctgg acggtcttgg     1620

aagactttca ccagactaga cagctgctag agaactcatc ggagggagtc tcttacctgt     1680

ggagattctg cttcggtggg cctctagcta agctagtcta tagggccaaa caggattata     1740

aggatcaatt tgaggatatt ttgagagagt gtcctgatat ttttgactct ctcaacttgg     1800

gccatcagtc tcactttaac cagagtattc tgagagccct tgacttttct actcctggca     1860

gaactaccgc cgcggtagcc ttttttgcct ttatccttga caa atg gag tca aga        1915
                                                  Met Glu Ser Arg
                                                  1

aac cca ttt cag cag gga tta ccg tct gga ctg ctt agc agt agc ttt        1963
Asn Pro Phe Gln Gln Gly Leu Pro Ser Gly Leu Leu Ser Ser Ser Phe
5                   10                  15                  20

gtg gag aac atg gag gtg cca gcg cct gaa tgc aat ctc cgg cta ctt        2011
Val Glu Asn Met Glu Val Pro Ala Pro Glu Cys Asn Leu Arg Leu Leu
                25                  30                  35

gcc agt aca gcc ggt aga cac gct gag gat cct gag tct cca gtc acc        2059
Ala Ser Thr Ala Gly Arg His Ala Glu Asp Pro Glu Ser Pro Val Thr
            40                  45                  50

cca gga aca cca acg ccg cca gca gcc gca gca gga gca gca gca aga        2107
Pro Gly Thr Pro Thr Pro Pro Ala Ala Ala Ala Gly Ala Ala Ala Arg
        55                  60                  65

gga gga gga gga ccg aga aga gaa ccc gag agc cgg tct gga ccc tcc        2155
Gly Gly Gly Gly Pro Arg Arg Glu Pro Glu Ser Arg Ser Gly Pro Ser
    70                  75                  80
```

```
ggt ggc gga gga gga gga gta gct gac ttg ttt ccc gag ctg cgc cgg       2203
Gly Gly Gly Gly Gly Gly Val Ala Asp Leu Phe Pro Glu Leu Arg Arg
85                  90                  95                  100

gtg ctg act agg tct tcc agt gga cgg gag agg ggg att aag cgg gag       2251
Val Leu Thr Arg Ser Ser Ser Gly Arg Glu Arg Gly Ile Lys Arg Glu
                105                 110                 115

agg cat gag gag act agt cac aga act gaa ctg act gtc agt ctg atg       2299
Arg His Glu Glu Thr Ser His Arg Thr Glu Leu Thr Val Ser Leu Met
            120                 125                 130

agc cgc agg cgc cca gaa tcg gtg tgg tgg cat gag gtt cag tcg cag       2347
Ser Arg Arg Arg Pro Glu Ser Val Trp Trp His Glu Val Gln Ser Gln
        135                 140                 145

ggg ata gat gag gtc tcg gta atg cat gag aaa tat tcc cta gaa caa       2395
Gly Ile Asp Glu Val Ser Val Met His Glu Lys Tyr Ser Leu Glu Gln
    150                 155                 160

gtc aag act tgt tgg ttg gag ccc gag gat gat tgg gag gta gcc atc       2443
Val Lys Thr Cys Trp Leu Glu Pro Glu Asp Asp Trp Glu Val Ala Ile
165                 170                 175                 180

agg aat tat gcc aag ttg gct ctg aag cca gac aag aag tac aag att       2491
Arg Asn Tyr Ala Lys Leu Ala Leu Lys Pro Asp Lys Lys Tyr Lys Ile
                185                 190                 195

acc aag ttg att aat atc aga aat tcc tgc tac att tcg ggg aat ggg       2539
Thr Lys Leu Ile Asn Ile Arg Asn Ser Cys Tyr Ile Ser Gly Asn Gly
            200                 205                 210

gcc gag gtg gag atc agt acc cag gag agg gtg gcc ttc aga tgc tgc       2587
Ala Glu Val Glu Ile Ser Thr Gln Glu Arg Val Ala Phe Arg Cys Cys
        215                 220                 225

atg atg aat atg tac ccg ggg gtg gtg ggc atg gag gga gtt acc ttt       2635
Met Met Asn Met Tyr Pro Gly Val Val Gly Met Glu Gly Val Thr Phe
    230                 235                 240

atg aac gcg agg ttt agg ggt gat ggg tat aat ggg gtg gtc ttt atg       2683
Met Asn Ala Arg Phe Arg Gly Asp Gly Tyr Asn Gly Val Val Phe Met
245                 250                 255                 260

gcc aac acc aag ctg aca gtg cac gga tgc tcc ttc ttt ggc ttc aat       2731
Ala Asn Thr Lys Leu Thr Val His Gly Cys Ser Phe Phe Gly Phe Asn
                265                 270                 275

aac atg tgc atc gag gcc tgg ggc agt gtt tca gtg agg gga tgc agc       2779
Asn Met Cys Ile Glu Ala Trp Gly Ser Val Ser Val Arg Gly Cys Ser
            280                 285                 290

ttt tca gcc aac tgg atg ggg gtc gtg ggc aga acc aag agc aag gtg       2827
Phe Ser Ala Asn Trp Met Gly Val Val Gly Arg Thr Lys Ser Lys Val
        295                 300                 305

tca gtg aag aaa tgc ctg ttc gag agg tgc cac ctg ggg gtg atg agc       2875
Ser Val Lys Lys Cys Leu Phe Glu Arg Cys His Leu Gly Val Met Ser
    310                 315                 320

gag ggc gaa gcc aaa gtt aaa cac tgc gcc tct acc gag acg ggc tgc       2923
Glu Gly Glu Ala Lys Val Lys His Cys Ala Ser Thr Glu Thr Gly Cys
325                 330                 335                 340

ttt gtg ctg atc aag ggc aat gcc caa gtc aag cat aac atg atc tgt       2971
Phe Val Leu Ile Lys Gly Asn Ala Gln Val Lys His Asn Met Ile Cys
                345                 350                 355
```

```
ggg gcc tcg gat gag cgc ggc tac cag atg ctg acc tgc gcc ggt ggg       3019
Gly Ala Ser Asp Glu Arg Gly Tyr Gln Met Leu Thr Cys Ala Gly Gly
            360                 365                 370

aac agc cat atg ctg gcc acc gtg cat gtg gcc tcg cac ccc cgc aag       3067
Asn Ser His Met Leu Ala Thr Val His Val Ala Ser His Pro Arg Lys
        375                 380                 385

aca tgg ccc gag ttc gag cac aac gtc atg acc cgc tgc aat gtg cac       3115
Thr Trp Pro Glu Phe Glu His Asn Val Met Thr Arg Cys Asn Val His
    390                 395                 400

ctg ggc tcc cgc cga ggc atg ttc atg cca tac cag tgc aac atg caa       3163
Leu Gly Ser Arg Arg Gly Met Phe Met Pro Tyr Gln Cys Asn Met Gln
405                 410                 415                 420

ttt gtg aag gtg ctg ctg gag ccc gat gcc atg tcc aga gtg agc ctg       3211
Phe Val Lys Val Leu Leu Glu Pro Asp Ala Met Ser Arg Val Ser Leu
                425                 430                 435

acg ggg gtg ttt gac atg aat gtg gag ctg tgg aaa att ctg aga tat       3259
Thr Gly Val Phe Asp Met Asn Val Glu Leu Trp Lys Ile Leu Arg Tyr
            440                 445                 450

gat gaa tcc aag acc agg tgc cgg gcc tgc gaa tgc gga ggc aag cac       3307
Asp Glu Ser Lys Thr Arg Cys Arg Ala Cys Glu Cys Gly Gly Lys His
        455                 460                 465

gcc agg ctt cag ccc gtg tgt gtg gag gtg acg gag gac ctg cga ccc       3355
Ala Arg Leu Gln Pro Val Cys Val Glu Val Thr Glu Asp Leu Arg Pro
    470                 475                 480

gat cat ttg gtg ttg tcc tgc aac ggg acg gag ttc ggc tcc agc ggg       3403
Asp His Leu Val Leu Ser Cys Asn Gly Thr Glu Phe Gly Ser Ser Gly
485                 490                 495                 500

gaa gaa tct gac tagagtgagt agtgtttggg ggtgggtggg agcctgcatg           3455
Glu Glu Ser Asp


atgggcagaa tgactaaaat ctgtgttttt ctgcgcagca gcatgagcgg aagcgcctcc     3515

tttgagggag gggtattcag cccttatctg acggggcgtc tcccctcctg ggctggagtg     3575

cgtcagaatg tgatgggatc cacggtggac ggccggcccg tgcagcccgc gaactcttca     3635

accctgacct acgcgaccct gagctcctcg tccgtggacg cagctgccgc cgcagctgct     3695

gcttccgccg ccagcgccgt gcgcggaatg gccctgggtg ccggctacta cagctctctg     3755

gtggccaact cgagttccgc caataatccc gccagcctga acgaggagaa gctgctgctg     3815

ctgatggccc agctcgaggc cctgacccag cgcctgggcg agctgaccca gcaggtggct     3875

cagctgcagg cggagacgcg ggccgcggtt gccacggtga aaaccaaata aaaaatgaat     3935

caataaataa acggaaacgg ttgttgattt taacacagag tcttgaatct ttatttgatt     3995

tttcgcgcgc ggtaggccct ggaccaccgg tctcgatcat tgagcacccg gtggatcttt     4055

tccaggaccc ggtagaggtg ggcttggatg ttgaggtaca tgggcatgag cccgtcccgg     4115

gggtggaggt agctccactg cagggcctcg tgctcggggg tggtgttgta aatcacccag     4175

tcatagcagg ggcgcagggc gtggtgctgc acgatgtcct tgaggaggag actgatggcc     4235

acgggcagtc ccttggtgta ggtgttgacg aacctgttga gctgggaggg atgcatgcgg     4295

ggggagatga gatgcatctt ggcctggatc ttgagattgg cgatgttccc acccagatcc     4355
```

cgccgggggt tcatgttgtg caggaccacc agcacggtgt atccggtgca cttggggaat 4415
ttgtcatgca acttggaagg gaaggcgtga aagaatttgg agacgccctt gtgaccgccc 4475
aggttttcca tgcactcatc catgatgatg gcgatgggcc cgtgggcggc ggcctgggca 4535
aagacgtttc gggggtcgga cacatcgtag ttgtggtcct gggtgagctc gtcataggcc 4595
attttaatga atttggggcg gagggtgccc gactggggga caaaggtgcc ctcgatcccg 4655
ggggcgtagt tgccctcgca gatctgcatc tcccaggcct tgagctcgga ggggggggatc 4715
atgtccacct gcggggcgat gaaaaaaacg gtttccgggg cgggggagat gagctgggcc 4775
gaaagcaggt tccggagcag ctgggacttg ccgcagccgg tggggccgta gatgaccccg 4835
atgaccggct gcaggtggta gttgagggag agacagctgc cgtcctcgcg gaggaggggg 4895
gccacctcgt tcatcatctc gcgcacatgc atgttctcgc gcacgagttc cgccaggagg 4955
cgctcgcccc ccagcgagag gagctcttgc agcgaggcga agtttttcag cggcttgagt 5015
ccgtcggcca tgggcatttt ggagagggtc tgttgcaaga gttccagacg gtcccagagc 5075
tcggtgatgt gctctagggc atctcgatcc agcagacctc ctcgtttcgc gggttggggc 5135
ggctgcggga gtagggcacc aggcgatggg cgtccagcga ggccagggtc cggtccttcc 5195
agggtcgcag ggtccgcgtc agcgtggtct ccgtcacggt gaaggggtgc gcgccgggct 5255
gggcgcttgc gagggtgcgc ttcaggctca tccggctggt cgagaaccgc tcccggtcgg 5315
tgccctgcgc gtcggccagg tagcaattga gcatgagttc gtagttgagc gcctcggccg 5375
cgtggccctt ggcgcggagc ttacctttgg aagtgtgtcc gcagacggga cagaggaggg 5435
acttgagggc gtagagcttg ggggcgagga agacggactc gggggcgtag gcgtccgcgc 5495
cgcagctggc gcagacggtc tcgcactcca cgagccaggt gaggtcgggg cggtcggggt 5555
caaaaacgag gtttcctccg tgctttttga tgcgtttctt acctctggtc tccatgagct 5615
cgtgtccccg ctgggtgaca aagaggctgt ccgtgtcccc gtagaccgac tttatgggcc 5675
ggtcctcgag cggggtgccg cggtcctcgt cgtagaggaa ccccgcccac tccgagacga 5735
aggcccgggt ccaggccagc acgaaggagg ccacgtggga ggggtagcgg tcgttgtcca 5795
ccagcgggtc caccttctcc agggtatgca agcacatgtc cccctcgtcc acatccagga 5855
aggtgattgg cttgtaagtg taggccacgt gaccgggggt cccggccggg ggggtataaa 5915
agggggcggg cccctgctcg tcctcactgt cttccggatc gctgtccagg agcgccagct 5975
gttggggtag gtattccctc tcgaaggcgg gcatgacctc ggcactcagg ttgtcagttt 6035
ctagaaacga ggaggatttg atattgacgg tgccgttgga gacgcctttc atgagcccct 6095
cgtccatctg gtcagaaaag acgatctttt tgttgtcgag cttggtggcg aaggagccgt 6155
agagggcatt ggagaggagc ttggcgatgg agcgcatggt ctggttcttt tccttgtcgg 6215
cgcgctcctt ggcggcgatg ttgagctgca cgtactcgcg cgccacgcac ttccattcgg 6275
ggaagacggt ggtgagctcg tcgggcacga ttctgacccg ccagccgcgg ttgtgcaggg 6335
tgatgaggtc cacgctggtg gccacctcgc cgcgcagggg ctcgttggtc cagcagaggc 6395

gcccgccctt gcgcgagcag aaggggggca gcgggtccag catgagctcg tcgggggggt 6455

cggcgtccac ggtgaagatg ccgggcagga gctcggggtc gaagtagctg atgcaggtgc 6515

ccagatcgtc cagcgccgct tgccagtcgc gcacggccag cgcgcgctcg taggggctga 6575

ggggcgtgcc ccagggcatg gggtgcgtga gcgcggaggc gtacatgccg cagatgtcgt 6635

agacgtagag gggctcctcg aggacgccga tgtaggtggg gtagcagcgc cccccgcgga 6695

tgctggcgcg cacgtagtcg tacagctcgt gcgagggcgc gaggagcccc gcgccgaggt 6755

tggagcgctg cggcttttcg gcgcggtaga cgatctggcg gaagatggcg tgggagttgg 6815

aggagatggt gggcctctgg aagatgttga agtgggcgtg gggcaggccg accgagtccc 6875

tgatgaagtg ggcgtaggag tcctgcagct tggcgacgag ctcggcggtg acgaggacgt 6935

ccagggcgca gtagtcgagg gtctcttgga tgatgtcgta cttgagctgg cccttctgct 6995

tccacagctc gcggttgaga aggaactctt cgcggtcctt ccagtactct tcgaggggga 7055

acccgtcctg atcggcacgg taagagccca ccatgtagaa ctggttgacg gccttgtagg 7115

cgcagcagcc cttctccacg gggagggcat aagcttgcgc ggccttgcgc agggaggtgt 7175

gggtgagggc gaaggtgtcg cgcaccatga ccttgaggaa ctggtgcttg aagtcgaggt 7235

cgtcgcagcc gccctgctcc cagagttgga agtccgtgcg cttcttgtag gcggggttgg 7295

gcaaagcgaa agtaacatcg ttgaagagga tcttgcccgc gcggggcatg aagttgcgag 7355

tgatgcggaa aggctggggc acctcggccc ggttgttgat gacctgggcg gcgaggacga 7415

tctcgtcgaa gccgttgatg ttgtgcccga cgatgtagag ttccacgaat cgcgggcggc 7475

ccttgacgtg gggcagcttc ttgagctcgt cgtaggtgag ctcggcgggg tcgctgagtc 7535

cgtgctgctc aagggcccag tcggcgacgt gggggttggc gctgaggaag gaagtccaga 7595

gatccacggc cagggcggtt tgcaagcggt cccggtactg acggaactgc tggcccacgg 7655

ccatttttc gggggtgatg cagtagaagg tgcgggggtc gccgtgccag cggtcccact 7715

tgagctggag ggcgaggtcg tgggcgagct cgacaagcgg cgggtccccg gagagtttca 7775

tgaccagcat gaaggggacg agctgcttgc cgaaggaccc catccaggtg taggtttcca 7835

catcgtaggt gaggaagagc ctttcggtgc gaggatgcga gccgatgggg aagaactgga 7895

tctcctgcca ccagttggag gaatggctgt tgatgtgatg gaagtagaaa tgccgacggc 7955

gcgccgagca ctcgtgcttg tgtttataca agcgtccgca gtgctcgcaa cgctgcacgg 8015

gatgcacgtg ctgcacgagc tgtacctgag ttcctttgac gaggaatttc agtgggcagt 8075

ggagcgctgg cggctgcatc tggtgctgta ctacgtcctg gccatcggcg tggccatcgt 8135

ctgcctcgat ggtggtcatg ctgacgagcc cgcgcgggag gcaggtccag acctcggctc 8195

ggacgggtcg gagagcgagg acgagggcgc gcaggccgga gctgtccagg gtcctgagac 8255

gctgcggagt caggtcagtg ggcagcggcg gcgcgcggtt gacttgcagg agcttttcca 8315

gggcgcgcgg gaggtccaga tggtacttga tctccacggc gccgttggtg gcgacgtcca 8375

cggcttgcag ggtcccgtgc ccctggggcg ccaccaccgt gccccgtttc ttcttgggcg 8435

ctggcggcgt tggcgctggt tccatgtcgg tcagaagcgg cggcgaggac gcgcgccggg 8495

cggcaggggc ggctcggggc ccggaggcag gggcggcagg ggcacgtcgg cgccgcgcgc 8555

gggcaggttc tggtactgcg cccggagaag actggcgtga gcgacgacgc gacggttgac 8615

gtcctggatc tgacgcctct gggtgaaggc cacgggaccc gtgagtttga acctgaaaga 8675

gagttcgaca gaatcaatct cggtatcgtt gacggcggcc tgccgcagga tctcttgcac 8735

gtcgcccgag ttgtcctggt aggcgatctc ggtcatgaac tgctcgatct cctcctcctg 8795

aaggtctccg cggccggcgc gctcgacggt ggccgcgagg tcgttggaga tgcgggccat 8855

gagctgcgag aaggcgttca tgccggcctc gttccagacg cggctgtaga ccacggctcc 8915

gtcggggtcg cgcgcgcgca tgaccacctg ggcaaggttg agctcgacgt ggcgcgtgaa 8975

gaccgcgtag ttgcagaggc gctggtagag gtagttgagc gtggtggcga tgtgctcggt 9035

gacgaagaag tacatgatcc agcggcggag cggcatctcg ctgacgtcgc ccagggcttc 9095

caagcgctcc atggcctcgt agaagtccac ggcgaagttg aaaaactggg agttgcgcgc 9155

cgagacggtc aactcctcct ccagaagacg gatgagctct gcgatggtgg cgcgcacctc 9215

gcgctcgaag gccccggggg gctcctcttc ttccatctcc tcctcctctt cctcctccac 9275

taacatctct tctacttcct cctcaggcgg tggtggcggg ggaggggggcc tgcgtcgccg 9335

gcggcgcacg ggcagacggt cgatgaagcg ctcgatggtc tcgccgcgcc ggcgtcgcat 9395

ggtctcggtg acggcgcgcc cgtcctcgcg gggccgcagc gtgaagacgc cgccgcgcat 9455

ctccaggtgg ccgggggggt ccccgttggg cagggagagg gcgctgacga tgcatcttat 9515

caattgcccc gtagggactc cgcgcaagga cctgagcgtc tcgagatcca cgggatctga 9575

aaaccgttga acgaaggctt cgagccagtc gcagtcgcaa ggtaggctga gcacggtttc 9635

ttctggcggg tcatgttggt tggagggagc ggggcgggcg atgctgctgg tgatgaagtt 9695

gaaataggcg gttctgagac ggcggatggt ggcgaggagc accaggtctt tgggcccggc 9755

ttgctggatg cgcagacggt cggccatgcc ccaggcgtgg tcctgacacc tggccaggtc 9815

cttgtagtag tcctgcatga gccgctccac gggcacctcc tcctcgcccg cgcggccgtg 9875

catgcgcgtg agcccgaagc cgcgctgggg ctggacgagc gccaggtcgg cgacgacgcg 9935

ctcggcgagg atggcctgct ggacctgggt gagggtggtc tggaagtcgt cgaagtcgac 9995

gaagcggtgg taggctccgg tgttgatggt gtaggagcag ttggccatga cggaccagtt 10055

gacggtctgg tggccggggc gcacgagctc gtggtacttg aggcgcgagt aggcgcgcgt 10115

gtcgaagatg tagtcgttgc aggtgcgcac gaggtactgg tatccgacga ggaagtgcgg 10175

cggcggctgg cggtagagcg gccatcgctc ggtggcgggg gcgccgggcg cgaggtcctc 10235

gagcatgagg cggtggtagc cgtagatgta cctggacatc caggtgatgc cggcggcggt 10295

ggtggaggcg cgcgggaact cgcggacgcg gttccagatg ttgcgcagcg gcaggaagta 10355

gttcatggtg gccgcggtct ggcccgtgag gcgcgcgcag tcgtggatgc tctagacata 10415

cgggcaaaaa cgaaagcggt cagcggctcg actccgtggc ctggaggcta agcgaacggg 10475

ttgggctgcg cgtgtacccc ggttcgagtc tctgctcgaa tcaggctgga gccgcagcta 10535

acgtggtact ggcactcccg tctcgaccca agcctgctaa cgaaacctcc aggatacgga 10595

ggcgggtcgt tttttggcct tggtcactgg tcatgaaaaa ctagtaagcg cggaaagcgg 10655

ccgcccgcga tggctcgctg ccgtagtctg gagaaagaat cgccagggtt gcgttgcggt 10715

gtgccccggt tcgagactca gcgctcggcg ccggccggat tccgcggcta acgtgggcgt 10775

ggctgccccg tcgtttccaa gacccccttag ccagccgact tctccagtta cggagcgagc 10835

ccctcttttt cttgtgtttt tgccagatgc atcccgtact gcggcagatg cgcccccacc 10895

ctccaccaca accgccccta ccgccgcagc agcagcaaca gccggcgctt ctgcccccgc 10955

cccagcagca gccagccact accgcggcgg ccgccgtgag cggagccggc gttcagtatg 11015

acctggcctt ggaagagggc gaggggctgg cgcggctggg ggcgtcgtcg ccggagcggc 11075

acccgcgcgt gcagatgaaa agggacgctc gcgaggccta cgtgcccaag cagaacctgt 11135

tcagagacag gagcggcgag gagcccgagg agatgcgcgc ctcccgcttc cacgcggggc 11195

gggagctgcg gcgcggcctg gaccgaaagc gggtgctgag ggacgaggat ttcgaggcgg 11255

acgagctgac ggggatcagc cccgcgcgcg cgcacgtggc cgcggccaac ctggtcacgg 11315

cgtacgagca gaccgtgaag gaggagagca acttccaaaa atccttcaac aaccacgtgc 11375

gcacgctgat cgcgcgcgag gaggtgaccc tgggcctgat gcatctgtgg gacctgttgg 11435

aggccatcgt gcagaacccc acgagcaagc cgctgacggc gcagctgttt ctggtggtgc 11495

agcacagtcg ggacaacgag acgttcaggg aggcgctgct gaatatcacc gagcccgagg 11555

gccgctggct cctggacctg gtgaacattc tgcagagcat cgtggtgcag gagcgcgggc 11615

tgccgctgtc cgagaagctg gcggccatca acttctcggt gctgagcctg ggcaagtact 11675

acgctaggaa gatctacaag accccgtacg tgcccataga caaggaggtg aagatcgacg 11735

ggttttacat gcgcatgacc ctgaaagtgc tgaccctgag cgacgatctg ggggtgtacc 11795

gcaacgacag gatgcaccgc gcggtgagcg ccagccgccg gcgcgagctg agcgaccagg 11855

agctgatgca cagcctgcag cgggccctga ccggggccgg gaccgagggg gagagctact 11915

ttgacatggg cgcggacctg cgctggcagc ccagccgccg ggctttagag gcagccggcg 11975

gcgtgcccta cgtggaggag gtggacgatg atgaggagga gggcgagtac ctggaagact 12035

gatggcgcga ccgtattttt gctagatgca gcaacagcca ccgcctcctg atcccgcgat 12095

gcgggcggcg ctgcagagcc agccgtccgg cattaactcc tcggacgatt ggacccaggc 12155

catgcaacgc atcatggcgc tgacgacccg caatcccgaa gcctttagac agcagcctca 12215

ggccaaccgg ctctcggcca tcctggaggc cgtggtgccc tcgcgctcga accccacgca 12275

cgagaaggtg ctggccatcg tgaacgcgct ggtggagaac aaggccatcc gcggcgacga 12335

ggccgggctg gtgtacaacg cgctgctgga gcgcgtggcc cgctacaaca gcaccaacgt 12395

gcagacgaac ctggaccgca tggtgaccga cgtgcgcgag gcggtgtcgc agcgcgagcg 12455

gttccaccgc gagtcgaacc tgggctccat ggtggcgctg aacgccttcc tgagcacgca 12515

gcccgccaac gtgccccggg gccaggagga ctacaccaac tttatcagcg cgctgcggct 12575

gatggtggcc gaggtgcccc agagcgaggt gtaccagtcg gggccggact acttcttcca 12635

gaccagtcgc cagggcttgc agaccgtgaa cctgagccag gctttcaaga acttgcaggg 12695
actgtggggc gtgcaggccc cggtcgggga ccgcgcgacg gtgtcgagcc tgctgacgcc 12755
gaactcgcgc ctgctgctgc tgctggtggc gcccttcacg gacagcggca gcgtgagccg 12815
cgactcgtac ctgggctacc tgcttaacct gtaccgcgag gccatcgggc aggcgcacgt 12875
ggacgagcag acctaccagg agatcaccca cgtgagccgc gcgctgggcc aggaggaccc 12935
gggcaacctg gaggccaccc tgaacttcct gctgaccaac cggtcgcaga agatcccgcc 12995
ccagtacgcg ctgagcaccg aggaggagcg catcctgcgc tacgtgcagc agagcgtggg 13055
gctgttcctg atgcaggagg gggccacgcc cagcgccgcg ctcgacatga ccgcgcgcaa 13115
catggagccc agcatgtacg cccgcaaccg cccgttcatc aataagctga tggactactt 13175
gcatcgggcg gccgccatga actcggacta ctttaccaac gccatcttga acccgcactg 13235
gctcccgccg cccgggttct acacgggcga gtacgacatg cccgacccca acgacgggtt 13295
cctgtgggac gacgtggaca gcagcgtgtt ctcgccgcgc cccaccacca ccgtgtggaa 13355
gaaagagggc ggggaccggc ggccgtcctc ggcgctgtcc ggtcgcgcgg gtgctgccgc 13415
ggcggtgccc gaggccgcca gccccttccc gagcctgccc ttttcgctga acagcgtgcg 13475
cagcagcgag ctgggtcggc tgacgcggcc gcgcctgctg ggcgaggagg agtacctgaa 13535
cgactccttg ttgaggcccg agcgcgagaa aaacttcccc aataacggga tagagagcct 13595
ggtggacaag atgagccgct ggaagacgta cgcgcacgag cacagggacg agccccgagc 13655
tagcagcagc gccggcgcca cccgtagacg ccagcggcac gacaggcagc ggggactggt 13715
gtgggacgat gaggattccg ccgacgacag cagcgtgttg gacttgggtg ggagtggtgg 13775
tggtaacccg ttcgctcact tgcgcccccg tatcgggcgc ctgatgtaag aatctgaaaa 13835
aataaaaaaa cggtactcac caaggccatg gcgaccagcg tgcgttcttc tctgttgttt 13895
gtagtagtat gatgaggcgc gtgtacccgg agggtcctcc tccctcgtac gagagcgtga 13955
tgcagcaggc ggtggcggcg gcgatgcagc ccccgctgga ggcgccttac gtgcccccgc 14015
ggtacctggc gcctacggag gggcggaaca gcattcgtta ctcggagctg gcacccttgt 14075
acgataccac ccggttgtac ctggtggaca acaagtcggc ggacatcgcc tcgctgaact 14135
accagaacga ccacagcaac ttcctgacca ccgtggtgca gaacaacgat ttcaccccca 14195
cggaggccag cacccagacc atcaactttg acgagcgctc gcggtggggc ggccagctga 14255
aaaccatcat gcacaccaac atgcccaacg tgaacgagtt catgtacagc aacaagttca 14315
aggcgcgggt gatggtctcg cgcaagaccc ccaacggggt gacggtggat gagaattatg 14375
atggtagtca ggacgagctg acctacgagt gggtggagtt tgagctgccc gagggcaact 14435
tctcggtgac catgaccatc gatctgatga acaacgccat catcgacaac tacttggcgg 14495
tgggacggca gaacggggtg ctggagagcg acatcggcgt gaagttcgac acgcgcaact 14555
tccggctggg ctgggacccc gtgaccgagc tggtgatgcc gggcgtgtac accaacgagg 14615
ccttccaccc cgacatcgtc ctgctgcccg gctgcggcgt ggacttcacc gagagccgcc 14675

tcagcaacct gctgggcatc cgcaagcggc agcccttcca ggagggcttc cagatcctgt 14735

acgaggacct ggaggggggc aacatccccg cgctgctgga cgtcgaagcc tacgagaaaa 14795

gcaaggagga ggccgccgca gcggcgaccg cggccgtggc taccgctgcg accaccgatg 14855

cagatgcagc tactactacc aggggcgata cattcgccac ccaggcggag gaagcagccg 14915

ccctagcggc gaccgatgat agtgaaagta agatagtcat caagccggtg gagaaggaca 14975

gcaaggacag gagctacaac gttctatcgg atggaaagaa caccgcctac cgcagctggt 15035

acctggccta caactacggc gaccctgaga agggcgtgcg ctcctggacg ctgctcacca 15095

cctcggacgt cacctgcggc gtggagcaag tctactggtc gctgcccgac atgatgcaag 15155

acccggtcac cttccgctcc acgcgtcaag ttagcaacta cccggtggtg ggcgccgagc 15215

tcctgcccgt ctactccaag agcttcttca acgagcaggc cgtctactcg cagcagctgc 15275

gcgccttcac ctcgctcacg cacgtcttca accgcttccc cgagaaccag atcctcgtcc 15335

gcccgcccgc gcccaccatt accaccgtca gtgaaaacgt tcctgctctc acagatcacg 15395

ggaccctgcc gctgcgcagc agtatccggg gagtccagcg cgtgaccgtc actgacgcca 15455

gacgccgcac ctgcccctac gtctacaagg ccctgggcgt agtcgcgccg cgcgtcctct 15515

cgagccgcac cttctaaaaa atgtccattc tcatctcgcc cagtaataac accggttggg 15575

gcctgcgcgc gcccagcaag atgtacggag gcgctcgcca acgctccacg caacaccccg 15635

tgcgcgtgcg cgggcacttc cgcgctccct ggggcgccct caagggccgc gtgcgctcgc 15695

gcaccaccgt cgacgacgtg atcgaccagg tggtggccga cgcgcgcaac tacacgcccg 15755

ccgccgcgcc cgcctccacc gtggacgccg tcatcgacag cgtggtggcc gacgcgcgcc 15815

ggtacgcccg cgccaagagc cggcggcggc gcatcgcccg gcggcaccgg agcacccccg 15875

ccatgcgcgc ggcgcgagcc ttgctgcgca gggccaggcg cacgggacgc agggccatgc 15935

tcagggcggc cagacgcgcg gcctccggca gcagcagcgc cggcaggacc cgcagacgcg 15995

cggccacggc ggcggcggcg gccatcgcca gcatgtcccg cccgcggcgc ggcaacgtgt 16055

actgggtgcg cgacgccgcc accggtgtgc gcgtgcccgt gcgcacccgc ccccctcgca 16115

cttgaagatg ctgacttcgc gatgttgatg tgtcccagcg gcgaggagga tgtccaagcg 16175

caaattcaag gaagagatgc tccaggtcat cgcgcctgag atctacggcc ccgcggcggc 16235

ggtgaaggag gaaagaaagc cccgcaaact gaagcgggtc aaaaaggaca aaaaggagga 16295

ggaagatgac ggactggtgg agtttgtgcg cgagttcgcc ccccggcggc gcgtgcagtg 16355

gcgcgggcgg aaagtgaaac cggtgctgcg gcccggcacc acggtggtct tcacgcccgg 16415

cgagcgttcc ggctccgcct ccaagcgctc ctacgacgag gtgtacgggg acgaggacat 16475

cctcgagcag gcggccgagc gtctgggcga gtttgcttac ggcaagcgca gccgccccgc 16535

gcccttgaaa gaggaggcgg tgtccatccc gctggaccac ggcaacccca cgccgagcct 16595

gaagccggtg accctgcagc aggtgctgcc gagcgcggcg ccgcgccggg gcttcaagcg 16655

cgagggcggc gaggatctgt acccgaccat gcagctgatg gtgcccaagc gccagaagct 16715

ggaggacgtg ctggagcaca tgaaggtgga ccccgaggtg cagcccgagg tcaaggtgcg 16775

gcccatcaag caggtggccc cgggcctggg cgtgcagacc gtggacatca agatccccac 16835

ggagcccatg gaaacgcaga ccgagcccgt gaagcccagc accagcacca tggaggtgca 16895

gacggatccc tggatgccgg cgccggcttc caccaccacc accacccgcc gaagacgcaa 16955

gtacggcgcg gccagcctgc tgatgcccaa ctacgcgctg catccttcca tcatccccac 17015

gccgggctac cgcggcacgc gcttctaccg cggctacagc agccgccgca agaccaccac 17075

ccgccgccgc cgtcgccgca cccgccgcag caccaccgcg acttccgccg ccgccttggt 17135

gcggagagtg taccgcagcg ggcgtgagcc tctgaccctg ccgcgcgcgc gctaccaccc 17195

gagcatcgcc atttaactct gccgtcgcct ccttgcagat atggccctca catgccgcct 17255

ccgcgtcccc attacgggct accgaggaag aaagccgcgc cgtagaaggc tgacggggaa 17315

cgggctgcgt cgccatcacc accggcggcg gcgcgccatc agcaagcggt tgggggggagg 17375

cttcctgccc gcgctgatcc ccatcatcgc cgcggcgatc ggggcgatcc ccggcatagc 17435

ttccgtggcg gtgcaggcct ctcagcgcca ctgagacaca gcttggaaaa tttgtaataa 17495

aaaaatggac tgacgctcct ggtcctgtga tgtgtgtttt tagatggaag acatcaattt 17555

ttcgtccctg gcaccgcgac acggcacgcg gccgtttatg ggcacctgga gcgacatcgg 17615

caacagccaa ctgaacgggg gcgccttcaa ttggagcagt ctctggagcg ggcttaagaa 17675

tttcgggtcc acgctcaaaa cctatggcag caaggcgtgg aacagcacca cagggcaggc 17735

gctgagggat aagctgaaag agcagaactt ccagcagaag gtggtcgatg ggctcgcttc 17795

gggcatcaac ggggtggtgg acctggccaa ccaggccgtg cagcggcaga tcaacagccg 17855

cctggacccg gtgccgcccg ccggctccgt ggagatgccg caggtggagg aggagctgcc 17915

tcccctggac aagcggggcg agaagcgacc ccgccccgac gcggaggaga cgctgctgac 17975

gcacacggac gagccgcccc cgtacgagga ggcggtgaaa ctgggtctgc ccaccacgcg 18035

gcccattgcg cccctagcca ccggggtgct gaaacccgag agtaataagc ccgcgaccct 18095

ggacttgcct cctccccagc cttcccgccc ctccacagtg gctaagcccc tgccgccggt 18155

ggccgtggcc cgcgcgcgac ccgggggctc cgcccgccct catgcgaact ggcagagcac 18215

tctgaacagc atcgtgggtc tgggagtgca gagtgtgaag cgccgccgct gctattaaac 18275

ctaccgtagc gcttaacttg cttgtctgtg tgtgtatgta ttatgtcgcc gccgctgtcc 18335

gccagaagga ggagtgaaga ggcgcgtcgc cgagttgcaa gatggccacc ccatcgatgc 18395

tgccccagtg ggcgtacatg cacatcgccg gacaggacgc ttcggagtac ctgagtccgg 18455

gtctggtgca gttcgcccgc gccacagaca cctacttcag tctggggaac aagtttagga 18515

accccacggt ggcgcccacg cacgatgtga ccaccgaccg cagccagcgg ctgacgctgc 18575

gcttcgtgcc cgtggaccgc gaggacaaca cctactcgta caaagtgcgc tacacgctgg 18635

ccgtgggcga caaccgcgtg ctggacatgg ccagcaccta ctttgacatc cgcggcgtgc 18695

tggaccgggg ccctagcttc aaaccctact ccggcaccgc ctacaacagc ctggctccca 18755

agggagcgcc caattccagc cagtgggagc gagctaagac aaacaataac ggagccacgg 18815

aatctgttac ctttggtgtg gctgccatgg ggggtataga tattacaaaa gagggtctcc 18875

agattggaac tgatgaaact aaagctgata gtaaagaaat ttatgcagac aaaacctacc 18935

aacctgaacc tcagatagga gaggagaact ggcaagaaac attctcctat tatggcggca 18995

gagctcttaa aaaagatacc aagatgaagc catgctacgg ctcctttgct aaaccaacga 19055

atgtcaaagg aggtcaggcc aaatttaaag ttcaggacgg tcaacaaact acagaatatg 19115

atatcgactt agctttcttt gatattccaa actctggaac aggagggaat ggcacgaatg 19175

ttaattatga tccagatatg gtcatgtaca ctgaaaatgt ggatttggag acccctgata 19235

cccacattgt ttacaaacca gggacttccg atgacagttc tgaagcaaac ttgcttcagc 19295

agtccatgcc taacagaccc aactatattg ggtttagaga caactttatc ggtctcatgt 19355

actacaacag tactggcaat atgggtgtgc tggctggtca ggcctcccag ctgaatgctg 19415

tggtcgactt gcaagacaga aacaccgagc tatcctacca gctcttgctt gactctctgg 19475

gcgatagaac ccggtatttc agtatgtgga accaggcggt ggacagttat gaccctgatg 19535

tgcgcattat tgaaaaccat ggtgtggaag atgaacttcc caactattgc ttcccattgg 19595

atggagctgg tactaatgct gtctatcagg gtgttaaagc aaaaactaat ggaggcgcag 19655

ccaatggaga ttgggagcaa gatacagacg tgtcaaacat taaccagata tgcaagggga 19715

acatctatgc catggaaatc aacctccaag ccaacctgtg gagaagtttc ctctactcga 19775

acgtggccct gtacctgccc gattcttaca agtacacgcc ggccaacatc accttgccca 19835

cgaataccaa cacctatgat tacatgaatg ggagagtggc gcctccctcg ttggtggatg 19895

cctacatcaa catcggggcg cgctggtcgc tggaccccat ggacaacgtc aatcccttca 19955

accaccaccg caacgcgggg ctgcgctacc gctccatgct tctgggcaac gggcgcttcg 20015

tgcccttcca catccaggtg ccccagaaat ttttcgccat caagagcctc ctgctcctgc 20075

ccgggtccta cacctacgag tggaacttcc gcaaggacgt caacatgatc ctgcagagct 20135

ccctcggcaa cgacctgcgc acggacgggg cctccatctc cttcaccagc atcaacctct 20195

acgccacctt cttccccatg gcgcacaaca cggcctccac gctcgaggcc atgctgcgca 20255

acgacaccaa cgaccagtcc ttcaacgact acctctcggc ggccaacatg ctctacccca 20315

tcccagccaa cgccaccaac gtgcccatct ccatcccctc gcgcaactgg gccgccttcc 20375

gcggctggtc cttcacgcgt ctcaagacca aggagacgcc ctcgctgggc tccgggttcg 20435

acccctactt cgtctactcg ggctccatcc cctacctcga cggcaccttc tacctcaacc 20495

acaccttcaa gaaggtctcc atcaccttcg actcctccgt cagctggccc ggcaacgacc 20555

ggctcctgac gcccaacgag ttcgaaatca agcgcaccgt cgacggcgag ggctacaacg 20615

tggcccagtg caacatgacc aaggactggt tcctggtcca gatgctggcc cactacaaca 20675

tcggctacca gggcttctac gtgcccgagg gctacaagga ccgcatgtac tccttcttcc 20735

gcaacttcca gcccatgagc cgccaggtgg tggacgaggt caactacaag gactaccagg 20795

ccgtcaccct ggcctaccag cacaacaact cgggcttcgt cggctacctc gcgcccacca 20855

tgcgccaggg ccagccctac cccgccaact acccgtaccc gctcatcggc aagagcgccg 20915

tcaccagcgt cacccagaaa aagttcctct gcgacagggt catgtggcgc atccccttct 20975
ccagcaactt catgtccatg ggcgcgctca ccgacctcgg ccagaacatg ctctatgcca 21035
actccgccca cgcgctagac atgaatttcg aagtcgaccc catggatgag tccacccttc 21095
tctatgttgt cttcgaagtc ttcgacgtcg tccgagtgca ccagccccac cgcggcgtca 21155
tcgaggccgt ctacctgcgc acccccttct cggccggtaa cgccaccacc taagctcttg 21215
cttcttgcaa gatggctgag cccacgggct ccggcgagca ggagctcagg gccatcatcc 21275
gcgacctggg ctgcgggccc tacttcctgg gcaccttcga taagcgcttc ccgggattca 21335
tggccccgca caagctggcc tgcgccatcg tcaacacggc cggccgcgag accgggggcg 21395
agcactggct ggccttcgcc tggaacccgc gctcgaacac ctgctacctc ttcgacccct 21455
tcgggttctc ggacgagcgc ctcaagcaga tctaccagtt cgagtacgag ggcctgctgc 21515
gccgcagcgc cctggccacc gaggaccgct gcgtcaccct ggaaaagtcc acccagaccg 21575
tgcagggtcc gcgctcggcc gcctgcgggc tcttttgctg catgttcctg cacgccttcg 21635
tgcactggcc cgaccgcccc atggacaaga accccaccat gaacttgctg acgggggtgc 21695
ccaacggcat gctccagtcg ccccaggtgg aacccaccct gcgccgcaac caggaggcgc 21755
tctaccgctt cctcaacgcc cactccgcct actttcgctc ccaccgcgcg cgcatcgaga 21815
aggccaccgc cttcgaccgc atgaatcaag acatgtaaac cgtgtgtgta tgtgaatgct 21875
ttattcataa taaacagcac atgtttatgc caccttctct gaggctctga ctttatttag 21935
aaatcgaagg ggttctgccg gctctcggcg tgccccgcgg gcagggatac gttgcggaac 21995
tggtacttgg gcagccactt gaactcgggg atcagcagct tcggcacggg gaggtcgggg 22055
aacgagtcgc tccacagctt gcgcgtgagt tgcagggcgc ccagcaggtc gggcgcggag 22115
atcttgaaat cgcagttggg acccgcgttc tgcgcgcgag agttgcggta cacggggttg 22175
cagcactgga acaccatcag ggccgggtgc ttcacgctcg ccagcaccgt cgcgtcggtg 22235
atgccctcca cgtccagatc ctcggcgttg gccatcccga agggggtcat cttgcaggtc 22295
tgccgcccca tgctgggcac gcagccgggc ttgtggttgc aatcgcagtg caggggggatc 22355
agcatcatct gggcctgctc ggagctcatg cccgggtaca tggccttcat gaaagcctcc 22415
agctggcgga aggcctgctg cgccttgccg ccctcggtga agaagacccc gcaggacttg 22475
ctagagaact ggttggtagc gcagcccgcg tcgtgcacgc agcagcgcgc gtcgttgttg 22535
gccagctgca ccacgctgcg cccccagcgg ttctgggtga tcttggcccg gtcggggttc 22595
tccttcagcg cgcgctgccc gttctcgctc gccacatcca tctcgatcgt gtgctccttc 22655
tggatcatca cggtcccgtg caggcaccgc agcttgccct cggcctcggt gcagccgtgc 22715
agccacagcg cgcagccggt gctctcccag ttcttgtggg cgatctggga gtgcgagtgc 22775
acgaagccct gcaggaagcg gcccatcatc gcggtcaggg tcttgttgct ggtgaaggtc 22835
agcgggatgc cgcggtgctc ctcgttcaca tacaggtggc agatgcggcg gtacacctcg 22895
ccctgctcgg gcatcagctg gaaggcggac ttcaggtcgc tctccacgcg gtaccggtcc 22955

atcagcagcg tcatcacttc catgcccttc tcccaggccg aaacgatcgg caggctcagg 23015

gggttcttca ccgtcatctt agtcgccgcc gccgaagtca gggggtcgtt ctcgtccagg 23075

gtctcaaaca ctcgcttgcc gtccttctcg gtgatgcgca cgggggggaa ggcgaagccc 23135

acggccgcca gctcctcctc ggcctgcctt tcgtcctcgc tgtcctggct gatgtcttgc 23195

aaaggcacat gcttggtctt gcggggtttc tttttgggcg gcagaggcgg cggcggcgga 23255

gacgtgctgg gcgagcgcga gttctcgctc accacgacta tttcttcttc ttggccgtcg 23315

tccgagacca cgcggcggta ggcatgcctc ttctggggca gaggcggagg cgacgggctc 23375

tcgcggttcg gcgggcggct ggcagagccc cttccgcgtt cgggggtgcg ctcctggcgg 23435

cgctgctctg actgacttcc tccgcggccg gccattgtgt tctcctaggg agcaacaaca 23495

agcatggaga ctcagccatc gtcgccaaca tcgccatctg cccccgccgc cgccgacgag 23555

aaccagcagc agcagaatga aagcttaacc gccccgccgc ccagccccac ctccgacgcc 23615

gcggccccag acatgcaaga gatggaggaa tccatcgaga ttgacctggg ctacgtgacg 23675

cccgcggagc acgaggagga gctggcagcg cgcttttcag ccccggaaga gaaccaccaa 23735

gagcagccag agcaggaagc agagagcgag cagagccagg ctgggctcga gcatggcgac 23795

tacctgagcg gggcagagga cgtgctcatc aagcatctgg cccgccaatg catcatcgtc 23855

aaggacgcgc tgctcgaccg cgccgaggtg cccctcagcg tggcggagct cagccgcgcc 23915

tacgagcgca acctcttctc gccgcgcgtg ccccccaagc gccagcccaa cggcacctgc 23975

gagcccaacc cgcgcctcaa cttctacccg gtcttcgcgg tgcccgaggc cctggccacc 24035

taccacctct ttttcaagaa ccaaaggatc cccgtctcct gccgcgccaa ccgcacccgc 24095

gccgacgccc tgctcaacct gggccccggc gcccgcctac ctgatatcgc ctccttggaa 24155

gaggttccca agatcttcga gggtctgggc agcgacgaga ctcgggccgc gaacgctctg 24215

caaggaagcg gagaggagca tgagcaccac agcgccctgg tggagttgga aggcgacaac 24275

gcgcgcctgg cggtcctcaa gcgcacggtc gagctgaccc acttcgccta cccggcgctc 24335

aacctgcccc ccaaggtcat gagcgccgtc atggaccagg tgctcatcaa gcgcgcctcg 24395

cccctctcgg aggaggagat gcaggacccc gagagctcgg acgagggcaa gcccgtggtc 24455

agcgacgagc agctggcgcg ctggctggga acgagtagca ccccccagag tctggaagag 24515

cggcgcaagc tcatgatggc cgtggtcctg gtgaccgtgg agcttgagtg tctgcgccgc 24575

ttcttcgccg acgcggagac cctgcgcaag gtcgaggaga acctgcacta cctcttcagg 24635

cacgggttcg tgcgccaggc ctgcaagatc tccaacgtgg agctgaccaa cctggtctcc 24695

tacatgggca tcctgcacga gaaccgcctg gggcagaacg tgctgcacac caccctgcgc 24755

ggggaggccc gccgcgacta catccgcgac tgcgtctacc tgtacctctg ccacacctgg 24815

cagacgggca tgggcgtgtg gcagcagtgc ctggaggagc agaacctgaa agagctctgc 24875

aagctcctgc agaagaacct gaaggccctg tggaccgggt tcgacgagcg taccaccgcc 24935

tcggacctgg ccgacctcat cttccccgag cgcctgcggc tgacgctgcg caacgggctg 24995

cccgacttta tgagccaaag catgttgcaa aactttcgct ctttcatcct cgaacgctcc 25055

```
gggatcctgc ccgccacctg ctccgcgctg ccctcggact tcgtgccgct gaccttccgc    25115

gagtgccccc cgccgctctg gagccactgc tacttgctgc gcctggccaa ctacctggcc    25175

taccactcgg acgtgatcga ggacgtcagc ggcgagggtc tgctcgagtg ccactgccgc    25235

tgcaacctct gcacgccgca ccgctccctg gcctgcaacc cccagctgct gagcgagacc    25295

cagatcatcg gcaccttcga gttgcaaggc cccggcgagg agggcaaggg gggtctgaaa    25355

ctcaccccgg ggctgtggac ctcggcctac ttgcgcaagt tcgtgcccga ggactaccat    25415

cccttcgaga tcaggttcta cgaggaccaa tcccagccgc ccaaggccga gctgtcggcc    25475

tgcgtcatca cccaggggGC catcctggcc caattgcaag ccatccagaa atcccgccaa    25535

gaatttctgc tgaaaaaggg ccacggggtc tacttggacc cccagaccgg agaggagctc    25595

aaccccagct tcccccagg atg ccc aga gga agc agc aag aag ctg aaa gtg      25647
                        Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val
                        505                 510                 515

gag ctg ccg ctg ccg ccg gag gat ttg gag gaa gac tgg gag agc agt       25695
Glu Leu Pro Leu Pro Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser
                    520                 525                 530

cag gca gag gag gag gag atg gaa gac tgg gac agc act cag gca gag       25743
Gln Ala Glu Glu Glu Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu
                535                 540                 545

gag gac agc ctg caa gac agt ctg gaa gac gag gtg gag gag gca gag       25791
Glu Asp Ser Leu Gln Asp Ser Leu Glu Asp Glu Val Glu Glu Ala Glu
            550                 555                 560

gaa gaa gca gcc gcc gcc aga ccg tcg tcc tcg gcg gag aaa gca agc       25839
Glu Glu Ala Ala Ala Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser
        565                 570                 575

agc acg gat acc atc tcc gct ccg ggt cgg ggt ctc ggc ggc cgg gcc       25887
Ser Thr Asp Thr Ile Ser Ala Pro Gly Arg Gly Leu Gly Gly Arg Ala
580                 585                 590                 595

cac agt aga tgg gac gag acc ggg cgc ttc ccg aac ccc acc acc cag       25935
His Ser Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln
                600                 605                 610

acc ggt aag aag gag cgg cag gga tac aag tcc tgg cgg ggg cac aaa       25983
Thr Gly Lys Lys Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys
            615                 620                 625

aac gcc atc gtc tcc tgc ttg caa gcc tgc ggg ggc aac atc tcc ttc       26031
Asn Ala Ile Val Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe
        630                 635                 640

acc cgg cgc tac ctg ctc ttc cac cgc ggg gtg aac ttc ccc cgc aac       26079
Thr Arg Arg Tyr Leu Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn
    645                 650                 655

atc ttg cat tac tac cgt cac ctc cac agc ccc tac tac tgt ttc caa       26127
Ile Leu His Tyr Tyr Arg His Leu His Ser Pro Tyr Tyr Cys Phe Gln
660                 665                 670                 675

gaa gag gca gaa acc cag cag cag cag aaa acc agc agc agc               26169
Glu Glu Ala Glu Thr Gln Gln Gln Gln Lys Thr Ser Ser Ser
                680                 685

tagaaaatcc acagcggcgg cggcggcagg tggactgagg atcgcggcga acgagccggc    26229
```

```
gcagacccgg gagctgagga accggatctt tcccaccctc tatgccatct tccagcagag    26289

tcgggggcag gagcaggaac tgaaagtcaa gaaccgttct ctgcgctcgc tcacccgcag    26349

ttgtctgtat cacaagagcg aagaccaact tcagcgcact ctcgaggacg ccgaggctct    26409

cttcaacaag tactgcgcgc tcactcttaa agagtagccc gcgcccgccc acacacggaa    26469

aaaggcggga attacgtcac cacctgcgcc cttcgcccga ccatcatcat gagcaaagag    26529

attcccacgc cttacatgtg gagctaccag ccccagatgg gcctggccgc cggcgccgcc    26589

caggactact ccacccgcat gaactggctc agtgccgggc ccgcgatgat ctcacgggtg    26649

aatgacatcc gcgcccaccg aaaccagata ctcctagaac agtcagcgat caccgccacg    26709

ccccgccatc accttaatcc gcgtaattgg cccgccgccc tggtgtacca ggaaattccc    26769

cagcccacga ccgtactact tccgcgagac gcccaggccg aagtccagct gactaactca    26829

ggtgtccagc tggccggcgg cgccgccctg tgtcgtcacc gccccgctca gggtataaag    26889

cggctggtga tccgaggcag aggcacacag ctcaacgacg aggtggtgag ctcttcgctg    26949

ggtctgcgac ctgacggagt cttccaactc gccggatcgg ggagatcttc cttcacgcct    27009

cgtcaggccg tcctgacttt ggagagttcg tcctcgcagc cccgctcggg tggcatcggc    27069

actctccagt tcgtggagga gttcactccc tcggtctact tcaacccctt ctccggctcc    27129

cccggccact acccggacga gttcatcccg aacttcgacg ccatcagcga gtcggtggac    27189

ggctacgatt gaatgtccca tggtggcgcg gctgacctag ctcggcttcg acacctggac    27249

cactgccgcc gcttccgctg cttcgctcgg gatctcgccg agtttgccta ctttgagctg    27309

cccgaggagc accctcaggg cccggcccac ggagtgcgga tcatcgtcga agggggcctc    27369

gactcccacc tgcttcggat cttcagccag cgtccgatcc tggtcgagcg cgagcaagga    27429

cagacccgtc tgaccctgta ctgcatctgc aaccaccccg gcctgc atg aaa gtc        27484
                                                  Met Lys Val
                                                  690

ttt gtt gtc tgc tgt gta ctg agt ata ata aaa gct gag atc agc gac      27532
Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu Ile Ser Asp
        695                 700                 705

tac tcc gga ctt ccg tgt gtt cct gaa tcc atc aac cag tcc ctg ttc      27580
Tyr Ser Gly Leu Pro Cys Val Pro Glu Ser Ile Asn Gln Ser Leu Phe
    710                 715                 720

ttc acc ggg aac gag acc gag ctc cag ctc cag tgt aag ccc cac aag      27628
Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys Pro His Lys
725                 730                 735                 740

aag tac ctc acc tgg ctg ttc cag ggc tcc ccg atc gcc gtt gtc aac      27676
Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala Val Val Asn
                745                 750                 755

cac tgc gac aac gac gga gtc ctg ctg agc ggc cct gcc aac ctt act      27724
His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala Asn Leu Thr
            760                 765                 770

ttt tcc acc cgc aga agc aag ctc cag ctc ttc caa ccc ttc ctc ccc      27772
Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro Phe Leu Pro
        775                 780                 785

ggg acc tat cag tgc gtc tcg gga ccc tgc cat cac acc ttc cac ctg      27820
```

```
Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr Phe His Leu
    790                 795                 800

atc ccg aat acc aca gcg tcg ctc ccc gct act aac aac caa act acc      27868
Ile Pro Asn Thr Thr Ala Ser Leu Pro Ala Thr Asn Asn Gln Thr Thr
805                 810                 815                 820

cac caa cgc cac cgt cgc gac ctt tcc tct gaa tct aat acc act acc      27916
His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn Thr Thr Thr
                825                 830                 835

gga ggt gag ctc cga ggt cga cca acc tct ggg att tac tac ggc ccc      27964
Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr Tyr Gly Pro
            840                 845                 850

tgg gag gtg gtg ggg tta ata gcg cta ggc cta gtt gtg ggt ggg ctt      28012
Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Val Gly Gly Leu
        855                 860                 865

ttg gct ctc tgc tac cta tac ctc cct tgc tgt tcg tac tta gtg gtg      28060
Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr Leu Val Val
    870                 875                 880

ctg tgt tgc tgg ttt aag aaa tgg ggc aga tca ccc tagtgagctg           28106
Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
885                 890                 895

cggtgtgctg gtggcggtgg tgctttcgat tgtgggactg ggcggcgcgg ctgtagtgaa    28166

ggagaaggcc gatccctgct tgcatttcaa tcccgataaa tgccagctga gttttcagcc    28226

cgatggcaat cggtgcgcgg tgctgatcaa gtgcggatgg gaatgcgaga acgtgagaat    28286

cgagtacaat aacaagactc ggaacaatac tctcgcgtcc acgtggcagc ccggggaccc    28346

cgagtggtac accgtctctg tccccggtgc tgacggctcc ccgcgcaccg tgaataatac    28406

tttcattttt gcgcacatgt gcgacacggt catgtggatg agcaagcagt acgatatgtg    28466

gccccccacg aaggagaaca tcgtggtctt ctccatcgct tacagcctgt gcacggtgct    28526

aatcaccgct atcgtgtgcc tgagcattca catgctcatc gctattcgcc ccagaaataa    28586

tgccgaaaaa gaaaaacagc cataacacgt tttttcacac acctttttca gaccatggcc    28646

tctgttaaat ttttgctttt atttgccagt ctcattactg ttataagtaa tgagaaactc    28706

actatttaca ttggcactaa ccacactcta gaaggaattc caaaatcctc atggtattgc    28766

tattttgatc aagatccaga cttaactata gaactgtgtg gtaacaaggg acaaaataca    28826

agcattcatt taattaactt taaatgcgga gacgatttga aattaattaa tatcactaaa    28886

gagtatggag gtatgtatta ctatgttaca gaaaataaca acatgcagtt ttatgaagtt    28946

actgtaacta atcccaccac gcctagaaca acaacaacca ccacaaagac tacacctgtt    29006

accactatgc agctcactac caataacatt tttgccatgc gtcagaaggc caacaatagc    29066

accagcattc aacccccccc acccagtgag gaaattccca aatccatgat tggcattatt    29126

gttgctgtag tggtgtgcat gttgatcatc gccttgtgca tggtgtacta tgccttctgc    29186

tacagaaagc acagactgaa cgacaagcta gaacacttac taagtgttga attttaattt    29246

ttttagaacc atgaagatcc taggcctttt aatttttct atcattacct ctgctctatg    29306

caattctgac aatgaggacg ttactgtcgt tgtcggatca aattatacac tgaaaggtcc    29366
```

agcgaagggt atgctttcgt ggtattgctg gtttggaact gacactgaac aaaccgaatt 29426

atgcaatctt caaaatggca aagttcataa ttctaaaatt tacaattata tatgcaatgg 29486

cactgatttg atactcctca atatcacgaa atcatatgct ggcagttatt catgccctgg 29546

agatgatgct gacaatatga ttttttataa attgcaagtg gttgatccca ctactccacc 29606

tccacccacc acaactactc acaccacaca cacagaacaa accacagcag aggaggcggc 29666

aaagttagct ttgcaggtcc aagacagttc atttgttggc attaccccta cacccgatca 29726

gcggtgtccg gggctgctcg tcagcggcat tgtcggtgtg ctttcgggat tagcagttat 29786

aatcatctgc atgttcattt ttgcttgctg ctatagaagg ctttaccgac aaaaatcaga 29846

cccactgctg aacctctatg tttaattttt tccagagcca tgaaggcagt tagcgctcta 29906

gttttttgtt ctttgattgg cactgttttt agtgttagct ttttaaaaca aattaatgtt 29966

actgaggggg aaaatgtgac actggtaggc gtagaaggtg ctcaaaatac cacctggaca 30026

aaataccacc tcgatgggtg gaaagatatt tgcaattgga gtgtcattac ttacacatgt 30086

gagggagtta atttgaccat agtcaatgcc agccaaaatc agaagggttg gattaaaggg 30146

caatctgtta gtgttaccag tgaggggtac tatacccagc atactcttat ctatgacatt 30206

atagtcatac cgctgcctac gcctagccca cctagcacta ccacacagac aacccacact 30266

acacaaacaa ccacatacag tacatcaaat cagcctacca ccactacaac agcagaggtt 30326

gccagctcgt ctggggtccg agcggcattt ttgatgttgg ccccatctag cagtcccact 30386

gctagtacca atgagcagac tactgaattt ttgtccactg tcgagagcca caccacagct 30446

acctcgagtg ccttctctag caccgccaat ctctcctcgc tttcctctac accaatcagt 30506

cccgctacta ctactacccc cgctattctt cccactcccc tgaagcaaac tgaggacagc 30566

ggcatgcaat ggcagatcac cctgctcatt gtgatcgggt tggtcatcct agccgtgttg 30626

ctctactaca tcttccgccg ccgcattccc aacgcgcacc gcaagccggt ctacaagccc 30686

atcattgtcg ggcagccgga gccgcttcag gtggaagggg gtctaaggaa tcttctcttc 30746

tcttttacag tatggtgatt gaactatgat tcctagacaa ttcttgatca ctattcttat 30806

ctgcctcctc caagtctgtg ccaccctcgc tctggtggcc aacgccagtc cagactgtat 30866

tgggcccttc gcctcctacg tgctctttgc cttcatcacc tgcatctgct gctgtagcat 30926

agtctgcctg cttatcacct tcttccagtt cattgactgg atctttgtgc gcatcgccta 30986

cctgcgccac caccccagt accgcgacca gcgagtggcg cagctgctca ggctcctctg 31046

ataagcatgc gggctctgct acttctcgcg cttctgctgt tagtgctccc ccgtcccgtt 31106

gacccccggc cccccactca gtcccccgag gaggtccgca aatgcaaatt ccaagaaccc 31166

tggaaattcc tcaaatgcta ccgccaaaaa tcagacatgc atcccagctg gatcatgatc 31226

attgggatcg tgaacattct ggcctgcacc ctcatctcct ttgtgattta cccctgcttt 31286

gactttggtt ggaactcgcc agaggcgctc tatctcccgc ctgaacctga cacaccacca 31346

cagcaacctc aggcacacgc actaccacca ccacagccta ggccacaata catgcccata 31406

ttagactatg aggccgagcc acagcgaccc atgctccccg ctattagtta cttcaatcta 31466

```
accggcggag atg act gac cca ctg gcc aac aac aac gtc aac gac ctt       31515
           Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp Leu
                       900                 905

ctc ctg gac atg gac ggc cgc gcc tcg gag cag cga ctc gcc caa ctt      31563
Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu
910                 915                 920                 925

cgc att cgc cag cag cag gag aga gcc gtc aag gag ctg cag gac ggc      31611
Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Gly
                930                 935                 940

ata gcc atc cac cag tgc aag aaa ggc atc ttc tgc ctg gtg aaa cag      31659
Ile Ala Ile His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln
            945                 950                 955

gcc aag atc tcc tac gag gtc acc cag acc gac cat cgc ctc tcc tac      31707
Ala Lys Ile Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser Tyr
        960                 965                 970

gag ctc ctg cag cag cgc cag aag ttc acc tgc ctg gtc gga gtc aac      31755
Glu Leu Leu Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn
    975                 980                 985

ccc atc gtc atc acc cag cag tcg ggc gat acc  aag ggg tgc atc cac     31803
Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr  Lys Gly Cys Ile His
990                 995                 1000                1005

tgc tcc tgc gac tcc  ccc gac tgc gtc cac  act ctg atc aag acc        31848
Cys Ser Cys Asp Ser  Pro Asp Cys Val His  Thr Leu Ile Lys Thr
                1010                1015                1020

ctc tgc ggc ctc cgc  gac ctc ctc ccc atg  aac taatcacccc             31891
Leu Cys Gly Leu Arg  Asp Leu Leu Pro Met  Asn
                1025                1030

cttatccag                                                            31900
```

<210> 46
<211> 504
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 46

```
Met Glu Ser Arg Asn Pro Phe Gln Gln Gly Leu Pro Ser Gly Leu Leu
1               5                   10                  15

Ser Ser Ser Phe Val Glu Asn Met Glu Val Pro Ala Pro Glu Cys Asn
            20                  25                  30

Leu Arg Leu Leu Ala Ser Thr Ala Gly Arg His Ala Glu Asp Pro Glu
        35                  40                  45

Ser Pro Val Thr Pro Gly Thr Pro Thr Pro Pro Ala Ala Ala Ala Gly
    50                  55                  60

Ala Ala Ala Arg Gly Gly Gly Gly Pro Arg Arg Glu Pro Glu Ser Arg
65                  70                  75                  80
```

```
Ser Gly Pro Ser Gly Gly Gly Gly Gly Gly Val Ala Asp Leu Phe Pro
                85                  90                  95

Glu Leu Arg Arg Val Leu Thr Arg Ser Ser Ser Gly Arg Glu Arg Gly
            100                 105                 110

Ile Lys Arg Glu Arg His Glu Glu Thr Ser His Arg Thr Glu Leu Thr
        115                 120                 125

Val Ser Leu Met Ser Arg Arg Arg Pro Glu Ser Val Trp Trp His Glu
    130                 135                 140

Val Gln Ser Gln Gly Ile Asp Glu Val Ser Val Met His Glu Lys Tyr
145                 150                 155                 160

Ser Leu Glu Gln Val Lys Thr Cys Trp Leu Glu Pro Glu Asp Asp Trp
                165                 170                 175

Glu Val Ala Ile Arg Asn Tyr Ala Lys Leu Ala Leu Lys Pro Asp Lys
            180                 185                 190

Lys Tyr Lys Ile Thr Lys Leu Ile Asn Ile Arg Asn Ser Cys Tyr Ile
        195                 200                 205

Ser Gly Asn Gly Ala Glu Val Glu Ile Ser Thr Gln Glu Arg Val Ala
    210                 215                 220

Phe Arg Cys Cys Met Met Asn Met Tyr Pro Gly Val Val Gly Met Glu
225                 230                 235                 240

Gly Val Thr Phe Met Asn Ala Arg Phe Arg Gly Asp Gly Tyr Asn Gly
                245                 250                 255

Val Val Phe Met Ala Asn Thr Lys Leu Thr Val His Gly Cys Ser Phe
            260                 265                 270

Phe Gly Phe Asn Asn Met Cys Ile Glu Ala Trp Gly Ser Val Ser Val
        275                 280                 285

Arg Gly Cys Ser Phe Ser Ala Asn Trp Met Gly Val Val Gly Arg Thr
    290                 295                 300

Lys Ser Lys Val Ser Val Lys Lys Cys Leu Phe Glu Arg Cys His Leu
305                 310                 315                 320

Gly Val Met Ser Glu Gly Glu Ala Lys Val Lys His Cys Ala Ser Thr
                325                 330                 335

Glu Thr Gly Cys Phe Val Leu Ile Lys Gly Asn Ala Gln Val Lys His
            340                 345                 350
```

```
Asn Met Ile Cys Gly Ala Ser Asp Glu Arg Gly Tyr Gln Met Leu Thr
        355                 360                 365

Cys Ala Gly Gly Asn Ser His Met Leu Ala Thr Val His Val Ala Ser
    370                 375                 380

His Pro Arg Lys Thr Trp Pro Glu Phe Glu His Asn Val Met Thr Arg
385                 390                 395                 400

Cys Asn Val His Leu Gly Ser Arg Arg Gly Met Phe Met Pro Tyr Gln
                405                 410                 415

Cys Asn Met Gln Phe Val Lys Val Leu Leu Glu Pro Asp Ala Met Ser
            420                 425                 430

Arg Val Ser Leu Thr Gly Val Phe Asp Met Asn Val Glu Leu Trp Lys
        435                 440                 445

Ile Leu Arg Tyr Asp Glu Ser Lys Thr Arg Cys Arg Ala Cys Glu Cys
    450                 455                 460

Gly Gly Lys His Ala Arg Leu Gln Pro Val Cys Val Glu Val Thr Glu
465                 470                 475                 480

Asp Leu Arg Pro Asp His Leu Val Leu Ser Cys Asn Gly Thr Glu Phe
                485                 490                 495

Gly Ser Ser Gly Glu Glu Ser Asp
            500
```

<210> 47
<211> 185
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 47

```
Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Leu Pro
1               5                   10                  15

Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu
            20                  25                  30

Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
        35                  40                  45

Asp Ser Leu Glu Asp Glu Val Glu Glu Ala Glu Glu Glu Ala Ala Ala
    50                  55                  60

Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr Asp Thr Ile
65                  70                  75                  80
```

Ser Ala Pro Gly Arg Gly Leu Gly Gly Arg Ala His Ser Arg Trp Asp
85 90 95

Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu
100 105 110

Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser
115 120 125

Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu
130 135 140

Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr
145 150 155 160

Arg His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala Glu Thr
165 170 175

Gln Gln Gln Gln Lys Thr Ser Ser Ser
180 185

<210> 48
<211> 207
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 48

Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1 5 10 15

Ile Ser Asp Tyr Ser Gly Leu Pro Cys Val Pro Glu Ser Ile Asn Gln
20 25 30

Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys
35 40 45

Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala
50 55 60

Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala
65 70 75 80

Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro
85 90 95

Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr
100 105 110

Phe His Leu Ile Pro Asn Thr Thr Ala Ser Leu Pro Ala Thr Asn Asn
115 120 125

```
Gln Thr Thr His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn
    130                 135                 140

Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr
145                 150                 155                 160

Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Val
                165                 170                 175

Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr
            180                 185                 190

Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
        195                 200                 205
```

<210> 49
<211> 135
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 49

```
Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp Leu Leu Leu Asp
1               5                   10                  15

Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg
            20                  25                  30

Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Gly Ile Ala Ile
        35                  40                  45

His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile
    50                  55                  60

Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser Tyr Glu Leu Leu
65                  70                  75                  80

Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val
                85                  90                  95

Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys
            100                 105                 110

Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu
        115                 120                 125

Arg Asp Leu Leu Pro Met Asn
    130                 135
```

<210> 50

<211> 36647
<212> DNA
<213> Unknown

<220>
<223> Simian adenovirus A1331

<220>
<221> repeat_region
<222> (1)..(129)
<223> ITR

<220>
<221> CDS
<222> (1601)..(2173)
<223> E1b\19K

<220>
<221> misc_feature
<222> (3988)..(5609)
<223> IVa2 complement (3988..5318,5598..5609)

<220>
<221> misc_feature
<222> (5091)..(13857)
<223> pol complement (5091..8657,13849..13857)

<220>
<221> misc_feature
<222> (8465)..(13857)
<223> pTP complement (8465..10399,13849..13857)

<220>
<221> CDS
<222> (10855)..(12030)
<223> 52K

<220>
<221> CDS
<222> (12057)..(13814)
<223> pIIIa

<220>
<221> CDS
<222> (13897)..(15513)
<223> penton

<220>
<221> CDS
<222> (15520)..(16101)
<223> pVII

<220>
<221> CDS
<222> (16149)..(17186)
<223> V

<220>
<221> CDS
<222> (17214)..(17444)
<223> pX

<220>
<221> CDS
<222> (17517)..(18233)
<223> pVI

<220>

<221> CDS
<222> (18337)..(21168)
<223> hexon

<220>
<221> CDS
<222> (21190)..(21813)
<223> protease

<220>
<221> misc_feature
<222> (21894)..(23429)
<223> DBP complement (21894..23429)

<220>
<221> CDS
<222> (23458)..(25866)
<223> 100K

<220>
<221> CDS
<222> (26474)..(27154)
<223> pVIII

<220>
<221> CDS
<222> (27158)..(27475)
<223> E3\12.5K

<220>
<221> CDS
<222> (28040)..(28567)
<223> E3\gp19K

<220>
<221> CDS
<222> (28604)..(29287)
<223> E3\CR1-beta

<220>
<221> CDS
<222> (29303)..(29911)
<223> E3\CR1-gamma

<220>
<221> CDS
<222> (29929)..(30792)
<223> E3\CR1-delta

<220>
<221> CDS
<222> (31084)..(31515)
<223> E3\RID-beta

<220>
<221> CDS
<222> (32212)..(33546)
<223> fiber

<220>
<221> misc_feature
<222> (33644)..(34797)
<223> E4\orf6/7   complement (33644..33894,34627..34797)

<220>
<221> misc_feature
<222> (33895)..(34797)
<223> E4\orf6   complement (33895..34797)

<220>
<221> misc_feature
<222> (34706)..(35068)
<223> E4\orf4 complement (34706..35068)

<220>
<221> misc_feature
<222> (35081)..(35431)
<223> E4\orf3 complement (35081..35431)

<220>
<221> misc_feature
<222> (35431)..(35817)
<223> E4\orf2 complement (35431..35817)

<220>
<221> misc_feature
<222> (35870)..(36241)
<223> E4\orf1 complement (35870..36241)

<220>
<221> repeat_region
<222> (36519)..(36647)
<223> ITR

<400> 50
cwwymtmwat aatatacctc aaacttttgg tgcgcgttaa tatgcaaatg agccgtttga 60

atttggggat ggaggaaggt gattggctgt gggagcggcg accgttaggg gcggggcggg 120

tgacgttttg atgacgtggc catgaggcgg agccggtttg caagttctcg tgggaaaagt 180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca 240

ggaaatgagg tgtttctggg cggatgcaag tgaaaacggg ccattttcgc gcgaaaactg 300

aatgaggaag tgaaaatctg agtaattccg cgtttatggc agggaggagt atttgccgag 360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtatttt tcacctaaat 420

ttccgcgtac ggtgtcaaag tccggtgttt ttacgtaggt gtcagctgat cgccagggta 480

tttaaacctg cgctctctag tcaagaggcc actcttgagt gccagcgagt agagttttct 540

cctccgcgcc gcgagtcaga tctacacttt gaaagatgag gcacctgaga gacctgcccg 600

gtaatgtttt cctggctact gggaacgaga ttctggaact ggtggtggac gccatgatgg 660

gtgacgaccc tcccgagccc cctaccccat ttgaggcgcc ttcgctgtac gatttgtatg 720

atctggaggt ggatgtgtcc gagaacgacc ccaacgagga ggcggtgaat gatttgttta 780

gcgatgccgc gctgctggct gccgagcagg ctaatacgga ctctggctca gacagcgatt 840

cctctctcca taccccgaga cccggcagag gtgagaaaaa gatccccgag cttaaagggg 900

aagagctcga cctgcgctgc tatgaggaat gcttgcctcc gagcgatgat gaggaggacg 960

aggaggcgat tcgagctgca gcgagcgagg gagtgaaagt tgcgggcgag agctttagcc 1020

tggactgtcc tactctgccc ggacacggct gtaagtcttg tgaatttcat cgcatgaata 1080

ctggagataa gaatgtgatg tgtgccctgt gctatatgag agcttacaac cattgtgttt 1140

acagtaagtg tgattaactt tagttgggaa aggcagaggg tgactgggtg ctgactggtt 1200

tatttatgta tatgtttttt atgtgtaggt cccgtctctg acgcagatga gacccccact 1260

tcagagtgca tttcatcacc cccagaaatt ggcgaggaac cgcccgaaga tattattcat 1320

```
agaccagttg cagtgagagt caccgggcgg agagcagctg tggagagttt ggatgacttg     1380

ctacagggtg gggatgaacc tttggacttg tgtacccgga aacgccccag gcactaagtg     1440

ccacacatgt gtgtttactt aaggtgatgt cagtatttat agggtgtgga gtgcaataaa     1500

aatatgtgtt gactttaagt gcgtgtttta tgactcaggg gtggggactg tgggtatata     1560

agcaggtgca gacctgtgtg gtcagttcag agcaggactc atg gag atc tgg aca       1615
                                              Met Glu Ile Trp Thr
                                              1               5

gtc ttg gaa gac ttt cac cag act aga cag ctg cta gag aac tca tcg       1663
Val Leu Glu Asp Phe His Gln Thr Arg Gln Leu Leu Glu Asn Ser Ser
                10                  15                  20

gag gga gtc tct tac ctg tgg aga ttc tgc ttc gct ggg cct cta gct       1711
Glu Gly Val Ser Tyr Leu Trp Arg Phe Cys Phe Ala Gly Pro Leu Ala
            25                  30                  35

aag cta gtc tat agg gcc aag cag gat tat agg gaa caa ttt gag gat       1759
Lys Leu Val Tyr Arg Ala Lys Gln Asp Tyr Arg Glu Gln Phe Glu Asp
        40                  45                  50

att ttg aga gag tgt cct ggt att ttt gac tct ctc aac ttg ggc cat       1807
Ile Leu Arg Glu Cys Pro Gly Ile Phe Asp Ser Leu Asn Leu Gly His
    55                  60                  65

cag tct cac ttt aac cag agt att ctg aga gcc ctt gac ttt tct act       1855
Gln Ser His Phe Asn Gln Ser Ile Leu Arg Ala Leu Asp Phe Ser Thr
70                  75                  80                  85

cct ggc aga act acc gcc gcg gta gcc ttt ttt gcc ttt atc ctt gac       1903
Pro Gly Arg Thr Thr Ala Ala Val Ala Phe Phe Ala Phe Ile Leu Asp
                90                  95                  100

aaa tgg agt caa gaa acc cat ttc agc agg gat tac cgt ctg gac tgc       1951
Lys Trp Ser Gln Glu Thr His Phe Ser Arg Asp Tyr Arg Leu Asp Cys
            105                 110                 115

tta gca gta gct ttg tgg aga aca tgg agg tgc cag cgc ctg aat gca       1999
Leu Ala Val Ala Leu Trp Arg Thr Trp Arg Cys Gln Arg Leu Asn Ala
        120                 125                 130

atc tcc ggc tac ttg cca gta cag ccg gta gac acg ctg agg atc ctg       2047
Ile Ser Gly Tyr Leu Pro Val Gln Pro Val Asp Thr Leu Arg Ile Leu
    135                 140                 145

agt ctc cag tca ccc cag gaa cac caa cgc cgc cag cag ccg cag cag       2095
Ser Leu Gln Ser Pro Gln Glu His Gln Arg Arg Gln Gln Pro Gln Gln
150                 155                 160                 165

gag cag cag caa gag gag gag gac cga gaa gag aac ccg aga gcc ggt       2143
Glu Gln Gln Gln Glu Glu Glu Asp Arg Glu Glu Asn Pro Arg Ala Gly
                170                 175                 180

ctg gac cct ccg gtg gcg gag gag gag gag tagctgactt gtttcccgag         2193
Leu Asp Pro Pro Val Ala Glu Glu Glu Glu
            185                 190

ctgcgccggg tgctgactag gtcttccagt ggacgggaga gggggattaa gcgggagagg     2253

catgaggaga ctagccacag aactgaactg actgtcagtc tgatgagccg caggcgccca     2313

gaatcggtgt ggtggcatga ggttcagtcg caggggggtag atgaggtctc ggtgatgcat    2373

gagaaatatt ccctagaaca agtcaagact tgttggttgg agcccgagga tgattgggag     2433
```

gtagccatca ggaattatgc caagctggct ctgaggccag acaagaagta caagattacc 2493

aaactgatta atatcagaaa ttcctgctac atttcaggga atggggccga ggtggagatc 2553

agtacccagg agagggtggc tttcagatgc tgcatgatga atatgtaccc gggggtggtg 2613

ggcatggagg gagtcacctt tatgaacgcg aggttcaggg gtgatgggta taatggggtg 2673

gtctttatgg ccaacaccaa gctgacagtg cacggatgct ccttctttgg cttcaataac 2733

atgtgcatcg aggcctgggg cagtgtttca gtgaggggat gcagcttttc agccaactgg 2793

atgggggtcg tgggcagaac caagagcaag gtgtcagtga agaaatgcct gttcgagagg 2853

tgccacctgg gggtgatgag cgagggcgaa gccaaagtca aacactgcgc ctctaccgag 2913

acgggctgct ttgtgtgtat caagggcaat gcccaagtca agcataacat gatctgtggg 2973

gcctcggatg agcgcggcta ccagatgctg acctgcgccg gtgggaacag ccatatgctg 3033

gccaccgtgc atgtggcctc gcacccccgc aagacatggc ccgagttcga gcacaacgtc 3093

atgacccgct gcaatgtgca cctgggctcc cgccgaggca tgttcatgcc ataccagtgc 3153

aacatgcaat ttgtgaaggt gctgctggag cccgatgcca tgtccagagt gagcctggcg 3213

ggggtgtttg acatgaatgt ggagctgtgg aaaattctga gatatgatga atccaagacc 3273

aggtgccggg cctgcgaatg cggaggcaag cacgccaggc ttcagcccgt gtgtgtggag 3333

gtgacggagg acctgcgacc cgatcatttg gtgttgtcct gcaacgggac ggagttcggc 3393

tccagcgggg aagaatctga ctagagtgag tagtgtttgg gggcgggtgg gagcctgcat 3453

gaggggcaga atgactaaaa tctgtgtttt tctgtgcagc agcatgagcg gaagcgcctc 3513

ctttgaggga ggggtattca gcccttatct gacggggcgt ctcccctcct gggcgggagt 3573

gcgtcagaat gtgatgggat ctacggtgga cggccggccc gtgcagcccg cgaactcttc 3633

aaccctgacc tacgcgaccc tgagctcctc gtccgtggac gcagctgccg ccgcagctgc 3693

tgcttccgcc gccagcgccg tgcgcggaat ggccctgggc gccggctact acagctctct 3753

ggtggccaac tcgagttcca ccaataatcc cgccagcctg aacgaggaga agctgctgct 3813

gctgatggcc cagctcgagg ccctgaccca gcgcctgggc gagctgaccc agcaggtggc 3873

tcagctgcag gcggagacgc gggccgcggt tgccacggtg aaaaccaaat aaaaaatgaa 3933

tcaataaata aacggagacg gttgttgatt ttaacacaga gtcttgaatc tttatttgat 3993

ttttcgcgcg cggtaggccc tggaccaccg gtctcgatca ttgagcaccc ggtggatctt 4053

ttccaggacc cggtagaggt gggcttggat gttgaggtac atgggcatga gcccgtcccg 4113

ggggtggagg tagctccatt gcagggcctc gtgctcgggg gtggtgttgt aaatcaccca 4173

gtcatagcag gggcgcagtg cgtggtgctg cacgatgtcc ttgaggagga gactgatggc 4233

cacgggcagc cccttggtgt aggtgttgac gaacctgttg agctgggagg gatgcatgcg 4293

gggggagatg agatgcatct tggcctggat cttgagattg gcgatgttcc cgcccagatc 4353

ccgccggggg ttcatgttgt gcaggaccac cagcacggtg tatccggtgc acttggggaa 4413

tttgtcatgc aacttggaag ggaaggcgtg aaagaatttg gagacgccct tgtgaccgcc 4473

caggttttcc atgcactcat ccatgatgat ggcgatgggc ccgtgggcgg cggcctgggc 4533

aaagacgttt cgggggtcgg acacatcgta gttgtggtcc tgggtgagct cgtcataggc 4593
cattttaatg aatttggggc ggagggtgcc cgactggggg acgaaggtgc cttcgatccc 4653
gggggcgtag ttgccctcgc agatctgcat ctcccaggcc ttgagctcgg agggggggat 4713
catgtccacc tgcggggcga tgaaaaaaac ggtttccggg gcgggggaga tgagctgcgc 4773
cgaaagcagg ttccggagca gctgggactt gccgcagccg gtggggccgt agatgacccc 4833
gatgaccggc tgcaggtggt agttgaggga gagacagctg ccgtcctcgc gtaggagggg 4893
ggccacctcg ttcatcatct cgcgcacatg catgttctcg cgcacgagtt ccgccaggag 4953
gcgctcgccc cccagcgaga ggagctcttg cagcgaggcg aagtttttca gcggcttgag 5013
cccgtcggcc atgggcattt tggagagggt ctgttgcaag agttccagac ggtcccagag 5073
ctcggtgatg tgctctacgg catctcgatc cagcagacct cctcgtttcg cgggttggga 5133
cgactgcggg agtagggcac cagacgatgg gcgtccagcg cagccagggt ccggtccttc 5193
cagggtcgca gcgtccgcgt cagcgtggtc tccgtcacgg tgaaggggtg cgcgccgggc 5253
tgggcgcttg cgagggtgcg cttcaggctc atccggctgg tcgagaaccg ctcccgatcg 5313
gcgccctgcg cgtcggccag gtagcaattg accatgagtt cgtagttgag cgcctcggcc 5373
gcgtggcctt tggcgcggag cttacctttg gaagtctgcc cgcaggcggg acagaggagg 5433
gacttgaggg cgtagagctt gggggcgagg aagacggact cgggggcgta ggcgtccgcg 5493
ccgcagtggg cgcagacggt ctcgcactcc acaagccagg tgaggtcggg ctggtcgggg 5553
tcaaaaacca gttttccgcc gttctttttg atgcgtttct tacctttggt ctccatgagc 5613
tcgtgtcccc gctgggtgac aaagaggctg tccgtgtccc cgtagaccga ctttatgggc 5673
cggtcctcga gcggtgtgcc acggtcctcc tcgtagagga accccgccca ctccgagacg 5733
aaagcccggg tccaggccag cacgaaggag gccacgtggg acgggtagcg gtcgttgtcc 5793
accagcgggt ccactttctc cagggtatgc aaacacatgt ccccctcgtc cacatccagg 5853
aaggtgattg gcttgtaagt gtaggccacg tgaccggggg tcccggccgg gggggtataa 5913
aaggggggcgg gcccctgctc gtcctcactg tcttccggat cgctgtccag gagcgccagc 5973
tgttggggta ggtattccct ctcgaaggcg ggcatgacct cggcactcag gttgtcagtt 6033
tctagaaacg aggaggattt gatattgacg gtgccgttgg agacgccttt catgagcccc 6093
tcgtccatct ggtcagaaaa gacgatcttt ttgttgtcga gcttggtggc gaaggagccg 6153
tagagggcgt tggagagcag cttggcgatg gagcgcatgg tctggttctt ttccttgtcg 6213
gcgcgctcct tggcggcgat gttgagctgc acgtactcgc gcgccacgca cttccattcg 6273
gggaagacgg tggtgagctc gtcgggcacg attctgaccc gccagccgcg gttgtgcagg 6333
gtgatgaggt ccacgctggt ggccacctcg ccgcgcaggg gctcgttggt ccagcagagg 6393
cgcccgccct tgcgcgagca gaaggggggc agcgggtcca gcatgagctc gtcgggggggg 6453
tcggcgtcca cggtgaagat gccgggcagg agctcggggt cgaagtagct gatgcaggtg 6513
cccagatcgt ccagcgccgc ttgccagtcg cgcacggcca gcgcgcgctc gtaggggctg 6573

aggggcgtgc cccagggcat ggggtgcgtg agcgcggagg cgtacatgcc gcagatgtcg 6633

tagacgtaga ggggctcctc gaggacgccg atgtaggtgg ggtagcagcg ccccccgcgg 6693

atgctggcgc gcacgtagtc gtacagctcg tgcgagggcg cgaggagccc cgcgccgagg 6753

ttggagcgct gcggcttttc ggcgcggtag acgatctggc ggaagatggc gtgggagttg 6813

gaggagatgg tgggcctctg gaagatgttg aagtgggcgt ggggcaggcc gaccgagtcc 6873

ctgatgaagt gggcgtagga gtcctgcagc ttggcgacga gctcggcggt gacgaggacg 6933

tccagggcgc agtagtcgag ggtctcttgg atgatgtcgt acttgagctg gcccttctgc 6993

ttccacagct cgcggttgag aaggaactct tcgcggtcct tccagtactc ttcgaggggg 7053

aacccgtcct gatcggcacg gtaagagccc accatgtaga actggttgac ggccttgtag 7113

gcgcagcagc ccttctccac ggggagggcg taagcttgcg cggccttgcg cagggaggtg 7173

tgggtgaggg cgaaggtgtc gcgcaccatg accttgagga actggtgctt gaagtcgagg 7233

tcgtcgcagc cgccctgctc ccagagttgg aagtccgtgc gcttcttgta ggcggggttg 7293

ggcaaagcga aagtaacatc gttgaagagg atcttgcccg cgcggggcat gaagttgcga 7353

gtgatgcgga aaggctgggg cacctcggcc cggttgttga tgacctgggc ggcgaggacg 7413

atctcgtcga agccgttgat gttgtgcccg acgatgtaga gttccacgaa tcgcgggcgg 7473

cccttgacgt ggggcagctt cttgagctcg tcgtaggtga gctcggcggg gtcgctgagc 7533

ccgtgctgct caagggccca gtcggcgacg tgggggttgg cgctgaggaa ggaagtccag 7593

agatccacgg ccagggcggt ttgcaagcgg tcccggtact gacggaactg ctggcccacg 7653

gccatttttt cgggggtgat gcagtagaag gtgcgggggt cgccgtgcca gcggtcccac 7713

ttgagctgga gggcgaggtc gtgggcgagc tcgacgagcg gcgggtcccc ggagagtttc 7773

atgaccagca tgaaggggac gagctgcttg ccgaaggacc ccatccaggt gtaggtttcc 7833

acatcgtagg tgaggaagag cctttcggtg cgaggatgcg agccgatggg gaagaactgg 7893

atctcctgcc accagttgga ggaatggctg ttgatgtgat ggaagtagaa atgccgacgg 7953

cgcgccgagc actcgtgctt gtgtttatac aagcgtccgc agtgctcgca acgctgcacg 8013

ggatgcacgt gctgcacgag ctgtacctgg gttcctttga cgaggaattt cagtgggcag 8073

tggagcgctg gcggctgcat ctggtgctgt actacgtcct ggccatcggc gtggccatcg 8133

tctgcctcga tggtggtcat gctgacgagc ccgcgcggga ggcaggtcca gacctcggct 8193

cggacgggtc ggagagcgag gacgagggcg cgcaggccgg agctgtccag ggtcctgaga 8253

cgctgcggag tcaggtcagt gggcagcggc ggcgcgcggt tgacttgcag gagcttttcc 8313

agggcgcgcg ggaggtccag atggtacttg atctccacgg cgccgttggt ggcgacgtcc 8373

acggcttgca gggtcccgtg cccctggggc gccaccaccg tgccccgttt cttcttgggc 8433

gctggcgttg gcgctgcttc catgtcggtc agaagcggcg gcgaggacgc gcgccgggcg 8493

gcaggggcgg ctcggggccc ggaggcaggg gcggcagggg cacgtcggcg ccgcgcgcgg 8553

gcaggttctg gtactgcgcc cggagaagac tggcgtgagc gacgacgcga cggttgacgt 8613

cctggatctg acgcctctgg gtgaaggcca cgggacccgt gagtttgaac ctgaaagaga 8673

gttcgacaga atcaatctcg gtatcgttga cggcggcctg ccgcaggatc tcttgcacgt 8733
cgcccgagtt gtcctggtag gcgatctcgg tcatgaactg ctcgatctcc tcctcctgaa 8793
ggtctccgcg gccggcgcgc tcgacggtgg ccgcgaggtc gttggagatg cggcccatga 8853
gctgcgagaa ggcgttcatg ccggcctcgt tccagacgcg gctgtagacc acggatccgt 8913
cggggtcgcg cgcgcgcatg accacctggg cgaggttgag ctccacgtgg cgcgtgaaga 8973
ccgcgtagtt gcagaggcgc tggtagaggt agttgagcgt ggtggcgatg tgctcggtga 9033
cgaagaagta catgatccag cggcggagcg gcatctcgct gacgtcgccc agggcttcca 9093
agcgctccat ggcctcgtag aagtccacgg cgaagttgaa aaactgggag ttgcgcgccg 9153
agacggtcaa ctcctcctcc agaagacgga tgagctcggc gatggtggcg cgcacctcgc 9213
gctcgaaggc cccgggggggc tcctcttcca tctcctcctc ttcttcctcc tccactaaca 9273
tctcttctac ttcctcctca ggaggcggcg gcgggggagg gggcctgcgt cgccggcggc 9333
gcacgggcag acggtcgatg aagcgctcga tggtctcccc gcgccggcga cgcatggtct 9393
cggtgacggc gcgcccgtcc tcgcggggcc gcagcgtgaa gacgccgccg cgcatctcca 9453
ggtggccgcc gggggggtct ccgttgggca gggagagggc gctgacgatg catcttatca 9513
attgacccgt agggactccg cgcaaggacc tgagcgtctc gagatccacg ggatccgaaa 9573
accgctgaac gaaggcttcg agccagtcgc agtcgcaagg taggctgagc ccggtttctt 9633
cttcggggat ttgctggtcg ggaggcgggc gggcgatgct gctggtgatg aagttgaagt 9693
aggcggtcct gagacggcgg atggtggcga ggagcaccag gtccttgggc ccggcttgct 9753
ggatgcgcag acggtcggcc atgccccagg cgtggtcctg acacctggcg aggtccttgt 9813
agtagtcctg catgagccgc tccacgggca cctcctcctc gcccgcgcgg ccgtgcatgc 9873
gcgtgagccc gaacccgcgc tggggctgga cgagcgccag gtcggcgacg acgcgctcgg 9933
cgaggatggc ctgctggatc tgggtgaggg tggtctggaa gtcgtcgaag tcgacgaagc 9993
ggtggtaggc tccggtgttg atggtgtagg agcagttggc catgacggac cagttgacgg 10053
tctggtggcc ggggcgcacg agctcgtggt acttgaggcg cgagtaggcg cgcgtgtcga 10113
agatgtagtc gttgcaggtg cgcacgaggt actggtatcc gacgaggaag tgaggcggcg 10173
gctggcggta gagcggccat cgctcggtgg cgggggcgcc gggcgcgagg tcttcgagca 10233
tgaggcggtg gtagccgtag atgtacctgg acatccaggt gatgccagcg gcggtggtgg 10293
aggcgcgcgg gaactcgcgg acgcggttcc agatgttgcg cagcggcagg aagtagttca 10353
tggtggccgc ggtctggccc gtgaggcgcg cgcagtcgtg gatgctctag acatacgggc 10413
aaaaacgaaa gcggtcagcg gctcgactcc gtggcctgga ggctaagcga acgggttggg 10473
ctgcgcgtgt accccggttc gagtccctgc tcgaatcagg ctggagccgc agctaacgtg 10533
gtactggcac tcccgtctcg acccaagcct gctaacgaaa cctccaggat acggaggcgg 10593
gtcgtttttt ggccttggtc actggtcatg aaaaactagt aagcgcggaa agcggccgcc 10653
cgcgatggct cgctgccgta gtctggagaa agaatcgcca gggttgcgtt gcggtgtgcc 10713

```
ccggttcgag cctcagcgct cggcgccggc cggattccgc ggctaacgtg ggcgtggctg    10773

ccccgtcgtt tccaagaccc cttagccagc cgacttctcc agttacggag cgagcccctc    10833

ttttтcttgt gtttttgcca g atg cat ccc gta ctg cgg cag atg cgc ccc      10884
                        Met His Pro Val Leu Arg Gln Met Arg Pro
                                    195                 200

cac cct cca cct caa ccg ccc cta ccg cag cag cag caa cag ccg gcg      10932
His Pro Pro Pro Gln Pro Pro Leu Pro Gln Gln Gln Gln Gln Pro Ala
            205                 210                 215

ctt ttg ccc ccg ccc cag cag cag cag cag cca gcc act acc gcg gcg      10980
Leu Leu Pro Pro Pro Gln Gln Gln Gln Gln Pro Ala Thr Thr Ala Ala
        220                 225                 230

gcc gcc gtg agc gga gcc ggc gtt caa tat gac ctg gcc ttg gaa gag      11028
Ala Ala Val Ser Gly Ala Gly Val Gln Tyr Asp Leu Ala Leu Glu Glu
    235                 240                 245

ggc gag ggg ctg gcg cgg ctg ggg gcg tcg tcg ccg gag cgg cac ccg      11076
Gly Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro
250                 255                 260                 265

cgc gtg cag atg aaa agg gac gct cgc gag gcc tac gtg ccc aag cag      11124
Arg Val Gln Met Lys Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln
                270                 275                 280

aac ctg ttc aga gac agg agc ggc gag gag ccc gag gag atg cgc gcc      11172
Asn Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala
            285                 290                 295

tcc cgc ttc cac gcg ggg cgg gag ctg cgg cgc ggc ctg gac cga aag      11220
Ser Arg Phe His Ala Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys
        300                 305                 310

cgg gtg ctg agg gac gag gat ttc gag gcg gac gag ctg acg ggg atc      11268
Arg Val Leu Arg Asp Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile
    315                 320                 325

agc ccc gcg cgc gcg cac gtg gcc gcg gcc aac ctg gtc acg gcg tac      11316
Ser Pro Ala Arg Ala His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr
330                 335                 340                 345

gag cag acc gtg aag gag gag agc aac ttc caa aaa tcc ttc aac aac      11364
Glu Gln Thr Val Lys Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn
                350                 355                 360

cac gtg cgc acg ctg atc gcg cgc gag gag gtg acc ctg ggc ctg atg      11412
His Val Arg Thr Leu Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met
            365                 370                 375

cac ctg tgg gac ctg ctg gag gcc atc gtg cag aac ccc acg agc aag      11460
His Leu Trp Asp Leu Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys
        380                 385                 390

ccg ctg acg gcg cag ctg ttc ctg gtg gtg cag cac agt cgg gac aac      11508
Pro Leu Thr Ala Gln Leu Phe Leu Val Val Gln His Ser Arg Asp Asn
    395                 400                 405

gag acg ttc agg gag gcg ctg ctg aat atc acc gag ccc gag ggc cgc      11556
Glu Thr Phe Arg Glu Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg
410                 415                 420                 425

tgg ctc ctg gac ctg gtg aac att ctg cag agc atc gtg gtg cag gag      11604
Trp Leu Leu Asp Leu Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu
                430                 435                 440

cgc ggg ctg ccg ctg tcc gag aag ctg gcg gcc atc aac ttc tcg gtg      11652
```

```
Arg Gly Leu Pro Leu Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val
            445                 450                 455

ctg agc ctg ggc aag tac tac gct agg aag atc tac aag acc ccg tac      11700
Leu Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr
        460                 465                 470

gtg ccc ata gac aag gag gtg aag atc gat ggg ttt tac atg cgc atg      11748
Val Pro Ile Asp Lys Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met
    475                 480                 485

acc ctg aaa gtg ctg acc ctg agc gac gat ctg ggg gtg tac cgc aac      11796
Thr Leu Lys Val Leu Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn
490                 495                 500                 505

gac agg atg cac cgc gcg gtg agc gcc agc cgc cgg cgc gag ctg agc      11844
Asp Arg Met His Arg Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser
                510                 515                 520

gac cag gag ctg atg cac agc ctg cag cgg gcc ctg acc ggg gcc ggg      11892
Asp Gln Glu Leu Met His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly
            525                 530                 535

acc gag ggg gag agc tac ttt gac atg ggc gcg gac ctg cgc tgg cag      11940
Thr Glu Gly Glu Ser Tyr Phe Asp Met Gly Ala Asp Leu Arg Trp Gln
        540                 545                 550

ccc agc cgc cgg gcc ttg gaa gct gcc ggc ggc gtg ccc tac gtg gag      11988
Pro Ser Arg Arg Ala Leu Glu Ala Ala Gly Gly Val Pro Tyr Val Glu
    555                 560                 565

gag gtg gac gat gag gag gag gag ggc gag tac ctg gaa gac              12030
Glu Val Asp Asp Glu Glu Glu Glu Gly Glu Tyr Leu Glu Asp
570                 575                 580

tgatggcgcg accgtatttt tgctag atg cag caa cag cca ccg cct cct gat     12083
                             Met Gln Gln Gln Pro Pro Pro Pro Asp
                                 585                 590

ccc gcg atg cgg gcg gcg ctg cag agc cag ccg tcc ggc att aac tcc      12131
Pro Ala Met Arg Ala Ala Leu Gln Ser Gln Pro Ser Gly Ile Asn Ser
        595                 600                 605

tcg gac gat tgg acc cag gcc atg caa cgc atc atg gcg ctg acg acc      12179
Ser Asp Asp Trp Thr Gln Ala Met Gln Arg Ile Met Ala Leu Thr Thr
    610                 615                 620

cgc aat ccc gaa gcc ttt aga cag cag cct cag gcc aac cgg ctc tcg      12227
Arg Asn Pro Glu Ala Phe Arg Gln Gln Pro Gln Ala Asn Arg Leu Ser
625                 630                 635                 640

gcc atc ctg gag gcc gtg gtg ccc tcg cgc tcg aac ccc acg cac gag      12275
Ala Ile Leu Glu Ala Val Val Pro Ser Arg Ser Asn Pro Thr His Glu
                645                 650                 655

aag gtg ctg gcc atc gtg aac gcg ctg gtg gag aac aag gcc atc cgc      12323
Lys Val Leu Ala Ile Val Asn Ala Leu Val Glu Asn Lys Ala Ile Arg
            660                 665                 670

ggc gac gag gcc ggg ctg gtg tac aac gcg ctg ctg gag cgc gtg gcc      12371
Gly Asp Glu Ala Gly Leu Val Tyr Asn Ala Leu Leu Glu Arg Val Ala
        675                 680                 685

cgc tac aac agc acc aac gtg cag acg aac ctg gac cgc atg gtg acc      12419
Arg Tyr Asn Ser Thr Asn Val Gln Thr Asn Leu Asp Arg Met Val Thr
    690                 695                 700

gac gtg cgc gag gcg gtg tcg cag cgc gag cgg ttc cac cgc gag tcg      12467
Asp Val Arg Glu Ala Val Ser Gln Arg Glu Arg Phe His Arg Glu Ser
```

```
705                 710                 715                 720

aac ctg ggc tcc atg gtg gcg ctg aac gcc ttc ctg agc acg cag ccc      12515
Asn Leu Gly Ser Met Val Ala Leu Asn Ala Phe Leu Ser Thr Gln Pro
                725                 730                 735

gcc aac gtg ccc cgg ggc cag gag gac tac acc aac ttc atc agc gcg      12563
Ala Asn Val Pro Arg Gly Gln Glu Asp Tyr Thr Asn Phe Ile Ser Ala
            740                 745                 750

ctg cgg ctg atg gtg gcc gag gtg ccc cag agc gag gtg tac cag tcg      12611
Leu Arg Leu Met Val Ala Glu Val Pro Gln Ser Glu Val Tyr Gln Ser
        755                 760                 765

ggg ccg gac tac ttc ttc cag acc agt cgc cag ggc ttg cag acc gtg      12659
Gly Pro Asp Tyr Phe Phe Gln Thr Ser Arg Gln Gly Leu Gln Thr Val
    770                 775                 780

aac ctg agc cag gct ttc aag aac ttg cag gga ctg tgg ggc gtg cag      12707
Asn Leu Ser Gln Ala Phe Lys Asn Leu Gln Gly Leu Trp Gly Val Gln
785                 790                 795                 800

gcc ccg gtc ggg gac cgc gcg acg gtg tcg agc ctg ctg acg ccg aac      12755
Ala Pro Val Gly Asp Arg Ala Thr Val Ser Ser Leu Leu Thr Pro Asn
                805                 810                 815

tcg cgc ctg ctg ctg ctg ctg gtg gcg ccc ttc acg gac agc ggc agc      12803
Ser Arg Leu Leu Leu Leu Leu Val Ala Pro Phe Thr Asp Ser Gly Ser
            820                 825                 830

gtg agc cgc gac tcg tac ctg ggc tac ctg ctt aac ctg tac cgc gag      12851
Val Ser Arg Asp Ser Tyr Leu Gly Tyr Leu Leu Asn Leu Tyr Arg Glu
        835                 840                 845

gcc atc ggg cag gcg cac gtg gac gag cag acc tac cag gag atc acc      12899
Ala Ile Gly Gln Ala His Val Asp Glu Gln Thr Tyr Gln Glu Ile Thr
    850                 855                 860

cac gtg agc cgc gcg ctg ggc cag gag gac ccg ggc aac ctg gag gcc      12947
His Val Ser Arg Ala Leu Gly Gln Glu Asp Pro Gly Asn Leu Glu Ala
865                 870                 875                 880

acc ctg aac ttc ctg ctg acc aac cgg tcg cag aag atc ccg ccc cag      12995
Thr Leu Asn Phe Leu Leu Thr Asn Arg Ser Gln Lys Ile Pro Pro Gln
                885                 890                 895

tac gcg ctg agc acc gag gag gag cgc atc ctg cgc tac gtg cag cag      13043
Tyr Ala Leu Ser Thr Glu Glu Glu Arg Ile Leu Arg Tyr Val Gln Gln
            900                 905                 910

agc gtg ggg ctg ttc ctg atg cag gag ggg gcc acg ccc agc gcc gcg      13091
Ser Val Gly Leu Phe Leu Met Gln Glu Gly Ala Thr Pro Ser Ala Ala
        915                 920                 925

ctc gac atg acc gcg cgc aac atg gag ccc agc atg tac gcc cgc aac      13139
Leu Asp Met Thr Ala Arg Asn Met Glu Pro Ser Met Tyr Ala Arg Asn
    930                 935                 940

cgc ccg ttc atc aat aag ctg atg gac tac ttg cat cgg gcg gcc gcc      13187
Arg Pro Phe Ile Asn Lys Leu Met Asp Tyr Leu His Arg Ala Ala Ala
945                 950                 955                 960

atg aac tcg gac tac ttt acc aac gcc atc ttg aac ccg cac tgg ctc      13235
Met Asn Ser Asp Tyr Phe Thr Asn Ala Ile Leu Asn Pro His Trp Leu
                965                 970                 975

ccg ccg ccc ggg ttc tac acg ggc gag tac gac atg ccc gac ccc aac      13283
Pro Pro Pro Gly Phe Tyr Thr Gly Glu Tyr Asp Met Pro Asp Pro Asn
            980                 985                 990
```

```
gac ggg ttc ctg tgg gac gac gtg  gac agc agc gtg ttc  tcg ccg cgc    13331
Asp Gly Phe Leu Trp Asp Asp Val  Asp Ser Ser Val Phe  Ser Pro Arg
        995                1000                1005

ccc acc  acc acc gtg tgg aag  aaa gag ggc ggg gac  cgg cgg ccg       13376
Pro Thr  Thr Thr Val Trp Lys  Lys Glu Gly Gly Asp  Arg Arg Pro
    1010                1015                1020

tcc tcg  gcg ctg tcc ggt cgc  gcg ggt gct gcc gcg  gcg gtg ccc       13421
Ser Ser  Ala Leu Ser Gly Arg  Ala Gly Ala Ala Ala  Ala Val Pro
    1025                1030                1035

gag gcc  gcc agc ccc ttc ccg  agc ctg ccc ttt tcg  ctg aac agc       13466
Glu Ala  Ala Ser Pro Phe Pro  Ser Leu Pro Phe Ser  Leu Asn Ser
    1040                1045                1050

gtg cgc  agc agc gat ctg ggt  cgg ctg acg cgg ccg  cgc ctg ctg       13511
Val Arg  Ser Ser Asp Leu Gly  Arg Leu Thr Arg Pro  Arg Leu Leu
    1055                1060                1065

ggc gag  gag gag tac ctg aac  gac tcc ttg ttg agg  ccc gag cgc       13556
Gly Glu  Glu Glu Tyr Leu Asn  Asp Ser Leu Leu Arg  Pro Glu Arg
    1070                1075                1080

gag aaa  aac ttc ccc aat aac  ggg ata gag agc ctg  gtg gac aag       13601
Glu Lys  Asn Phe Pro Asn Asn  Gly Ile Glu Ser Leu  Val Asp Lys
    1085                1090                1095

atg agc  cgc tgg aag acg tac  gcg cac gag cac agg  gac gag ccc       13646
Met Ser  Arg Trp Lys Thr Tyr  Ala His Glu His Arg  Asp Glu Pro
    1100                1105                1110

cga gct  agc agc agc acc ggc  gcc cgt aga cgc cag  cgg cac gac       13691
Arg Ala  Ser Ser Ser Thr Gly  Ala Arg Arg Arg Gln  Arg His Asp
    1115                1120                1125

agg cag  cgg gga ctg gtg tgg  gac gat gag gat tcc  gcc gac gac       13736
Arg Gln  Arg Gly Leu Val Trp  Asp Asp Glu Asp Ser  Ala Asp Asp
    1130                1135                1140

agc agc  gtg ttg gac ttg ggt  ggg agt ggt ggt ggt  aac ccg ttc       13781
Ser Ser  Val Leu Asp Leu Gly  Gly Ser Gly Gly Gly  Asn Pro Phe
    1145                1150                1155

gct cac  ctg cgc ccc cgt atc  ggg cgc ctg atg taagaatctg            13824
Ala His  Leu Arg Pro Arg Ile  Gly Arg Leu Met
    1160                1165

aaaaaataaa aaaacggtac tcaccaaggc catggcgacc agcgtgcgtt cttctctgtt    13884

gtttgtagta gt atg  atg agg cgc gtg tac  ccg gag ggt cct cct  ccc     13932
              Met  Met Arg Arg Val Tyr  Pro Glu Gly Pro Pro  Pro
              1170                1175                1180

tcg tac gag agc  gtg atg cag cag gcg  gtg gcg gcg gcg atg  cag       13977
Ser Tyr Glu Ser  Val Met Gln Gln Ala  Val Ala Ala Ala Met  Gln
            1185                1190                1195

ccc ccg ctg gag  gcg cct tac gtg ccc  ccg cgg tac ctg gcg  cct       14022
Pro Pro Leu Glu  Ala Pro Tyr Val Pro  Pro Arg Tyr Leu Ala  Pro
            1200                1205                1210

acg gag ggg cgg  aac agc att cgt tac  tcg gag ctg gca ccc  ttg       14067
Thr Glu Gly Arg  Asn Ser Ile Arg Tyr  Ser Glu Leu Ala Pro  Leu
            1215                1220                1225

tac gat acc acc  cgg ttg tac ctg gtg  gac aac aag tcg gcg  gac       14112
Tyr Asp Thr Thr  Arg Leu Tyr Leu Val  Asp Asn Lys Ser Ala  Asp
```

```
            1230                1235                1240

atc gcc tcg ctg  aac tac cag aac gac  cac agc aac ttc ctg  acc       14157
Ile Ala Ser Leu  Asn Tyr Gln Asn Asp  His Ser Asn Phe Leu  Thr
            1245                1250                1255

acc gtg gtg cag  aac aac gat ttc acc  ccc acg gag gcc agc  acc       14202
Thr Val Val Gln  Asn Asn Asp Phe Thr  Pro Thr Glu Ala Ser  Thr
            1260                1265                1270

cag acc atc aac  ttt gac gag cgc tcg  cgg tgg ggc ggc cag  ctg       14247
Gln Thr Ile Asn  Phe Asp Glu Arg Ser  Arg Trp Gly Gly Gln  Leu
            1275                1280                1285

aaa acc atc atg  cac acc aac atg ccc  aac gtg aac gag ttc  atg       14292
Lys Thr Ile Met  His Thr Asn Met Pro  Asn Val Asn Glu Phe  Met
            1290                1295                1300

tac agc aac aag  ttc aag gcg cgg gtg  atg gtc tcg cgc aag  acc       14337
Tyr Ser Asn Lys  Phe Lys Ala Arg Val  Met Val Ser Arg Lys  Thr
            1305                1310                1315

ccc aac ggg gtc  aca gta aca gat ggt  agt cag gac gag ctg  acc       14382
Pro Asn Gly Val  Thr Val Thr Asp Gly  Ser Gln Asp Glu Leu  Thr
            1320                1325                1330

tac gag tgg gtg  gag ttt gag ctg ccc  gag ggc aac ttc tcg  gtg       14427
Tyr Glu Trp Val  Glu Phe Glu Leu Pro  Glu Gly Asn Phe Ser  Val
            1335                1340                1345

acc atg acc atc  gat ctg atg aac aac  gcc atc atc gac aac  tac       14472
Thr Met Thr Ile  Asp Leu Met Asn Asn  Ala Ile Ile Asp Asn  Tyr
            1350                1355                1360

ttg gcg gtg gga  cgg cag aac ggg gtg  ctg gag agc gac atc  ggc       14517
Leu Ala Val Gly  Arg Gln Asn Gly Val  Leu Glu Ser Asp Ile  Gly
            1365                1370                1375

gtg aag ttc gac  acg cgc aac ttc cgg  ctg ggc tgg gac ccc  gtg       14562
Val Lys Phe Asp  Thr Arg Asn Phe Arg  Leu Gly Trp Asp Pro  Val
            1380                1385                1390

acc gag ctg gtg  atg ccg ggc gtg tac  acc aac gag gcc ttc  cac       14607
Thr Glu Leu Val  Met Pro Gly Val Tyr  Thr Asn Glu Ala Phe  His
            1395                1400                1405

ccc gac atc gtc  ctg ctg ccc ggc tgc  ggc gtg gac ttc acc  gag       14652
Pro Asp Ile Val  Leu Leu Pro Gly Cys  Gly Val Asp Phe Thr  Glu
            1410                1415                1420

agc cgc ctc agc  aac ctg ctg ggc atc  cgc aag cgg cag ccc  ttc       14697
Ser Arg Leu Ser  Asn Leu Leu Gly Ile  Arg Lys Arg Gln Pro  Phe
            1425                1430                1435

cag gag ggc ttc  cag atc ctg tac gag  gac ctg gag ggg ggc  aac       14742
Gln Glu Gly Phe  Gln Ile Leu Tyr Glu  Asp Leu Glu Gly Gly  Asn
            1440                1445                1450

atc ccc gcg ctg  ctg gac gtc gaa gcc  tac gag aaa agc aag  gag       14787
Ile Pro Ala Leu  Leu Asp Val Glu Ala  Tyr Glu Lys Ser Lys  Glu
            1455                1460                1465

gag gcc gcc gca  gcg gcg acc gcg gcc  gtg gct acc gct gcg  acc       14832
Glu Ala Ala Ala  Ala Ala Thr Ala Ala  Val Ala Thr Ala Ala  Thr
            1470                1475                1480

acc gat gca gat  gca gct act act acc  agg ggc gat aca ttc  gcc       14877
Thr Asp Ala Asp  Ala Ala Thr Thr Thr  Arg Gly Asp Thr Phe  Ala
            1485                1490                1495
```

```
acc cag gcg gag  gaa gca gcc gcc cta  gcg gcg acc gat gat  agt       14922
Thr Gln Ala Glu  Glu Ala Ala Ala Leu  Ala Ala Thr Asp Asp  Ser
            1500                 1505                 1510

gaa agt aag ata  gtc atc aag ccg gtg  gag aag gac agc aag  gac       14967
Glu Ser Lys Ile  Val Ile Lys Pro Val  Glu Lys Asp Ser Lys  Asp
            1515                 1520                 1525

agg agc tac aac  gtt cta tcg gat gga  aag aac acc gcc tac  cgc       15012
Arg Ser Tyr Asn  Val Leu Ser Asp Gly  Lys Asn Thr Ala Tyr  Arg
            1530                 1535                 1540

agc tgg tac ctg  gcc tac aac tac ggc  gac cct gag aag ggc  gtg       15057
Ser Trp Tyr Leu  Ala Tyr Asn Tyr Gly  Asp Pro Glu Lys Gly  Val
            1545                 1550                 1555

cgc tcc tgg acg  ctg ctc acc acc tcg  gac gtc acc tgc ggc  gtg       15102
Arg Ser Trp Thr  Leu Leu Thr Thr Ser  Asp Val Thr Cys Gly  Val
            1560                 1565                 1570

gag caa gtc tac  tgg tcg ctg ccc gac  atg atg caa gac ccg  gtc       15147
Glu Gln Val Tyr  Trp Ser Leu Pro Asp  Met Met Gln Asp Pro  Val
            1575                 1580                 1585

acc ttc cgc tcc  acg cgt caa gtt agc  aac tac ccg gtg gtg  ggc       15192
Thr Phe Arg Ser  Thr Arg Gln Val Ser  Asn Tyr Pro Val Val  Gly
            1590                 1595                 1600

gcc gag ctc ctg  ccc gtc tac tcc aag  agc ttc ttc aac gag  cag       15237
Ala Glu Leu Leu  Pro Val Tyr Ser Lys  Ser Phe Phe Asn Glu  Gln
            1605                 1610                 1615

gcc gtc tac tcg  cag cag ctg cgc gcc  ttc acc tcg ctc acg  cac       15282
Ala Val Tyr Ser  Gln Gln Leu Arg Ala  Phe Thr Ser Leu Thr  His
            1620                 1625                 1630

gtc ttc aac cgc  ttc ccc gag aac cag  atc ctc gtc cgc ccg  ccc       15327
Val Phe Asn Arg  Phe Pro Glu Asn Gln  Ile Leu Val Arg Pro  Pro
            1635                 1640                 1645

gcg ccc acc att  acc acc gtc agt gaa  aac gtt cct gct ctc  aca       15372
Ala Pro Thr Ile  Thr Thr Val Ser Glu  Asn Val Pro Ala Leu  Thr
            1650                 1655                 1660

gat cac ggg acc  ctg ccg ctg cgc agc  agt atc cgg gga gtc  cag       15417
Asp His Gly Thr  Leu Pro Leu Arg Ser  Ser Ile Arg Gly Val  Gln
            1665                 1670                 1675

cgc gtg acc gtc  act gac gcc aga cgc  cgc acc tgc ccc tac  gtc       15462
Arg Val Thr Val  Thr Asp Ala Arg Arg  Arg Thr Cys Pro Tyr  Val
            1680                 1685                 1690

tac aag gcc ctg  ggc gta gtc gcg ccg  cgc gtc ctc tcg agc  cgc       15507
Tyr Lys Ala Leu  Gly Val Val Ala Pro  Arg Val Leu Ser Ser  Arg
            1695                 1700                 1705

acc ttc taaaaa atg tcc  att ctc atc tcg ccc  agt aat aac acc ggt     15555
Thr Phe        Met Ser  Ile Leu Ile Ser Pro  Ser Asn Asn Thr Gly
                   1710                 1715                 1720

tgg ggc ctg cgc gcg  ccc agc aag atg tac  gga ggc gct cgc caa       15600
Trp Gly Leu Arg Ala  Pro Ser Lys Met Tyr  Gly Gly Ala Arg Gln
               1725                 1730                 1735

cgc tcc acg caa cac  ccc gtg cgc gtg cgc  ggg cac ttc cgc gct       15645
Arg Ser Thr Gln His  Pro Val Arg Val Arg  Gly His Phe Arg Ala
               1740                 1745                 1750
```

```
ccc tgg ggc gcc ctc  aag ggc cgc gtg cgc  tcg cgc acc acc gtc        15690
Pro Trp Gly Ala Leu  Lys Gly Arg Val Arg  Ser Arg Thr Thr Val
                1755                1760                1765

gac gac gtg atc gac  cag gtg gtg gcc gac  gcg cgc aac tac acg        15735
Asp Asp Val Ile Asp  Gln Val Val Ala Asp  Ala Arg Asn Tyr Thr
                1770                1775                1780

ccc gcc gcc gcg ccc  gcc tcc acc gtg gac  gcc gtc atc gac agc        15780
Pro Ala Ala Ala Pro  Ala Ser Thr Val Asp  Ala Val Ile Asp Ser
                1785                1790                1795

gtg gtg gcc gac gcg  cgc cgg tac gcc cgc  gcc aag agc cgg cgg        15825
Val Val Ala Asp Ala  Arg Arg Tyr Ala Arg  Ala Lys Ser Arg Arg
                1800                1805                1810

cgg cgc atc gcc cgg  cgg cac cgg agc acc  ccc gcc atg cgc gcg        15870
Arg Arg Ile Ala Arg  Arg His Arg Ser Thr  Pro Ala Met Arg Ala
                1815                1820                1825

gcg cga gcc ttg ctg  cgc agg gcc agg cgc  acg gga cgc agg gcc        15915
Ala Arg Ala Leu Leu  Arg Arg Ala Arg Arg  Thr Gly Arg Arg Ala
                1830                1835                1840

atg ctc agg gcg gcc  aga cgc gcg gcc tcc  ggc agc agc agc gcc        15960
Met Leu Arg Ala Ala  Arg Arg Ala Ala Ser  Gly Ser Ser Ser Ala
                1845                1850                1855

ggc agg acc cgc aga  cgc gcg gcc acg gcg  gcg gcg gcg gcc atc        16005
Gly Arg Thr Arg Arg  Arg Ala Ala Thr Ala  Ala Ala Ala Ala Ile
                1860                1865                1870

gcc agc atg tcc cgc  ccg cgg cgc ggc aac  gtg tac tgg gtg cgc        16050
Ala Ser Met Ser Arg  Pro Arg Arg Gly Asn  Val Tyr Trp Val Arg
                1875                1880                1885

gac gcc gcc acc ggt  gtg cgc gtg ccc gtg  cgc acc cgc ccc cct        16095
Asp Ala Ala Thr Gly  Val Arg Val Pro Val  Arg Thr Arg Pro Pro
                1890                1895                1900

cgc act tgaagatgct gacttcgcga tgttgatgtg tcccagcggc gaggagg atg      16151
Arg Thr                                                      Met


tcc aag  cgc aaa ttc aag gaa  gag atg ctc cag gtc  atc gcg cct        16196
Ser Lys  Arg Lys Phe Lys Glu  Glu Met Leu Gln Val  Ile Ala Pro
    1905                1910                1915

gag atc  tac ggc ccc gcg gcg  gcg gtg aag gag gaa  aga aag ccc        16241
Glu Ile  Tyr Gly Pro Ala Ala  Ala Val Lys Glu Glu  Arg Lys Pro
    1920                1925                1930

cgc aaa  ctg aag cgg gtc aaa  aag gac aaa aag gag  gag gaa gat        16286
Arg Lys  Leu Lys Arg Val Lys  Lys Asp Lys Lys Glu  Glu Glu Asp
    1935                1940                1945

gac gga  ctg gtg gag ttt gtg  cgc gag ttc gcc ccc  cgg cgg cgc        16331
Asp Gly  Leu Val Glu Phe Val  Arg Glu Phe Ala Pro  Arg Arg Arg
    1950                1955                1960

gtg cag  tgg cgc ggg cgg aaa  gtg aaa ccg gtg ctg  cgg ccc ggc        16376
Val Gln  Trp Arg Gly Arg Lys  Val Lys Pro Val Leu  Arg Pro Gly
    1965                1970                1975

acc acg  gtg gtc ttc acg ccc  ggc gag cgt tcc ggc  tcc gcc tcc        16421
Thr Thr  Val Val Phe Thr Pro  Gly Glu Arg Ser Gly  Ser Ala Ser
    1980                1985                1990

aag cgc  tcc tac gac gag gtg  tac ggg gac gag gac  atc ctc gag        16466
```

```
Lys Arg  Ser Tyr Asp Glu Val  Tyr Gly Asp Glu Asp  Ile Leu Glu
    1995                2000                2005

cag gcg  gca gag cgt ctg ggc  gag ttt gct tac ggc  aag cgc agc       16511
Gln Ala  Ala Glu Arg Leu Gly  Glu Phe Ala Tyr Gly  Lys Arg Ser
    2010                2015                2020

cgc ccc  gcg ccc ttg aaa gag  gag gcg gtg tcc atc  ccg ctg gac       16556
Arg Pro  Ala Pro Leu Lys Glu  Glu Ala Val Ser Ile  Pro Leu Asp
    2025                2030                2035

cac ggc  aac ccc acg ccg agc  ctg aag ccg gtg acc  ctg cag cag       16601
His Gly  Asn Pro Thr Pro Ser  Leu Lys Pro Val Thr  Leu Gln Gln
    2040                2045                2050

gtg ctg  ccg agc gcg gcg ccg  cgc cgg ggc ttc aag  cgc gag ggc       16646
Val Leu  Pro Ser Ala Ala Pro  Arg Arg Gly Phe Lys  Arg Glu Gly
    2055                2060                2065

ggc gag  gat ctg tac ccg acc  atg cag ctg atg gtg  ccc aag cgc       16691
Gly Glu  Asp Leu Tyr Pro Thr  Met Gln Leu Met Val  Pro Lys Arg
    2070                2075                2080

cag aag  ctg gag gac gtg ctg  gag cac atg aag gtg  gac ccc gag       16736
Gln Lys  Leu Glu Asp Val Leu  Glu His Met Lys Val  Asp Pro Glu
    2085                2090                2095

gtg cag  ccc gag gtc aag gtg  cgg ccc atc aag cag  gtg gcc ccg       16781
Val Gln  Pro Glu Val Lys Val  Arg Pro Ile Lys Gln  Val Ala Pro
    2100                2105                2110

ggc ctg  ggc gtg cag acc gtg  gac atc aag atc ccc  acg gag ccc       16826
Gly Leu  Gly Val Gln Thr Val  Asp Ile Lys Ile Pro  Thr Glu Pro
    2115                2120                2125

atg gaa  acg cag acc gag ccc  gtg aag ccc agc acc  agc acc atg       16871
Met Glu  Thr Gln Thr Glu Pro  Val Lys Pro Ser Thr  Ser Thr Met
    2130                2135                2140

gag gtg  cag acg gat ccc tgg  atg ccg gcg ccg gct  tcc acc acc       16916
Glu Val  Gln Thr Asp Pro Trp  Met Pro Ala Pro Ala  Ser Thr Thr
    2145                2150                2155

act cgc  cga aga cgc aag tac  ggc gcg gcc agc ctg  ctg atg ccc       16961
Thr Arg  Arg Arg Arg Lys Tyr  Gly Ala Ala Ser Leu  Leu Met Pro
    2160                2165                2170

aac tac  gcg ctg cat cct tcc  atc atc ccc acg ccg  ggc tac cgc       17006
Asn Tyr  Ala Leu His Pro Ser  Ile Ile Pro Thr Pro  Gly Tyr Arg
    2175                2180                2185

ggc acg  cgc ttc tac cgc ggc  tac agc agc cgc cgc  aag acc acc       17051
Gly Thr  Arg Phe Tyr Arg Gly  Tyr Ser Ser Arg Arg  Lys Thr Thr
    2190                2195                2200

acc cgc  cgc cgc cgt cgc cgc  acc cgc cgc agc acc  acc gcg act       17096
Thr Arg  Arg Arg Arg Arg Arg  Thr Arg Arg Ser Thr  Thr Ala Thr
    2205                2210                2215

tcc gcc  gcc gcc ttg gtg cgg  aga gtg tac cgc agc  ggg cgt gag       17141
Ser Ala  Ala Ala Leu Val Arg  Arg Val Tyr Arg Ser  Gly Arg Glu
    2220                2225                2230

cct ctg  acc ctg ccg cgc gcg  cgc tac cac ccg agc  atc gcc att       17186
Pro Leu  Thr Leu Pro Arg Ala  Arg Tyr His Pro Ser  Ile Ala Ile
    2235                2240                2245

taactctgcc gtcgcctcct tgcagat atg gcc  ctc aca tgc cgc ctc  cgc      17237
                               Met Ala  Leu Thr Cys Arg Leu  Arg
```

```
                                    2250                2255

gtc ccc att acg  ggc tac cga gga aga  aag ccg cgc cgt aga  agg       17282
Val Pro Ile Thr  Gly Tyr Arg Gly Arg  Lys Pro Arg Arg Arg  Arg
            2260                2265                2270

ctg acg ggg aac  ggg ctg cgt cgc cat  cac cac cgg cgg cgg  cgc       17327
Leu Thr Gly Asn  Gly Leu Arg Arg His  His His Arg Arg Arg  Arg
            2275                2280                2285

gcc atc agc aag  cgg ttg ggg gga ggc  ttc ctg ccc gcg ctg  atc       17372
Ala Ile Ser Lys  Arg Leu Gly Gly Gly  Phe Leu Pro Ala Leu  Ile
            2290                2295                2300

ccc atc atc gcc  gcg gcg atc ggg gcg  atc ccc ggc ata gct  tcc       17417
Pro Ile Ile Ala  Ala Ala Ile Gly Ala  Ile Pro Gly Ile Ala  Ser
            2305                2310                2315

gtg gcg gtg cag  gcc tct cag cgc cac  tgagacacag cttggaaaat          17464
Val Ala Val Gln  Ala Ser Gln Arg His
            2320                2325

ttgtaataaa aaaatggact gacgctcctg gtcctgtgat gtgtgttttt ag atg gaa    17522
                                                           Met Glu


gac atc aat  ttt tcg tcc ctg gca  ccg cga cac ggc acg  cgg ccg       17567
Asp Ile Asn  Phe Ser Ser Leu Ala  Pro Arg His Gly Thr  Arg Pro
        2330                2335                2340

ttt atg ggc  acc tgg agc gac atc  ggc aac agc caa ctg  aac ggg       17612
Phe Met Gly  Thr Trp Ser Asp Ile  Gly Asn Ser Gln Leu  Asn Gly
        2345                2350                2355

ggc gcc ttc  aat tgg agc agt ctc  tgg agc ggg ctt aag  aat ttc       17657
Gly Ala Phe  Asn Trp Ser Ser Leu  Trp Ser Gly Leu Lys  Asn Phe
        2360                2365                2370

ggg tcc acg  ctc aaa acc tat ggc  aac aag gcg tgg aac  agc agc       17702
Gly Ser Thr  Leu Lys Thr Tyr Gly  Asn Lys Ala Trp Asn  Ser Ser
        2375                2380                2385

aca ggg cag  gcg ctg agg gaa aag  ctg aaa gag cag aac  ttc cag       17747
Thr Gly Gln  Ala Leu Arg Glu Lys  Leu Lys Glu Gln Asn  Phe Gln
        2390                2395                2400

cag aag gtg  gtc gat ggc ctg gcc  tcg ggc atc aac ggg  gtg gtg       17792
Gln Lys Val  Val Asp Gly Leu Ala  Ser Gly Ile Asn Gly  Val Val
        2405                2410                2415

gac ctg gcc  aac cag gcc gtg cag  aaa cag atc aac agc  cgc ctg       17837
Asp Leu Ala  Asn Gln Ala Val Gln  Lys Gln Ile Asn Ser  Arg Leu
        2420                2425                2430

gac gcg gtc  ccg ccc gcg ggg tcc  gtg gag atg ccc cag  gtg gag       17882
Asp Ala Val  Pro Pro Ala Gly Ser  Val Glu Met Pro Gln  Val Glu
        2435                2440                2445

gag gag ctg  cct ccc ctg gac aag  cgc ggc gac aag cga  ccg cgt       17927
Glu Glu Leu  Pro Pro Leu Asp Lys  Arg Gly Asp Lys Arg  Pro Arg
        2450                2455                2460

ccc gac gcg  gag gag acg ctg ctg  acg cac acg gac gag  ccg ccc       17972
Pro Asp Ala  Glu Glu Thr Leu Leu  Thr His Thr Asp Glu  Pro Pro
        2465                2470                2475

ccg tac gag  gag gcg gtg aaa ctg  ggt ctg ccc acc acg  cgg ccc       18017
Pro Tyr Glu  Glu Ala Val Lys Leu  Gly Leu Pro Thr Thr  Arg Pro
        2480                2485                2490
```

```
atc gcg ccc  ctg gcc acc ggg gtg  ctg aaa ccc gag tct  aag ccc       18062
Ile Ala Pro  Leu Ala Thr Gly Val  Leu Lys Pro Glu Ser  Lys Pro
        2495                 2500                 2505

gcg acc ctg  gac ttg cct cct ccc  ccg acc tcc cgc ccc  tcc aca       18107
Ala Thr Leu  Asp Leu Pro Pro Pro  Pro Thr Ser Arg Pro  Ser Thr
        2510                 2515                 2520

gtg gct aag  ccc ctg ccg ccg gtg  gcc cgc gcg cga ccc  ggg agc       18152
Val Ala Lys  Pro Leu Pro Pro Val  Ala Arg Ala Arg Pro  Gly Ser
        2525                 2530                 2535

cgc ccg cag  gcg aac tgg cag agc  act ctg aac agc atc  gtg ggt       18197
Arg Pro Gln  Ala Asn Trp Gln Ser  Thr Leu Asn Ser Ile  Val Gly
        2540                 2545                 2550

ctg gga gtg  cag agt gtg aag cgc  cgc cgc tgc tat taaacatacc         18243
Leu Gly Val  Gln Ser Val Lys Arg  Arg Arg Cys Tyr
        2555                 2560

gtagcgctta acttgcttgt ctgtgtgtgt atgtattatg tcgccgccgc tgtccagaag    18303

gaggagtgaa gaggcgcgtc gccgagttgc aag atg  gcc acc cca tcg atg        18354
                                     Met  Ala Thr Pro Ser Met
                                     2565                 2570

ctg ccc cag tgg gcg  tac atg cac atc gcc  gga cag gac gct tcg        18399
Leu Pro Gln Trp Ala  Tyr Met His Ile Ala  Gly Gln Asp Ala Ser
                2575                 2580                 2585

gag tac ctg agt ccg  ggt ctg gtg cag ttc  gcc cgc gcc aca gac        18444
Glu Tyr Leu Ser Pro  Gly Leu Val Gln Phe  Ala Arg Ala Thr Asp
                2590                 2595                 2600

acc tac ttc agt ctg  ggg aac aag ttt agg  aac ccc acg gtg gcg        18489
Thr Tyr Phe Ser Leu  Gly Asn Lys Phe Arg  Asn Pro Thr Val Ala
                2605                 2610                 2615

ccc acg cac gat gtg  acc acc gac cgc agc  cag cgg ctg acg ctg        18534
Pro Thr His Asp Val  Thr Thr Asp Arg Ser  Gln Arg Leu Thr Leu
                2620                 2625                 2630

cgc ttc gtg ccc gtg  gac cgc gag gac aac  acc tac tcg tac aaa        18579
Arg Phe Val Pro Val  Asp Arg Glu Asp Asn  Thr Tyr Ser Tyr Lys
                2635                 2640                 2645

gtg cgc tac acg ctg  gcc gtg ggc gac aac  cgc gtg ctg gac atg        18624
Val Arg Tyr Thr Leu  Ala Val Gly Asp Asn  Arg Val Leu Asp Met
                2650                 2655                 2660

gcc agc acc tac ttt  gac atc cgc ggc gtg  ctg gac cgg ggc cct        18669
Ala Ser Thr Tyr Phe  Asp Ile Arg Gly Val  Leu Asp Arg Gly Pro
                2665                 2670                 2675

agc ttc aaa ccc tac  tcc ggc acc gcc tac  aac agc ctg gcc ccc        18714
Ser Phe Lys Pro Tyr  Ser Gly Thr Ala Tyr  Asn Ser Leu Ala Pro
                2680                 2685                 2690

aag gga gct ccc aat  tcc agt cag tgg gag  cag acg gag aac ggg        18759
Lys Gly Ala Pro Asn  Ser Ser Gln Trp Glu  Gln Thr Glu Asn Gly
                2695                 2700                 2705

ggc gga cag gct acg  act aaa aca cac acc  tat gga gtt gcc cca        18804
Gly Gly Gln Ala Thr  Thr Lys Thr His Thr  Tyr Gly Val Ala Pro
                2710                 2715                 2720

atg ggt gga act aat  att aca gtc gac gga  cta caa att gga act        18849
Met Gly Gly Thr Asn  Ile Thr Val Asp Gly  Leu Gln Ile Gly Thr
```

```
                2725                2730                2735

gac gct aca gct gat  acg gaa aaa cca att  tat gct gat aaa aca       18894
Asp Ala Thr Ala Asp  Thr Glu Lys Pro Ile  Tyr Ala Asp Lys Thr
                2740                2745                2750

ttc caa cct gag cct  cag ata gga gag gaa  aac tgg caa gaa act       18939
Phe Gln Pro Glu Pro  Gln Ile Gly Glu Glu  Asn Trp Gln Glu Thr
                2755                2760                2765

gaa agc ttt tat ggc  ggt agg gct ctt aag  aaa gac aca aac atg       18984
Glu Ser Phe Tyr Gly  Gly Arg Ala Leu Lys  Lys Asp Thr Asn Met
                2770                2775                2780

aag cct tgt tat ggc  tca ttt gcc aga cct  acc aat gaa aag gga       19029
Lys Pro Cys Tyr Gly  Ser Phe Ala Arg Pro  Thr Asn Glu Lys Gly
                2785                2790                2795

ggt caa gct aaa ctt  aaa gtt gga gct gat  ggg ctg ccg acc aaa       19074
Gly Gln Ala Lys Leu  Lys Val Gly Ala Asp  Gly Leu Pro Thr Lys
                2800                2805                2810

gaa ttt gac ata gac  cta gca ttc ttt gat  act cct ggt ggc act       19119
Glu Phe Asp Ile Asp  Leu Ala Phe Phe Asp  Thr Pro Gly Gly Thr
                2815                2820                2825

gtg acc gga ggt aca  gag gag tat aaa gca  gat att gtt atg tat       19164
Val Thr Gly Gly Thr  Glu Glu Tyr Lys Ala  Asp Ile Val Met Tyr
                2830                2835                2840

acc gaa aac acg tat  ctg gaa act cca gac  aca cat gtg gtg tat       19209
Thr Glu Asn Thr Tyr  Leu Glu Thr Pro Asp  Thr His Val Val Tyr
                2845                2850                2855

aaa cca ggc aag gat  aac aca agt tct aaa  att aac ctg gtc cag       19254
Lys Pro Gly Lys Asp  Asn Thr Ser Ser Lys  Ile Asn Leu Val Gln
                2860                2865                2870

cag tct atg ccc aac  agg ccc aac tac att  ggg ttt agg gac aac       19299
Gln Ser Met Pro Asn  Arg Pro Asn Tyr Ile  Gly Phe Arg Asp Asn
                2875                2880                2885

ttt att ggg ctc atg  tat tac aac agc act  ggc aat atg ggt gtg       19344
Phe Ile Gly Leu Met  Tyr Tyr Asn Ser Thr  Gly Asn Met Gly Val
                2890                2895                2900

ctg gcc ggt cag gct  tct cag ttg aat gct  gtg gtt gac ttg caa       19389
Leu Ala Gly Gln Ala  Ser Gln Leu Asn Ala  Val Val Asp Leu Gln
                2905                2910                2915

gac aga aac act gaa  ctg tct tac cag ctc  ttg ctt gac tct ttg       19434
Asp Arg Asn Thr Glu  Leu Ser Tyr Gln Leu  Leu Leu Asp Ser Leu
                2920                2925                2930

ggt gac aga acc agg  tat ttc agt atg tgg  aat cag gcg gtg gac       19479
Gly Asp Arg Thr Arg  Tyr Phe Ser Met Trp  Asn Gln Ala Val Asp
                2935                2940                2945

agt tat gat cct gat  gtg cgc att att gaa  aac cat ggt gtg gaa       19524
Ser Tyr Asp Pro Asp  Val Arg Ile Ile Glu  Asn His Gly Val Glu
                2950                2955                2960

gat gaa ctt ccc aac  tat tgc ttc ccc ctg  gat ggg tct ggc act       19569
Asp Glu Leu Pro Asn  Tyr Cys Phe Pro Leu  Asp Gly Ser Gly Thr
                2965                2970                2975

aac gcc gct tac caa  ggt gtg aaa gta aaa  aat ggt caa gat ggt       19614
Asn Ala Ala Tyr Gln  Gly Val Lys Val Lys  Asn Gly Gln Asp Gly
                2980                2985                2990
```

```
gat gtt gag agc gaa  tgg gaa aaa gat gat  act gtc gca gct cga        19659
Asp Val Glu Ser Glu  Trp Glu Lys Asp Asp  Thr Val Ala Ala Arg
                2995                3000                3005

aat caa tta tgc aag  ggc aac att ttt gcc  atg gag atc aat ctc        19704
Asn Gln Leu Cys Lys  Gly Asn Ile Phe Ala  Met Glu Ile Asn Leu
                3010                3015                3020

cag gcc aac ctg tgg  aga agt ttt ctc tac  tcg aac gtg gcc ctg        19749
Gln Ala Asn Leu Trp  Arg Ser Phe Leu Tyr  Ser Asn Val Ala Leu
                3025                3030                3035

tac ctg ccc gat tct  tac aag tac acg ccg  gcc aac atc acc ctg        19794
Tyr Leu Pro Asp Ser  Tyr Lys Tyr Thr Pro  Ala Asn Ile Thr Leu
                3040                3045                3050

ccc acc aac acc aac  acc tac gat tac atg  aac ggg aga gtg gtg        19839
Pro Thr Asn Thr Asn  Thr Tyr Asp Tyr Met  Asn Gly Arg Val Val
                3055                3060                3065

cct ccc tcg ctg gtg  gac gcc tac atc aac  atc ggg gcg cgc tgg        19884
Pro Pro Ser Leu Val  Asp Ala Tyr Ile Asn  Ile Gly Ala Arg Trp
                3070                3075                3080

tcg ctg gac ccc atg  gac aac gtc aat ccc  ttc aac cac cat cgc        19929
Ser Leu Asp Pro Met  Asp Asn Val Asn Pro  Phe Asn His His Arg
                3085                3090                3095

aac gcg ggg ctg cgc  tac cgc tcc atg ctc  ctg ggc aac ggg cgc        19974
Asn Ala Gly Leu Arg  Tyr Arg Ser Met Leu  Leu Gly Asn Gly Arg
                3100                3105                3110

tac gtg ccc ttc cac  atc cag gtg ccc cag  aaa ttt ttc gcc att        20019
Tyr Val Pro Phe His  Ile Gln Val Pro Gln  Lys Phe Phe Ala Ile
                3115                3120                3125

aag agc ctc ctg ctc  ctg ccc ggg tcc tac  acc tac gag tgg aac        20064
Lys Ser Leu Leu Leu  Leu Pro Gly Ser Tyr  Thr Tyr Glu Trp Asn
                3130                3135                3140

ttc cgc aag gac gtc  aac atg atc ctg cag  agc tcc ctc ggc aac        20109
Phe Arg Lys Asp Val  Asn Met Ile Leu Gln  Ser Ser Leu Gly Asn
                3145                3150                3155

gac ctg cgc acg gac  ggg gcc tcc atc tcc  ttc acc agc atc aac        20154
Asp Leu Arg Thr Asp  Gly Ala Ser Ile Ser  Phe Thr Ser Ile Asn
                3160                3165                3170

ctc tac gcc acc ttc  ttc ccc atg gcg cac  aac acc gcc tcc acg        20199
Leu Tyr Ala Thr Phe  Phe Pro Met Ala His  Asn Thr Ala Ser Thr
                3175                3180                3185

ctc gag gcc atg ctg  cgc aac gac acc aac  gac cag tcc ttc aac        20244
Leu Glu Ala Met Leu  Arg Asn Asp Thr Asn  Asp Gln Ser Phe Asn
                3190                3195                3200

gac tac ctc tcg gcg  gcc aac atg ctc tac  ccc atc ccg gcc aac        20289
Asp Tyr Leu Ser Ala  Ala Asn Met Leu Tyr  Pro Ile Pro Ala Asn
                3205                3210                3215

gcc acc aac gtg ccc  atc tcc atc ccc tcg  cgc aac tgg gcc gcc        20334
Ala Thr Asn Val Pro  Ile Ser Ile Pro Ser  Arg Asn Trp Ala Ala
                3220                3225                3230

ttc cgc ggc tgg tcc  ttc acg cgc ctc aag  acc aag gag acg ccc        20379
Phe Arg Gly Trp Ser  Phe Thr Arg Leu Lys  Thr Lys Glu Thr Pro
                3235                3240                3245
```

```
tcg ctg ggc tcc ggg  ttc gac ccc tac ttc  gtc tac tcg ggc tcc        20424
Ser Leu Gly Ser Gly  Phe Asp Pro Tyr Phe  Val Tyr Ser Gly Ser
                3250                3255                3260

atc ccc tac ctc gac  ggc acc ttc tac ctc  aac cac acc ttc aag        20469
Ile Pro Tyr Leu Asp  Gly Thr Phe Tyr Leu  Asn His Thr Phe Lys
                3265                3270                3275

aag gtc tcc atc acc  ttc gac tcc tcc gtc  agc tgg ccc ggc aac        20514
Lys Val Ser Ile Thr  Phe Asp Ser Ser Val  Ser Trp Pro Gly Asn
                3280                3285                3290

gac cgg ctc ctg acg  ccc aac gag ttc gaa  atc aag cgc acc gtc        20559
Asp Arg Leu Leu Thr  Pro Asn Glu Phe Glu  Ile Lys Arg Thr Val
                3295                3300                3305

gac ggc gag ggc tac  aac gtg gcc cag tgc  aac atg acc aag gac        20604
Asp Gly Glu Gly Tyr  Asn Val Ala Gln Cys  Asn Met Thr Lys Asp
                3310                3315                3320

tgg ttc ctg gtc cag  atg ctg gcc cac tac  aac atc ggc tac cag        20649
Trp Phe Leu Val Gln  Met Leu Ala His Tyr  Asn Ile Gly Tyr Gln
                3325                3330                3335

ggc ttc tac gtg ccc  gag ggc tac aag gac  cgc atg tac tcc ttc        20694
Gly Phe Tyr Val Pro  Glu Gly Tyr Lys Asp  Arg Met Tyr Ser Phe
                3340                3345                3350

ttc cgc aac ttc cag  ccc atg agc cgc cag  gtg gtg gac gag gtc        20739
Phe Arg Asn Phe Gln  Pro Met Ser Arg Gln  Val Val Asp Glu Val
                3355                3360                3365

aac tac aag gac tac  cag gcc gtc acc ctg  gcc tac cag cac aac        20784
Asn Tyr Lys Asp Tyr  Gln Ala Val Thr Leu  Ala Tyr Gln His Asn
                3370                3375                3380

aac tcg ggc ttc gtc  ggc tac ctc gcg ccc  acc atg cgc cag ggc        20829
Asn Ser Gly Phe Val  Gly Tyr Leu Ala Pro  Thr Met Arg Gln Gly
                3385                3390                3395

cag ccc tac ccc gcc  aac tac ccg tac ccg  ctc atc ggc aag agc        20874
Gln Pro Tyr Pro Ala  Asn Tyr Pro Tyr Pro  Leu Ile Gly Lys Ser
                3400                3405                3410

gcc gtc acc agc gtc  acc cag aaa aag ttc  ctc tgc gac agg gtc        20919
Ala Val Thr Ser Val  Thr Gln Lys Lys Phe  Leu Cys Asp Arg Val
                3415                3420                3425

atg tgg cgc atc ccc  ttc tcc agc aac ttc  atg tcc atg ggc gcg        20964
Met Trp Arg Ile Pro  Phe Ser Ser Asn Phe  Met Ser Met Gly Ala
                3430                3435                3440

ctc acc gac ctc ggc  cag aac atg ctc tat  gcc aac tcc gcc cac        21009
Leu Thr Asp Leu Gly  Gln Asn Met Leu Tyr  Ala Asn Ser Ala His
                3445                3450                3455

gcg cta gac atg aat  ttc gaa gtc gac ccc  atg gat gag tcc acc        21054
Ala Leu Asp Met Asn  Phe Glu Val Asp Pro  Met Asp Glu Ser Thr
                3460                3465                3470

ctt ctc tat gtt gtc  ttc gaa gtc ttc gac  gtc gtc cga gtg cac        21099
Leu Leu Tyr Val Val  Phe Glu Val Phe Asp  Val Val Arg Val His
                3475                3480                3485

cag ccc cac cgc ggc  gtc atc gag gcc gtc  tac ctg cgc acc ccc        21144
Gln Pro His Arg Gly  Val Ile Glu Ala Val  Tyr Leu Arg Thr Pro
                3490                3495                3500

ttc tcg gcc ggt aac  gcc acc acc taagctcttg cttcttgcaa g atg gct     21195
```

```
Phe Ser Ala Gly Asn  Ala Thr Thr                         Met Ala
                3505                                        3510

gag ccc acg ggc tcc  ggc gag cag gag ctc  agg gcc atc atc cgc        21240
Glu Pro Thr Gly Ser  Gly Glu Gln Glu Leu  Arg Ala Ile Ile Arg
                3515                3520                3525

gac ctg ggc tgc ggg  ccc tac ttc ctg ggc  acc ttc gat aag cgc        21285
Asp Leu Gly Cys Gly  Pro Tyr Phe Leu Gly  Thr Phe Asp Lys Arg
                3530                3535                3540

ttc ccg gga ttc atg  gcc ccg cac aag ctg  gcc tgc gcc atc gtc        21330
Phe Pro Gly Phe Met  Ala Pro His Lys Leu  Ala Cys Ala Ile Val
                3545                3550                3555

aac acg gcc ggc cgc  gag acc ggg ggc gag  cac tgg ctg gcc ttc        21375
Asn Thr Ala Gly Arg  Glu Thr Gly Gly Glu  His Trp Leu Ala Phe
                3560                3565                3570

gcc tgg aac ccg cgc  tcg aac acc tgc tac  ctc ttc gac ccc ttc        21420
Ala Trp Asn Pro Arg  Ser Asn Thr Cys Tyr  Leu Phe Asp Pro Phe
                3575                3580                3585

ggg ttc tcg gac gag  cgc ctc aag cag atc  tac cag ttc gag tac        21465
Gly Phe Ser Asp Glu  Arg Leu Lys Gln Ile  Tyr Gln Phe Glu Tyr
                3590                3595                3600

gag ggc ctg ctg cgc  cgc agc gcc ctg gcc  acc gag gac cgc tgc        21510
Glu Gly Leu Leu Arg  Arg Ser Ala Leu Ala  Thr Glu Asp Arg Cys
                3605                3610                3615

gtc acc ctg gaa aag  tcc acc cag acc gtg  cag ggt ccg cgc tcg        21555
Val Thr Leu Glu Lys  Ser Thr Gln Thr Val  Gln Gly Pro Arg Ser
                3620                3625                3630

gcc gcc tgc ggg ctc  ttt tgc tgc atg ttc  ctg cac gcc ttc gtg        21600
Ala Ala Cys Gly Leu  Phe Cys Cys Met Phe  Leu His Ala Phe Val
                3635                3640                3645

cac tgg ccc gac cgc  ccc atg gac aag aac  ccc acc atg aac ttg        21645
His Trp Pro Asp Arg  Pro Met Asp Lys Asn  Pro Thr Met Asn Leu
                3650                3655                3660

ctg acg ggg gtg ccc  aac ggc atg ctc cag  tcg ccc cag gtg gaa        21690
Leu Thr Gly Val Pro  Asn Gly Met Leu Gln  Ser Pro Gln Val Glu
                3665                3670                3675

ccc acc ctg cgc cgc  aac cag gag gcg ctc  tac cgc ttc ctc aac        21735
Pro Thr Leu Arg Arg  Asn Gln Glu Ala Leu  Tyr Arg Phe Leu Asn
                3680                3685                3690

gcc cac tcc gcc tac  ttt cgc tcc cac cgc  gcg cgc atc gag aag        21780
Ala His Ser Ala Tyr  Phe Arg Ser His Arg  Ala Arg Ile Glu Lys
                3695                3700                3705

gcc acc gcc ttc gac  cgc atg aat caa gac  atg taaaccgtgt             21823
Ala Thr Ala Phe Asp  Arg Met Asn Gln Asp  Met
                3710                3715

gtgtgtatgt taaaatgtct ttaataaaca gcactttcat gttacacatg catctgagat    21883

gatttattta gaaatcgaaa gggttctgcc gggtctcggc atggcccgcg ggcagggaca    21943

cgttgcggaa ctggtacttg gccagccact tgaactcggg gatcagcagt ttcggcagcg    22003

gggtgtcggg gaaggagtcg gtccacagct tccgcgtcag ttgcagggcg cccagcaggt    22063

cgggcgcgga gatcttgaaa tcgcagttgg gacccgcgtt ctgcgcgcga gagttgcggt    22123
```

```
acacggggtt gcagcactgg aacaccatca gggccgggtg cttcacgctc gccagcaccg    22183

tcgcgtcggt gatgccctcc acgtccagat cctcggcgtt ggccatcccg aaggggtca    22243

tcttgcaggt ctgccgcccc atgctgggca cgcagccggg cttgtggttg caatcgcagt    22303

gcaggggat cagcatcatc tgggcctgct cggagctcat gcccgggtac atggccttca    22363

tgaaagcctc cagctggcgg aaggcctgct gcgccttgcc gccctcggtg aagaagaccc    22423

cgcaggactt gctagagaac tggttggtag cgcagcccgc gtcgtgcacg cagcagcgcg    22483

cgtcgttgtt ggccagctgc accacgctgc gcccccagcg gttctgggtg atcttggccc    22543

ggtcggggtt ctccttcagc gcgcgctgcc cgttctcgct cgccacatcc atctcgatcg    22603

tgtgctcctt ctggatcatc acggtcccgt gcaggcaccg cagcttgccc tcggcctcgg    22663

tgcagccgtg cagccacagc gcgcagccgg tgctctccca gttcttgtgg gcgatctggg    22723

agtgcgagtg cacgaagccc tgcaggaagc ggcccatcat cgcggtcagg gtcttgttgc    22783

tggtgaaggt cagcgggatg ccgcggtgct cctcgttcac atacaggtgg cagatgcggc    22843

ggtacacctc gccctgctcg ggcatcagct ggaaggcgga cttcaggtcg ctctccacgc    22903

ggtaccggtc catcagcagc gtcatcactt ccatgccctt ctcccaggcc gagacgatcg    22963

gcaggctcag ggggttcttc accgccattg tcatcttagt cgccgccgcc gaggtcaggg    23023

ggtcgttctc gtccagggtc tcaaacactc gcttgccgtc cttctcgatg atgcgcacgg    23083

ggggaaagct gaagcccacg gccgccagct cctcctcggc ctgcctttcg tcctcgctgt    23143

cctggctgat gtcttgcaaa ggcacatgct tggtcttgcg gggtttcttt ttgggcggca    23203

gaggcggcgg cgatgtgctg ggcgagcgcg agttctcgct caccacgact atttcttctc    23263

cttggccgtc gtccgagacc acgcggcggt aggcatgcct cttctggggc agaggcggag    23323

gcgacgggct ctcgcggttc ggcgggcggc tggcagagcc ccttccgcgt tcgggggtgc    23383

gctcctggcg gcgctgctct gactgacttc ctccgcggcc ggccattgtg ttctcctagg    23443

gagcaacaac aagc atg gag act cag  cca tcg tcg cca aca  tcg cca tct    23493
               Met Glu Thr Gln  Pro Ser Ser Pro Thr  Ser Pro Ser
                           3720                3725

gcc ccc  gcc tcc acc gcc gac  gag aac cag cag cag  aat gaa agc      23538
Ala Pro  Ala Ser Thr Ala Asp  Glu Asn Gln Gln Gln  Asn Glu Ser
    3730                3735                3740

tta acc  gcc ccg ccg ccc agc  ccc acc tcc gac gcc  gcg gcc cca      23583
Leu Thr  Ala Pro Pro Pro Ser  Pro Thr Ser Asp Ala  Ala Ala Pro
    3745                3750                3755

gac atg  caa gag atg gag gaa  tcc atc gag att gac  ctg ggc tac      23628
Asp Met  Gln Glu Met Glu Glu  Ser Ile Glu Ile Asp  Leu Gly Tyr
    3760                3765                3770

gtg acg  ccc gcg gag cac gag  gag gag ctg gca gcg  cgc ttt tca      23673
Val Thr  Pro Ala Glu His Glu  Glu Glu Leu Ala Ala  Arg Phe Ser
    3775                3780                3785

gcc ccg  gaa gag aac cac caa  gag cag cca gag cag  gaa gca gag      23718
Ala Pro  Glu Glu Asn His Gln  Glu Gln Pro Glu Gln  Glu Ala Glu
    3790                3795                3800

aac gag  cag aac cag gct ggg  cac gag cat ggc gac  tac ctg agc      23763
```

```
Asn Glu  Gln Asn Gln Ala Gly  His Glu His Gly Asp  Tyr Leu Ser
    3805                 3810                 3815

ggg gca  gag gac gtg ctc atc  aag cat ctg gcc cgc  caa tgc atc       23808
Gly Ala  Glu Asp Val Leu Ile  Lys His Leu Ala Arg  Gln Cys Ile
    3820                 3825                 3830

atc gtc  aag gac gcg ctg ctc  gac cgc gcc gag gtg  ccc ctc agc       23853
Ile Val  Lys Asp Ala Leu Leu  Asp Arg Ala Glu Val  Pro Leu Ser
    3835                 3840                 3845

gtg gcg  gag ctc agc cgc gcc  tac gag cgc aac ctc  ttc tcg ccg       23898
Val Ala  Glu Leu Ser Arg Ala  Tyr Glu Arg Asn Leu  Phe Ser Pro
    3850                 3855                 3860

cgc gtg  ccc ccc aag cgc cag  ccc aac ggc acc tgt  gag ccc aac       23943
Arg Val  Pro Pro Lys Arg Gln  Pro Asn Gly Thr Cys  Glu Pro Asn
    3865                 3870                 3875

ccg cgc  ctc aac ttc tac ccg  gtc ttc gcg gtg ccc  gag gcc ctg       23988
Pro Arg  Leu Asn Phe Tyr Pro  Val Phe Ala Val Pro  Glu Ala Leu
    3880                 3885                 3890

gcc acc  tac cac ctc ttt ttc  aag aac caa aga atc  ccc gtc tcc       24033
Ala Thr  Tyr His Leu Phe Phe  Lys Asn Gln Arg Ile  Pro Val Ser
    3895                 3900                 3905

tgc cgc  gcc aac cgc acc cgc  gcc gac gcc ctt ttc  aac ctg ggc       24078
Cys Arg  Ala Asn Arg Thr Arg  Ala Asp Ala Leu Phe  Asn Leu Gly
    3910                 3915                 3920

ccc ggc  gcc cgc cta cct gat  atc gcc tcc ttg gaa  gag gtt ccc       24123
Pro Gly  Ala Arg Leu Pro Asp  Ile Ala Ser Leu Glu  Glu Val Pro
    3925                 3930                 3935

aag atc  ttc gag ggt ctg ggc  agc gac gag act cgg  gcc gcg aac       24168
Lys Ile  Phe Glu Gly Leu Gly  Ser Asp Glu Thr Arg  Ala Ala Asn
    3940                 3945                 3950

gct ctg  caa gga gaa gga gga  gag cat gag cac cac  agc gcc ctg       24213
Ala Leu  Gln Gly Glu Gly Gly  Glu His Glu His His  Ser Ala Leu
    3955                 3960                 3965

gtc gag  ttg gaa ggc gac aac  gcg cgg ctg gcg gtg  ctc aaa cgc       24258
Val Glu  Leu Glu Gly Asp Asn  Ala Arg Leu Ala Val  Leu Lys Arg
    3970                 3975                 3980

acg gtc  gag ctg acc cat ttc  gcc tac ccg gct ctg  aac ctg ccc       24303
Thr Val  Glu Leu Thr His Phe  Ala Tyr Pro Ala Leu  Asn Leu Pro
    3985                 3990                 3995

ccc aaa  gtc atg agc gcc gtc  atg gac cag gtg ctc  atc aag cgc       24348
Pro Lys  Val Met Ser Ala Val  Met Asp Gln Val Leu  Ile Lys Arg
    4000                 4005                 4010

gcg tcg  ccc atc tcc gag gac  gag ggc atg caa gac  ccc gag agc       24393
Ala Ser  Pro Ile Ser Glu Asp  Glu Gly Met Gln Asp  Pro Glu Ser
    4015                 4020                 4025

acc gag  gat ggc aag ccc gtg  gtc agc gac gag cag  ctg gcc cgg       24438
Thr Glu  Asp Gly Lys Pro Val  Val Ser Asp Glu Gln  Leu Ala Arg
    4030                 4035                 4040

tgg ctg  ggt cct aat gct agt  ccc cag agt ttg gaa  gag cgg cgc       24483
Trp Leu  Gly Pro Asn Ala Ser  Pro Gln Ser Leu Glu  Glu Arg Arg
    4045                 4050                 4055

aag ctc  atg atg gcc gtg gtc  ctg gtg acc gtg gag  ctg gag tgc       24528
Lys Leu  Met Met Ala Val Val  Leu Val Thr Val Glu  Leu Glu Cys
```

```
    4060                4065                4070

ctg cgc  cgc ttc ttc gcc gac  gcg gag acc ctg cgc  aag gtc gag       24573
Leu Arg  Arg Phe Phe Ala Asp  Ala Glu Thr Leu Arg  Lys Val Glu
    4075                4080                4085

gag aac  ctg cac tac ctc ttc  agg cac ggg ttc gtg  cgc cag gcc       24618
Glu Asn  Leu His Tyr Leu Phe  Arg His Gly Phe Val  Arg Gln Ala
    4090                4095                4100

tgc aag  atc tcc aac gtg gag  ctg acc aac ctg gtc  tcc tac atg       24663
Cys Lys  Ile Ser Asn Val Glu  Leu Thr Asn Leu Val  Ser Tyr Met
    4105                4110                4115

ggc atc  ttg cac gag aac cgt  ctg ggg cag aac gtg  ctg cac acc       24708
Gly Ile  Leu His Glu Asn Arg  Leu Gly Gln Asn Val  Leu His Thr
    4120                4125                4130

acc ctg  cgc ggg gag gcc cgc  cgc gac tac atc cgc  gac tgc gtc       24753
Thr Leu  Arg Gly Glu Ala Arg  Arg Asp Tyr Ile Arg  Asp Cys Val
    4135                4140                4145

tac ctc  tac ctc tgc cac acc  tgg cag acg ggc atg  ggc gtg tgg       24798
Tyr Leu  Tyr Leu Cys His Thr  Trp Gln Thr Gly Met  Gly Val Trp
    4150                4155                4160

cag cag  tgc ctg gag gag cag  aac ctg aaa gag ctc  tgc aag ctc       24843
Gln Gln  Cys Leu Glu Glu Gln  Asn Leu Lys Glu Leu  Cys Lys Leu
    4165                4170                4175

ctg cag  aag aac ctc aag ggt  ctg tgg acc ggg ttc  gac gag cgg       24888
Leu Gln  Lys Asn Leu Lys Gly  Leu Trp Thr Gly Phe  Asp Glu Arg
    4180                4185                4190

acc acc  gcc tcg gat ctg gcc  gac ctc atc ttc ccc  gag cgc ctc       24933
Thr Thr  Ala Ser Asp Leu Ala  Asp Leu Ile Phe Pro  Glu Arg Leu
    4195                4200                4205

agg ctg  acg ctg cgc aac ggc  ctg ccc gac ttt atg  agc caa agc       24978
Arg Leu  Thr Leu Arg Asn Gly  Leu Pro Asp Phe Met  Ser Gln Ser
    4210                4215                4220

atg ttg  caa aac ttt cgc tct  ttc atc ctc gaa cgc  tcc gga atc       25023
Met Leu  Gln Asn Phe Arg Ser  Phe Ile Leu Glu Arg  Ser Gly Ile
    4225                4230                4235

ctg ccc  gcc acc tgc tcc gcg  ctg ccc tcg gac ttc  gtg ccg ctg       25068
Leu Pro  Ala Thr Cys Ser Ala  Leu Pro Ser Asp Phe  Val Pro Leu
    4240                4245                4250

acc ttc  cgc gag tgc ccc ccg  ccg ctg tgg agc cac  tgc tac ctg       25113
Thr Phe  Arg Glu Cys Pro Pro  Pro Leu Trp Ser His  Cys Tyr Leu
    4255                4260                4265

ctg cgc  ctg gcc aac tac ctg  gcc tac cac tcg gac  gtg atc gag       25158
Leu Arg  Leu Ala Asn Tyr Leu  Ala Tyr His Ser Asp  Val Ile Glu
    4270                4275                4280

gac gtc  agc ggc gag ggc ctg  ctc gag tgc cac tgc  cgc tgc aac       25203
Asp Val  Ser Gly Glu Gly Leu  Leu Glu Cys His Cys  Arg Cys Asn
    4285                4290                4295

ctc tgc  acg ccg cac cgc tcc  ctg gcc tgc aac ccc  cag ctg ctg       25248
Leu Cys  Thr Pro His Arg Ser  Leu Ala Cys Asn Pro  Gln Leu Leu
    4300                4305                4310

agc gag  acc cag atc atc ggc  acc ttc gag ttg caa  ggg ccc agc       25293
Ser Glu  Thr Gln Ile Ile Gly  Thr Phe Glu Leu Gln  Gly Pro Ser
    4315                4320                4325
```

```
gat gag  ggt tcc gcc gcc aag  ggg ggt ctg aaa ctc  acc ccg ggg       25338
Asp Glu  Gly Ser Ala Ala Lys  Gly Gly Leu Lys Leu  Thr Pro Gly
    4330                 4335                 4340

ctg tgg  acc tcg gcc tac ttg  cgc aag ttc gtg ccc  gag gac tac       25383
Leu Trp  Thr Ser Ala Tyr Leu  Arg Lys Phe Val Pro  Glu Asp Tyr
    4345                 4350                 4355

cat ccc  ttc gag atc agg ttc  tac gag gac caa tcc  cag ccg ccc       25428
His Pro  Phe Glu Ile Arg Phe  Tyr Glu Asp Gln Ser  Gln Pro Pro
    4360                 4365                 4370

aag gcc  gag ctg tcg gcc tgc  gtc atc acc cag ggg  gcg atc ctg       25473
Lys Ala  Glu Leu Ser Ala Cys  Val Ile Thr Gln Gly  Ala Ile Leu
    4375                 4380                 4385

gcc caa  ttg caa gcc atc cag  aaa tcc cgc caa gaa  ttc ttg ctg       25518
Ala Gln  Leu Gln Ala Ile Gln  Lys Ser Arg Gln Glu  Phe Leu Leu
    4390                 4395                 4400

aaa aag  ggc cgc ggg gtc tac  ctc gac ccc cag acc  ggt gag gag       25563
Lys Lys  Gly Arg Gly Val Tyr  Leu Asp Pro Gln Thr  Gly Glu Glu
    4405                 4410                 4415

ctc aac  ccc ggc ttc ccc cag  gat gcc ccg agg aaa  caa gaa gct       25608
Leu Asn  Pro Gly Phe Pro Gln  Asp Ala Pro Arg Lys  Gln Glu Ala
    4420                 4425                 4430

gaa agt  gga gct gcc gcc cgt  gga gga ttt gga gga  aga ctg gga       25653
Glu Ser  Gly Ala Ala Ala Arg  Gly Gly Phe Gly Gly  Arg Leu Gly
    4435                 4440                 4445

gaa cag  cag tca ggc aga gga  gga gga gat gga gga  aga ctg gga       25698
Glu Gln  Gln Ser Gly Arg Gly  Gly Gly Asp Gly Gly  Arg Leu Gly
    4450                 4455                 4460

cag cac  tca ggc aga gga gga  cag cct gca aga cag  tct gga gga       25743
Gln His  Ser Gly Arg Gly Gly  Gln Pro Ala Arg Gln  Ser Gly Gly
    4465                 4470                 4475

aga cga  gga gga ggc aga ggt  gga aga agc agc cgc  cgc cag acc       25788
Arg Arg  Gly Gly Gly Arg Gly  Gly Arg Ser Ser Arg  Arg Gln Thr
    4480                 4485                 4490

gtc gtc  ctc ggc ggg gga gaa  agc aag cag cac gga  tac cat ctc       25833
Val Val  Leu Gly Gly Gly Glu  Ser Lys Gln His Gly  Tyr His Leu
    4495                 4500                 4505

cgc tcc  ggg tcg ggg tcc cgc  tcg gcc cca cag tagatgggac           25876
Arg Ser  Gly Ser Gly Ser Arg  Ser Ala Pro Gln
    4510                 4515

gagaccgggc gattcccgaa ccccaccacc cagaccggta agaaggagcg gcagggatac  25936

aagtcctggc gggggcacaa aaacgccatc gtctcctgct tgcaggcctg cgggggcaac  25996

atctccttca cccggcgcta cctgctcttc caccgcgggg tgaacttccc ccgcaacatc  26056

ttgcattact accgtcacct ccacagcccc tactacttcc aagaagaggc agcagaaaaa  26116

gaccagaaaa ccagctagaa aatccacagc ggcggcagca ggtggactga ggatcgcggc  26176

gaacgagccg gcgcagaccc gggagctgag gaaccggatc tttcccaccc tctatgccat  26236

cttccagcag agtcgggggc aggagcagga actgaaagtc aagaaccgtt ctctgcgctc  26296

gctcacccgc agttgtctgt atcacaagag cgaagaccaa cttcagcgca ctctcgagga  26356
```

```
cgccgaggct ctcttcaaca agtactgcgc gctcactctt aaagagtagc ccgcgcccgc    26416

ccacacacgg aaaaaggcgg gaattacgtc accacctgcg cccttcgccc gaccatc       26473

atg  agc aaa gag att ccc  acg cct tac atg tgg  agc tac cag ccc       26518
Met  Ser Lys Glu Ile Pro  Thr Pro Tyr Met Trp  Ser Tyr Gln Pro
4520                 4525                 4530

cag  atg ggc ctg gcc gcc  ggc gcc gcc cag gac  tac tcc acc cgc       26563
Gln  Met Gly Leu Ala Ala  Gly Ala Ala Gln Asp  Tyr Ser Thr Arg
4535                 4540                 4545

atg  aac tgg ctc agt gcc  ggg ccc gcg atg atc  tca cgg gtg aat       26608
Met  Asn Trp Leu Ser Ala  Gly Pro Ala Met Ile  Ser Arg Val Asn
4550                 4555                 4560

gac  atc cgc gcc cgc cga  aac cag ata ctc cta  gaa cag tca gcg       26653
Asp  Ile Arg Ala Arg Arg  Asn Gln Ile Leu Leu  Glu Gln Ser Ala
4565                 4570                 4575

atc  gcc gcc acg ccc cgc  cat cac ctt aat ccg  cgt aat tgg ccc       26698
Ile  Ala Ala Thr Pro Arg  His His Leu Asn Pro  Arg Asn Trp Pro
4580                 4585                 4590

gcc  gcc ctg gtg tac cag  gaa att ccc cag ccc  acg acc gta cta       26743
Ala  Ala Leu Val Tyr Gln  Glu Ile Pro Gln Pro  Thr Thr Val Leu
4595                 4600                 4605

ctt  ccg cga gac gcc cag  gcc gaa gtc cag ctg  act aac tca ggt       26788
Leu  Pro Arg Asp Ala Gln  Ala Glu Val Gln Leu  Thr Asn Ser Gly
4610                 4615                 4620

gtc  cag ctg gcc ggc ggc  gcc gcc ctg tgt cgt  cac cgc ccc gct       26833
Val  Gln Leu Ala Gly Gly  Ala Ala Leu Cys Arg  His Arg Pro Ala
4625                 4630                 4635

cag  ggt ata aag cgg ctg  gtg atc cga ggc aga  ggc aca cag ctc       26878
Gln  Gly Ile Lys Arg Leu  Val Ile Arg Gly Arg  Gly Thr Gln Leu
4640                 4645                 4650

aac  gac gag gtg gtg agc  tct tcg ctg ggt ctg  cga cct gac gga       26923
Asn  Asp Glu Val Val Ser  Ser Ser Leu Gly Leu  Arg Pro Asp Gly
4655                 4660                 4665

gtc  ttc caa ctc gcc gga  tcg ggg aga tct tcc  ttc acg cct cgt       26968
Val  Phe Gln Leu Ala Gly  Ser Gly Arg Ser Ser  Phe Thr Pro Arg
4670                 4675                 4680

cag  gcc gtc ctg act ttg  gag agt tcg tcc tcg  cag ccc cgc tcg       27013
Gln  Ala Val Leu Thr Leu  Glu Ser Ser Ser Ser  Gln Pro Arg Ser
4685                 4690                 4695

ggc  ggc atc ggc act ctc  cag ttc gtg gag gag  ttc act ccc tcg       27058
Gly  Gly Ile Gly Thr Leu  Gln Phe Val Glu Glu  Phe Thr Pro Ser
4700                 4705                 4710

gtc  tac ttc aac ccc ttc  tcc ggc tcc ccc ggc  cac tac ccg gac       27103
Val  Tyr Phe Asn Pro Phe  Ser Gly Ser Pro Gly  His Tyr Pro Asp
4715                 4720                 4725

gag  ttc atc ccg aac ttc  gac gcc atc agc gag  tcg gtg gac ggc       27148
Glu  Phe Ile Pro Asn Phe  Asp Ala Ile Ser Glu  Ser Val Asp Gly
4730                 4735                 4740

tac  gat tga atg tcc cat ggt  ggc gca gct gac cta  gct cgg ctt       27193
Tyr  Asp     Met Ser His Gly  Gly Ala Ala Asp Leu  Ala Arg Leu
4745                     4750                 4755

cga cac  ctg gac cac tgc cgc  cgc ttc cgc tgc ttc  gct cgg gat       27238
```

```
Arg His  Leu Asp His Cys Arg  Arg Phe Arg Cys Phe  Ala Arg Asp
    4760                 4765                 4770

ctc gcc  gag ttt gcc tac ttt  gag ctg ccc gag gag  cac cct cag       27283
Leu Ala  Glu Phe Ala Tyr Phe  Glu Leu Pro Glu Glu  His Pro Gln
    4775                 4780                 4785

ggc cca  gcc cac gga gtg cgg  atc atc gtc gaa ggg  ggc ctc gac       27328
Gly Pro  Ala His Gly Val Arg  Ile Ile Val Glu Gly  Gly Leu Asp
    4790                 4795                 4800

tcc cac  ctg ctt cgg atc ttc  agc cag cga ccg atc  ctg gtc gag       27373
Ser His  Leu Leu Arg Ile Phe  Ser Gln Arg Pro Ile  Leu Val Glu
    4805                 4810                 4815

cgc gaa  caa gga cag acc cgt  ctg acc ctg tac tgc  atc tgc aac       27418
Arg Glu  Gln Gly Gln Thr Arg  Leu Thr Leu Tyr Cys  Ile Cys Asn
    4820                 4825                 4830

cac ccc  ggc ctg cat gaa agt  ctt tgt tgt ctg ctg  tgt act gag       27463
His Pro  Gly Leu His Glu Ser  Leu Cys Cys Leu Leu  Cys Thr Glu
    4835                 4840                 4845

tat aat  aaa agc tgagatcagc gactactccg gactcgattg tggtgttcct        27515
Tyr Asn  Lys Ser
    4850

gctatcaacc ggtccctgtt cttcaccggg aacgaaaccg agctccagct ccagtgtaag   27575

ccccacaaga agtacctcac ctggctgttc cagggctccc ccatcgccgt tgtcaaccac   27635

tgcgacaacg acggagtcct gctgagcggc cctgccaacc ttacttttc cacccgcaga    27695

agcaagctcc agctcttcca acccttcctc cccgggacct atcagtgcgt ctcgggaccc   27755

tgccatcaca ccttccacct gatcccgaat accacagcgc cgctccccgc tactaacaac   27815

caaactaacc tccaccaacg ccaccgtcgc gacctttcct ctgaatctaa taccactacc   27875

ggaggtgagc tccgaggtcg accaacctct gggatttact acggcccctg ggaggtggtg   27935

gggttaatag cgctaggcct agttgtgggt gggcttttgg ctctctgcta cctatacctc   27995

ccttgctgtt cgtacttagt ggtgctgtgt tgctggttta agaa atg ggg cag  atc    28051
                                                Met Gly Gln  Ile
                                                        4855

acc cta gtg agc  tgc ggt gtg ctg gtg  gcg gtg ctt tcg att  gtg       28096
Thr Leu Val Ser  Cys Gly Val Leu Val  Ala Val Leu Ser Ile  Val
            4860                 4865                 4870

gga ctg ggc ggc  gcg gct gta gtg aag  gag gag aag gcc gat  ccc       28141
Gly Leu Gly Gly  Ala Ala Val Val Lys  Glu Glu Lys Ala Asp  Pro
            4875                 4880                 4885

tgc ttg cat ttc  aat ccc gac aaa tgc  cag ctg agt ttt cag  ccc       28186
Cys Leu His Phe  Asn Pro Asp Lys Cys  Gln Leu Ser Phe Gln  Pro
            4890                 4895                 4900

gat ggc aat cgg  tgc gcg gtg ctg atc  aag tgc gga tgg gaa  tgc       28231
Asp Gly Asn Arg  Cys Ala Val Leu Ile  Lys Cys Gly Trp Glu  Cys
            4905                 4910                 4915

gag aac gtg aga  atc gag tac aat aac  aag act cgg aac aat  act       28276
Glu Asn Val Arg  Ile Glu Tyr Asn Asn  Lys Thr Arg Asn Asn  Thr
            4920                 4925                 4930

ctc gcg tcc gtg  tgg cag ccc ggg gac  ccc gag tgg tac acc  gtc       28321
Leu Ala Ser Val  Trp Gln Pro Gly Asp  Pro Glu Trp Tyr Thr  Val
```

```
            4935                4940                4945

tct gtc ccc ggt  gct gac ggc tcc ccg  cgc acc gtg aat aat  act       28366
Ser Val Pro Gly  Ala Asp Gly Ser Pro  Arg Thr Val Asn Asn  Thr
            4950                4955                4960

ttc att ttt gcg  cac atg tgc aac acg  gtc atg tgg atg agc  aag       28411
Phe Ile Phe Ala  His Met Cys Asn Thr  Val Met Trp Met Ser  Lys
            4965                4970                4975

cag tac gat atg  tgg ccc ccc acg aag  gag aac atc gtg gtc  ttc       28456
Gln Tyr Asp Met  Trp Pro Pro Thr Lys  Glu Asn Ile Val Val  Phe
            4980                4985                4990

tcc atc gct tac  agc ctg tgc acg gcg  cta atc acc gct atc  gtg       28501
Ser Ile Ala Tyr  Ser Leu Cys Thr Ala  Leu Ile Thr Ala Ile  Val
            4995                5000                5005

tgc ctg agc att  cac atg ctc atc gct  att cgc ccc aga aat  aat       28546
Cys Leu Ser Ile  His Met Leu Ile Ala  Ile Arg Pro Arg Asn  Asn
            5010                5015                5020

gcc gag aaa gag  aaa cag cca taacacgttt tttcacacac cttgttttta       28597
Ala Glu Lys Glu  Lys Gln Pro
            5025

cagaca atg cgt  ctg tta aat ttt tta  aac att gtg ctc agt  att gct    28645
       Met Arg  Leu Leu Asn Phe Leu  Asn Ile Val Leu Ser  Ile Ala
           5030                5035                5040

tat gcc tct  ggt tat gca aac ata  cag aaa acc ctt tat  gta gga       28690
Tyr Ala Ser  Gly Tyr Ala Asn Ile  Gln Lys Thr Leu Tyr  Val Gly
        5045                5050                5055

tct gat ggt  aca cta gag ggt acc  caa tca caa gcc aag  gtt gca       28735
Ser Asp Gly  Thr Leu Glu Gly Thr  Gln Ser Gln Ala Lys  Val Ala
        5060                5065                5070

tgg tat ttt  tat aga acc aac act  gat cca gtt aaa ctt  tgt aag       28780
Trp Tyr Phe  Tyr Arg Thr Asn Thr  Asp Pro Val Lys Leu  Cys Lys
        5075                5080                5085

ggt gaa ttg  ccg cgt aca cat aaa  act cca ctt aca ttt  agt tgc       28825
Gly Glu Leu  Pro Arg Thr His Lys  Thr Pro Leu Thr Phe  Ser Cys
        5090                5095                5100

agc aat aat  aat ctt aca ctt ttt  tca att aca aaa caa  tat act       28870
Ser Asn Asn  Asn Leu Thr Leu Phe  Ser Ile Thr Lys Gln  Tyr Thr
        5105                5110                5115

ggt act tat  tac agt aca aac ttt  cat aca gga caa gat  aaa tat       28915
Gly Thr Tyr  Tyr Ser Thr Asn Phe  His Thr Gly Gln Asp  Lys Tyr
        5120                5125                5130

tat act gtt  aag gta gaa aat cct  acc act cct aga act  acc acc       28960
Tyr Thr Val  Lys Val Glu Asn Pro  Thr Thr Pro Arg Thr  Thr Thr
        5135                5140                5145

acc acc acc  act act gca aag ccc  act gtg aaa act aca  act agg       29005
Thr Thr Thr  Thr Thr Ala Lys Pro  Thr Val Lys Thr Thr  Thr Arg
        5150                5155                5160

acc acc aca  act aca gaa acc acc  acc agc aca aca ctt  gct gca       29050
Thr Thr Thr  Thr Thr Glu Thr Thr  Thr Ser Thr Thr Leu  Ala Ala
        5165                5170                5175

act aca cac  aca cac act aag cta  acc tta cag acc act  aat gat       29095
Thr Thr His  Thr His Thr Lys Leu  Thr Leu Gln Thr Thr  Asn Asp
        5180                5185                5190
```

```
ttg atc gcc  ctg ctg caa aag ggg  gat aac agc acc act  tcc aat       29140
Leu Ile Ala  Leu Leu Gln Lys Gly  Asp Asn Ser Thr Thr  Ser Asn
        5195                 5200                 5205

gag gag ata  ccc aaa tcc atg att  ggc att att gtt gct  gta gtg       29185
Glu Glu Ile  Pro Lys Ser Met Ile  Gly Ile Ile Val Ala  Val Val
        5210                 5215                 5220

gtg tgc atg  ttg atc atc gcc ttg  tgc atg gtg tac tat  gcc ttc       29230
Val Cys Met  Leu Ile Ile Ala Leu  Cys Met Val Tyr Tyr  Ala Phe
        5225                 5230                 5235

tgc tac aga  aag cac aga ctg aac  gac aag ctg gaa cac  tta cta       29275
Cys Tyr Arg  Lys His Arg Leu Asn  Asp Lys Leu Glu His  Leu Leu
        5240                 5245                 5250

agt gtt gaa  ttt taatttttta gaacc atg aag atc cta  ggc ctt ttt       29323
Ser Val Glu  Phe                  Met Lys Ile Leu  Gly Leu Phe
        5255                                5260

agt ttt  tct atc att acc tct  gct ctt tgt gaa tca  gtg gat aga       29368
Ser Phe  Ser Ile Ile Thr Ser  Ala Leu Cys Glu Ser  Val Asp Arg
    5265                 5270                 5275

gat gtt  act att acc act ggt  tct aat tat aca ctg  aaa ggg cca       29413
Asp Val  Thr Ile Thr Thr Gly  Ser Asn Tyr Thr Leu  Lys Gly Pro
    5280                 5285                 5290

ccc tca  ggt atg ctt tcg tgg  tat tgc tat ttt gga  act gac act       29458
Pro Ser  Gly Met Leu Ser Trp  Tyr Cys Tyr Phe Gly  Thr Asp Thr
    5295                 5300                 5305

gat caa  act gaa tta tgc aat  ttt caa aaa ggc aaa  acc tca aac       29503
Asp Gln  Thr Glu Leu Cys Asn  Phe Gln Lys Gly Lys  Thr Ser Asn
    5310                 5315                 5320

tct aaa  atc tct aat tat caa  tgc aat ggc act gat  ctg ata cta       29548
Ser Lys  Ile Ser Asn Tyr Gln  Cys Asn Gly Thr Asp  Leu Ile Leu
    5325                 5330                 5335

ctc aat  gtc acg aaa gca tat  ggt ggc agt tat tat  tgc cct gga       29593
Leu Asn  Val Thr Lys Ala Tyr  Gly Gly Ser Tyr Tyr  Cys Pro Gly
    5340                 5345                 5350

caa aac  act gaa gaa atg att  ttt tac aaa gtg gaa  gtg gtt gat       29638
Gln Asn  Thr Glu Glu Met Ile  Phe Tyr Lys Val Glu  Val Val Asp
    5355                 5360                 5365

ccc act  aca cca ccc acc acc  aca act att cat acc  aca cac aca       29683
Pro Thr  Thr Pro Pro Thr Thr  Thr Thr Ile His Thr  Thr His Thr
    5370                 5375                 5380

gaa caa  aca cca gag gca aca  gaa gca gag ttg gcc  ttc cag gtt       29728
Glu Gln  Thr Pro Glu Ala Thr  Glu Ala Glu Leu Ala  Phe Gln Val
    5385                 5390                 5395

cac gga  gat tcc ttt gct gtc  aat acc cct aca ccc  gat cag cgg       29773
His Gly  Asp Ser Phe Ala Val  Asn Thr Pro Thr Pro  Asp Gln Arg
    5400                 5405                 5410

tgt ccg  ggg ccg cta gtc agc  ggc att gtc ggt gtg  ctt tcg gga       29818
Cys Pro  Gly Pro Leu Val Ser  Gly Ile Val Gly Val  Leu Ser Gly
    5415                 5420                 5425

tta gca  gtc ata atc atc tgc  atg ttc att ttt gct  tgc tgc tat       29863
Leu Ala  Val Ile Ile Ile Cys  Met Phe Ile Phe Ala  Cys Cys Tyr
    5430                 5435                 5440
```

```
aga agg  ctt tac cga caa aaa  tca gac cca ctg ctg  aac ctc tat       29908
Arg Arg  Leu Tyr Arg Gln Lys  Ser Asp Pro Leu Leu  Asn Leu Tyr
    5445                5450                5455

gtt taatttttc cagagcc atg  aag gca gtt agc gct  cta gtt ttt tgt     29958
Val                    Met  Lys Ala Val Ser Ala  Leu Val Phe Cys
                       5460                5465

tct  ttg att gac att gtt  ttt aat agt aaa att  acc aaa gtt agc       30003
Ser  Leu Ile Asp Ile Val  Phe Asn Ser Lys Ile  Thr Lys Val Ser
5470                 5475                5480

ttt  att aaa cat gtt aat  gta act gaa gga gat  aac atc aca cta       30048
Phe  Ile Lys His Val Asn  Val Thr Glu Gly Asp  Asn Ile Thr Leu
5485                 5490                5495

gca  ggt gta gaa ggt gct  caa aac acc acc tgg  aca aaa tac cat       30093
Ala  Gly Val Glu Gly Ala  Gln Asn Thr Thr Trp  Thr Lys Tyr His
5500                 5505                5510

cta  gga tgg aga gat att  tgc acc tgg aat gta  act tat tat tgc       30138
Leu  Gly Trp Arg Asp Ile  Cys Thr Trp Asn Val  Thr Tyr Tyr Cys
5515                 5520                5525

ata  gga att aat ctt acc  att gtt aac gct aac  caa tct cag aat       30183
Ile  Gly Ile Asn Leu Thr  Ile Val Asn Ala Asn  Gln Ser Gln Asn
5530                 5535                5540

ggg  tta att aaa gga cag  agt gtt agt gtg acc  agt gat ggg tac       30228
Gly  Leu Ile Lys Gly Gln  Ser Val Ser Val Thr  Ser Asp Gly Tyr
5545                 5550                5555

tat  acc cag cat agt ttt  aac tac aac att act  gtc ata cca ctg       30273
Tyr  Thr Gln His Ser Phe  Asn Tyr Asn Ile Thr  Val Ile Pro Leu
5560                 5565                5570

cct  acg cct agc cca cct  agc act acc aca cag  aca acc aca tac       30318
Pro  Thr Pro Ser Pro Pro  Ser Thr Thr Thr Gln  Thr Thr Thr Tyr
5575                 5580                5585

agt  aca tca aat cag cct  acc acc act aca gca  gca gag gtt gcc       30363
Ser  Thr Ser Asn Gln Pro  Thr Thr Thr Thr Ala  Ala Glu Val Ala
5590                 5595                5600

agc  tcg tct ggg gtc cga  gtg gca ttt ttg atg  ttg gcc cca tct       30408
Ser  Ser Ser Gly Val Arg  Val Ala Phe Leu Met  Leu Ala Pro Ser
5605                 5610                5615

agc  agt ccc act gct agt  acc aat gag cag act  act gaa ttt ttg       30453
Ser  Ser Pro Thr Ala Ser  Thr Asn Glu Gln Thr  Thr Glu Phe Leu
5620                 5625                5630

tcc  act gtc gag agc cac  acc aca gct acc tcc  agt gcc ttc tct       30498
Ser  Thr Val Glu Ser His  Thr Thr Ala Thr Ser  Ser Ala Phe Ser
5635                 5640                5645

agc  acc gcc aat ctc tcc  tcg ctt tcc tct aca  cca atc agc ccc       30543
Ser  Thr Ala Asn Leu Ser  Ser Leu Ser Ser Thr  Pro Ile Ser Pro
5650                 5655                5660

gct  act act cct agc ccc  gct cct ctt ccc act  ccc ctg aag caa       30588
Ala  Thr Thr Pro Ser Pro  Ala Pro Leu Pro Thr  Pro Leu Lys Gln
5665                 5670                5675

aca  gac ggc ggc atg caa  tgg cag atc acc ctg  ctc att gtg atc       30633
Thr  Asp Gly Gly Met Gln  Trp Gln Ile Thr Leu  Leu Ile Val Ile
5680                 5685                5690

ggg  ttg gtc atc ctg gcc  gtg ttg ctc tac tac  atc ttc tgc cgc       30678
```

```
Gly  Leu Val Ile Leu Ala  Val Leu Leu Tyr Tyr  Ile Phe Cys Arg
5695                 5700                 5705

cgc  att ccc aac gcg cac  cgc aag ccg gcc tac  aag ccc atc gtt       30723
Arg  Ile Pro Asn Ala His  Arg Lys Pro Ala Tyr  Lys Pro Ile Val
5710                 5715                 5720

atc  ggg cag ccg gag ccg  ctt cag gtg gaa ggg  ggt cta agg aat       30768
Ile  Gly Gln Pro Glu Pro  Leu Gln Val Glu Gly  Gly Leu Arg Asn
5725                 5730                 5735

ctt  ctc ttc tct ttt aca  gta tgg tgattgaact atgattccta             30812
Leu  Leu Phe Ser Phe Thr  Val Trp
5740                 5745

gacaattctt gatcactatt cttatctgcc tcctccaagt ctgtgccacc ctcgctctgg    30872

tggccaacgc cagtccagac tgtattgggc ccttcgcctc ctacgtgctc tttgccttca    30932

tcacctgcat ctgctgctgt agcatagtct gcctgcttat caccttcttc cagttcattg    30992

actggatctt tgtgcgcatc gcctacctgc gccaccaccc ccagtaccgc gaccagcgag    31052

tggcgcagct gctcaggctc ctctgataag c atg cgg gct  ctg cta ctt ctc      31104
                                  Met Arg Ala  Leu Leu Leu Leu
                                           5750

gca  ctt ctg ctg tta gtg  ctc ccc cgt ccc gtt  gac ccc cgg ccc       31149
Ala  Leu Leu Leu Leu Val  Leu Pro Arg Pro Val  Asp Pro Arg Pro
5755                 5760                 5765

ccc  act cag tcc ccc gag  gag gtc cgc aaa tgc  aaa ttc caa gaa       31194
Pro  Thr Gln Ser Pro Glu  Glu Val Arg Lys Cys  Lys Phe Gln Glu
5770                 5775                 5780

ccc  tgg aaa ttc ctc aaa  tgc tac cgc caa aaa  tca gac atg cat       31239
Pro  Trp Lys Phe Leu Lys  Cys Tyr Arg Gln Lys  Ser Asp Met His
5785                 5790                 5795

ccc  agc tgg atc atg atc  att ggg atc gtg aac  att ctg gcc tgc       31284
Pro  Ser Trp Ile Met Ile  Ile Gly Ile Val Asn  Ile Leu Ala Cys
5800                 5805                 5810

acc  ctc atc tcc ttt gtg  att tac ccc tgc ttt  gac ttt ggt tgg       31329
Thr  Leu Ile Ser Phe Val  Ile Tyr Pro Cys Phe  Asp Phe Gly Trp
5815                 5820                 5825

aac  tcg cca gag gcg ctc  tat ctc ccg cct gaa  cct gac aca cca       31374
Asn  Ser Pro Glu Ala Leu  Tyr Leu Pro Pro Glu  Pro Asp Thr Pro
5830                 5835                 5840

cca  cag caa cct cag gca  cac gca cta cca cca  cca cca cag cct       31419
Pro  Gln Gln Pro Gln Ala  His Ala Leu Pro Pro  Pro Pro Gln Pro
5845                 5850                 5855

agg  cca caa tac atg ccc  ata tta gac tat gag  gcc gag cca cag       31464
Arg  Pro Gln Tyr Met Pro  Ile Leu Asp Tyr Glu  Ala Glu Pro Gln
5860                 5865                 5870

cga  ccc atg ctc ccc gct  att agt tac ttc aat  cta acc ggc gga       31509
Arg  Pro Met Leu Pro Ala  Ile Ser Tyr Phe Asn  Leu Thr Gly Gly
5875                 5880                 5885

gat  gac tgacccactg gccaacaaca acgtcaacga ccttctcctg gacatggacg      31565
Asp  Asp
5890

gccgcgcctc ggagcagcga ctcgcccaac ttcgcattcg ccagcagcag gagagagccg    31625
```

```
tcaaggagct gcaggacggc atagccatcc accagtgcaa gaaaggcatc ttctgcctgg    31685

tgaaacaggc caagatctcc tacgaggtca cccagaccga ccatcgcctc tcctacgagc    31745

tcctgcagca gcgccagaag ttcacctgcc tggtcggagt caaccccatc gtcatcaccc    31805

agcagtcggg cgataccaag gggtgcatcc actgctcctg cgactccccc gactgcgtcc    31865

acactctgat caagaccctc tgcggcctcc gcgacctcct ccccatgaac taatcacccc    31925

cttatccagt gaaataaaga tcatattgat gattaaataa aaaaaataat catttgattt    31985

gaaataaaga tacaatcata ttgatgattt gagtttaata aaaataaaga atcacttact    32045

tgaaatctga taccaggtct ctgtccatgt tttctgccaa caccacttca ctcccctctt    32105

cccagctctg gtactgcagg ccccggcggg ctgcaaactt cctccacacc ctgaagggga    32165

tgtcaaattc ctcctgtccc tcaatcttca ttttatcttc tatcag atg tcc aaa        32220
                                                    Met Ser Lys

aag  cgc gtc cgg gtg gat  gat gac ttc gac ccc  gtc tac ccc tac       32265
Lys  Arg Val Arg Val Asp  Asp Asp Phe Asp Pro  Val Tyr Pro Tyr
5895                 5900                 5905

gat  gca gac aac gca ccg  acc gtg ccc ttc atc  aac ccc ccc ttc       32310
Asp  Ala Asp Asn Ala Pro  Thr Val Pro Phe Ile  Asn Pro Pro Phe
5910                 5915                 5920

gtc  tct tca gat gga ttc  caa gag aag ccc ctg  ggg gtg ctg tcc       32355
Val  Ser Ser Asp Gly Phe  Gln Glu Lys Pro Leu  Gly Val Leu Ser
5925                 5930                 5935

ctg  cgt ctg gcc gat ccc  gtc acc acc aag aac  ggg gaa atc acc       32400
Leu  Arg Leu Ala Asp Pro  Val Thr Thr Lys Asn  Gly Glu Ile Thr
5940                 5945                 5950

ctc  aag ctg gga gat ggg  gtg gac ctc gac gac  tcg gga aaa ctc       32445
Leu  Lys Leu Gly Asp Gly  Val Asp Leu Asp Asp  Ser Gly Lys Leu
5955                 5960                 5965

atc  tcc aac acg gcc acc  aag gcc gcc gcc cct  ctc agt ttt tcc       32490
Ile  Ser Asn Thr Ala Thr  Lys Ala Ala Ala Pro  Leu Ser Phe Ser
5970                 5975                 5980

aac  aac acc att tcc ctt  aac atg gat acc cct  ctt tac aac aac       32535
Asn  Asn Thr Ile Ser Leu  Asn Met Asp Thr Pro  Leu Tyr Asn Asn
5985                 5990                 5995

aat  gga aag cta ggt atg  aag gta acc gca cca  tta aag ata tta       32580
Asn  Gly Lys Leu Gly Met  Lys Val Thr Ala Pro  Leu Lys Ile Leu
6000                 6005                 6010

gac  aca gat cta cta aaa  aca ctt gtt gtt gct  tat ggg cag gga       32625
Asp  Thr Asp Leu Leu Lys  Thr Leu Val Val Ala  Tyr Gly Gln Gly
6015                 6020                 6025

tta  gga aca aac acc aat  ggt gct ctt gtt gcc  caa cta gca tac       32670
Leu  Gly Thr Asn Thr Asn  Gly Ala Leu Val Ala  Gln Leu Ala Tyr
6030                 6035                 6040

cca  ctt gtt ttt aat acc  gct agc aaa att gcc  ctt aat tta ggc       32715
Pro  Leu Val Phe Asn Thr  Ala Ser Lys Ile Ala  Leu Asn Leu Gly
6045                 6050                 6055

aat  gga cca tta aaa gtg  gat gca aat aga ctg  aac att aat tgc       32760
Asn  Gly Pro Leu Lys Val  Asp Ala Asn Arg Leu  Asn Ile Asn Cys
6060                 6065                 6070
```

```
aaa  aga ggt atc tat gtc  act acc aca aaa gat  gca ctg gag att       32805
Lys  Arg Gly Ile Tyr Val  Thr Thr Thr Lys Asp  Ala Leu Glu Ile
6075                 6080                 6085

aat  atc agt tgg gca aat  gct atg aca ttt ata  gga aat gcc att       32850
Asn  Ile Ser Trp Ala Asn  Ala Met Thr Phe Ile  Gly Asn Ala Ile
6090                 6095                 6100

ggt  gtc aat att gac aca  aaa aaa ggc cta cag  ttc ggc act tca       32895
Gly  Val Asn Ile Asp Thr  Lys Lys Gly Leu Gln  Phe Gly Thr Ser
6105                 6110                 6115

agc  act gaa aca gat gtt  aaa aat gct ttt cca  ctc caa gta aaa       32940
Ser  Thr Glu Thr Asp Val  Lys Asn Ala Phe Pro  Leu Gln Val Lys
6120                 6125                 6130

ctt  gga gct ggt ctt aca  ttt gac agc aca ggt  gcc att gtt gct       32985
Leu  Gly Ala Gly Leu Thr  Phe Asp Ser Thr Gly  Ala Ile Val Ala
6135                 6140                 6145

tgg  aac aaa gaa gat gac  aaa ctt aca ctg tgg  acc aca gcc gat       33030
Trp  Asn Lys Glu Asp Asp  Lys Leu Thr Leu Trp  Thr Thr Ala Asp
6150                 6155                 6160

cca  tct cca aac tgt cac  ata tat tct gca aag  gat gct aag ctt       33075
Pro  Ser Pro Asn Cys His  Ile Tyr Ser Ala Lys  Asp Ala Lys Leu
6165                 6170                 6175

aca  ctc tgc ttg aca aag  tgt ggt agt cag ata  ctg ggc act gtt       33120
Thr  Leu Cys Leu Thr Lys  Cys Gly Ser Gln Ile  Leu Gly Thr Val
6180                 6185                 6190

tct  ctc ata gct gtt gat  act ggt agc tta aat  cca ata aca gga       33165
Ser  Leu Ile Ala Val Asp  Thr Gly Ser Leu Asn  Pro Ile Thr Gly
6195                 6200                 6205

caa  gta acc act gct ctt  gtt tca ctt aaa ttc  gat gcc aat gga       33210
Gln  Val Thr Thr Ala Leu  Val Ser Leu Lys Phe  Asp Ala Asn Gly
6210                 6215                 6220

gtt  ttg caa acc agt tca  aca ttg gac aaa gaa  tat tgg aat ttt       33255
Val  Leu Gln Thr Ser Ser  Thr Leu Asp Lys Glu  Tyr Trp Asn Phe
6225                 6230                 6235

aga  aaa gga gat gtg aca  cct gct gag cca tat  act aat gct ata       33300
Arg  Lys Gly Asp Val Thr  Pro Ala Glu Pro Tyr  Thr Asn Ala Ile
6240                 6245                 6250

ggt  ttt atg ccc aat ata  aag gca tat ccg aaa  aac aca aat tca       33345
Gly  Phe Met Pro Asn Ile  Lys Ala Tyr Pro Lys  Asn Thr Asn Ser
6255                 6260                 6265

gct  gca aaa agt cac att  gtg gga aaa gta tac  cta cat ggg gaa       33390
Ala  Ala Lys Ser His Ile  Val Gly Lys Val Tyr  Leu His Gly Glu
6270                 6275                 6280

gta  agc aag cca cta gac  ttg ata att aca ttt  aat gaa acc agt       33435
Val  Ser Lys Pro Leu Asp  Leu Ile Ile Thr Phe  Asn Glu Thr Ser
6285                 6290                 6295

aat  gaa acc tgt acc tat  tgc att aac ttt cag  tgg cag tgg gga       33480
Asn  Glu Thr Cys Thr Tyr  Cys Ile Asn Phe Gln  Trp Gln Trp Gly
6300                 6305                 6310

act  gac aaa tat aaa aat  gaa acg ctt gct gtc  agt tca ttc acc       33525
Thr  Asp Lys Tyr Lys Asn  Glu Thr Leu Ala Val  Ser Ser Phe Thr
6315                 6320                 6325
```

```
ttt  tcc tac att gcc caa  gaa taaacccgcc ctgcatgtca accccattgt      33576
Phe  Ser Tyr Ile Ala Gln  Glu
6330                 6335

tcccaccact atggaaaact ctgaagcaga aaaataaagt tcaagtgttt tattgattca   33636

acagttttca cagaattcga gtagttattt ttcctccacc ctcccaggac atggaataca   33696

ccaccctctc cccccgcaca gccttgaaca tctgaatgtc attggtgatg gacatgcttt   33756

tggtctccac attccacaca gtttcagagc gagccagtct cgggtcggtc agggagatga   33816

aaccctccgg gcactcccgc atctgcacct caaagttcag tagctgaggg ctgtcctcgg   33876

tggtcgggat cacggttatc tggaagaagc agaagagcgg cggtgggaat catagtccgc   33936

gaacgggatc ggccggtggt gtcgcatcag gccccgcagc agtcgctgtc gccgccgctc   33996

cgtcaaactg ctgctcaggg ggtccgggtc cagggactcc ctcagcatga tgcccacggc   34056

cctcagcatc agtcgcctgg tgcggcgggc gcagcagcgc atgcggatct cgctcaggtc   34116

gctgcagtac gtgcaacaca ggaccaccag gttgttcaac agtccatagt tcaacacgct   34176

ccagccgaaa ctcatcgcgg gaaggatgct acccacgtgg ccgtcgtacc agatcctcag   34236

gtaaatcaag tggcgctccc tccagaacac gctgcccaca tacatgatct ccttgggcat   34296

gtggtggttc accacctccc ggtaccacat caccctctgg ttgaacatgc agccccggat   34356

gatcctgcgg aaccacaggg ccagcaccgc cccgcccgcc atgcagcgaa gagaccccgg   34416

gtcccggcaa tggcaatgga ggacccaccg ctcgtacccg tggatcatct gggagctgaa   34476

caagtctatg ttggcacagc acaggcacac gctcatgcat ctcttcagca ctctcagctc   34536

ctcgggggtc aaaaccatat cccagggcac ggggaactct tgcaggacag cgaaccccgc   34596

agaacagggc aatcctcgca cataacttac attgtgcatg gacagggtat cgcaatcagg   34656

cagcaccggg tgatcctcca ccagagaagc gcgggtctcg gtttcctcac agcgtggtaa   34716

gggggccggc cgatacgggt gatggcggga cgcggctgat cgtgttctcg accgtgtcat   34776

gatgcagttg ctttcggaca ttttcgtact tgctgtagca gaacctggtc cgggcgctgc   34836

acaccgatcg ccggcggcgg tctcggcgct tggaacgctc ggtgttgaaa ttgtaaaaca   34896

gccactctct cagaccgtgc agcagatcta gggcctcagg agtgatgaag atcccatcat   34956

gcctgatggc tctgatcaca tcgaccaccg tggaatgggc cagacccagc cagatgatgc   35016

aattttgttg ggtttcggtg acggcggggg agggaagaac aggaagaacc atgattaact   35076

tttaatccaa acggtctcgg agcacttcaa aatgaaggtc gcggagatgg cacctctcgc   35136

ccccgctgtg ttggtggaaa ataacagcca ggtcaaaggt gatacggttc tcgagatgtt   35196

ccacggtggc ttccagcaaa gcctccacgc gcacatccag aaacaagaca atagcgaaag   35256

cgggagggtt ctctaattcc tcaatcatca tgttacactc ctgcaccatc cccagataat   35316

tttcattttt ccagccttga atgattcgaa ctagttcctg aggtaaatcc aagccagcca   35376

tgataaagag ctcgcgcaga gcgccctcca ccggcattct taagcacacc ctcataattc   35436

caagagattc tgctcctggt tcacctgcag cagattaaca aggggaatat caaaatctct   35496

gccgcgatct ctaagctcct ccctcagcaa taactgcaag tactctttca tatcttctcc   35556
```

gaaattttta gccatagggc cgccaggaat gagagcaggg caagccacat tacagataaa 35616

gcgaagtcct ccccagtgag cattgccaaa tgtaagattg aaataagcat gctggctaga 35676

cccggtgata tcttccagat aactggacag aaaatcaggc aagcaatttt taagaaaatc 35736

aacaaaagaa aagtcgtcca ggtgcaagtt tagagcctca ggaacaacga tggaataagt 35796

gcaaggagtg cgttccagca tggttagtgt ttttttggtg atctgtagaa caaaaaataa 35856

acatgcaata ttaaaccatg ctagcctggc gaacaggtgg gtaaatcact ctttccagca 35916

ccaggcaggc tacggggtct ccggcgcgac cctcgtagaa gctgtcgcca tgattgaaaa 35976

gcatcaccga aagactttcc cggtggccgg catggatgat tcgcgaagac gcgtacactc 36036

cgggaacatt ggcatccgtg agtgaaaaaa atcgccccaa gaagccccga ggcactacaa 36096

tgctcaacct taattccagc agagcgaccc catgcggatg aagcacaaaa ttggtaggtg 36156

cgtaaaaaat gtaattactc ccctcctgca caggcagcaa agcccccgct ccctccagaa 36216

acacatacaa agcctcagcg tccatagctt accgagcacg gcaggcgcaa gattcagaga 36276

aaaggctgag ctctaacctg actgcccgct cctgagctca atatatagcc ctaacctaca 36336

ctgacgtaaa ggccaaagtc taaaaatacc cgccaaaatg acacacacgc ccagcacacg 36396

cccagaaacc ggtgacacac tcaaaaaaat acgtgcgctt cctcaaacgc ccaaaccggc 36456

gtcatttccg ggttcccacg ctacgtcacc gctcagcgac tttcaaattt cgtcgaccgt 36516

taaacacgtc actcgccccg cccctaacgg tcgccgctcc cacagccaat caccttcctc 36576

catccccaaa ttcaaacggc tcatttgcat attaacgcgc accaaaagtt tgaggtatat 36636

tatwkakrww g 36647

<210> 51
<211> 191
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 51

Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Gln Thr Arg Gln Leu
1 5 10 15

Leu Glu Asn Ser Ser Glu Gly Val Ser Tyr Leu Trp Arg Phe Cys Phe
20 25 30

Ala Gly Pro Leu Ala Lys Leu Val Tyr Arg Ala Lys Gln Asp Tyr Arg
35 40 45

Glu Gln Phe Glu Asp Ile Leu Arg Glu Cys Pro Gly Ile Phe Asp Ser
50 55 60

Leu Asn Leu Gly His Gln Ser His Phe Asn Gln Ser Ile Leu Arg Ala
65 70 75 80

```
Leu Asp Phe Ser Thr Pro Gly Arg Thr Thr Ala Ala Val Ala Phe Phe
                85                  90                  95

Ala Phe Ile Leu Asp Lys Trp Ser Gln Glu Thr His Phe Ser Arg Asp
            100                 105                 110

Tyr Arg Leu Asp Cys Leu Ala Val Ala Leu Trp Arg Thr Trp Arg Cys
        115                 120                 125

Gln Arg Leu Asn Ala Ile Ser Gly Tyr Leu Pro Val Gln Pro Val Asp
    130                 135                 140

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

Gln Gln Pro Gln Gln Glu Gln Gln Gln Glu Glu Glu Asp Arg Glu Glu
                165                 170                 175

Asn Pro Arg Ala Gly Leu Asp Pro Pro Val Ala Glu Glu Glu Glu
            180                 185                 190
```

<210> 52
<211> 392
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 52

```
Met His Pro Val Leu Arg Gln Met Arg Pro His Pro Pro Pro Gln Pro
1               5                  10                  15

Pro Leu Pro Gln Gln Gln Gln Gln Pro Ala Leu Leu Pro Pro Pro Gln
            20                  25                  30

Gln Gln Gln Gln Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala
        35                  40                  45

Gly Val Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg
    50                  55                  60

Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys Arg
65                  70                  75                  80

Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp Arg
                85                  90                  95

Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ser Arg Phe His Ala Gly
            100                 105                 110

Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp Glu
        115                 120                 125
```

```
Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala His
    130                 135                 140

Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys Glu
145                 150                 155                 160

Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu Ile
                165                 170                 175

Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu Leu
            180                 185                 190

Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu
        195                 200                 205

Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Thr Phe Arg Glu Ala
    210                 215                 220

Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu Val
225                 230                 235                 240

Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu Ser
                245                 250                 255

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

Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu
        275                 280                 285

Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu Thr
    290                 295                 300

Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg Ala
305                 310                 315                 320

Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met His
                325                 330                 335

Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser Tyr
            340                 345                 350

Phe Asp Met Gly Ala Asp Leu Arg Trp Gln Pro Ser Arg Arg Ala Leu
        355                 360                 365

Glu Ala Ala Gly Gly Val Pro Tyr Val Glu Glu Val Asp Asp Glu Glu
    370                 375                 380

Glu Glu Gly Glu Tyr Leu Glu Asp
385                 390
```

<210> 53
<211> 586
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 53

Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu
1 5 10 15

Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala
20 25 30

Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg
35 40 45

Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val
50 55 60

Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn
65 70 75 80

Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val
85 90 95

Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val
100 105 110

Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser
115 120 125

Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala
130 135 140

Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln
145 150 155 160

Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu
165 170 175

Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln
180 185 190

Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys
195 200 205

Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala
210 215 220

Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu
225 230 235 240

```
Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu
                245                 250                 255

Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val
            260                 265                 270

Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly
        275                 280                 285

Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr
    290                 295                 300

Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu
305                 310                 315                 320

Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met
                325                 330                 335

Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn
            340                 345                 350

Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu
        355                 360                 365

Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr
    370                 375                 380

Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr
385                 390                 395                 400

Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp
                405                 410                 415

Val Asp Ser Ser Val Phe Ser Pro Arg Pro Thr Thr Thr Val Trp Lys
            420                 425                 430

Lys Glu Gly Gly Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly Arg Ala
        435                 440                 445

Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro Ser Leu
    450                 455                 460

Pro Phe Ser Leu Asn Ser Val Arg Ser Ser Asp Leu Gly Arg Leu Thr
465                 470                 475                 480

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

Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu Ser Leu
            500                 505                 510
```

```
Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala His Glu His Arg Asp
        515                 520                 525

Glu Pro Arg Ala Ser Ser Ser Thr Gly Ala Arg Arg Arg Gln Arg His
    530                 535                 540

Asp Arg Gln Arg Gly Leu Val Trp Asp Asp Glu Asp Ser Ala Asp Asp
545                 550                 555                 560

Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe Ala
                565                 570                 575

His Leu Arg Pro Arg Ile Gly Arg Leu Met
            580                 585
```

<210> 54
<211> 539
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 54

```
Met Met Arg Arg Val Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1               5                   10                  15

Val Met Gln Gln Ala Val Ala Ala Ala Met Gln Pro Pro Leu Glu Ala
            20                  25                  30

Pro Tyr Val Pro Pro Arg Tyr Leu Ala Pro Thr Glu Gly Arg Asn Ser
        35                  40                  45

Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg Leu Tyr
    50                  55                  60

Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr Gln Asn
65                  70                  75                  80

Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp Phe Thr
                85                  90                  95

Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg Ser Arg
            100                 105                 110

Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro Asn Val
        115                 120                 125

Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met Val Ser
    130                 135                 140

Arg Lys Thr Pro Asn Gly Val Thr Val Thr Asp Gly Ser Gln Asp Glu
145                 150                 155                 160
```

```
Leu Thr Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly Asn Phe Ser
                165                 170                 175

Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile Asp Asn Tyr
            180                 185                 190

Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp Ile Gly Val
        195                 200                 205

Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro Val Thr Glu
    210                 215                 220

Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His Pro Asp Ile
225                 230                 235                 240

Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser Arg Leu Ser
                245                 250                 255

Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu Gly Phe Gln
            260                 265                 270

Ile Leu Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala Leu Leu Asp
        275                 280                 285

Val Glu Ala Tyr Glu Lys Ser Lys Glu Glu Ala Ala Ala Ala Ala Thr
    290                 295                 300

Ala Ala Val Ala Thr Ala Ala Thr Thr Asp Ala Asp Ala Ala Thr Thr
305                 310                 315                 320

Thr Arg Gly Asp Thr Phe Ala Thr Gln Ala Glu Glu Ala Ala Ala Leu
                325                 330                 335

Ala Ala Thr Asp Asp Ser Glu Ser Lys Ile Val Ile Lys Pro Val Glu
            340                 345                 350

Lys Asp Ser Lys Asp Arg Ser Tyr Asn Val Leu Ser Asp Gly Lys Asn
        355                 360                 365

Thr Ala Tyr Arg Ser Trp Tyr Leu Ala Tyr Asn Tyr Gly Asp Pro Glu
    370                 375                 380

Lys Gly Val Arg Ser Trp Thr Leu Leu Thr Thr Ser Asp Val Thr Cys
385                 390                 395                 400

Gly Val Glu Gln Val Tyr Trp Ser Leu Pro Asp Met Met Gln Asp Pro
                405                 410                 415

Val Thr Phe Arg Ser Thr Arg Gln Val Ser Asn Tyr Pro Val Val Gly
            420                 425                 430
```

```
Ala Glu Leu Leu Pro Val Tyr Ser Lys Ser Phe Phe Asn Glu Gln Ala
        435                 440                 445

Val Tyr Ser Gln Gln Leu Arg Ala Phe Thr Ser Leu Thr His Val Phe
    450                 455                 460

Asn Arg Phe Pro Glu Asn Gln Ile Leu Val Arg Pro Pro Ala Pro Thr
465                 470                 475                 480

Ile Thr Thr Val Ser Glu Asn Val Pro Ala Leu Thr Asp His Gly Thr
                485                 490                 495

Leu Pro Leu Arg Ser Ser Ile Arg Gly Val Gln Arg Val Thr Val Thr
            500                 505                 510

Asp Ala Arg Arg Arg Thr Cys Pro Tyr Val Tyr Lys Ala Leu Gly Val
        515                 520                 525

Val Ala Pro Arg Val Leu Ser Ser Arg Thr Phe
    530                 535
```

<210> 55
<211> 194
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 55

```
Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1               5                   10                  15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
            20                  25                  30

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
        35                  40                  45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
    50                  55                  60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Ala Ser Thr
65                  70                  75                  80

Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
                85                  90                  95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
            100                 105                 110

Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
        115                 120                 125
```

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ser
130 135 140

Ser Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala
145 150 155 160

Ala Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val
165 170 175

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

Arg Thr

<210> 56
<211> 346
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 56

Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1 5 10 15

Glu Ile Tyr Gly Pro Ala Ala Ala Val Lys Glu Glu Arg Lys Pro Arg
20 25 30

Lys Leu Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Glu Asp Asp Gly
35 40 45

Leu Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln Trp
50 55 60

Arg Gly Arg Lys Val Lys Pro Val Leu Arg Pro Gly Thr Thr Val Val
65 70 75 80

Phe Thr Pro Gly Glu Arg Ser Gly Ser Ala Ser Lys Arg Ser Tyr Asp
85 90 95

Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu Gln Ala Ala Glu Arg Leu
100 105 110

Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Pro Ala Pro Leu Lys Glu
115 120 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
130 135 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Ser Ala Ala Pro Arg Arg

145 150 155 160

Gly Phe Lys Arg Glu Gly Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu
165 170 175

Met Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu His Met Lys
180 185 190

Val Asp Pro Glu Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln
195 200 205

Val Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr
210 215 220

Glu Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr
225 230 235 240

Met Glu Val Gln Thr Asp Pro Trp Met Pro Ala Pro Ala Ser Thr Thr
245 250 255

Thr Arg Arg Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn
260 265 270

Tyr Ala Leu His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg Gly Thr
275 280 285

Arg Phe Tyr Arg Gly Tyr Ser Ser Arg Arg Lys Thr Thr Thr Arg Arg
290 295 300

Arg Arg Arg Arg Thr Arg Arg Ser Thr Thr Ala Thr Ser Ala Ala Ala
305 310 315 320

Leu Val Arg Arg Val Tyr Arg Ser Gly Arg Glu Pro Leu Thr Leu Pro
325 330 335

Arg Ala Arg Tyr His Pro Ser Ile Ala Ile
340 345

<210> 57
<211> 77
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 57

Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1 5 10 15

Arg Lys Pro Arg Arg Arg Arg Leu Thr Gly Asn Gly Leu Arg Arg His
20 25 30

```
His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
        35                  40                  45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
    50                  55                  60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65                  70                  75
```

<210> 58
<211> 239
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 58

```
Met Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg
1               5                   10                  15

Pro Phe Met Gly Thr Trp Ser Asp Ile Gly Asn Ser Gln Leu Asn Gly
            20                  25                  30

Gly Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly
        35                  40                  45

Ser Thr Leu Lys Thr Tyr Gly Asn Lys Ala Trp Asn Ser Ser Thr Gly
    50                  55                  60

Gln Ala Leu Arg Glu Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val
65                  70                  75                  80

Val Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn
                85                  90                  95

Gln Ala Val Gln Lys Gln Ile Asn Ser Arg Leu Asp Ala Val Pro Pro
            100                 105                 110

Ala Gly Ser Val Glu Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu
        115                 120                 125

Asp Lys Arg Gly Asp Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu
    130                 135                 140

Leu Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu
145                 150                 155                 160

Gly Leu Pro Thr Thr Arg Pro Ile Ala Pro Leu Ala Thr Gly Val Leu
                165                 170                 175

Lys Pro Glu Ser Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Pro Thr
            180                 185                 190
```

Ser Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Arg Ala
195 200 205

Arg Pro Gly Ser Arg Pro Gln Ala Asn Trp Gln Ser Thr Leu Asn Ser
210 215 220

Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg Arg Arg Cys Tyr
225 230 235

<210> 59
<211> 944
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 59

Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65 70 75 80

Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Ser Ser Gln Trp Glu Gln Thr Glu Asn Gly Gly Gly Gln
130 135 140

Ala Thr Thr Lys Thr His Thr Tyr Gly Val Ala Pro Met Gly Gly Thr
145 150 155 160

Asn Ile Thr Val Asp Gly Leu Gln Ile Gly Thr Asp Ala Thr Ala Asp
165 170 175

Thr Glu Lys Pro Ile Tyr Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln
180 185 190

```
Ile Gly Glu Glu Asn Trp Gln Glu Thr Glu Ser Phe Tyr Gly Gly Arg
        195                 200                 205

Ala Leu Lys Lys Asp Thr Asn Met Lys Pro Cys Tyr Gly Ser Phe Ala
    210                 215                 220

Arg Pro Thr Asn Glu Lys Gly Gly Gln Ala Lys Leu Lys Val Gly Ala
225                 230                 235                 240

Asp Gly Leu Pro Thr Lys Glu Phe Asp Ile Asp Leu Ala Phe Phe Asp
                245                 250                 255

Thr Pro Gly Gly Thr Val Thr Gly Gly Thr Glu Glu Tyr Lys Ala Asp
            260                 265                 270

Ile Val Met Tyr Thr Glu Asn Thr Tyr Leu Glu Thr Pro Asp Thr His
        275                 280                 285

Val Val Tyr Lys Pro Gly Lys Asp Asn Thr Ser Ser Lys Ile Asn Leu
    290                 295                 300

Val Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Gly Phe Arg Asp
305                 310                 315                 320

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
                325                 330                 335

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
            340                 345                 350

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Leu Gly Asp
        355                 360                 365

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp
    370                 375                 380

Pro Asp Val Arg Ile Ile Glu Asn His Gly Val Glu Asp Glu Leu Pro
385                 390                 395                 400

Asn Tyr Cys Phe Pro Leu Asp Gly Ser Gly Thr Asn Ala Ala Tyr Gln
                405                 410                 415

Gly Val Lys Val Lys Asn Gly Gln Asp Gly Asp Val Glu Ser Glu Trp
            420                 425                 430

Glu Lys Asp Asp Thr Val Ala Ala Arg Asn Gln Leu Cys Lys Gly Asn
        435                 440                 445

Ile Phe Ala Met Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe
    450                 455                 460
```

```
Leu Tyr Ser Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr
465                 470                 475                 480

Pro Ala Asn Ile Thr Leu Pro Thr Asn Thr Asn Thr Tyr Asp Tyr Met
                485                 490                 495

Asn Gly Arg Val Val Pro Pro Ser Leu Val Asp Ala Tyr Ile Asn Ile
            500                 505                 510

Gly Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn Pro Phe Asn
        515                 520                 525

His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn
    530                 535                 540

Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala
545                 550                 555                 560

Ile Lys Ser Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn
                565                 570                 575

Phe Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp
            580                 585                 590

Leu Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr
        595                 600                 605

Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala
    610                 615                 620

Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser
625                 630                 635                 640

Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro
                645                 650                 655

Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe
            660                 665                 670

Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp
        675                 680                 685

Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe
    690                 695                 700

Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser
705                 710                 715                 720

Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu
                725                 730                 735
```

```
Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn
            740                 745                 750

Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile
        755                 760                 765

Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr
    770                 775                 780

Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu
785                 790                 795                 800

Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn
                805                 810                 815

Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln
            820                 825                 830

Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val
        835                 840                 845

Thr Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg
    850                 855                 860

Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu
865                 870                 875                 880

Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn
                885                 890                 895

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

Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile
        915                 920                 925

Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
    930                 935                 940


<210>  60
<211>  208
<212>  PRT
<213>  Unknown

<220>
<223>  Synthetic Construct

<400>  60

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

Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys Arg
            20                  25                  30
```

```
Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val Asn
        35                  40                  45

Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala Trp
    50                  55                  60

Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe Ser
65                  70                  75                  80

Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu Leu
                85                  90                  95

Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu Lys
            100                 105                 110

Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu Phe
        115                 120                 125

Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro Met
    130                 135                 140

Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly Met
145                 150                 155                 160

Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu Ala
                165                 170                 175

Leu Tyr Arg Phe Leu Asn Ala His Ser Ala Tyr Phe Arg Ser His Arg
            180                 185                 190

Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Gln Asp Met
        195                 200                 205


<210>  61
<211>  803
<212>  PRT
<213>  Unknown

<220>
<223>  Synthetic Construct

<400>  61

Met Glu Thr Gln Pro Ser Ser Pro Thr Ser Pro Ser Ala Pro Ala Ser
1               5                   10                  15

Thr Ala Asp Glu Asn Gln Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro
            20                  25                  30

Pro Ser Pro Thr Ser Asp Ala Ala Ala Pro Asp Met Gln Glu Met Glu
        35                  40                  45

Glu Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His Glu
    50                  55                  60
```

```
Glu Glu Leu Ala Ala Arg Phe Ser Ala Pro Glu Glu Asn His Gln Glu
65                  70                  75                  80

Gln Pro Glu Gln Glu Ala Glu Asn Glu Gln Asn Gln Ala Gly His Glu
                85                  90                  95

His Gly Asp Tyr Leu Ser Gly Ala Glu Asp Val Leu Ile Lys His Leu
            100                 105                 110

Ala Arg Gln Cys Ile Ile Val Lys Asp Ala Leu Leu Asp Arg Ala Glu
        115                 120                 125

Val Pro Leu Ser Val Ala Glu Leu Ser Arg Ala Tyr Glu Arg Asn Leu
    130                 135                 140

Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr Cys Glu
145                 150                 155                 160

Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro Glu Ala
                165                 170                 175

Leu Ala Thr Tyr His Leu Phe Phe Lys Asn Gln Arg Ile Pro Val Ser
            180                 185                 190

Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Phe Asn Leu Gly Pro
        195                 200                 205

Gly Ala Arg Leu Pro Asp Ile Ala Ser Leu Glu Glu Val Pro Lys Ile
    210                 215                 220

Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala Leu Gln
225                 230                 235                 240

Gly Glu Gly Gly Glu His Glu His His Ser Ala Leu Val Glu Leu Glu
                245                 250                 255

Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu Leu Thr
            260                 265                 270

His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met Ser Ala
        275                 280                 285

Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Ile Ser Glu Asp
    290                 295                 300

Glu Gly Met Gln Asp Pro Glu Ser Thr Glu Asp Gly Lys Pro Val Val
305                 310                 315                 320

Ser Asp Glu Gln Leu Ala Arg Trp Leu Gly Pro Asn Ala Ser Pro Gln
                325                 330                 335
```

```
Ser Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr
            340                 345                 350

Val Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu
        355                 360                 365

Arg Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val
    370                 375                 380

Arg Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser
385                 390                 395                 400

Tyr Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His
                405                 410                 415

Thr Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val
            420                 425                 430

Tyr Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln
        435                 440                 445

Gln Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln
    450                 455                 460

Lys Asn Leu Lys Gly Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala
465                 470                 475                 480

Ser Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu
                485                 490                 495

Arg Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe
            500                 505                 510

Arg Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser
        515                 520                 525

Ala Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro
    530                 535                 540

Pro Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala
545                 550                 555                 560

Tyr His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu
                565                 570                 575

Cys His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys
            580                 585                 590

Asn Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu
        595                 600                 605
```

```
Gln Gly Pro Ser Asp Glu Gly Ser Ala Ala Lys Gly Gly Leu Lys Leu
    610                 615                 620

Thr Pro Gly Leu Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu
625                 630                 635                 640

Asp Tyr His Pro Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro
                645                 650                 655

Pro Lys Ala Glu Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu
            660                 665                 670

Ala Gln Leu Gln Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys
        675                 680                 685

Lys Gly Arg Gly Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn
    690                 695                 700

Pro Gly Phe Pro Gln Asp Ala Pro Arg Lys Gln Glu Ala Glu Ser Gly
705                 710                 715                 720

Ala Ala Ala Arg Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Gln Ser
                725                 730                 735

Gly Arg Gly Gly Gly Asp Gly Gly Arg Leu Gly Gln His Ser Gly Arg
            740                 745                 750

Gly Gly Gln Pro Ala Arg Gln Ser Gly Gly Arg Arg Gly Gly Gly Arg
        755                 760                 765

Gly Gly Arg Ser Ser Arg Arg Gln Thr Val Val Leu Gly Gly Gly Glu
    770                 775                 780

Ser Lys Gln His Gly Tyr His Leu Arg Ser Gly Ser Gly Ser Arg Ser
785                 790                 795                 800

Ala Pro Gln
```

<210> 62
<211> 227
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 62

```
Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1               5                   10                  15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
            20                  25                  30
```

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala Arg Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Ile Ala Ala Thr
50 55 60

Pro Arg His His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
100 105 110

Ala Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
115 120 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
130 135 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Leu Ala Gly Ser Gly Arg Ser
145 150 155 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
165 170 175

Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
180 185 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
195 200 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
210 215 220

Gly Tyr Asp
225

<210> 63
<211> 106
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 63

Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1 5 10 15

His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Ala
20 25 30

```
Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
        35                  40                  45

Arg Ile Ile Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
    50                  55                  60

Ser Gln Arg Pro Ile Leu Val Glu Arg Glu Gln Gly Gln Thr Arg Leu
65                  70                  75                  80

Thr Leu Tyr Cys Ile Cys Asn His Pro Gly Leu His Glu Ser Leu Cys
                85                  90                  95

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
            100                 105
```

<210> 64
<211> 176
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 64

```
Met Gly Gln Ile Thr Leu Val Ser Cys Gly Val Leu Val Ala Val Leu
1               5                   10                  15

Ser Ile Val Gly Leu Gly Gly Ala Ala Val Val Lys Glu Glu Lys Ala
            20                  25                  30

Asp Pro Cys Leu His Phe Asn Pro Asp Lys Cys Gln Leu Ser Phe Gln
        35                  40                  45

Pro Asp Gly Asn Arg Cys Ala Val Leu Ile Lys Cys Gly Trp Glu Cys
    50                  55                  60

Glu Asn Val Arg Ile Glu Tyr Asn Asn Lys Thr Arg Asn Asn Thr Leu
65                  70                  75                  80

Ala Ser Val Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
                85                  90                  95

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

Ala His Met Cys Asn Thr Val Met Trp Met Ser Lys Gln Tyr Asp Met
        115                 120                 125

Trp Pro Pro Thr Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
    130                 135                 140

Leu Cys Thr Ala Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
```

145 150 155 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
165 170 175

<210> 65
<211> 228
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 65

Met Arg Leu Leu Asn Phe Leu Asn Ile Val Leu Ser Ile Ala Tyr Ala
1 5 10 15

Ser Gly Tyr Ala Asn Ile Gln Lys Thr Leu Tyr Val Gly Ser Asp Gly
20 25 30

Thr Leu Glu Gly Thr Gln Ser Gln Ala Lys Val Ala Trp Tyr Phe Tyr
35 40 45

Arg Thr Asn Thr Asp Pro Val Lys Leu Cys Lys Gly Glu Leu Pro Arg
50 55 60

Thr His Lys Thr Pro Leu Thr Phe Ser Cys Ser Asn Asn Asn Leu Thr
65 70 75 80

Leu Phe Ser Ile Thr Lys Gln Tyr Thr Gly Thr Tyr Tyr Ser Thr Asn
85 90 95

Phe His Thr Gly Gln Asp Lys Tyr Tyr Thr Val Lys Val Glu Asn Pro
100 105 110

Thr Thr Pro Arg Thr Thr Thr Thr Thr Thr Thr Thr Ala Lys Pro Thr
115 120 125

Val Lys Thr Thr Thr Arg Thr Thr Thr Thr Thr Glu Thr Thr Thr Ser
130 135 140

Thr Thr Leu Ala Ala Thr Thr His Thr His Thr Lys Leu Thr Leu Gln
145 150 155 160

Thr Thr Asn Asp Leu Ile Ala Leu Leu Gln Lys Gly Asp Asn Ser Thr
165 170 175

Thr Ser Asn Glu Glu Ile Pro Lys Ser Met Ile Gly Ile Ile Val Ala
180 185 190

Val Val Val Cys Met Leu Ile Ile Ala Leu Cys Met Val Tyr Tyr Ala
195 200 205

```
Phe Cys Tyr Arg Lys His Arg Leu Asn Asp Lys Leu Glu His Leu Leu
    210                 215                 220

Ser Val Glu Phe
225
```

<210> 66
<211> 203
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 66

```
Met Lys Ile Leu Gly Leu Phe Ser Phe Ser Ile Ile Thr Ser Ala Leu
1               5                   10                  15

Cys Glu Ser Val Asp Arg Asp Val Thr Ile Thr Thr Gly Ser Asn Tyr
            20                  25                  30

Thr Leu Lys Gly Pro Pro Ser Gly Met Leu Ser Trp Tyr Cys Tyr Phe
        35                  40                  45

Gly Thr Asp Thr Asp Gln Thr Glu Leu Cys Asn Phe Gln Lys Gly Lys
    50                  55                  60

Thr Ser Asn Ser Lys Ile Ser Asn Tyr Gln Cys Asn Gly Thr Asp Leu
65                  70                  75                  80

Ile Leu Leu Asn Val Thr Lys Ala Tyr Gly Gly Ser Tyr Tyr Cys Pro
                85                  90                  95

Gly Gln Asn Thr Glu Glu Met Ile Phe Tyr Lys Val Glu Val Val Asp
            100                 105                 110

Pro Thr Thr Pro Pro Thr Thr Thr Thr Ile His Thr Thr His Thr Glu
        115                 120                 125

Gln Thr Pro Glu Ala Thr Glu Ala Glu Leu Ala Phe Gln Val His Gly
    130                 135                 140

Asp Ser Phe Ala Val Asn Thr Pro Thr Pro Asp Gln Arg Cys Pro Gly
145                 150                 155                 160

Pro Leu Val Ser Gly Ile Val Gly Val Leu Ser Gly Leu Ala Val Ile
                165                 170                 175

Ile Ile Cys Met Phe Ile Phe Ala Cys Cys Tyr Arg Arg Leu Tyr Arg
            180                 185                 190

Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
        195                 200
```

<210> 67
<211> 288
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 67

Met Lys Ala Val Ser Ala Leu Val Phe Cys Ser Leu Ile Asp Ile Val
1 5 10 15

Phe Asn Ser Lys Ile Thr Lys Val Ser Phe Ile Lys His Val Asn Val
20 25 30

Thr Glu Gly Asp Asn Ile Thr Leu Ala Gly Val Glu Gly Ala Gln Asn
35 40 45

Thr Thr Trp Thr Lys Tyr His Leu Gly Trp Arg Asp Ile Cys Thr Trp
50 55 60

Asn Val Thr Tyr Tyr Cys Ile Gly Ile Asn Leu Thr Ile Val Asn Ala
65 70 75 80

Asn Gln Ser Gln Asn Gly Leu Ile Lys Gly Gln Ser Val Ser Val Thr
85 90 95

Ser Asp Gly Tyr Tyr Thr Gln His Ser Phe Asn Tyr Asn Ile Thr Val
100 105 110

Ile Pro Leu Pro Thr Pro Ser Pro Pro Ser Thr Thr Thr Gln Thr Thr
115 120 125

Thr Tyr Ser Thr Ser Asn Gln Pro Thr Thr Thr Thr Ala Ala Glu Val
130 135 140

Ala Ser Ser Ser Gly Val Arg Val Ala Phe Leu Met Leu Ala Pro Ser
145 150 155 160

Ser Ser Pro Thr Ala Ser Thr Asn Glu Gln Thr Thr Glu Phe Leu Ser
165 170 175

Thr Val Glu Ser His Thr Thr Ala Thr Ser Ser Ala Phe Ser Ser Thr
180 185 190

Ala Asn Leu Ser Ser Leu Ser Ser Thr Pro Ile Ser Pro Ala Thr Thr
195 200 205

Pro Ser Pro Ala Pro Leu Pro Thr Pro Leu Lys Gln Thr Asp Gly Gly
210 215 220

Met Gln Trp Gln Ile Thr Leu Leu Ile Val Ile Gly Leu Val Ile Leu
225 230 235 240

```
Ala Val Leu Leu Tyr Tyr Ile Phe Cys Arg Arg Ile Pro Asn Ala His
                245                 250                 255

Arg Lys Pro Ala Tyr Lys Pro Ile Val Ile Gly Gln Pro Glu Pro Leu
            260                 265                 270

Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser Phe Thr Val Trp
        275                 280                 285
```

<210> 68
<211> 144
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 68

```
Met Arg Ala Leu Leu Leu Leu Ala Leu Leu Leu Leu Val Leu Pro Arg
1               5                   10                  15

Pro Val Asp Pro Arg Pro Pro Thr Gln Ser Pro Glu Glu Val Arg Lys
            20                  25                  30

Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Lys Cys Tyr Arg Gln Lys
        35                  40                  45

Ser Asp Met His Pro Ser Trp Ile Met Ile Ile Gly Ile Val Asn Ile
    50                  55                  60

Leu Ala Cys Thr Leu Ile Ser Phe Val Ile Tyr Pro Cys Phe Asp Phe
65                  70                  75                  80

Gly Trp Asn Ser Pro Glu Ala Leu Tyr Leu Pro Pro Glu Pro Asp Thr
                85                  90                  95

Pro Pro Gln Gln Pro Gln Ala His Ala Leu Pro Pro Pro Pro Gln Pro
            100                 105                 110

Arg Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala Glu Pro Gln Arg
        115                 120                 125

Pro Met Leu Pro Ala Ile Ser Tyr Phe Asn Leu Thr Gly Gly Asp Asp
    130                 135                 140
```

<210> 69
<211> 445
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 69

```
Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
1               5                  10                  15

Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
            20                  25                  30

Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
        35                  40                  45

Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
    50                  55                  60

Lys Leu Gly Asp Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser
65                  70                  75                  80

Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
                85                  90                  95

Ile Ser Leu Asn Met Asp Thr Pro Leu Tyr Asn Asn Asn Gly Lys Leu
            100                 105                 110

Gly Met Lys Val Thr Ala Pro Leu Lys Ile Leu Asp Thr Asp Leu Leu
        115                 120                 125

Lys Thr Leu Val Val Ala Tyr Gly Gln Gly Leu Gly Thr Asn Thr Asn
    130                 135                 140

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

Ser Lys Ile Ala Leu Asn Leu Gly Asn Gly Pro Leu Lys Val Asp Ala
                165                 170                 175

Asn Arg Leu Asn Ile Asn Cys Lys Arg Gly Ile Tyr Val Thr Thr Thr
            180                 185                 190

Lys Asp Ala Leu Glu Ile Asn Ile Ser Trp Ala Asn Ala Met Thr Phe
        195                 200                 205

Ile Gly Asn Ala Ile Gly Val Asn Ile Asp Thr Lys Lys Gly Leu Gln
    210                 215                 220

Phe Gly Thr Ser Ser Thr Glu Thr Asp Val Lys Asn Ala Phe Pro Leu
225                 230                 235                 240

Gln Val Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile
                245                 250                 255

Val Ala Trp Asn Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala
            260                 265                 270
```

```
Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Ala Lys Asp Ala Lys Leu
        275                 280                 285

Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser
    290                 295                 300

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

Thr Thr Ala Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Val Leu Gln
                325                 330                 335

Thr Ser Ser Thr Leu Asp Lys Glu Tyr Trp Asn Phe Arg Lys Gly Asp
            340                 345                 350

Val Thr Pro Ala Glu Pro Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn
        355                 360                 365

Ile Lys Ala Tyr Pro Lys Asn Thr Asn Ser Ala Ala Lys Ser His Ile
    370                 375                 380

Val Gly Lys Val Tyr Leu His Gly Glu Val Ser Lys Pro Leu Asp Leu
385                 390                 395                 400

Ile Ile Thr Phe Asn Glu Thr Ser Asn Glu Thr Cys Thr Tyr Cys Ile
                405                 410                 415

Asn Phe Gln Trp Gln Trp Gly Thr Asp Lys Tyr Lys Asn Glu Thr Leu
            420                 425                 430

Ala Val Ser Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu
        435                 440                 445
```

<210> 70
<211> 31920
<212> DNA
<213> Unknown

<220>
<223> Simian adenovirus A1331

<220>
<221> CDS
<222> (1906)..(3414)
<223> E1b\55K

<220>
<221> CDS
<222> (25586)..(26131)
<223> 22K

<220>
<221> CDS
<222> (27432)..(28055)
<223> E3\CR1-alpha

<220>

<221> CDS
<222> (31511)..(31915)
<223> E3\14.7K

<400> 70
cwwymtmwat aatatacctc aaacttttgg tgcgcgttaa tatgcaaatg agccgtttga 60

atttggggat ggaggaaggt gattggctgt gggagcggcg accgttaggg gcggggcggg 120

tgacgttttg atgacgtggc catgaggcgg agccggtttg caagttctcg tgggaaaagt 180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca 240

ggaaatgagg tgtttctggg cggatgcaag tgaaaacggg ccattttcgc gcgaaaactg 300

aatgaggaag tgaaaatctg agtaattccg cgtttatggc agggaggagt atttgccgag 360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtatttt tcacctaaat 420

ttccgcgtac ggtgtcaaag tccggtgttt ttacgtaggt gtcagctgat cgccagggta 480

tttaaacctg cgctctctag tcaagaggcc actcttgagt gccagcgagt agagttttct 540

cctccgcgcc gcgagtcaga tctacacttt gaaagatgag gcacctgaga gacctgcccg 600

gtaatgtttt cctggctact gggaacgaga ttctggaact ggtggtggac gccatgatgg 660

gtgacgaccc tcccgagccc cctaccccat ttgaggcgcc ttcgctgtac gatttgtatg 720

atctggaggt ggatgtgtcc gagaacgacc ccaacgagga ggcggtgaat gatttgttta 780

gcgatgccgc gctgctggct gccgagcagg ctaatacgga ctctggctca gacagcgatt 840

cctctctcca taccccgaga cccggcagag gtgagaaaaa gatccccgag cttaaagggg 900

aagagctcga cctgcgctgc tatgaggaat gcttgcctcc gagcgatgat gaggaggacg 960

aggaggcgat tcgagctgca gcgagcgagg gagtgaaagt tgcgggcgag agctttagcc 1020

tggactgtcc tactctgccc ggacacggct gtaagtcttg tgaatttcat cgcatgaata 1080

ctggagataa gaatgtgatg tgtgccctgt gctatatgag agcttacaac cattgtgttt 1140

acagtaagtg tgattaactt tagttgggaa aggcagaggg tgactgggtg ctgactggtt 1200

tatttatgta tatgtttttt atgtgtaggt cccgtctctg acgcagatga gacccccact 1260

tcagagtgca tttcatcacc cccagaaatt ggcgaggaac cgcccgaaga tattattcat 1320

agaccagttg cagtgagagt caccgggcgg agagcagctg tggagagttt ggatgacttg 1380

ctacagggtg gggatgaacc tttggacttg tgtacccgga aacgccccag gcactaagtg 1440

ccacacatgt gtgtttactt aaggtgatgt cagtatttat agggtgtgga gtgcaataaa 1500

aatatgtgtt gactttaagt gcgtgtttta tgactcaggg gtggggactg tgggtatata 1560

agcaggtgca gacctgtgtg gtcagttcag agcaggactc atggagatct ggacagtctt 1620

ggaagacttt caccagacta gacagctgct agagaactca tcggagggag tctcttacct 1680

gtggagattc tgcttcgctg ggcctctagc taagctagtc tatagggcca agcaggatta 1740

tagggaacaa tttgaggata ttttgagaga gtgtcctggt atttttgact ctctcaactt 1800

gggccatcag tctcacttta accagagtat tctgagagcc cttgactttt ctactcctgg 1860

cagaactacc gccgcggtag cctttttttgc ctttatcctt gacaa atg gag tca aga 1917
Met Glu Ser Arg

```
aac cca ttt cag cag gga tta ccg tct gga ctg ctt agc agt agc ttt       1965
Asn Pro Phe Gln Gln Gly Leu Pro Ser Gly Leu Leu Ser Ser Ser Phe
5                   10                  15                  20

gtg gag aac atg gag gtg cca gcg cct gaa tgc aat ctc cgg cta ctt       2013
Val Glu Asn Met Glu Val Pro Ala Pro Glu Cys Asn Leu Arg Leu Leu
                25                  30                  35

gcc agt aca gcc ggt aga cac gct gag gat cct gag tct cca gtc acc       2061
Ala Ser Thr Ala Gly Arg His Ala Glu Asp Pro Glu Ser Pro Val Thr
            40                  45                  50

cca gga aca cca acg ccg cca gca gcc gca gca gga gca gca gca aga       2109
Pro Gly Thr Pro Thr Pro Pro Ala Ala Ala Ala Gly Ala Ala Ala Arg
        55                  60                  65

gga gga gga ccg aga aga gaa ccc gag agc cgg tct gga ccc tcc ggt       2157
Gly Gly Gly Pro Arg Arg Glu Pro Glu Ser Arg Ser Gly Pro Ser Gly
    70                  75                  80

ggc gga gga gga gga gta gct gac ttg ttt ccc gag ctg cgc cgg gtg       2205
Gly Gly Gly Gly Gly Val Ala Asp Leu Phe Pro Glu Leu Arg Arg Val
85                  90                  95                  100

ctg act agg tct tcc agt gga cgg gag agg ggg att aag cgg gag agg       2253
Leu Thr Arg Ser Ser Ser Gly Arg Glu Arg Gly Ile Lys Arg Glu Arg
                105                 110                 115

cat gag gag act agc cac aga act gaa ctg act gtc agt ctg atg agc       2301
His Glu Glu Thr Ser His Arg Thr Glu Leu Thr Val Ser Leu Met Ser
            120                 125                 130

cgc agg cgc cca gaa tcg gtg tgg tgg cat gag gtt cag tcg cag ggg       2349
Arg Arg Arg Pro Glu Ser Val Trp Trp His Glu Val Gln Ser Gln Gly
        135                 140                 145

gta gat gag gtc tcg gtg atg cat gag aaa tat tcc cta gaa caa gtc       2397
Val Asp Glu Val Ser Val Met His Glu Lys Tyr Ser Leu Glu Gln Val
    150                 155                 160

aag act tgt tgg ttg gag ccc gag gat gat tgg gag gta gcc atc agg       2445
Lys Thr Cys Trp Leu Glu Pro Glu Asp Asp Trp Glu Val Ala Ile Arg
165                 170                 175                 180

aat tat gcc aag ctg gct ctg agg cca gac aag aag tac aag att acc       2493
Asn Tyr Ala Lys Leu Ala Leu Arg Pro Asp Lys Lys Tyr Lys Ile Thr
                185                 190                 195

aaa ctg att aat atc aga aat tcc tgc tac att tca ggg aat ggg gcc       2541
Lys Leu Ile Asn Ile Arg Asn Ser Cys Tyr Ile Ser Gly Asn Gly Ala
            200                 205                 210

gag gtg gag atc agt acc cag gag agg gtg gct ttc aga tgc tgc atg       2589
Glu Val Glu Ile Ser Thr Gln Glu Arg Val Ala Phe Arg Cys Cys Met
        215                 220                 225

atg aat atg tac ccg ggg gtg gtg ggc atg gag gga gtc acc ttt atg       2637
Met Asn Met Tyr Pro Gly Val Val Gly Met Glu Gly Val Thr Phe Met
    230                 235                 240

aac gcg agg ttc agg ggt gat ggg tat aat ggg gtg gtc ttt atg gcc       2685
Asn Ala Arg Phe Arg Gly Asp Gly Tyr Asn Gly Val Val Phe Met Ala
245                 250                 255                 260

aac acc aag ctg aca gtg cac gga tgc tcc ttc ttt ggc ttc aat aac       2733
Asn Thr Lys Leu Thr Val His Gly Cys Ser Phe Phe Gly Phe Asn Asn
                265                 270                 275
```

```
atg tgc atc gag gcc tgg ggc agt gtt tca gtg agg gga tgc agc ttt       2781
Met Cys Ile Glu Ala Trp Gly Ser Val Ser Val Arg Gly Cys Ser Phe
            280                 285                 290

tca gcc aac tgg atg ggg gtc gtg ggc aga acc aag agc aag gtg tca       2829
Ser Ala Asn Trp Met Gly Val Val Gly Arg Thr Lys Ser Lys Val Ser
        295                 300                 305

gtg aag aaa tgc ctg ttc gag agg tgc cac ctg ggg gtg atg agc gag       2877
Val Lys Lys Cys Leu Phe Glu Arg Cys His Leu Gly Val Met Ser Glu
    310                 315                 320

ggc gaa gcc aaa gtc aaa cac tgc gcc tct acc gag acg ggc tgc ttt       2925
Gly Glu Ala Lys Val Lys His Cys Ala Ser Thr Glu Thr Gly Cys Phe
325                 330                 335                 340

gtg tgt atc aag ggc aat gcc caa gtc aag cat aac atg atc tgt ggg       2973
Val Cys Ile Lys Gly Asn Ala Gln Val Lys His Asn Met Ile Cys Gly
                345                 350                 355

gcc tcg gat gag cgc ggc tac cag atg ctg acc tgc gcc ggt ggg aac       3021
Ala Ser Asp Glu Arg Gly Tyr Gln Met Leu Thr Cys Ala Gly Gly Asn
            360                 365                 370

agc cat atg ctg gcc acc gtg cat gtg gcc tcg cac ccc cgc aag aca       3069
Ser His Met Leu Ala Thr Val His Val Ala Ser His Pro Arg Lys Thr
        375                 380                 385

tgg ccc gag ttc gag cac aac gtc atg acc cgc tgc aat gtg cac ctg       3117
Trp Pro Glu Phe Glu His Asn Val Met Thr Arg Cys Asn Val His Leu
    390                 395                 400

ggc tcc cgc cga ggc atg ttc atg cca tac cag tgc aac atg caa ttt       3165
Gly Ser Arg Arg Gly Met Phe Met Pro Tyr Gln Cys Asn Met Gln Phe
405                 410                 415                 420

gtg aag gtg ctg ctg gag ccc gat gcc atg tcc aga gtg agc ctg gcg       3213
Val Lys Val Leu Leu Glu Pro Asp Ala Met Ser Arg Val Ser Leu Ala
                425                 430                 435

ggg gtg ttt gac atg aat gtg gag ctg tgg aaa att ctg aga tat gat       3261
Gly Val Phe Asp Met Asn Val Glu Leu Trp Lys Ile Leu Arg Tyr Asp
            440                 445                 450

gaa tcc aag acc agg tgc cgg gcc tgc gaa tgc gga ggc aag cac gcc       3309
Glu Ser Lys Thr Arg Cys Arg Ala Cys Glu Cys Gly Gly Lys His Ala
        455                 460                 465

agg ctt cag ccc gtg tgt gtg gag gtg acg gag gac ctg cga ccc gat       3357
Arg Leu Gln Pro Val Cys Val Glu Val Thr Glu Asp Leu Arg Pro Asp
    470                 475                 480

cat ttg gtg ttg tcc tgc aac ggg acg gag ttc ggc tcc agc ggg gaa       3405
His Leu Val Leu Ser Cys Asn Gly Thr Glu Phe Gly Ser Ser Gly Glu
485                 490                 495                 500

gaa tct gac tagagtgagt agtgtttggg ggcgggtggg agcctgcatg               3454
Glu Ser Asp


aggggcagaa tgactaaaat ctgtgttttt ctgtgcagca gcatgagcgg aagcgcctcc     3514

tttgagggag gggtattcag cccttatctg acggggcgtc tcccctcctg ggcgggagtg     3574

cgtcagaatg tgatgggatc tacggtggac ggccggcccg tgcagcccgc gaactcttca     3634

accctgacct acgcgaccct gagctcctcg tccgtggacg cagctgccgc cgcagctgct     3694
```

gcttccgccg ccagcgccgt gcgcggaatg gccctgggcg ccggctacta cagctctctg 3754

gtggccaact cgagttccac caataatccc gccagcctga acgaggagaa gctgctgctg 3814

ctgatggccc agctcgaggc cctgacccag cgcctgggcg agctgaccca gcaggtggct 3874

cagctgcagg cggagacgcg ggccgcggtt gccacggtga aaaccaaata aaaaatgaat 3934

caataaataa acggagacgg ttgttgattt taacacagag tcttgaatct ttatttgatt 3994

tttcgcgcgc ggtaggccct ggaccaccgg tctcgatcat tgagcacccg gtggatcttt 4054

tccaggaccc ggtagaggtg ggcttggatg ttgaggtaca tgggcatgag cccgtcccgg 4114

gggtggaggt agctccattg cagggcctcg tgctcggggg tggtgttgta aatcacccag 4174

tcatagcagg ggcgcagtgc gtggtgctgc acgatgtcct tgaggaggag actgatggcc 4234

acgggcagcc ccttggtgta ggtgttgacg aacctgttga gctgggaggg atgcatgcgg 4294

ggggagatga gatgcatctt ggcctggatc ttgagattgg cgatgttccc gcccagatcc 4354

cgccgggggt tcatgttgtg caggaccacc agcacggtgt atccggtgca cttggggaat 4414

ttgtcatgca acttggaagg gaaggcgtga aagaatttgg agacgccctt gtgaccgccc 4474

aggttttcca tgcactcatc catgatgatg gcgatgggcc cgtgggcggc ggcctgggca 4534

aagacgtttc gggggtcgga cacatcgtag ttgtggtcct gggtgagctc gtcataggcc 4594

attttaatga atttggggcg gagggtgccc gactggggga cgaaggtgcc ttcgatcccg 4654

ggggcgtagt tgccctcgca gatctgcatc tcccaggcct tgagctcgga ggggggggatc 4714

atgtccacct gcggggcgat gaaaaaaacg gtttccgggg cgggggagat gagctgcgcc 4774

gaaagcaggt tccggagcag ctgggacttg ccgcagccgg tggggccgta gatgaccccg 4834

atgaccggct gcaggtggta gttgagggag agacagctgc cgtcctcgcg taggaggggg 4894

gccacctcgt tcatcatctc gcgcacatgc atgttctcgc gcacgagttc cgccaggagg 4954

cgctcgcccc ccagcgagag gagctcttgc agcgaggcga agtttttcag cggcttgagc 5014

ccgtcggcca tgggcatttt ggagagggtc tgttgcaaga gttccagacg gtcccagagc 5074

tcggtgatgt gctctacggc atctcgatcc agcagacctc ctcgtttcgc gggttgggac 5134

gactgcggga gtagggcacc agacgatggg cgtccagcgc agccagggtc cggtccttcc 5194

agggtcgcag cgtccgcgtc agcgtggtct ccgtcacggt gaaggggtgc gcgccgggct 5254

gggcgcttgc gagggtgcgc ttcaggctca tccggctggt cgagaaccgc tcccgatcgg 5314

cgccctgcgc gtcggccagg tagcaattga ccatgagttc gtagttgagc gcctcggccg 5374

cgtggccttt ggcgcggagc ttacctttgg aagtctgccc gcaggcggga cagaggaggg 5434

acttgagggc gtagagcttg ggggcgagga agacggactc gggggcgtag gcgtccgcgc 5494

cgcagtgggc gcagacggtc tcgcactcca caagccaggt gaggtcgggc tggtcggggt 5554

caaaaaccag ttttccgccg ttctttttga tgcgtttctt acctttggtc tccatgagct 5614

cgtgtccccg ctgggtgaca aagaggctgt ccgtgtcccc gtagaccgac tttatgggcc 5674

ggtcctcgag cggtgtgcca cggtcctcct cgtagaggaa ccccgcccac tccgagacga 5734

aagcccgggt ccaggccagc acgaaggagg ccacgtggga cgggtagcgg tcgttgtcca 5794

ccagcgggtc cactttctcc agggtatgca aacacatgtc cccctcgtcc acatccagga 5854
aggtgattgg cttgtaagtg taggccacgt gaccgggggt cccggccggg ggggtataaa 5914
agggggcggg cccctgctcg tcctcactgt cttccggatc gctgtccagg agcgccagct 5974
gttggggtag gtattccctc tcgaaggcgg gcatgacctc ggcactcagg ttgtcagttt 6034
ctagaaacga ggaggatttg atattgacgg tgccgttgga gacgcctttc atgagcccct 6094
cgtccatctg gtcagaaaag acgatctttt tgttgtcgag cttggtggcg aaggagccgt 6154
agagggcgtt ggagagcagc ttggcgatgg agcgcatggt ctggttcttt tccttgtcgg 6214
cgcgctcctt ggcggcgatg ttgagctgca cgtactcgcg cgccacgcac ttccattcgg 6274
ggaagacggt ggtgagctcg tcgggcacga ttctgacccg ccagccgcgg ttgtgcaggg 6334
tgatgaggtc cacgctggtg gccacctcgc cgcgcagggg ctcgttggtc cagcagaggc 6394
gcccgccctt gcgcgagcag aaggggggca gcgggtccag catgagctcg tcgggggggt 6454
cggcgtccac ggtgaagatg ccgggcagga gctcggggtc gaagtagctg atgcaggtgc 6514
ccagatcgtc cagcgccgct tgccagtcgc gcacggccag cgcgcgctcg taggggctga 6574
ggggcgtgcc ccagggcatg gggtgcgtga gcgcggaggc gtacatgccg cagatgtcgt 6634
agacgtagag gggctcctcg aggacgccga tgtaggtggg gtagcagcgc cccccgcgga 6694
tgctggcgcg cacgtagtcg tacagctcgt gcgagggcgc gaggagcccc gcgccgaggt 6754
tggagcgctg cggcttttcg gcgcggtaga cgatctggcg gaagatggcg tgggagttgg 6814
aggagatggt gggcctctgg aagatgttga agtgggcgtg gggcaggccg accgagtccc 6874
tgatgaagtg ggcgtaggag tcctgcagct tggcgacgag ctcggcggtg acgaggacgt 6934
ccagggcgca gtagtcgagg gtctcttgga tgatgtcgta cttgagctgg cccttctgct 6994
tccacagctc gcggttgaga aggaactctt cgcggtcctt ccagtactct tcgaggggga 7054
acccgtcctg atcggcacgg taagagccca ccatgtagaa ctggttgacg gccttgtagg 7114
cgcagcagcc cttctccacg gggagggcgt aagcttgcgc ggccttgcgc agggaggtgt 7174
gggtgagggc gaaggtgtcg cgcaccatga ccttgaggaa ctggtgcttg aagtcgaggt 7234
cgtcgcagcc gccctgctcc cagagttgga agtccgtgcg cttcttgtag gcggggttgg 7294
gcaaagcgaa agtaacatcg ttgaagagga tcttgcccgc gcggggcatg aagttgcgag 7354
tgatgcggaa aggctggggc acctcggccc ggttgttgat gacctgggcg gcgaggacga 7414
tctcgtcgaa gccgttgatg ttgtgcccga cgatgtagag ttccacgaat cgcgggcggc 7474
ccttgacgtg gggcagcttc ttgagctcgt cgtaggtgag ctcggcgggg tcgctgagcc 7534
cgtgctgctc aagggcccag tcggcgacgt gggggttggc gctgaggaag gaagtccaga 7594
gatccacggc cagggcggtt tgcaagcggt cccggtactg acggaactgc tggcccacgg 7654
ccatttttc gggggtgatg cagtagaagg tgcgggggtc gccgtgccag cggtcccact 7714
tgagctggag ggcgaggtcg tgggcgagct cgacgagcgg cgggtccccg gagagtttca 7774
tgaccagcat gaaggggacg agctgcttgc cgaaggaccc catccaggtg taggtttcca 7834

catcgtaggt gaggaagagc ctttcggtgc gaggatgcga gccgatgggg aagaactgga 7894

tctcctgcca ccagttggag gaatggctgt tgatgtgatg gaagtagaaa tgccgacggc 7954

gcgccgagca ctcgtgcttg tgtttataca agcgtccgca gtgctcgcaa cgctgcacgg 8014

gatgcacgtg ctgcacgagc tgtacctggg ttcctttgac gaggaatttc agtgggcagt 8074

ggagcgctgg cggctgcatc tggtgctgta ctacgtcctg gccatcggcg tggccatcgt 8134

ctgcctcgat ggtggtcatg ctgacgagcc cgcgcgggag gcaggtccag acctcggctc 8194

ggacgggtcg gagagcgagg acgagggcgc gcaggccgga gctgtccagg gtcctgagac 8254

gctgcggagt caggtcagtg ggcagcggcg gcgcgcggtt gacttgcagg agcttttcca 8314

gggcgcgcgg gaggtccaga tggtacttga tctccacggc gccgttggtg gcgacgtcca 8374

cggcttgcag ggtcccgtgc ccctggggcg ccaccaccgt gccccgtttc ttcttgggcg 8434

ctggcgttgg cgctgcttcc atgtcggtca gaagcggcgg cgaggacgcg cgccgggcgg 8494

caggggcggc tcggggcccg gaggcagggg cggcaggggc acgtcggcgc cgcgcgcggg 8554

caggttctgg tactgcgccc ggagaagact ggcgtgagcg acgacgcgac ggttgacgtc 8614

ctggatctga cgcctctggg tgaaggccac gggacccgtg agtttgaacc tgaaagagag 8674

ttcgacagaa tcaatctcgg tatcgttgac ggcggcctgc cgcaggatct cttgcacgtc 8734

gcccgagttg tcctggtagg cgatctcggt catgaactgc tcgatctcct cctcctgaag 8794

gtctccgcgg ccggcgcgct cgacggtggc cgcgaggtcg ttggagatgc ggcccatgag 8854

ctgcgagaag gcgttcatgc cggcctcgtt ccagacgcgg ctgtagacca cggatccgtc 8914

ggggtcgcgc gcgcgcatga ccacctgggc gaggttgagc tccacgtggc gcgtgaagac 8974

cgcgtagttg cagaggcgct ggtagaggta gttgagcgtg gtggcgatgt gctcggtgac 9034

gaagaagtac atgatccagc ggcggagcgg catctcgctg acgtcgccca gggcttccaa 9094

gcgctccatg gcctcgtaga agtccacggc gaagttgaaa aactgggagt tgcgcgccga 9154

gacggtcaac tcctcctcca gaagacggat gagctcggcg atggtggcgc gcacctcgcg 9214

ctcgaaggcc ccgggggget cctcttccat ctcctcctct tcttcctcct ccactaacat 9274

ctcttctact tcctcctcag gaggcggcgg cgggggaggg ggcctgcgtc gccggcggcg 9334

cacgggcaga cggtcgatga agcgctcgat ggtctccccg cgccggcgac gcatggtctc 9394

ggtgacggcg cgcccgtcct cgcggggccg cagcgtgaag acgccgccgc gcatctccag 9454

gtggccgccg ggggggtctc cgttgggcag ggagagggcg ctgacgatgc atcttatcaa 9514

ttgacccgta gggactccgc gcaaggacct gagcgtctcg agatccacgg gatccgaaaa 9574

ccgctgaacg aaggcttcga gccagtcgca gtcgcaaggt aggctgagcc cggtttcttc 9634

ttcggggatt tgctggtcgg gaggcgggcg ggcgatgctg ctggtgatga agttgaagta 9694

ggcggtcctg agacggcgga tggtggcgag gagcaccagg tccttgggcc cggcttgctg 9754

gatgcgcaga cggtcggcca tgccccaggc gtggtcctga cacctggcga ggtccttgta 9814

gtagtcctgc atgagccgct ccacgggcac ctcctcctcg cccgcgcggc cgtgcatgcg 9874

cgtgagcccg aacccgcgct ggggctggac gagcgccagg tcggcgacga cgcgctcggc 9934

gaggatggcc tgctggatct gggtgagggt ggtctggaag tcgtcgaagt cgacgaagcg 9994
gtggtaggct ccggtgttga tggtgtagga gcagttggcc atgacggacc agttgacggt 10054
ctggtggccg gggcgcacga gctcgtggta cttgaggcgc gagtaggcgc gcgtgtcgaa 10114
gatgtagtcg ttgcaggtgc gcacgaggta ctggtatccg acgaggaagt gaggcggcgg 10174
ctggcggtag agcggccatc gctcggtggc gggggcgccg ggcgcgaggt cttcgagcat 10234
gaggcggtgg tagccgtaga tgtacctgga catccaggtg atgccagcgg cggtggtgga 10294
ggcgcgcggg aactcgcgga cgcggttcca gatgttgcgc agcggcagga agtagttcat 10354
ggtggccgcg gtctggcccg tgaggcgcgc gcagtcgtgg atgctctaga catacgggca 10414
aaaacgaaag cggtcagcgg ctcgactccg tggcctggag gctaagcgaa cgggttgggc 10474
tgcgcgtgta ccccggttcg agtccctgct cgaatcaggc tggagccgca gctaacgtgg 10534
tactggcact cccgtctcga cccaagcctg ctaacgaaac ctccaggata cggaggcggg 10594
tcgtttttg gccttggtca ctggtcatga aaaactagta agcgcggaaa gcggccgccc 10654
gcgatggctc gctgccgtag tctggagaaa gaatcgccag ggttgcgttg cggtgtgccc 10714
cggttcgagc ctcagcgctc ggcgccggcc ggattccgcg gctaacgtgg gcgtggctgc 10774
cccgtcgttt ccaagacccc ttagccagcc gacttctcca gttacggagc gagcccctct 10834
ttttcttgtg tttttgccag atgcatcccg tactgcggca gatgcgcccc caccctccac 10894
ctcaaccgcc cctaccgcag cagcagcaac agccggcgct tttgcccccg ccccagcagc 10954
agcagcagcc agccactacc gcggcggccg ccgtgagcgg agccggcgtt caatatgacc 11014
tggccttgga agagggcgag gggctggcgc ggctgggggc gtcgtcgccg gagcggcacc 11074
cgcgcgtgca gatgaaaagg gacgctcgcg aggcctacgt gcccaagcag aacctgttca 11134
gagacaggag cggcgaggag cccgaggaga tgcgcgcctc ccgcttccac gcggggcggg 11194
agctgcggcg cggcctggac cgaaagcggg tgctgaggga cgaggatttc gaggcggacg 11254
agctgacggg gatcagcccc gcgcgcgcgc acgtggccgc ggccaacctg gtcacggcgt 11314
acgagcagac cgtgaaggag gagagcaact tccaaaaatc cttcaacaac cacgtgcgca 11374
cgctgatcgc gcgcgaggag gtgaccctgg gcctgatgca cctgtgggac ctgctggagg 11434
ccatcgtgca gaaccccacg agcaagccgc tgacggcgca gctgttcctg gtggtgcagc 11494
acagtcggga caacgagacg ttcagggagg cgctgctgaa tatcaccgag cccgagggcc 11554
gctggctcct ggacctggtg aacattctgc agagcatcgt ggtgcaggag cgcgggctgc 11614
cgctgtccga gaagctggcg gccatcaact tctcggtgct gagcctgggc aagtactacg 11674
ctaggaagat ctacaagacc ccgtacgtgc ccatagacaa ggaggtgaag atcgatgggt 11734
tttacatgcg catgaccctg aaagtgctga ccctgagcga cgatctgggg gtgtaccgca 11794
acgacaggat gcaccgcgcg gtgagcgcca gccgccggcg cgagctgagc gaccaggagc 11854
tgatgcacag cctgcagcgg gccctgaccg gggccgggac cgagggggag agctactttg 11914
acatgggcgc ggacctgcgc tggcagccca gccgccgggc cttggaagct gccggcggcg 11974

tgccctacgt ggaggaggtg gacgatgagg aggaggaggg cgagtacctg gaagactgat 12034

ggcgcgaccg tatttttgct agatgcagca acagccaccg cctcctgatc ccgcgatgcg 12094

ggcggcgctg cagagccagc cgtccggcat taactcctcg gacgattgga cccaggccat 12154

gcaacgcatc atggcgctga cgacccgcaa tcccgaagcc tttagacagc agcctcaggc 12214

caaccggctc tcggccatcc tggaggccgt ggtgccctcg cgctcgaacc ccacgcacga 12274

gaaggtgctg gccatcgtga acgcgctggt ggagaacaag gccatccgcg gcgacgaggc 12334

cgggctggtg tacaacgcgc tgctggagcg cgtggcccgc tacaacagca ccaacgtgca 12394

gacgaacctg gaccgcatgg tgaccgacgt gcgcgaggcg gtgtcgcagc gcgagcggtt 12454

ccaccgcgag tcgaacctgg gctccatggt ggcgctgaac gccttcctga gcacgcagcc 12514

cgccaacgtg ccccggggcc aggaggacta caccaacttc atcagcgcgc tgcggctgat 12574

ggtggccgag gtgccccaga gcgaggtgta ccagtcgggg ccggactact tcttccagac 12634

cagtcgccag ggcttgcaga ccgtgaacct gagccaggct ttcaagaact tgcagggact 12694

gtggggcgtg caggccccgg tcggggaccg cgcgacggtg tcgagcctgc tgacgccgaa 12754

ctcgcgcctg ctgctgctgc tggtggcgcc cttcacggac agcggcagcg tgagccgcga 12814

ctcgtacctg ggctacctgc ttaacctgta ccgcgaggcc atcgggcagg cgcacgtgga 12874

cgagcagacc taccaggaga tcacccacgt gagccgcgcg ctgggccagg aggacccggg 12934

caacctggag gccaccctga acttcctgct gaccaaccgg tcgcagaaga tcccgcccca 12994

gtacgcgctg agcaccgagg aggagcgcat cctgcgctac gtgcagcaga gcgtggggct 13054

gttcctgatg caggaggggg ccacgcccag cgccgcgctc gacatgaccg cgcgcaacat 13114

ggagcccagc atgtacgccc gcaaccgccc gttcatcaat aagctgatgg actacttgca 13174

tcgggcggcc gccatgaact cggactactt taccaacgcc atcttgaacc cgcactggct 13234

cccgccgccc gggttctaca cgggcgagta cgacatgccc gaccccaacg acgggttcct 13294

gtgggacgac gtggacagca gcgtgttctc gccgcgcccc accaccaccg tgtggaagaa 13354

agagggcggg gaccggcggc cgtcctcggc gctgtccggt cgcgcgggtg ctgccgcggc 13414

ggtgcccgag gccgccagcc ccttcccgag cctgcccttt tcgctgaaca gcgtgcgcag 13474

cagcgatctg ggtcggctga cgcggccgcg cctgctgggc gaggaggagt acctgaacga 13534

ctccttgttg aggcccgagc gcgagaaaaa cttccccaat aacgggatag agagcctggt 13594

ggacaagatg agccgctgga agacgtacgc gcacgagcac agggacgagc cccgagctag 13654

cagcagcacc ggcgcccgta gacgccagcg gcacgacagg cagcggggac tggtgtggga 13714

cgatgaggat tccgccgacg acagcagcgt gttggacttg ggtgggagtg gtggtggtaa 13774

cccgttcgct cacctgcgcc cccgtatcgg gcgcctgatg taagaatctg aaaaaataaa 13834

aaaacggtac tcaccaaggc catggcgacc agcgtgcgtt cttctctgtt gtttgtagta 13894

gtatgatgag gcgcgtgtac ccggagggtc ctcctccctc gtacgagagc gtgatgcagc 13954

aggcggtggc ggcggcgatg cagcccccgc tggaggcgcc ttacgtgccc ccgcggtacc 14014

tggcgcctac ggaggggcgg aacagcattc gttactcgga gctggcaccc ttgtacgata 14074

ccacccggtt gtacctggtg gacaacaagt cggcggacat cgcctcgctg aactaccaga 14134
acgaccacag caacttcctg accaccgtgg tgcagaacaa cgatttcacc cccacggagg 14194
ccagcaccca gaccatcaac tttgacgagc gctcgcggtg gggcggccag ctgaaaacca 14254
tcatgcacac caacatgccc aacgtgaacg agttcatgta cagcaacaag ttcaaggcgc 14314
gggtgatggt ctcgcgcaag acccccaacg gggtcacagt aacagatggt agtcaggacg 14374
agctgaccta cgagtgggtg gagtttgagc tgcccgaggg caacttctcg gtgaccatga 14434
ccatcgatct gatgaacaac gccatcatcg acaactactt ggcggtggga cggcagaacg 14494
gggtgctgga gagcgacatc ggcgtgaagt tcgacacgcg caacttccgg ctgggctggg 14554
accccgtgac cgagctggtg atgccgggcg tgtacaccaa cgaggccttc caccccgaca 14614
tcgtcctgct gcccggctgc ggcgtggact tcaccgagag ccgcctcagc aacctgctgg 14674
gcatccgcaa gcggcagccc ttccaggagg gcttccagat cctgtacgag gacctggagg 14734
ggggcaacat ccccgcgctg ctggacgtcg aagcctacga gaaaagcaag gaggaggccg 14794
ccgcagcggc gaccgcggcc gtggctaccg ctgcgaccac cgatgcagat gcagctacta 14854
ctaccagggg cgatacattc gccacccagg cggaggaagc agccgcccta gcggcgaccg 14914
atgatagtga aagtaagata gtcatcaagc cggtggagaa ggacagcaag gacaggagct 14974
acaacgttct atcggatgga aagaacaccg cctaccgcag ctggtacctg gcctacaact 15034
acggcgaccc tgagaagggc gtgcgctcct ggacgctgct caccacctcg gacgtcacct 15094
gcggcgtgga gcaagtctac tggtcgctgc ccgacatgat gcaagacccg gtcaccttcc 15154
gctccacgcg tcaagttagc aactacccgg tggtgggcgc cgagctcctg cccgtctact 15214
ccaagagctt cttcaacgag caggccgtct actcgcagca gctgcgcgcc ttcacctcgc 15274
tcacgcacgt cttcaaccgc ttccccgaga accagatcct cgtccgcccg cccgcgccca 15334
ccattaccac cgtcagtgaa aacgttcctg ctctcacaga tcacgggacc ctgccgctgc 15394
gcagcagtat ccggggagtc cagcgcgtga ccgtcactga cgccagacgc cgcacctgcc 15454
cctacgtcta caaggccctg ggcgtagtcg cgccgcgcgt cctctcgagc cgcaccttct 15514
aaaaaatgtc cattctcatc tcgcccagta ataacaccgg ttggggcctg cgcgcgccca 15574
gcaagatgta cggaggcgct cgccaacgct ccacgcaaca ccccgtgcgc gtgcgcgggc 15634
acttccgcgc tccctggggc gccctcaagg gccgcgtgcg ctcgcgcacc accgtcgacg 15694
acgtgatcga ccaggtggtg gccgacgcgc gcaactacac gcccgccgcc gcgcccgcct 15754
ccaccgtgga cgccgtcatc gacagcgtgg tggccgacgc gcgccggtac gcccgcgcca 15814
agagccggcg gcggcgcatc gcccggcggc accggagcac ccccgccatg cgcgcggcgc 15874
gagccttgct gcgcagggcc aggcgcacgg gacgcagggc catgctcagg gcggccagac 15934
gcgcggcctc cggcagcagc agcgccggca ggacccgcag acgcgcggcc acggcggcgg 15994
cggcggccat cgccagcatg tcccgcccgc ggcgcggcaa cgtgtactgg gtgcgcgacg 16054
ccgccaccgg tgtgcgcgtg cccgtgcgca cccgcccccc tcgcacttga agatgctgac 16114

ttcgcgatgt tgatgtgtcc cagcggcgag gaggatgtcc aagcgcaaat tcaaggaaga 16174

gatgctccag gtcatcgcgc ctgagatcta cggccccgcg gcggcggtga aggaggaaag 16234

aaagccccgc aaactgaagc gggtcaaaaa ggacaaaaag gaggaggaag atgacggact 16294

ggtggagttt gtgcgcgagt tcgccccccg gcggcgcgtg cagtggcgcg ggcggaaagt 16354

gaaaccggtg ctgcggcccg gcaccacggt ggtcttcacg cccggcgagc gttccggctc 16414

cgcctccaag cgctcctacg acgaggtgta cggggacgag gacatcctcg agcaggcggc 16474

agagcgtctg ggcgagtttg cttacggcaa gcgcagccgc cccgcgccct tgaaagagga 16534

ggcggtgtcc atcccgctgg accacggcaa ccccacgccg agcctgaagc cggtgaccct 16594

gcagcaggtg ctgccgagcg cggcgccgcg ccggggcttc aagcgcgagg gcggcgagga 16654

tctgtacccg accatgcagc tgatggtgcc caagcgccag aagctggagg acgtgctgga 16714

gcacatgaag gtggaccccg aggtgcagcc cgaggtcaag gtgcggccca tcaagcaggt 16774

ggccccgggc ctgggcgtgc agaccgtgga catcaagatc cccacggagc ccatggaaac 16834

gcagaccgag cccgtgaagc ccagcaccag caccatggag gtgcagacgg atccctggat 16894

gccggcgccg gcttccacca ccactcgccg aagacgcaag tacggcgcgg ccagcctgct 16954

gatgcccaac tacgcgctgc atccttccat catccccacg ccgggctacc gcggcacgcg 17014

cttctaccgc ggctacagca gccgccgcaa gaccaccacc cgccgccgcc gtcgccgcac 17074

ccgccgcagc accaccgcga cttccgccgc cgccttggtg cggagagtgt accgcagcgg 17134

gcgtgagcct ctgaccctgc cgcgcgcgcg ctaccacccg agcatcgcca tttaactctg 17194

ccgtcgcctc cttgcagata tggccctcac atgccgcctc cgcgtcccca ttacgggcta 17254

ccgaggaaga aagccgcgcc gtagaaggct gacggggaac gggctgcgtc gccatcacca 17314

ccggcggcgg cgcgccatca gcaagcggtt ggggggaggc ttcctgcccg cgctgatccc 17374

catcatcgcc gcggcgatcg gggcgatccc cggcatagct tccgtggcgg tgcaggcctc 17434

tcagcgccac tgagacacag cttggaaaat ttgtaataaa aaaatggact gacgctcctg 17494

gtcctgtgat gtgtgttttt agatggaaga catcaatttt tcgtccctgg caccgcgaca 17554

cggcacgcgg ccgtttatgg gcacctggag cgacatcggc aacagccaac tgaacggggg 17614

cgccttcaat tggagcagtc tctggagcgg gcttaagaat ttcgggtcca cgctcaaaac 17674

ctatggcaac aaggcgtgga acagcagcac agggcaggcg ctgagggaaa agctgaaaga 17734

gcagaacttc cagcagaagg tggtcgatgg cctggcctcg ggcatcaacg gggtggtgga 17794

cctggccaac caggccgtgc agaaacagat caacagccgc ctggacgcgg tcccgcccgc 17854

ggggtccgtg gagatgcccc aggtggagga ggagctgcct cccctggaca agcgcggcga 17914

caagcgaccg cgtcccgacg cggaggagac gctgctgacg cacacggacg agccgccccc 17974

gtacgaggag gcggtgaaac tgggtctgcc caccacgcgg cccatcgcgc ccctggccac 18034

cggggtgctg aaacccgagt ctaagcccgc gaccctggac ttgcctcctc ccccgacctc 18094

ccgcccctcc acagtggcta agcccctgcc gccggtggcc cgcgcgcgac ccgggagccg 18154

cccgcaggcg aactggcaga gcactctgaa cagcatcgtg ggtctgggag tgcagagtgt 18214

gaagcgccgc cgctgctatt aaacataccg tagcgcttaa cttgcttgtc tgtgtgtgta 18274
tgtattatgt cgccgccgct gtccagaagg aggagtgaag aggcgcgtcg ccgagttgca 18334
agatggccac cccatcgatg ctgccccagt gggcgtacat gcacatcgcc ggacaggacg 18394
cttcggagta cctgagtccg ggtctggtgc agttcgcccg cgccacagac acctacttca 18454
gtctggggaa caagtttagg aaccccacgg tggcgcccac gcacgatgtg accaccgacc 18514
gcagccagcg gctgacgctg cgcttcgtgc ccgtggaccg cgaggacaac acctactcgt 18574
acaaagtgcg ctacacgctg gccgtgggcg acaaccgcgt gctggacatg gccagcacct 18634
actttgacat ccgcggcgtg ctggaccggg gccctagctt caaaccctac tccggcaccg 18694
cctacaacag cctggccccc aagggagctc ccaattccag tcagtgggag cagacggaga 18754
acgggggcgg acaggctacg actaaaacac acacctatgg agttgcccca atgggtggaa 18814
ctaatattac agtcgacgga ctacaaattg gaactgacgc tacagctgat acggaaaaac 18874
caatttatgc tgataaaaca ttccaacctg agcctcagat aggagaggaa aactggcaag 18934
aaactgaaag cttttatggc ggtagggctc ttaagaaaga cacaaacatg aagccttgtt 18994
atggctcatt tgccagacct accaatgaaa agggaggtca agctaaactt aaagttggag 19054
ctgatgggct gccgaccaaa gaatttgaca tagacctagc attctttgat actcctggtg 19114
gcactgtgac cggaggtaca gaggagtata aagcagatat tgttatgtat accgaaaaca 19174
cgtatctgga aactccagac acacatgtgg tgtataaacc aggcaaggat aacacaagtt 19234
ctaaaattaa cctggtccag cagtctatgc ccaacaggcc caactacatt gggtttaggg 19294
acaactttat tgggctcatg tattacaaca gcactggcaa tatgggtgtg ctggccggtc 19354
aggcttctca gttgaatgct gtggttgact tgcaagacag aaacactgaa ctgtcttacc 19414
agctcttgct tgactctttg ggtgacagaa ccaggtattt cagtatgtgg aatcaggcgg 19474
tggacagtta tgatcctgat gtgcgcatta ttgaaaacca tggtgtggaa gatgaacttc 19534
ccaactattg cttccccctg gatgggtctg gcactaacgc cgcttaccaa ggtgtgaaag 19594
taaaaaatgg tcaagatggt gatgttgaga gcgaatggga aaaagatgat actgtcgcag 19654
ctcgaaatca attatgcaag ggcaacattt ttgccatgga gatcaatctc caggccaacc 19714
tgtggagaag ttttctctac tcgaacgtgg ccctgtacct gcccgattct tacaagtaca 19774
cgccggccaa catcaccctg cccaccaaca ccaacaccta cgattacatg aacgggagag 19834
tggtgcctcc ctcgctggtg gacgcctaca tcaacatcgg ggcgcgctgg tcgctggacc 19894
ccatggacaa cgtcaatccc ttcaaccacc atcgcaacgc ggggctgcgc taccgctcca 19954
tgctcctggg caacgggcgc tacgtgccct tccacatcca ggtgccccag aaatttttcg 20014
ccattaagag cctcctgctc ctgcccgggt cctacaccta cgagtggaac ttccgcaagg 20074
acgtcaacat gatcctgcag agctccctcg gcaacgacct gcgcacggac ggggcctcca 20134
tctccttcac cagcatcaac ctctacgcca ccttcttccc catggcgcac aacaccgcct 20194
ccacgctcga ggccatgctg cgcaacgaca ccaacgacca gtccttcaac gactacctct 20254

cggcggccaa catgctctac cccatcccgg ccaacgccac caacgtgccc atctccatcc 20314

cctcgcgcaa ctgggccgcc ttccgcggct ggtccttcac gcgcctcaag accaaggaga 20374

cgccctcgct gggctccggg ttcgacccct acttcgtcta ctcgggctcc atcccctacc 20434

tcgacggcac cttctacctc aaccacacct tcaagaaggt ctccatcacc ttcgactcct 20494

ccgtcagctg gcccggcaac gaccggctcc tgacgcccaa cgagttcgaa atcaagcgca 20554

ccgtcgacgg cgagggctac aacgtggccc agtgcaacat gaccaaggac tggttcctgg 20614

tccagatgct ggcccactac aacatcggct accagggctt ctacgtgccc gagggctaca 20674

aggaccgcat gtactccttc ttccgcaact tccagcccat gagccgccag gtggtggacg 20734

aggtcaacta caaggactac caggccgtca ccctggccta ccagcacaac aactcgggct 20794

tcgtcggcta cctcgcgccc accatgcgcc agggccagcc ctaccccgcc aactacccgt 20854

acccgctcat cggcaagagc gccgtcacca gcgtcaccca gaaaaagttc ctctgcgaca 20914

gggtcatgtg gcgcatcccc ttctccagca acttcatgtc catgggcgcg ctcaccgacc 20974

tcggccagaa catgctctat gccaactccg cccacgcgct agacatgaat ttcgaagtcg 21034

accccatgga tgagtccacc cttctctatg ttgtcttcga agtcttcgac gtcgtccgag 21094

tgcaccagcc ccaccgcggc gtcatcgagg ccgtctacct gcgcaccccc ttctcggccg 21154

gtaacgccac cacctaagct cttgcttctt gcaagatggc tgagcccacg ggctccggcg 21214

agcaggagct cagggccatc atccgcgacc tgggctgcgg gccctacttc ctgggcacct 21274

tcgataagcg cttcccggga ttcatggccc cgcacaagct ggcctgcgcc atcgtcaaca 21334

cggccggccg cgagaccggg ggcgagcact ggctggcctt cgcctggaac ccgcgctcga 21394

acacctgcta cctcttcgac cccttcgggt tctcggacga gcgcctcaag cagatctacc 21454

agttcgagta cgagggcctg ctgcgccgca gcgccctggc caccgaggac cgctgcgtca 21514

ccctggaaaa gtccacccag accgtgcagg gtccgcgctc ggccgcctgc gggctctttt 21574

gctgcatgtt cctgcacgcc ttcgtgcact ggcccgaccg ccccatggac aagaacccca 21634

ccatgaactt gctgacgggg gtgcccaacg gcatgctcca gtcgccccag gtggaaccca 21694

ccctgcgccg caaccaggag gcgctctacc gcttcctcaa cgcccactcc gcctactttc 21754

gctcccaccg cgcgcgcatc gagaaggcca ccgccttcga ccgcatgaat caagacatgt 21814

aaaccgtgtg tgtgtatgtt aaaatgtctt taataaacag cactttcatg ttacacatgc 21874

atctgagatg atttatttag aaatcgaaag ggttctgccg ggtctcggca tggcccgcgg 21934

gcagggacac gttgcggaac tggtacttgg ccagccactt gaactcgggg atcagcagtt 21994

tcggcagcgg ggtgtcgggg aaggagtcgg tccacagctt ccgcgtcagt tgcagggcgc 22054

ccagcaggtc gggcgcggag atcttgaaat cgcagttggg acccgcgttc tgcgcgcgag 22114

agttgcggta cacggggttg cagcactgga acaccatcag ggccgggtgc ttcacgctcg 22174

ccagcaccgt cgcgtcggtg atgccctcca cgtccagatc ctcggcgttg gccatcccga 22234

agggggtcat cttgcaggtc tgccgcccca tgctgggcac gcagccgggc ttgtggttgc 22294

aatcgcagtg caggggggatc agcatcatct gggcctgctc ggagctcatg cccgggtaca 22354

tggccttcat gaaagcctcc agctggcgga aggcctgctg cgccttgccg ccctcggtga 22414
agaagacccc gcaggacttg ctagagaact ggttggtagc gcagcccgcg tcgtgcacgc 22474
agcagcgcgc gtcgttgttg gccagctgca ccacgctgcg cccccagcgg ttctgggtga 22534
tcttggcccg gtcggggttc tccttcagcg cgcgctgccc gttctcgctc gccacatcca 22594
tctcgatcgt gtgctccttc tggatcatca cggtcccgtg caggcaccgc agcttgccct 22654
cggcctcggt gcagccgtgc agccacagcg cgcagccggt gctctcccag ttcttgtggg 22714
cgatctggga gtgcgagtgc acgaagccct gcaggaagcg gcccatcatc gcggtcaggg 22774
tcttgttgct ggtgaaggtc agcgggatgc cgcggtgctc ctcgttcaca tacaggtggc 22834
agatgcggcg gtacacctcg ccctgctcgg gcatcagctg gaaggcggac ttcaggtcgc 22894
tctccacgcg gtaccggtcc atcagcagcg tcatcacttc catgcccttc tcccaggccg 22954
agacgatcgg caggctcagg gggttcttca ccgccattgt catcttagtc gccgccgccg 23014
aggtcagggg gtcgttctcg tccagggtct caaacactcg cttgccgtcc ttctcgatga 23074
tgcgcacggg gggaaagctg aagcccacgg ccgccagctc ctcctcggcc tgcctttcgt 23134
cctcgctgtc ctggctgatg tcttgcaaag gcacatgctt ggtcttgcgg ggtttctttt 23194
tgggcggcag aggcggcggc gatgtgctgg gcgagcgcga gttctcgctc accacgacta 23254
tttcttctcc ttggccgtcg tccgagacca cgcggcggta ggcatgcctc ttctggggca 23314
gaggcggagg cgacgggctc tcgcggttcg gcgggcggct ggcagagccc cttccgcgtt 23374
cgggggtgcg ctcctggcgg cgctgctctg actgacttcc tccgcggccg gccattgtgt 23434
tctcctaggg agcaacaaca agcatggaga ctcagccatc gtcgccaaca tcgccatctg 23494
cccccgcctc caccgccgac gagaaccagc agcagaatga aagcttaacc gccccgccgc 23554
ccagccccac ctccgacgcc gcggccccag acatgcaaga gatggaggaa tccatcgaga 23614
ttgacctggg ctacgtgacg cccgcggagc acgaggagga gctggcagcg cgcttttcag 23674
ccccggaaga gaaccaccaa gagcagccag agcaggaagc agagaacgag cagaaccagg 23734
ctgggcacga gcatggcgac tacctgagcg gggcagagga cgtgctcatc aagcatctgg 23794
cccgccaatg catcatcgtc aaggacgcgc tgctcgaccg cgccgaggtg cccctcagcg 23854
tggcggagct cagccgcgcc tacgagcgca acctcttctc gccgcgcgtg ccccccaagc 23914
gccagcccaa cggcacctgt gagcccaacc cgcgcctcaa cttctacccg gtcttcgcgg 23974
tgcccgaggc cctggccacc taccacctct ttttcaagaa ccaaagaatc cccgtctcct 24034
gccgcgccaa ccgcacccgc gccgacgccc ttttcaacct gggccccggc gcccgcctac 24094
ctgatatcgc ctccttggaa gaggttccca agatcttcga gggtctgggc agcgacgaga 24154
ctcgggccgc gaacgctctg caaggagaag gaggagagca tgagcaccac agcgccctgg 24214
tcgagttgga aggcgacaac gcgcggctgg cggtgctcaa acgcacggtc gagctgaccc 24274
atttcgccta cccggctctg aacctgcccc ccaaagtcat gagcgccgtc atggaccagg 24334
tgctcatcaa gcgcgcgtcg cccatctccg aggacgaggg catgcaagac cccgagagca 24394

```
ccgaggatgg caagcccgtg gtcagcgacg agcagctggc ccggtggctg ggtcctaatg    24454

ctagtcccca gagtttggaa gagcggcgca agctcatgat ggccgtggtc ctggtgaccg    24514

tggagctgga gtgcctgcgc cgcttcttcg ccgacgcgga gaccctgcgc aaggtcgagg    24574

agaacctgca ctacctcttc aggcacgggt tcgtgcgcca ggcctgcaag atctccaacg    24634

tggagctgac caacctggtc tcctacatgg gcatcttgca cgagaaccgt ctggggcaga    24694

acgtgctgca caccaccctg cgcggggagg cccgccgcga ctacatccgc gactgcgtct    24754

acctctacct ctgccacacc tggcagacgg gcatgggcgt gtggcagcag tgcctggagg    24814

agcagaacct gaaagagctc tgcaagctcc tgcagaagaa cctcaagggt ctgtggaccg    24874

ggttcgacga gcggaccacc gcctcggatc tggccgacct catcttcccc gagcgcctca    24934

ggctgacgct gcgcaacggc ctgcccgact ttatgagcca aagcatgttg caaaactttc    24994

gctctttcat cctcgaacgc tccggaatcc tgcccgccac ctgctccgcg ctgccctcgg    25054

acttcgtgcc gctgaccttc cgcgagtgcc ccccgccgct gtggagccac tgctacctgc    25114

tgcgcctggc caactacctg gcctaccact cggacgtgat cgaggacgtc agcggcgagg    25174

gcctgctcga gtgccactgc cgctgcaacc tctgcacgcc gcaccgctcc ctggcctgca    25234

acccccagct gctgagcgag acccagatca tcggcacctt cgagttgcaa gggcccagcg    25294

atgagggttc cgccgccaag gggggtctga aactcacccc ggggctgtgg acctcggcct    25354

acttgcgcaa gttcgtgccc gaggactacc atcccttcga gatcaggttc tacgaggacc    25414

aatcccagcc gcccaaggcc gagctgtcgg cctgcgtcat cacccagggg gcgatcctgg    25474

cccaattgca agccatccag aaatcccgcc aagaattctt gctgaaaaag ggccgcgggg    25534

tctacctcga cccccagacc ggtgaggagc tcaaccccgg cttcccccag g atg ccc     25591
                                                          Met Pro
                                                              505

cga gga aac aag aag ctg aaa gtg gag ctg ccg ccc gtg gag gat ttg      25639
Arg Gly Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val Glu Asp Leu
                510                 515                 520

gag gaa gac tgg gag aac agc agt cag gca gag gag gag gag atg gag      25687
Glu Glu Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Glu Glu Met Glu
            525                 530                 535

gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa gac agt      25735
Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
        540                 545                 550

ctg gag gaa gac gag gag gag gca gag gtg gaa gaa gca gcc gcc gcc      25783
Leu Glu Glu Asp Glu Glu Glu Ala Glu Val Glu Glu Ala Ala Ala Ala
    555                 560                 565

aga ccg tcg tcc tcg gcg ggg gag aaa gca agc agc acg gat acc atc      25831
Arg Pro Ser Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr Asp Thr Ile
570                 575                 580                 585

tcc gct ccg ggt cgg ggt ccc gct cgg ccc cac agt aga tgg gac gag      25879
Ser Ala Pro Gly Arg Gly Pro Ala Arg Pro His Ser Arg Trp Asp Glu
                590                 595                 600

acc ggg cga ttc ccg aac ccc acc acc cag acc ggt aag aag gag cgg      25927
Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu Arg
            605                 610                 615
```

```
cag gga tac aag tcc tgg cgg ggg cac aaa aac gcc atc gtc tcc tgc      25975
Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser Cys
        620                 625                 630

ttg cag gcc tgc ggg ggc aac atc tcc ttc acc cgg cgc tac ctg ctc      26023
Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu Leu
    635                 640                 645

ttc cac cgc ggg gtg aac ttc ccc cgc aac atc ttg cat tac tac cgt      26071
Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr Arg
650                 655                 660                 665

cac ctc cac agc ccc tac tac ttc caa gaa gag gca gca gaa aaa gac      26119
His Leu His Ser Pro Tyr Tyr Phe Gln Glu Glu Ala Ala Glu Lys Asp
                670                 675                 680

cag aaa acc agc tagaaaatcc acagcggcgg cagcaggtgg actgaggatc          26171
Gln Lys Thr Ser
            685

gcggcgaacg agccggcgca gacccgggag ctgaggaacc ggatctttcc caccctctat    26231

gccatcttcc agcagagtcg ggggcaggag caggaactga aagtcaagaa ccgttctctg    26291

cgctcgctca cccgcagttg tctgtatcac aagagcgaag accaacttca gcgcactctc    26351

gaggacgccg aggctctctt caacaagtac tgcgcgctca ctcttaaaga gtagcccgcg    26411

cccgcccaca cacggaaaaa ggcgggaatt acgtcaccac ctgcgccctt cgcccgacca    26471

tcatgagcaa agagattccc acgccttaca tgtggagcta ccagccccag atgggcctgg    26531

ccgccggcgc cgcccaggac tactccaccc gcatgaactg gctcagtgcc gggcccgcga    26591

tgatctcacg ggtgaatgac atccgcgccc gccgaaacca gatactccta gaacagtcag    26651

cgatcgccgc cacgccccgc catcacctta atccgcgtaa ttggcccgcc gccctggtgt    26711

accaggaaat tccccagccc acgaccgtac tacttccgcg agacgcccag gccgaagtcc    26771

agctgactaa ctcaggtgtc cagctggccg gcggcgccgc cctgtgtcgt caccgccccg    26831

ctcagggtat aaagcggctg gtgatccgag gcagaggcac acagctcaac gacgaggtgg    26891

tgagctcttc gctgggtctg cgacctgacg gagtcttcca actcgccgga tcggggagat    26951

cttccttcac gcctcgtcag gccgtcctga ctttggagag ttcgtcctcg cagccccgct    27011

cgggcggcat cggcactctc cagttcgtgg aggagttcac tccctcggtc tacttcaacc    27071

ccttctccgg ctccccccggc cactacccgg acgagttcat cccgaacttc gacgccatca    27131

gcgagtcggt ggacggctac gattgaatgt cccatggtgg cgcagctgac ctagctcggc    27191

ttcgacacct ggaccactgc cgccgcttcc gctgcttcgc tcgggatctc gccgagtttg    27251

cctactttga gctgcccgag gagcaccctc agggcccagc ccacggagtg cggatcatcg    27311

tcgaaggggg cctcgactcc cacctgcttc ggatcttcag ccagcgaccg atcctggtcg    27371

agcgcgaaca aggacagacc cgtctgaccc tgtactgcat ctgcaaccac cccggcctgc    27431

atg aaa gtc ttt gtt gtc tgc tgt gta ctg agt ata ata aaa gct gag      27479
Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
                690                 695                 700

atc agc gac tac tcc gga ctc gat tgt ggt gtt cct gct atc aac cgg      27527
Ile Ser Asp Tyr Ser Gly Leu Asp Cys Gly Val Pro Ala Ile Asn Arg
```

```
            705                 710                 715

tcc ctg ttc ttc acc ggg aac gaa acc gag ctc cag ctc cag tgt aag      27575
Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys
        720                 725                 730

ccc cac aag aag tac ctc acc tgg ctg ttc cag ggc tcc ccc atc gcc      27623
Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala
    735                 740                 745

gtt gtc aac cac tgc gac aac gac gga gtc ctg ctg agc ggc cct gcc      27671
Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala
750                 755                 760                 765

aac ctt act ttt tcc acc cgc aga agc aag ctc cag ctc ttc caa ccc      27719
Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro
                770                 775                 780

ttc ctc ccc ggg acc tat cag tgc gtc tcg gga ccc tgc cat cac acc      27767
Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr
            785                 790                 795

ttc cac ctg atc ccg aat acc aca gcg ccg ctc ccc gct act aac aac      27815
Phe His Leu Ile Pro Asn Thr Thr Ala Pro Leu Pro Ala Thr Asn Asn
        800                 805                 810

caa act aac ctc cac caa cgc cac cgt cgc gac ctt tcc tct gaa tct      27863
Gln Thr Asn Leu His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser
    815                 820                 825

aat acc act acc gga ggt gag ctc cga ggt cga cca acc tct ggg att      27911
Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile
830                 835                 840                 845

tac tac ggc ccc tgg gag gtg gtg ggg tta ata gcg cta ggc cta gtt      27959
Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val
                850                 855                 860

gtg ggt ggg ctt ttg gct ctc tgc tac cta tac ctc cct tgc tgt tcg      28007
Val Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser
            865                 870                 875

tac tta gtg gtg ctg tgt tgc tgg ttt aag aaa tgg ggc aga tca ccc      28055
Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
        880                 885                 890

tagtgagctg cggtgtgctg gtggcggtgc tttcgattgt gggactgggc ggcgcggctg    28115

tagtgaagga ggagaaggcc gatccctgct tgcatttcaa tcccgacaaa tgccagctga    28175

gttttcagcc cgatggcaat cggtgcgcgg tgctgatcaa gtgcggatgg gaatgcgaga    28235

acgtgagaat cgagtacaat aacaagactc ggaacaatac tctcgcgtcc gtgtggcagc    28295

ccggggaccc cgagtggtac accgtctctg tccccggtgc tgacggctcc ccgcgcaccg    28355

tgaataatac tttcattttt gcgcacatgt gcaacacggt catgtggatg agcaagcagt    28415

acgatatgtg gccccccacg aaggagaaca tcgtggtctt ctccatcgct tacagcctgt    28475

gcacggcgct aatcaccgct atcgtgtgcc tgagcattca catgctcatc gctattcgcc    28535

ccagaaataa tgccgagaaa gagaaacagc cataacacgt tttttcacac accttgtttt    28595

tacagacaat gcgtctgtta aatttttaa acattgtgct cagtattgct tatgcctctg    28655

gttatgcaaa catacagaaa acccttttatg taggatctga tggtacacta gagggtaccc    28715

aatcacaagc caaggttgca tggtattttt atagaaccaa cactgatcca gttaaacttt    28775
```

gtaagggtga attgccgcgt acacataaaa ctccacttac atttagttgc agcaataata 28835
atcttacact tttttcaatt acaaaacaat atactggtac ttattacagt acaaactttc 28895
atacaggaca agataaatat tatactgtta aggtagaaaa tcctaccact cctagaacta 28955
ccaccaccac caccactact gcaaagccca ctgtgaaaac tacaactagg accaccacaa 29015
ctacagaaac caccaccagc acaacacttg ctgcaactac acacacacac actaagctaa 29075
ccttacagac cactaatgat ttgatcgccc tgctgcaaaa gggggataac agcaccactt 29135
ccaatgagga gatacccaaa tccatgattg gcattattgt tgctgtagtg gtgtgcatgt 29195
tgatcatcgc cttgtgcatg gtgtactatg ccttctgcta cagaaagcac agactgaacg 29255
acaagctgga acacttacta agtgttgaat tttaattttt tagaaccatg aagatcctag 29315
gccttttag tttttctatc attacctctg ctctttgtga atcagtggat agagatgtta 29375
ctattaccac tggttctaat tatacactga aagggccacc ctcaggtatg ctttcgtggt 29435
attgctattt tggaactgac actgatcaaa ctgaattatg caattttcaa aaaggcaaaa 29495
cctcaaactc taaaatctct aattatcaat gcaatggcac tgatctgata ctactcaatg 29555
tcacgaaagc atatggtggc agttattatt gccctggaca aaacactgaa gaaatgattt 29615
tttacaaagt ggaagtggtt gatcccacta caccacccac caccacaact attcatacca 29675
cacacacaga acaaacacca gaggcaacag aagcagagtt ggccttccag gttcacggag 29735
attcctttgc tgtcaatacc cctacacccg atcagcggtg tccggggccg ctagtcagcg 29795
gcattgtcgg tgtgctttcg ggattagcag tcataatcat ctgcatgttc atttttgctt 29855
gctgctatag aaggctttac cgacaaaaat cagacccact gctgaacctc tatgtttaat 29915
tttttccaga gccatgaagg cagttagcgc tctagttttt tgttctttga ttgacattgt 29975
ttttaatagt aaaattacca aagttagctt tattaaacat gttaatgtaa ctgaaggaga 30035
taacatcaca ctagcaggtg tagaaggtgc tcaaaacacc acctggacaa aataccatct 30095
aggatggaga gatatttgca cctggaatgt aacttattat tgcataggaa ttaatcttac 30155
cattgttaac gctaaccaat ctcagaatgg gttaattaaa ggacagagtg ttagtgtgac 30215
cagtgatggg tactataccc agcatagttt taactacaac attactgtca taccactgcc 30275
tacgcctagc ccacctagca ctaccacaca gacaaccaca tacagtacat caaatcagcc 30335
taccaccact acagcagcag aggttgccag ctcgtctggg gtccgagtgg cattttgat 30395
gttggcccca tctagcagtc ccactgctag taccaatgag cagactactg aatttttgtc 30455
cactgtcgag agccacacca cagctacctc cagtgccttc tctagcaccg ccaatctctc 30515
ctcgctttcc tctacaccaa tcagccccgc tactactcct agccccgctc ctcttcccac 30575
tcccctgaag caaacagacg gcggcatgca atggcagatc accctgctca ttgtgatcgg 30635
gttggtcatc ctggccgtgt tgctctacta catcttctgc cgccgcattc ccaacgcgca 30695
ccgcaagccg gcctacaagc ccatcgttat cgggcagccg gagccgcttc aggtggaagg 30755
gggtctaagg aatcttctct tctcttttac agtatggtga ttgaactatg attcctagac 30815

```
aattcttgat cactattctt atctgcctcc tccaagtctg tgccaccctc gctctggtgg    30875

ccaacgccag tccagactgt attgggccct tcgcctccta cgtgctcttt gccttcatca    30935

cctgcatctg ctgctgtagc atagtctgcc tgcttatcac cttcttccag ttcattgact    30995

ggatctttgt gcgcatcgcc tacctgcgcc accaccccca gtaccgcgac cagcgagtgg    31055

cgcagctgct caggctcctc tgataagcat gcgggctctg ctacttctcg cacttctgct    31115

gttagtgctc ccccgtcccg ttgacccccg gccccccact cagtcccccg aggaggtccg    31175

caaatgcaaa ttccaagaac cctggaaatt cctcaaatgc taccgccaaa aatcagacat    31235

gcatcccagc tggatcatga tcattgggat cgtgaacatt ctggcctgca ccctcatctc    31295

ctttgtgatt tacccctgct ttgactttgg ttggaactcg ccagaggcgc tctatctccc    31355

gcctgaacct gacacaccac cacagcaacc tcaggcacac gcactaccac caccaccaca    31415

gcctaggcca caatacatgc ccatattaga ctatgaggcc gagccacagc gacccatgct    31475

ccccgctatt agttacttca atctaaccgg cggag atg act gac cca ctg gcc       31528
                                        Met Thr Asp Pro Leu Ala
                                            895

aac aac aac gtc aac gac ctt ctc ctg gac atg gac ggc cgc gcc tcg      31576
Asn Asn Asn Val Asn Asp Leu Leu Leu Asp Met Asp Gly Arg Ala Ser
900                 905                 910                 915

gag cag cga ctc gcc caa ctt cgc att cgc cag cag cag gag aga gcc      31624
Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala
                920                 925                 930

gtc aag gag ctg cag gac ggc ata gcc atc cac cag tgc aag aaa ggc      31672
Val Lys Glu Leu Gln Asp Gly Ile Ala Ile His Gln Cys Lys Lys Gly
            935                 940                 945

atc ttc tgc ctg gtg aaa cag gcc aag atc tcc tac gag gtc acc cag      31720
Ile Phe Cys Leu Val Lys Gln Ala Lys Ile Ser Tyr Glu Val Thr Gln
        950                 955                 960

acc gac cat cgc ctc tcc tac gag ctc ctg cag cag cgc cag aag ttc      31768
Thr Asp His Arg Leu Ser Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe
    965                 970                 975

acc tgc ctg gtc gga gtc aac ccc atc gtc atc acc cag cag tcg ggc      31816
Thr Cys Leu Val Gly Val Asn Pro Ile Val Ile Thr Gln Gln Ser Gly
980                 985                 990                 995

gat acc aag ggg tgc  atc cac tgc tcc tgc  gac tcc ccc gac tgc       31861
Asp Thr Lys Gly Cys  Ile His Cys Ser Cys  Asp Ser Pro Asp Cys
                1000                1005                1010

gtc cac act ctg atc  aag acc ctc tgc ggc  ctc cgc gac ctc ctc       31906
Val His Thr Leu Ile  Lys Thr Leu Cys Gly  Leu Arg Asp Leu Leu
                1015                1020                1025

ccc atg aac taatc                                                  31920
Pro Met Asn
```

<210> 71
<211> 503
<212> PRT
<213> Unknown

<220>

<223> Synthetic Construct

<400> 71

```
Met Glu Ser Arg Asn Pro Phe Gln Gln Gly Leu Pro Ser Gly Leu Leu
1               5                  10                  15

Ser Ser Ser Phe Val Glu Asn Met Glu Val Pro Ala Pro Glu Cys Asn
            20                  25                  30

Leu Arg Leu Leu Ala Ser Thr Ala Gly Arg His Ala Glu Asp Pro Glu
        35                  40                  45

Ser Pro Val Thr Pro Gly Thr Pro Thr Pro Pro Ala Ala Ala Ala Gly
    50                  55                  60

Ala Ala Ala Arg Gly Gly Gly Pro Arg Arg Glu Pro Glu Ser Arg Ser
65                  70                  75                  80

Gly Pro Ser Gly Gly Gly Gly Gly Gly Val Ala Asp Leu Phe Pro Glu
                85                  90                  95

Leu Arg Arg Val Leu Thr Arg Ser Ser Ser Gly Arg Glu Arg Gly Ile
            100                 105                 110

Lys Arg Glu Arg His Glu Glu Thr Ser His Arg Thr Glu Leu Thr Val
        115                 120                 125

Ser Leu Met Ser Arg Arg Arg Pro Glu Ser Val Trp Trp His Glu Val
    130                 135                 140

Gln Ser Gln Gly Val Asp Glu Val Ser Val Met His Glu Lys Tyr Ser
145                 150                 155                 160

Leu Glu Gln Val Lys Thr Cys Trp Leu Glu Pro Glu Asp Asp Trp Glu
                165                 170                 175

Val Ala Ile Arg Asn Tyr Ala Lys Leu Ala Leu Arg Pro Asp Lys Lys
            180                 185                 190

Tyr Lys Ile Thr Lys Leu Ile Asn Ile Arg Asn Ser Cys Tyr Ile Ser
        195                 200                 205

Gly Asn Gly Ala Glu Val Glu Ile Ser Thr Gln Glu Arg Val Ala Phe
    210                 215                 220

Arg Cys Cys Met Met Asn Met Tyr Pro Gly Val Val Gly Met Glu Gly
225                 230                 235                 240

Val Thr Phe Met Asn Ala Arg Phe Arg Gly Asp Gly Tyr Asn Gly Val
                245                 250                 255

Val Phe Met Ala Asn Thr Lys Leu Thr Val His Gly Cys Ser Phe Phe
```

260 265 270

Gly Phe Asn Asn Met Cys Ile Glu Ala Trp Gly Ser Val Ser Val Arg
275 280 285

Gly Cys Ser Phe Ser Ala Asn Trp Met Gly Val Val Gly Arg Thr Lys
290 295 300

Ser Lys Val Ser Val Lys Lys Cys Leu Phe Glu Arg Cys His Leu Gly
305 310 315 320

Val Met Ser Glu Gly Glu Ala Lys Val Lys His Cys Ala Ser Thr Glu
325 330 335

Thr Gly Cys Phe Val Cys Ile Lys Gly Asn Ala Gln Val Lys His Asn
340 345 350

Met Ile Cys Gly Ala Ser Asp Glu Arg Gly Tyr Gln Met Leu Thr Cys
355 360 365

Ala Gly Gly Asn Ser His Met Leu Ala Thr Val His Val Ala Ser His
370 375 380

Pro Arg Lys Thr Trp Pro Glu Phe Glu His Asn Val Met Thr Arg Cys
385 390 395 400

Asn Val His Leu Gly Ser Arg Arg Gly Met Phe Met Pro Tyr Gln Cys
405 410 415

Asn Met Gln Phe Val Lys Val Leu Leu Glu Pro Asp Ala Met Ser Arg
420 425 430

Val Ser Leu Ala Gly Val Phe Asp Met Asn Val Glu Leu Trp Lys Ile
435 440 445

Leu Arg Tyr Asp Glu Ser Lys Thr Arg Cys Arg Ala Cys Glu Cys Gly
450 455 460

Gly Lys His Ala Arg Leu Gln Pro Val Cys Val Glu Val Thr Glu Asp
465 470 475 480

Leu Arg Pro Asp His Leu Val Leu Ser Cys Asn Gly Thr Glu Phe Gly
485 490 495

Ser Ser Gly Glu Glu Ser Asp
500

<210> 72
<211> 182
<212> PRT
<213> Unknown

<220>

<223> Synthetic Construct

<400> 72

Met Pro Arg Gly Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val Glu
1 5 10 15

Asp Leu Glu Glu Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Glu Glu
20 25 30

Met Glu Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
35 40 45

Asp Ser Leu Glu Glu Asp Glu Glu Glu Ala Glu Val Glu Glu Ala Ala
50 55 60

Ala Ala Arg Pro Ser Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr Asp
65 70 75 80

Thr Ile Ser Ala Pro Gly Arg Gly Pro Ala Arg Pro His Ser Arg Trp
85 90 95

Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys
100 105 110

Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val
115 120 125

Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr
130 135 140

Leu Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr
145 150 155 160

Tyr Arg His Leu His Ser Pro Tyr Tyr Phe Gln Glu Glu Ala Ala Glu
165 170 175

Lys Asp Gln Lys Thr Ser
180

<210> 73
<211> 208
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 73

Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1 5 10 15

Ile Ser Asp Tyr Ser Gly Leu Asp Cys Gly Val Pro Ala Ile Asn Arg
20 25 30

Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys
35 40 45

Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala
50 55 60

Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala
65 70 75 80

Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro
85 90 95

Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr
100 105 110

Phe His Leu Ile Pro Asn Thr Thr Ala Pro Leu Pro Ala Thr Asn Asn
115 120 125

Gln Thr Asn Leu His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser
130 135 140

Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile
145 150 155 160

Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val
165 170 175

Val Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser
180 185 190

Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
195 200 205

<210> 74
<211> 135
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 74

Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp Leu Leu Leu Asp
1 5 10 15

Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg
20 25 30

Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Gly Ile Ala Ile
35 40 45

His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile
50 55 60

```
Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser Tyr Glu Leu Leu
65                  70                  75                  80

Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val
                85                  90                  95

Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys
            100                 105                 110

Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu
        115                 120                 125

Arg Asp Leu Leu Pro Met Asn
    130                 135
```

<210> 75
<211> 1440
<212> DNA
<213> Unknown

<220>
<223> Simian adenovirus A1331

<220>
<221> CDS
<222> (576)..(1154)
<223> E1a

<220>
<221> CDS
<222> (1231)..(1434)
<223> E1a

<400> 75

```
cwwymtmwat aatatacctc aaacttttgg tgcgcgttaa tatgcaaatg agccgtttga       60

atttggggat ggaggaaggt gattggctgt gggagcggcg accgttaggg gcggggcggg      120

tgacgttttg atgacgtggc catgaggcgg agccggtttg caagttctcg tgggaaaagt      180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca      240

ggaaatgagg tgtttctggg cggatgcaag tgaaaacggg ccattttcgc gcgaaaactg      300

aatgaggaag tgaaaatctg agtaattccg cgtttatggc agggaggagt atttgccgag      360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtatttt tcacctaaat      420

ttccgcgtac ggtgtcaaag tccggtgttt ttacgtaggt gtcagctgat cgccagggta      480

tttaaacctg cgctctctag tcaagaggcc actcttgagt gccagcgagt agagttttct      540

cctccgcgcc gcgagtcaga tctacacttt gaaag atg agg cac ctg aga gac          593
                                        Met Arg His Leu Arg Asp
                                        1               5

ctg ccc ggt aat gtt ttc ctg gct act ggg aac gag att ctg gaa ctg          641
Leu Pro Gly Asn Val Phe Leu Ala Thr Gly Asn Glu Ile Leu Glu Leu
            10                  15                  20

gtg gtg gac gcc atg atg ggt gac gac cct ccc gag ccc cct acc cca          689
```

```
Val Val Asp Ala Met Met Gly Asp Asp Pro Pro Glu Pro Pro Thr Pro
        25                  30                  35

ttt gag gcg cct tcg ctg tac gat ttg tat gat ctg gag gtg gat gtg        737
Phe Glu Ala Pro Ser Leu Tyr Asp Leu Tyr Asp Leu Glu Val Asp Val
    40                  45                  50

tcc gag aac gac ccc aac gag gag gcg gtg aat gat ttg ttt agc gat        785
Ser Glu Asn Asp Pro Asn Glu Glu Ala Val Asn Asp Leu Phe Ser Asp
55                  60                  65                  70

gcc gcg ctg ctg gct gcc gag cag gct aat acg gac tct ggc tca gac        833
Ala Ala Leu Leu Ala Ala Glu Gln Ala Asn Thr Asp Ser Gly Ser Asp
                75                  80                  85

agc gat tcc tct ctc cat acc ccg aga ccc ggc aga ggt gag aaa aag        881
Ser Asp Ser Ser Leu His Thr Pro Arg Pro Gly Arg Gly Glu Lys Lys
            90                  95                  100

atc ccc gag ctt aaa ggg gaa gag ctc gac ctg cgc tgc tat gag gaa        929
Ile Pro Glu Leu Lys Gly Glu Glu Leu Asp Leu Arg Cys Tyr Glu Glu
        105                 110                 115

tgc ttg cct ccg agc gat gat gag gag gac gag gag gcg att cga gct        977
Cys Leu Pro Pro Ser Asp Asp Glu Glu Asp Glu Glu Ala Ile Arg Ala
    120                 125                 130

gca gcg agc gag gga gtg aaa gtt gcg ggc gag agc ttt agc ctg gac       1025
Ala Ala Ser Glu Gly Val Lys Val Ala Gly Glu Ser Phe Ser Leu Asp
135                 140                 145                 150

tgt cct act ctg ccc gga cac ggc tgt aag tct tgt gaa ttt cat cgc       1073
Cys Pro Thr Leu Pro Gly His Gly Cys Lys Ser Cys Glu Phe His Arg
                155                 160                 165

atg aat act gga gat aag aat gtg atg tgt gcc ctg tgc tat atg aga       1121
Met Asn Thr Gly Asp Lys Asn Val Met Cys Ala Leu Cys Tyr Met Arg
            170                 175                 180

gct tac aac cat tgt gtt tac agt aag tgt gat taactttagt tgggaaaggc     1174
Ala Tyr Asn His Cys Val Tyr Ser Lys Cys Asp
        185                 190

agagggtgac tgggtgctga ctggtttatt tatgtatatg ttttttatgt gtaggt ccc     1233
                                                              Pro


gtc tct gac gca gat gag acc ccc act tca gag tgc att tca tca ccc       1281
Val Ser Asp Ala Asp Glu Thr Pro Thr Ser Glu Cys Ile Ser Ser Pro
195                 200                 205                 210

cca gaa att ggc gag gaa ccg ccc gaa gat att att cat aga cca gtt       1329
Pro Glu Ile Gly Glu Glu Pro Pro Glu Asp Ile Ile His Arg Pro Val
                215                 220                 225

gca gtg aga gtc acc ggg cgg aga gca gct gtg gag agt ttg gat gac       1377
Ala Val Arg Val Thr Gly Arg Arg Ala Ala Val Glu Ser Leu Asp Asp
            230                 235                 240

ttg cta cag ggt ggg gat gaa cct ttg gac ttg tgt acc cgg aaa cgc       1425
Leu Leu Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg Lys Arg
        245                 250                 255

ccc agg cac taagtg                                                   1440
Pro Arg His
    260
```

<210> 76

<211> 261
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 76

Met Arg His Leu Arg Asp Leu Pro Gly Asn Val Phe Leu Ala Thr Gly
1 5 10 15

Asn Glu Ile Leu Glu Leu Val Val Asp Ala Met Met Gly Asp Asp Pro
20 25 30

Pro Glu Pro Pro Thr Pro Phe Glu Ala Pro Ser Leu Tyr Asp Leu Tyr
35 40 45

Asp Leu Glu Val Asp Val Ser Glu Asn Asp Pro Asn Glu Glu Ala Val
50 55 60

Asn Asp Leu Phe Ser Asp Ala Ala Leu Leu Ala Ala Glu Gln Ala Asn
65 70 75 80

Thr Asp Ser Gly Ser Asp Ser Asp Ser Ser Leu His Thr Pro Arg Pro
85 90 95

Gly Arg Gly Glu Lys Lys Ile Pro Glu Leu Lys Gly Glu Glu Leu Asp
100 105 110

Leu Arg Cys Tyr Glu Glu Cys Leu Pro Pro Ser Asp Asp Glu Glu Asp
115 120 125

Glu Glu Ala Ile Arg Ala Ala Ala Ser Glu Gly Val Lys Val Ala Gly
130 135 140

Glu Ser Phe Ser Leu Asp Cys Pro Thr Leu Pro Gly His Gly Cys Lys
145 150 155 160

Ser Cys Glu Phe His Arg Met Asn Thr Gly Asp Lys Asn Val Met Cys
165 170 175

Ala Leu Cys Tyr Met Arg Ala Tyr Asn His Cys Val Tyr Ser Lys Cys
180 185 190

Asp Pro Val Ser Asp Ala Asp Glu Thr Pro Thr Ser Glu Cys Ile Ser
195 200 205

Ser Pro Pro Glu Ile Gly Glu Glu Pro Pro Glu Asp Ile Ile His Arg
210 215 220

Pro Val Ala Val Arg Val Thr Gly Arg Arg Ala Ala Val Glu Ser Leu
225 230 235 240

```
Asp Asp Leu Leu Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg
                245                 250                 255


Lys Arg Pro Arg His
            260


<210>  77
<211>  36639
<212>  DNA
<213>  Unknown

<220>
<223>  Simian adenovirus A1337


<220>
<221>  repeat_region
<222>  (7)..(129)
<223>  ITR

<220>
<221>  CDS
<222>  (1601)..(2164)
<223>  E1b\19K

<220>
<221>  misc_feature
<222>  (3983)..(5604)
<223>  IVa2   complement (3983..5313,5593..5604)

<220>
<221>  misc_feature
<222>  (5593)..(13844)
<223>  pol    complement (5593..8658,13836..13844)

<220>
<221>  misc_feature
<222>  (8466)..(13844)
<223>  pTP   complement (8466..10394,13836..13844)

<220>
<221>  CDS
<222>  (10831)..(12012)
<223>  52K

<220>
<221>  CDS
<222>  (12039)..(13805)
<223>  pIIIa

<220>
<221>  CDS
<222>  (13889)..(15484)
<223>  penton

<220>
<221>  CDS
<222>  (15491)..(16069)
<223>  pVII

<220>
<221>  CDS
<222>  (16114)..(17139)
<223>  V

<220>
<221>  CDS
```

<222> (17166)..(17396)
<223> pX

<220>
<221> CDS
<222> (17431)..(18207)
<223> pVI

<220>
<221> CDS
<222> (18313)..(21105)
<223> hexon

<220>
<221> CDS
<222> (21121)..(21750)
<223> protease

<220>
<221> misc_feature
<222> (21830)..(23365)
<223> DBP complement (21830...23365)

<220>
<221> CDS
<222> (23394)..(25796)
<223> 100K

<220>
<221> CDS
<222> (26418)..(27098)
<223> pVIII

<220>
<221> CDS
<222> (27102)..(27419)
<223> E3\12.5K

<220>
<221> CDS
<222> (27996)..(28523)
<223> E3\gp19K

<220>
<221> CDS
<222> (28562)..(29302)
<223> E3\CR1-beta

<220>
<221> CDS
<222> (29318)..(29941)
<223> E3\CR1-gamma

<220>
<221> CDS
<222> (29964)..(30836)
<223> E3\CR1-delta

<220>
<221> CDS
<222> (31123)..(31569)
<223> E3\RID=beta

<220>
<221> CDS
<222> (32078)..(33547)
<223> fiber

<220>

<221> misc_feature
<222> (33643)..(34970)
<223> E4\orf6/7 complement (33643..33893,34617..34970)

<220>
<221> misc_feature
<222> (33894)..(34790)
<223> E4\orf6 complement (33894..34790)

<220>
<221> misc_feature
<222> (34696)..(35061)
<223> E4\orf4 complement (34696..35061)

<220>
<221> misc_feature
<222> (35073)..(35423)
<223> E4\orf3 complement (35073..35423)

<220>
<221> misc_feature
<222> (35423)..(35809)
<223> E4\orf2 complement (35423..35809)

<220>
<221> misc_feature
<222> (35862)..(36233)
<223> E4\orf1 complement (35862..36233)

<220>
<221> repeat_region
<222> (36511)..(36633)
<223> ITR complement (36400..36528)

<400> 77
catcatcaat aatatacctc aaacttttg tgcgcgttaa tatgcaaatg aggcgtttga 60

atttgggaag ggaggaaggt gattggccga gagaagggcg accgttaggg gcggggcgag 120

tgacgttttg atgacgtggc cgcgaggagg agccagtttg caagttctcg tgggaaaagt 180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca 240

ggaaatgagg tgtttttggg cggatgcaag ttaaaacggg ccattttcgc gcgaaaactg 300

aatgaggaag tgaaaatctg agtaatttcg cgtttatggc agggaggagt atttgccgag 360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtgtttt tcacctaaat 420

ttccgcgtac ggtgtcaaag tccggtgttt ttacgtaggt gtcagctgat cgccagggta 480

tttaaacctg cgctctccag tcaagaggcc actcttgagt gccagcgaga agagttttct 540

cctccgcgcc gcgagtcaga tctacacttt gaaagatgag gcacctgaga gacctgcccg 600

atgagaaaat catcatcgct tccgggaacg agattctgga actggtggta aatgccatga 660

tgggcgacga ccctccggag ccccccaccc catttgaggt accttcgcta cacgatttgt 720

atgatctgga ggtggatgtg cccgaggacg accccaacga ggaggcggta aatgatttat 780

ttagcgatgc cgcgctgcta gctgccgagg aggcttcgag ccctagctca gacagcgact 840

cttcactgca tacccctaga cccggcagag gtgagaaaaa gatccccgag cttaaagggg 900

aagagatgga cttgcgctgc tatgaggaat gcttgccccc gagcgatgat gaggacgagc 960

aggcgatcca gaacgcagcg agccagggag tgcaagccgc cagcgagagc tttgcgctgg 1020

```
actgcccgcc tctgcccgga cacggctgta agtcttgtga atttcatcgc atgaatactg     1080

gagataaagc tgtgttatgt gcactttgct atatgagagc ttacaaccat tgtgtttaca     1140

gtaagtgtga ttaagttgaa ctttagaggg aggcagagag cagggtgact gggcgatgac     1200

tggtttattt atgtatatat gttctttata taggtcccgt ctctgacgca gatgatgaga     1260

cccccactac agagtccact tcgtcacccc cagaaattgg cacatctcca cctgagaata     1320

ttgttagacc agttcctgtt agagccactg ggaggagagc agctgtggaa tgtttggatg     1380

acttgctaca gggtggggat gaacctttgg acttgtgtac ccggaaacgc cccaggcact     1440

aagtgccaca catgtgtgtt tacttgaggt gatgtcagta tttatagggt gtggagtgca     1500

ataaaaaatg tgttgacttt aagtgcgtgg tttatgactc aggggtgggg actgtgggta     1560

tataagcagg tgcagacctg tgtggttagc tcagagcggc atg gag att tgg acg       1615
                                              Met Glu Ile Trp Thr
                                              1               5

gtc ttg gaa gac ttt cac aag act aga cag ctg cta gag aac gcc tcg       1663
Val Leu Glu Asp Phe His Lys Thr Arg Gln Leu Leu Glu Asn Ala Ser
                10                  15                  20

aac gga gtc tct tac ctg tgg aga ttc tgc ttc ggt ggc gac cta gct       1711
Asn Gly Val Ser Tyr Leu Trp Arg Phe Cys Phe Gly Gly Asp Leu Ala
            25                  30                  35

agg cta gtc tac agg gcc aaa cag gat tat agt gaa caa ttt gag gtt       1759
Arg Leu Val Tyr Arg Ala Lys Gln Asp Tyr Ser Glu Gln Phe Glu Val
        40                  45                  50

att ttg aga gag tgt cct ggt ctt ttt gac gct ctt aac ttg ggc cat       1807
Ile Leu Arg Glu Cys Pro Gly Leu Phe Asp Ala Leu Asn Leu Gly His
    55                  60                  65

cag tct cac ttt aac cag agg att tcg aga gcc ctt gac ttt act act       1855
Gln Ser His Phe Asn Gln Arg Ile Ser Arg Ala Leu Asp Phe Thr Thr
70                  75                  80                  85

cct ggc aga acc act gca gca gta gcc ttt ttt gct ttt att ctt gac       1903
Pro Gly Arg Thr Thr Ala Ala Val Ala Phe Phe Ala Phe Ile Leu Asp
                90                  95                  100

aaa tgg agt caa gaa acc cat ttc agc agg gat tac cag ctg gat ttc       1951
Lys Trp Ser Gln Glu Thr His Phe Ser Arg Asp Tyr Gln Leu Asp Phe
            105                 110                 115

tta gca gta gct ttg tgg aga aca tgg aag tgc cag cgc ctg aat gca       1999
Leu Ala Val Ala Leu Trp Arg Thr Trp Lys Cys Gln Arg Leu Asn Ala
        120                 125                 130

atc tcc ggc tac ttg ccg gta cag ccg cta gac act ctg agg atc ctg       2047
Ile Ser Gly Tyr Leu Pro Val Gln Pro Leu Asp Thr Leu Arg Ile Leu
    135                 140                 145

aat ctc cag gag agt ccc agg gca cgc caa cgt cgc cag cag cag cag       2095
Asn Leu Gln Glu Ser Pro Arg Ala Arg Gln Arg Arg Gln Gln Gln Gln
150                 155                 160                 165

cgg cag cag gag gag gat caa gaa gag aac ccg aga gcc ggc ctg gac       2143
Arg Gln Gln Glu Glu Asp Gln Glu Glu Asn Pro Arg Ala Gly Leu Asp
                170                 175                 180

cct ccg gag gag gag gag gag tagctgacct gtttcctgaa ctgcgccggg          2194
Pro Pro Glu Glu Glu Glu Glu
            185
```

tgctgactag gtcttcgagt ggtcgggaga gggggattaa gcgggagagg catgatgaga 2254

ctaatcacag aactgaactg actgtcagtc tgatgagccg caagcgccca gaaacagtgt 2314

ggtggcatga ggtgcagtcg actggcacag atgaggtgtc agtgatgcat gagaagtttt 2374

ctctagaaca agtcaagact tgttggttag agcctgagga tgattgggaa gtagccatca 2434

ggaattatgc caagctggct ctgatgccag acaagaagta caagattact aagctgataa 2494

atatcagaaa tgcctgctac atctcaggga atggggctga agtggagatt tgtctccagg 2554

atagagtggc tttcagatgc tgcatgatga atatgtaccc gggagtggtg ggcatggatg 2614

gggtcacctt tatgaacatg aggttcaggg gagatgggta taatggtacg gtctttatgg 2674

ccaataccaa gctgacagtc catggctgct ccttctttgg gtttaataac acttgcattg 2734

aggcctgggg ccaggtaggc gtgaggggct gcagtttttc agccaactgg atgggggtcg 2794

tgggcaggac caagagtatg ctgtccgtga agaaatgctt gtttgagagg tgccacctgg 2854

gggtgatgag cgagggcgaa gccagaatcc gccactgcgc ctctaccgag acgggctgct 2914

tcgtgctgtg caagggcaat gccaagatca agcataatat gatctgtgga gcctcggacg 2974

agcgcggcta ccagatgctg acctgtgccg gtgggaacag ccatatgctg gccaccgtgc 3034

atgtggcttc ccatgcccgc aagccctggc ccgagttcga gcacaatgtc atgaccaggt 3094

gcaatatgca tctggggtct cgccgaggca tgttcatgcc ctaccagtgc aacctgaatt 3154

atgtgaaggt gctgctggag cccgatgcca tgtccagagt gagcctgacg ggggtgtttg 3214

acatgaatgt ggaggtgtgg aagattctga gatatgatga atccaagacc aggtgccgag 3274

cctgcgagtg cggagggaag catgccaggt tccagcccgt gtgtgtggat gtgacggagg 3334

acctgcgacc cgatcatttg gtgttgtcct gcaccgggac ggagttcggt tccagcgggg 3394

aagaatctga ctagagtgag tagtgttctg gggcggggga ggacctgcat gagggccaga 3454

atgattgaaa tctgtgcttt tctgtgtgtt gcagcagcat gagcggaagc ggctcctttg 3514

agggaggggt attcagccct tatctgacgg ggcgtctccc ctcctgggcg ggagtgcgtc 3574

agaatgtgat gggatccacg gtggacggcc ggcccgtgca gcccgcgaac tcttcaaccc 3634

tgacctatgc aaccctgagc tcttcgtcgg tggacgcagc tgccgccgca gctgctgcat 3694

ctgccgccag cgccgtgcgc ggaatggcca tgggcgccgg ctactacggc actctggtgg 3754

ccaactcgag ttccaccaat aatcccgcca gcctgaacga ggagaagctg ctgctgctga 3814

tggcccagct cgaggccttg acccagcgcc tgggcgagct gacccagcag gtggctcagc 3874

tgcaggagca gacgcgggcc gcggttgcca cggtgaaatc caaataaaaa atgaatcaat 3934

aaataaacgg agacggttgt tgattttaac acagagtctg aatctttatt tgatttttcg 3994

cgcgcggtag gccctggacc accggtctcg atcattgagc actcggtgga tcttttccag 4054

gacccggtag aggtgggctt ggatgttgag gtacatgggc atgagcccgt cccgggggtg 4114

gaggtagctc cattgcaggg cctcgtgctc gggggtggtg ttgtaaatca cccagtcata 4174

gcaggggcgc agggcatggt gttgcacaat atctttgagg aggagactga tggccacggg 4234

cagccctttg gtgtaggtgt ttacaaatct gttgagctgg gagggatgca tgcgggggga 4294
gatgaggtgc atcttggcct ggatcttgag attggcgatg ttaccgccca gatcccgcct 4354
ggggttcatg ttgtgcagga ccaccagcac ggtgtatccg gtgcacttgg ggaatttatc 4414
atgcaacttg gaagggaagg cgtgaaagaa tttggcgacg cccttgtgcc cgcccaggtt 4474
ttccatgcac tcatccatga tgatggcgat ggggccgtgg gcggcggcct gggcaaaaac 4534
gtttcggggg tcggacacat catagttgtg gtcctgggtg agatcatcat aggccatttt 4594
aatgaatttg gggcggaggg tgccggactg ggggacaaag gtaccctcga tcccgggggc 4654
gtagttcccc tcacagatct gcatctccca ggctttgagc tcggaggggg ggatcatgtc 4714
cacctgcggg gcgataaaga acacggtttc cggggcggga gagatgagct gggccgaaag 4774
caagttccgg agcagctggg acttgccgca gccggtgggg ccgtagatga ccccgatgac 4834
cggttgcagg tggtagttga gggagagaca gctgccgtcc tcccggagga ggggggccac 4894
ctcgttcatc atctcgcgca cgtgcatgtt ctcgcgcacc agttccgcca ggaggcgctc 4954
tccccccagg gataggagct cctggagcga ggcgaagttt ttcagcggct tgagtccgtc 5014
ggccatgggc attttggaga gggtctgttg caagagttcc aagcggtccc agagctcggt 5074
gatgtgctct acggcatctc gatccagcag acctcctcgt ttcgcgggtt ggggcggctg 5134
cgggagtagg gcaccagacg atgggcgtcc agcgcagcca gggtccggtc cttccagggt 5194
cgcagcgtcc gcgtcagggt ggtctccgtc acggtgaagg ggtgcgcgcc gggctgggcg 5254
cttgcgaggg tgcgcttcag gctcatccgg ctggtcgaaa accgctcccg atcggcgccc 5314
tgcgcgtcgg ccaggtagca attgaccatg agttcgtaat tgagcgcctc ggccgcgtga 5374
cctttggcgc ggagcttacc tttggaagtc tgcccgcagg tgggacagag gagggacttg 5434
agggcgtaga gcttgggggc gaggaagacg gactcggggg cgtaggcgtc cgcgccgcag 5494
tgggcgcaga cggtctcgca ctccacgagc caggtgaggt cgggctggtc ggggtcaaaa 5554
accagtttcc cgccgttctt tttgatgcgt ttcttacctt tggtctccat gagctcgtgt 5614
ccccgctggg tgacaaagag gctgtccgtg tccccgtaga ccgactttat gggccggtcc 5674
tcgagcggtg tgccgcggtc ctcctcgtag aggaaccccg cccactccga gacgaaagcc 5734
cgggtccagg ccagcacgaa ggaggccacg tgggacgggt agcggtcgtt gtccaccagc 5794
gggtccacct tctccagggt atgcaaacac atgtcccct cgtccacatc caggaaggtg 5854
attggcttgt aagtgtaggc cacgtgaccg ggggtcccag ccgggggggt ataaaagggg 5914
gcgggcccct gctcgtcctc actgtcttcc ggatcgctgt ccaggagcgc cagctgttgg 5974
ggtaggtatt ccctctcgaa ggcgggcatg acctcggcac tcaggttgtc agtttctaga 6034
aacgaggagg atttgatatt gacggtgccg gcggagatgc ctttcaagag cccctcgtcc 6094
atctggtcag aaaagacgat ctttttgttg tcgagtttgg tggcgaagga gccgtagagg 6154
gcattggaga ggagcttggc gatagagcgc atggtctggt ttttttcctt gtcggcgcgc 6214
tccttggccg cgatgttgag ctgcacgtac tcgcgcgcca cgcacttcca ttcggggaag 6274
acggtggtca gctcgtcggg cacgattctg acttgccagc cccggttatg cagggtgatg 6334

aggtccacac tggtgcccac ctcgccgcgc aggggctcgt tggtccagca gagtcgaccg 6394
cccttgcgcg agcagaaggg gggcaggggg tccagcatga cctcgtcggg ggggtcggca 6454
tcgatggtga agatgcctgg caggagatcg gggtcgaagt agctgatgga agtggccaga 6514
tcgtccaggg cagcttgcca ttcgcgcacg gccagcgcgc gctcgtaggg actgaggggc 6574
gtgccccaag gcatggggtg tgtgagcgcg gaggcgtaca tgccgcagat gtcgtagacg 6634
tagaggggct cctcgaggat gccgatgtag gtggggtaac agcgcccccc gcggatgctg 6694
gcgcgcacgt agtcatacag ctcatgcgag ggggcgagga gccccgggcc caggttggtg 6754
cgactgggct tttcggcgcg gtagacgatc tggcgaaaga tggcatgcga gttggaggag 6814
atggtgggcc tttggaagat gttgaagtgg gcgtggggca gaccgaccga gtcgcggatg 6874
aagtgggcgt aggagtcttg cagtttggcg acgagctcgg cggtgacgag gacgtccaga 6934
gcgcagtagt cgagggtctc ctggatgatg tcatacttga gctggccctt ttgtttccac 6994
agctcgcggt tgagaaggaa ctcttcgcgg tccttccagt actcttcgag ggggaacccg 7054
tcctgatctg cacggtaaga gcctagcatg tagaactggt tgacggcctt gtaggcgcag 7114
cagcccttct ccacggggag ggcgtaggcc tgggcggcct tgcgcaggga ggtgtgcgtg 7174
agggcgaagg tgtccctgac catgaccttg aggaactggt gcttgaaatc gatatcgtcg 7234
cagcccccct gctcccagag ctggaagtcc gtgcgcttct tgtaggcggg gttgggcaaa 7294
gcgaaagtaa catcgttgaa aaggatcttg cccgcgcggg gcataaagtt gcgagtgatg 7354
cggaaaggct ggggcacctc ggcccggttg ttgatgacct gggcggcgag cacgatctcg 7414
tcgaaaccgt tgatgttgtg gcccacgatg tagagttcca cgaatcgcgg gcggcccttg 7474
acgtggggca gcttcttgag ctcctcgtag gtgagctcgt cggggtcgct gagaccgtgc 7534
tgctcgagcg cccagtcggc gagatggggg ttggcgcgga ggaaggaagt ccagagatcc 7594
acggccaggg cggtttgcag acggtcccgg tactgacgga actgctgccc gacggccatt 7654
ttttcggggg tgacgcagta gaaggtgcgg gggtccccgt gccagcggtc ccatttgagc 7714
tggagggcga gatcgagggc gagctcgacg aggcggtcgt ccccggagag tttcatgacc 7774
agcatgaagg ggacgagctg cttgccgaag gaccccatcc aggtgtaggt ttccacatcg 7834
taggtgagga agagcctttc ggtgcgagga tgcgagccga tggggaagaa ctggatctcc 7894
tgccaccaat tggaggaatg gctgttgatg tgatggaagt agaaatgccg acggcgcgcc 7954
gaacactcgt gcttgtgttt atacaagcgg ccacagtgct cgcaacgctg cacgggatgc 8014
acgtgctgca cgagctgtac ctgagttcct ttgacgagga atttcagtgg gaagtggagt 8074
cgtggcgcct gcatctcgtg ctgtactacg tcgtggtggt cggcctggcc ctcttctgcc 8134
tcgatggtgg tcatgctgac gagcccgcgc gggaggcagg tccagacctc ggcgcgagcg 8194
ggtcggagag cgaggacgag ggcgcgcagg ccggagctgt ccagggtcct gagacgctgc 8254
ggagtcaggt cagtgggcag cggcggcgcg cggttgactt gcaggagttt ttccagggcg 8314
cgcgggaggt ccagatggta cttgatctcc accgcgccgt tggtggcgac gtcgatggct 8374

tgcagggtcc cgtgcccctg gggtgtgacc accgtccccc gtttcttctt gggcggctgg 8434

ggcgacgggg gcggtgcctc ttccatggtt agaagcggcg gcgaggacgc gcgccgggcg 8494

gcagaggcgg ctcggggccc ggaggcaggg gcggcagggg cacgtcggcg ccgcgcgcgg 8554

gtaggttctg gtactgcgcc cggagaagac tggcgtgagc gacgacgcga cggttgacgt 8614

cctggatctg acgcctctgg gtgaaggcca cgggacccgt gagtttgaac ctgaaagaga 8674

gttcgacaga atcaatctcg gtatcgttga cggcggcctg ccgcaggatc tcttgcacgt 8734

cgcccgagtt gtcctggtag gcgatctcgg tcatgaactg ctcgatctcc tcctcctgaa 8794

ggtctccgcg gccggcgcgc tccacggtgg ccgcgaggtc gttggagatg cggcccatga 8854

gctgcgagaa ggcgttcatg cccgcctcgt tccagacgcg gctgtagacc acgacgccct 8914

cgggatcgcg ggcgcgcatg accacctggg cgaggttgag ctccacgtgg cgcgtgaaga 8974

ccgcgtagtt gcagaggcgc tggtagaggt agttgagcgt ggtggcgatg tgctcggtga 9034

cgaagaaata catgatccag cggcggagcg gcatctcgct gacgtcgccc agcgcctcca 9094

agcgttccat ggcctcgtaa aagtccacgg cgaagttgaa aaactgggag ttgcgcgccg 9154

agacggtcaa ctcctcctcc agaagacgga tgagctcggc gatggtggcg cgcacctcgc 9214

gctcgaaggc ccccgggagt tcctcctctt ccatctcctc ttcttcctcc tccactaaca 9274

tctcttctac ttcctcctca ggcggtggtg gcgggggagg gggcctgcgt cgccggcggc 9334

gcacgggcag acggtcgatg aagcgctcga tggtctcgcc gcgccggcgt cgcatggtct 9394

cggtgacggc gcgcccgtcc tcgcggggcc gcagcgtgaa gacgccgccg cgcatctcca 9454

ggtggccggg ggggtccccg ttgggcaggg agagggcgct gacgatgcat cttatcaatt 9514

gccccgtagg gactccgcgc aaggacctga gcgtctcgag atccacggga tctgaaaacc 9574

gttgaacgaa ggcttcgagc cagtcgcagt cgcaaggtag gctgagcacg gtttcttctg 9634

gcgggtcatg ttggggagcg gggcgggcga tgctgctggt gatgaagttg aaataggcgg 9694

ttctgagacg gcggatggtg gcgaggagca ccaggtcttt gggcccggct tgctggatgc 9754

gcagacggtc ggccatgccc caggcgtggt cctgacacct ggccaggtcc ttgtagtagt 9814

cctgcatgag ccgctccacg ggcacctcct cctcgcccgc gcggccgtgc atgcgcgtga 9874

gcccgaagcc gcgctggggc tggacgagcg ccaggtcggc gacgacgcgc tcggcgagga 9934

tggcctgctg gatctgggtg agggtggtct ggaagtcgtc aaagtcgacg aagcggtggt 9994

aggctccggt gttgatggtg taggagcagt tggccatgac ggaccagttg acggtctggt 10054

ggcccggacg cacgagctcg tggtacttga ggcgcgagta ggcgcgcgtg tcgaagatgt 10114

agtcgttgca ggtgcgcacc aggtactggt agccgatgag gaagtgcggc ggcggctggc 10174

ggtagagcgg ccatcgctcg gtggcggggg cgccgggcgc gaggtcctcg agcatggtgc 10234

ggtggtagcc gtagatgtac ctggacatcc aggtgatgcc ggcggcggtg gtggaggcgc 10294

gcgggaactc gcggacgcgg ttccagatgt tgcgcagcgg caggaagtag ttcatggtgg 10354

gcacggtctg gcccgtgagg cgcgcgcagt cgtggatgct ctatacgggc aaaaacgaaa 10414

gcggtcagcg gctcgactcc gtggcctgga ggctaagcga acgggttggg ctgcgcgtgt 10474

```
accccggttc gaatctcgaa tcaggctgga gccgcagcta acgtggtact ggcactcccg    10534

tctcgaccca agcctgcacc aaccctccag gatacggagg cgggtcgttt tgcaactttt    10594

tttcggaggc cggaaatgaa gactagtaag cgcggaaagc ggccgaccgc gatggctcgc    10654

tgccgtagtc tggagaagaa tcgccagggt tgcgttgcgg tgtgccccgg ttcgaggccg    10714

gccggattcc gcggctaacg agggcgtggc tgccccgtcg tttccaagac cccctagcca    10774

gccgacttct ccagttacgg agcgagcccc tcttttgttt tgtttgtttt tgccag atg    10833
                                                              Met

cat ccc gta ctg cgg cag atg cgc ccc cac cac cct cca ccg caa caa      10881
His Pro Val Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln Gln
190                 195                 200                 205

cag ccc cct cca cag ccg gcg ctt ctg ccc ccg ccc cag cag cag cag      10929
Gln Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln Gln
                210                 215                 220

caa ctt cca gcc acg acc gcc gcg gcc gcc gtg agc ggg gct gga cag      10977
Gln Leu Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly Gln
            225                 230                 235

act tct cag tat gac ctg gcc ttg gaa gag ggc gag ggg ctg gcg cgc      11025
Thr Ser Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg
        240                 245                 250

ctg ggg gcg tcg tcg ccg gag cgg cac ccg cgc gtg cag atg aaa agg      11073
Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys Arg
    255                 260                 265

gac gct cgc gag gcc tac gtg ccc aag cag aac ctg ttc aga gac agg      11121
Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp Arg
270                 275                 280                 285

agc ggc gag gag ccc gag gag atg cgc gcg gcc cgg ttc cac gcg ggg      11169
Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ala Arg Phe His Ala Gly
                290                 295                 300

cgg gag ctg cgg cgc ggc ctg gac cga aag agg gtg ctg agg gac gag      11217
Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp Glu
            305                 310                 315

gat ttc gag gcg gac gag ctg acg ggg atc agc ccc gcg cgc gcg cac      11265
Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala His
        320                 325                 330

gtg gcc gcg gcc aac ctg gtc acg gcg tac gag cag acc gtg aag gag      11313
Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys Glu
    335                 340                 345

gag agc aac ttc caa aaa tcc ttc aac aac cac gtg cgc acc ctg atc      11361
Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu Ile
350                 355                 360                 365

gcg cgc gag gag gtg acc ctg ggc ctg atg cac ctg tgg gac ctg ctg      11409
Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu Leu
                370                 375                 380

gag gcc atc gtg cag aac ccc acc agc aag ccg ctg acg gcg cag ctg      11457
Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu
            385                 390                 395

ttc ctg gtg gtg cag cat agt cgg gac aac gag gcg ttc agg gag gcg      11505
Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Ala Phe Arg Glu Ala
```

```
        400                 405                 410

ctg ctg aat atc acc gag ccc gag ggc cgc tgg ctc ctg gac ctg gtg      11553
Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu Val
    415                 420                 425

aac att ctg cag agc atc gtg gtg cag gag cgc ggg ctg ccg ctg tcc      11601
Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu Ser
430                 435                 440                 445

gag aag ctg gcg gcc atc aac ttc tcg gtg ctg agt ctg ggc aag tac      11649
Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys Tyr
                450                 455                 460

tac gct agg aag atc tac aag acc ccg tac gtg ccc ata gac aag gag      11697
Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu
            465                 470                 475

gtg aag atc gac ggg ttt tac atg cgc atg acc ctg aaa gtg ctg acc      11745
Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu Thr
        480                 485                 490

ctg agc gac gat ctg ggg gtg tac cgc aac gac agg atg cac cgc gcg      11793
Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg Ala
    495                 500                 505

gtg agc gcc agc agg cgg cgc gag ctg agc gac cag gag ctg atg cat      11841
Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met His
510                 515                 520                 525

agt ctg cag cgg gcc ctg acc ggg gcc ggg acc gag ggg gag agc tac      11889
Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser Tyr
                530                 535                 540

ttt gac atg ggc gcg gac ctg cac tgg cag ccc agc cgc cgg gcc ttg      11937
Phe Asp Met Gly Ala Asp Leu His Trp Gln Pro Ser Arg Arg Ala Leu
            545                 550                 555

gag gcg gca ggc ggt ccc ccc tac ata gaa gag gtg gac gat gag gtg      11985
Glu Ala Ala Gly Gly Pro Pro Tyr Ile Glu Glu Val Asp Asp Glu Val
        560                 565                 570

gac gag gag ggc gag tac ctg gaa gac tgatggcgcg accgtatttt tgctag     12038
Asp Glu Glu Gly Glu Tyr Leu Glu Asp
    575                 580

atg caa caa cag cca cct cct gat ccc gcg atg cgg gcg gcg ctg cag      12086
Met Gln Gln Gln Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu Gln
        585                 590                 595

agc cag ccg tcc ggc att aac tcc tcg gac gat tgg acc cag gcc atg      12134
Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala Met
    600                 605                 610

caa cgc atc atg gcg ctg acg acc cgc aac ccc gaa gcc ttt aga cag      12182
Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg Gln
615                 620                 625                 630

cag ccc cag gcc aac cgg ctc tcg gcc atc ctg gag gcc gtg gtg ccc      12230
Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val Pro
                635                 640                 645

tcg cgc tcc aac ccc acg cac gag aag gtc ctg gcc atc gtg aac gcg      12278
Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn Ala
            650                 655                 660

ctg gtg gag aac aag gcc atc cgc ggc gac gag gcc ggc ctg gtg tac      12326
Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val Tyr
        665                 670                 675
```

```
aac gcg ctg ctg gag cgc gtg gcc cgc tac aac agc acc aac gtg cag      12374
Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val Gln
    680                 685                 690

acc aac ctg gac cgc atg gtg acc gac gtg cgc gag gcc gtg gcc cag      12422
Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ala Gln
695                 700                 705                 710

cgc gag cgg ttc cac cgc gag tcc aac ctg gga tcc atg gtg gcg ctg      12470
Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala Leu
                715                 720                 725

aac gcc ttc ctc agc acc cag ccc gcc aac gtg ccc cgg ggc cag gag      12518
Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln Glu
            730                 735                 740

gac tac acc aac ttc atc agc gcc ctg cgc ctg atg gtg acc gag gtg      12566
Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Thr Glu Val
        745                 750                 755

ccc cag agc gag gtg tac cag tcc ggg ccg gac tac ttc ttc cag acc      12614
Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln Thr
    760                 765                 770

agt cgc cag ggc ttg cag acc gtg aac ctg agc cag gcg ttc aag aac      12662
Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys Asn
775                 780                 785                 790

ttg cag ggc ctg tgg ggc gtg cag gcc ccg gtc ggg gac cgc gcg acg      12710
Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala Thr
                795                 800                 805

gtg tcg agc ctg ctg acg ccg aac tcg cgc ctg ctg ctg ctg ctg gtg      12758
Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu Val
            810                 815                 820

gcc ccc ttc acg gac agc ggc agc atc aac cgc aac tcg tac ctg ggc      12806
Ala Pro Phe Thr Asp Ser Gly Ser Ile Asn Arg Asn Ser Tyr Leu Gly
        825                 830                 835

tac ctg att aac ctg tac cgc gag gcc atc ggc cag gcg cac gtg gac      12854
Tyr Leu Ile Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val Asp
    840                 845                 850

gag cag acc tac cag gag atc acc cac gtg agc cgc gcc ctg ggc cag      12902
Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly Gln
855                 860                 865                 870

gac gac ccg ggc aat ctg gaa gcc acc ctg aac ttt ttg ctg acc aac      12950
Asp Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr Asn
                875                 880                 885

cgg tcg cag aag atc ccg ccc cag tac acg ctc agc gcc gag gag gag      12998
Arg Ser Gln Lys Ile Pro Pro Gln Tyr Thr Leu Ser Ala Glu Glu Glu
            890                 895                 900

cgc atc ctg cga tac gtg cag cag agc gtg ggc ctg ttc ctg atg cag      13046
Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met Gln
        905                 910                 915

gag ggg gcc acc ccc agc gcc gcg ctc gac atg acc gcg cgc aac atg      13094
Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn Met
    920                 925                 930

gag ccc agc atg tac gcc agc aac cgc ccg ttc atc aat aaa ctg atg      13142
Glu Pro Ser Met Tyr Ala Ser Asn Arg Pro Phe Ile Asn Lys Leu Met
935                 940                 945                 950
```

```
gac tac ttg cat cgg gcg gcc gcc atg aac tct gac tat ttc acc aac      13190
Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr Asn
                955                 960                 965

gcc atc ctg aat ccc cac tgg ctc ccg ccg ccg ggg ttc tac acg ggc      13238
Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr Gly
            970                 975                 980

gag tac gac atg ccc gac ccc aat gac ggg ttc ctg tgg gac gat gtg      13286
Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp Val
        985                 990                 995

gac agc  agc gtg ttc tcc ccc  cga ccg ggt gct aac  gag cgc ccc       13331
Asp Ser  Ser Val Phe Ser Pro  Arg Pro Gly Ala Asn  Glu Arg Pro
    1000                1005                1010

ttg tgg  aag aag gaa ggc agc  gac cga cgc ccg tcc  tcg gcg ctg       13376
Leu Trp  Lys Lys Glu Gly Ser  Asp Arg Arg Pro Ser  Ser Ala Leu
    1015                1020                1025

tcc ggc  cgc gag ggt gct gcc  gcg gcg gtg ccc gag  gcc gcc agt       13421
Ser Gly  Arg Glu Gly Ala Ala  Ala Ala Val Pro Glu  Ala Ala Ser
    1030                1035                1040

cct ttc  ccg agc ttg ccc ttc  tcg ctg aac agt att  cgc agc agc       13466
Pro Phe  Pro Ser Leu Pro Phe  Ser Leu Asn Ser Ile  Arg Ser Ser
    1045                1050                1055

gag ctg  ggc agg atc acg cgc  ccg cgc ttg ctg ggc  gag gag gag       13511
Glu Leu  Gly Arg Ile Thr Arg  Pro Arg Leu Leu Gly  Glu Glu Glu
    1060                1065                1070

tac ttg  aat gac tcg ctg ttg  aga ccc gag cgg gag  aag aac ttc       13556
Tyr Leu  Asn Asp Ser Leu Leu  Arg Pro Glu Arg Glu  Lys Asn Phe
    1075                1080                1085

ccc aat  aac ggg ata gag agc  ctg gtg gac aag atg  agc cgc tgg       13601
Pro Asn  Asn Gly Ile Glu Ser  Leu Val Asp Lys Met  Ser Arg Trp
    1090                1095                1100

aag acg  tat gcg cag gag cac  agg gac gat ccg tcg  cag ggg gcc       13646
Lys Thr  Tyr Ala Gln Glu His  Arg Asp Asp Pro Ser  Gln Gly Ala
    1105                1110                1115

acg agc  cgg ggc agc gcc gcc  cgt aaa cgc cgg tgg  cac gac agg       13691
Thr Ser  Arg Gly Ser Ala Ala  Arg Lys Arg Arg Trp  His Asp Arg
    1120                1125                1130

cag cgg  gga ctg atg tgg gac  gat gag gat tcc gcc  gac gac agc       13736
Gln Arg  Gly Leu Met Trp Asp  Asp Glu Asp Ser Ala  Asp Asp Ser
    1135                1140                1145

agc gtg  ttg gac ttg ggt ggg  agt ggt aac ccg ttc  gct cac ctg       13781
Ser Val  Leu Asp Leu Gly Gly  Ser Gly Asn Pro Phe  Ala His Leu
    1150                1155                1160

cgc ccc  cgc atc ggg cgc atg  atg taagagaaac cgaaaataaa             13825
Arg Pro  Arg Ile Gly Arg Met  Met
    1165                1170

tgatactcac caaggccatg gcgaccagcg tgcgttcgtt tcttctctgt tgttgtatct   13885

agt atg atg agg cgt  gcg tac ccg gag ggt  cct cct ccc tcg tac        13930
    Met Met Arg Arg  Ala Tyr Pro Glu Gly  Pro Pro Pro Ser Tyr
                1175                1180                1185

gag agc gtg atg cag  cag gcg atg gcg gcg  gcg gcg gcg atg cag        13975
Glu Ser Val Met Gln  Gln Ala Met Ala Ala  Ala Ala Ala Met Gln
                1190                1195                1200
```

```
ccc ccg ctg gag gct  cct tac gtg ccc ccg  cgg tac ctg gcg cct        14020
Pro Pro Leu Glu Ala  Pro Tyr Val Pro Pro  Arg Tyr Leu Ala Pro
                1205                1210                1215

acg gag ggg cgg aac  agc att cgt tac tcg  gag ctg gca ccc ttg        14065
Thr Glu Gly Arg Asn  Ser Ile Arg Tyr Ser  Glu Leu Ala Pro Leu
                1220                1225                1230

tac gat acc acc cgg  ttg tac ctg gtg gac  aac aag tcg gcg gac        14110
Tyr Asp Thr Thr Arg  Leu Tyr Leu Val Asp  Asn Lys Ser Ala Asp
                1235                1240                1245

atc gcc tcg ctg aac  tac cag aac gac cac  agc aac ttc ctg acc        14155
Ile Ala Ser Leu Asn  Tyr Gln Asn Asp His  Ser Asn Phe Leu Thr
                1250                1255                1260

acc gtg gtg cag aac  aat gac ttc acc ccc  acg gag gcc agc acc        14200
Thr Val Val Gln Asn  Asn Asp Phe Thr Pro  Thr Glu Ala Ser Thr
                1265                1270                1275

cag acc atc aac ttt  gac gag cgc tcg cgg  tgg ggc ggt cag ctg        14245
Gln Thr Ile Asn Phe  Asp Glu Arg Ser Arg  Trp Gly Gly Gln Leu
                1280                1285                1290

aaa acc atc atg cac  acc aac atg ccc aac  gtg aac gag ttc atg        14290
Lys Thr Ile Met His  Thr Asn Met Pro Asn  Val Asn Glu Phe Met
                1295                1300                1305

tac agc aac aag ttc  aag gcg cgg gtg atg  gtc tcc cgc aag acc        14335
Tyr Ser Asn Lys Phe  Lys Ala Arg Val Met  Val Ser Arg Lys Thr
                1310                1315                1320

ccc aac ggg gtg aca  gtg aca gat ggt agt  cag gat atc ttg gag        14380
Pro Asn Gly Val Thr  Val Thr Asp Gly Ser  Gln Asp Ile Leu Glu
                1325                1330                1335

tat gaa tgg gtg gag  ttt gag ctg ccc gaa  ggc aac ttc tcg gtg        14425
Tyr Glu Trp Val Glu  Phe Glu Leu Pro Glu  Gly Asn Phe Ser Val
                1340                1345                1350

acc atg acc atc gac  ctg atg aac aac gcc  atc atc gac aat tac        14470
Thr Met Thr Ile Asp  Leu Met Asn Asn Ala  Ile Ile Asp Asn Tyr
                1355                1360                1365

ttg gcg gtg ggg cgg  cag aac ggg gtc ctg  gag agc gat atc ggc        14515
Leu Ala Val Gly Arg  Gln Asn Gly Val Leu  Glu Ser Asp Ile Gly
                1370                1375                1380

gtg aag ttc gac act  agg aac ttc agg ctg  ggc tgg gac ccc gtg        14560
Val Lys Phe Asp Thr  Arg Asn Phe Arg Leu  Gly Trp Asp Pro Val
                1385                1390                1395

acc gag ctg gtc atg  ccc ggg gtg tac acc  aac gag gcc ttc cac        14605
Thr Glu Leu Val Met  Pro Gly Val Tyr Thr  Asn Glu Ala Phe His
                1400                1405                1410

ccc gat att gtc ttg  ctg ccc ggc tgc ggg  gtg gac ttc acc gag        14650
Pro Asp Ile Val Leu  Leu Pro Gly Cys Gly  Val Asp Phe Thr Glu
                1415                1420                1425

agc cgc ctc agc aac  ctg ctg ggc att cgc  aag agg cag ccc ttc        14695
Ser Arg Leu Ser Asn  Leu Leu Gly Ile Arg  Lys Arg Gln Pro Phe
                1430                1435                1440

cag gag ggc ttc cag  atc atg tac gag gat  ctg gag ggg ggc aac        14740
Gln Glu Gly Phe Gln  Ile Met Tyr Glu Asp  Leu Glu Gly Gly Asn
                1445                1450                1455
```

```
atc ccc gcg ctc ctg  gat gtc gac gcc tat  gag aaa agc aag gag        14785
Ile Pro Ala Leu Leu  Asp Val Asp Ala Tyr  Glu Lys Ser Lys Glu
                1460                1465                1470

gag agc gcc gcc gcg  gcg act gca gct gta  gcc acc gcc tct acc        14830
Glu Ser Ala Ala Ala  Ala Thr Ala Ala Val  Ala Thr Ala Ser Thr
                1475                1480                1485

gag gtc agg ggc gat  aat ttt gcc agc cct  gca gca gtg gca gcg        14875
Glu Val Arg Gly Asp  Asn Phe Ala Ser Pro  Ala Ala Val Ala Ala
                1490                1495                1500

gcc gag gcg gct gaa  acc gaa agt aag ata  gtc att cag ccg gtg        14920
Ala Glu Ala Ala Glu  Thr Glu Ser Lys Ile  Val Ile Gln Pro Val
                1505                1510                1515

gag aag gat agc aag  gac agg agc tac aac  gtg ctg ccg gac aag        14965
Glu Lys Asp Ser Lys  Asp Arg Ser Tyr Asn  Val Leu Pro Asp Lys
                1520                1525                1530

ata aac acc gcc tac  cgc agc tgg tac ctg  gcc tac aac tat ggc        15010
Ile Asn Thr Ala Tyr  Arg Ser Trp Tyr Leu  Ala Tyr Asn Tyr Gly
                1535                1540                1545

gac ccc gag aag ggc  gtg cgc tcc tgg acg  ctg ctc acc acc tcg        15055
Asp Pro Glu Lys Gly  Val Arg Ser Trp Thr  Leu Leu Thr Thr Ser
                1550                1555                1560

gac gtc acc tgc ggc  gtg gag caa gtc tac  tgg tcg ctg ccc gac        15100
Asp Val Thr Cys Gly  Val Glu Gln Val Tyr  Trp Ser Leu Pro Asp
                1565                1570                1575

atg atg caa gac ccg  gtc acc ttc cgc tcc  acg cgt caa gtt agc        15145
Met Met Gln Asp Pro  Val Thr Phe Arg Ser  Thr Arg Gln Val Ser
                1580                1585                1590

aac tac ccg gtg gtg  ggc gcc gag ctc ctg  ccc gtc tac tcc aag        15190
Asn Tyr Pro Val Val  Gly Ala Glu Leu Leu  Pro Val Tyr Ser Lys
                1595                1600                1605

agc ttc ttc aac gag  cag gcc gtc tac tcg  cag cag ctg cgc gcc        15235
Ser Phe Phe Asn Glu  Gln Ala Val Tyr Ser  Gln Gln Leu Arg Ala
                1610                1615                1620

ttc acc tcg ctc acg  cac gtc ttc aac cgc  ttc ccc gag aac cag        15280
Phe Thr Ser Leu Thr  His Val Phe Asn Arg  Phe Pro Glu Asn Gln
                1625                1630                1635

atc ctc gtc cgc ccg  ccc gcg ccc acc att  acc acc gtc agt gaa        15325
Ile Leu Val Arg Pro  Pro Ala Pro Thr Ile  Thr Thr Val Ser Glu
                1640                1645                1650

aac gtt cct gct ctc  aca gat cac ggg acc  ctg ccg ctg cgc agc        15370
Asn Val Pro Ala Leu  Thr Asp His Gly Thr  Leu Pro Leu Arg Ser
                1655                1660                1665

agt atc cgg gga gtc  cag cgc gtg acc gtt  act gac gcc aga cgc        15415
Ser Ile Arg Gly Val  Gln Arg Val Thr Val  Thr Asp Ala Arg Arg
                1670                1675                1680

cgc acc tgc ccc tac  gtc tac aag gcc ctg  ggc ata gtc gcg ccg        15460
Arg Thr Cys Pro Tyr  Val Tyr Lys Ala Leu  Gly Ile Val Ala Pro
                1685                1690                1695

cgc gtc ctc tcg agc  cgc acc ttc taaaaa atg tcc  att ctc atc tcg     15508
Arg Val Leu Ser Ser  Arg Thr Phe        Met Ser  Ile Leu Ile Ser
                1700                        1705

ccc  agt aat aac acc ggt  tgg ggc ctg cgc gcg  ccc agc aag atg       15553
```

```
Pro  Ser Asn Asn Thr Gly  Trp Gly Leu Arg Ala  Pro Ser Lys Met
1710                1715                1720

tac  gga ggc gct cgc caa  cgc tcc acg caa cac  ccc gtg cgc gtg       15598
Tyr  Gly Gly Ala Arg Gln  Arg Ser Thr Gln His  Pro Val Arg Val
1725                1730                1735

cgc  ggg cac ttc cgc gct  ccc tgg ggc gcc ctc  aag ggc cgc gtg       15643
Arg  Gly His Phe Arg Ala  Pro Trp Gly Ala Leu  Lys Gly Arg Val
1740                1745                1750

cgg  tcg cgc acc acc gtc  gac gac gtg atc gac  cag gtg gtg gcc       15688
Arg  Ser Arg Thr Thr Val  Asp Asp Val Ile Asp  Gln Val Val Ala
1755                1760                1765

gac  gcg cgc aac tac acc  ccc gcc gcc gcg ccc  gtc tcc acc gtg       15733
Asp  Ala Arg Asn Tyr Thr  Pro Ala Ala Ala Pro  Val Ser Thr Val
1770                1775                1780

gac  gcc gtc atc gac agc  gtg gtg gcc gac gcg  cgc cgg tac gcc       15778
Asp  Ala Val Ile Asp Ser  Val Val Ala Asp Ala  Arg Arg Tyr Ala
1785                1790                1795

cgc  gcc aag agc cgg cgg  cgg cgc atc gcc cgg  cgg cac cgg agc       15823
Arg  Ala Lys Ser Arg Arg  Arg Arg Ile Ala Arg  Arg His Arg Ser
1800                1805                1810

acc  ccc gcc atg cgc gcg  gcg cga gcc ttg ctg  cgc agg gcc agg       15868
Thr  Pro Ala Met Arg Ala  Ala Arg Ala Leu Leu  Arg Arg Ala Arg
1815                1820                1825

cgc  acg gga cgc agg gcc  atg ctc agg gcg gcc  aga cgc gcg gcc       15913
Arg  Thr Gly Arg Arg Ala  Met Leu Arg Ala Ala  Arg Arg Ala Ala
1830                1835                1840

tca  ggc gcc agc gcc ggc  agg acc cgg aga cgc  gcg gcc acg gcg       15958
Ser  Gly Ala Ser Ala Gly  Arg Thr Arg Arg Arg  Ala Ala Thr Ala
1845                1850                1855

gcg  gca gcg gcc atc gcc  agc atg tcc cgc ccg  cgg cga ggg aac       16003
Ala  Ala Ala Ala Ile Ala  Ser Met Ser Arg Pro  Arg Arg Gly Asn
1860                1865                1870

gtg  tac tgg gtg cgc gac  gcc gcc acc ggt gtg  cgc gtg ccc gtg       16048
Val  Tyr Trp Val Arg Asp  Ala Ala Thr Gly Val  Arg Val Pro Val
1875                1880                1885

cgc  acc cgc ccc cct cgc  act tgaagatgtt cacttcgcga tgttgatgtg       16099
Arg  Thr Arg Pro Pro Arg  Thr
1890                1895

tcccagcggc gagg atg tcc aag cgc  aaa ttc aag gaa gag  atg ctc cag    16149
                Met Ser Lys Arg  Lys Phe Lys Glu Glu  Met Leu Gln
                           1900                1905

gtc atc  gcg cct gag atc tac  ggc ccc gcg gtg gtg  aag gag gaa       16194
Val Ile  Ala Pro Glu Ile Tyr  Gly Pro Ala Val Val  Lys Glu Glu
    1910                1915                1920

aga aag  ccc cgc aaa atc aag  cgg gtc aaa aag gac  aaa aag gaa       16239
Arg Lys  Pro Arg Lys Ile Lys  Arg Val Lys Lys Asp  Lys Lys Glu
    1925                1930                1935

gaa gaa  agt gat gtg gac gga  ctg gtg gag ttt gtg  cgc gag ttc       16284
Glu Glu  Ser Asp Val Asp Gly  Leu Val Glu Phe Val  Arg Glu Phe
    1940                1945                1950

gcc ccc  cgg cgg cgc gtg cag  tgg cgc ggg cgg aag  gtg cgc ccg       16329
Ala Pro  Arg Arg Arg Val Gln  Trp Arg Gly Arg Lys  Val Arg Pro
```

```
    1955                1960                1965

gtg ctg  aga cca ggc act acg  gtg gtc ttc acg ccc  ggc gag cgc       16374
Val Leu  Arg Pro Gly Thr Thr  Val Val Phe Thr Pro  Gly Glu Arg
    1970                1975                1980

tcc ggc  acc gct tcc aag cgc  tcc tac gac gag gtg  tac ggg gac       16419
Ser Gly  Thr Ala Ser Lys Arg  Ser Tyr Asp Glu Val  Tyr Gly Asp
    1985                1990                1995

gag gac  atc ctc gag cag gcg  gcc gag cgc ctg ggc  gag ttt gct       16464
Glu Asp  Ile Leu Glu Gln Ala  Ala Glu Arg Leu Gly  Glu Phe Ala
    2000                2005                2010

tac ggc  aag cgc agc cgc tcc  gcg ccg aag gaa gag  gcg gtg tcc       16509
Tyr Gly  Lys Arg Ser Arg Ser  Ala Pro Lys Glu Glu  Ala Val Ser
    2015                2020                2025

atc ccg  ctg gac cac ggc aac  ccc acg ccg agc ctc  aag ccc gtg       16554
Ile Pro  Leu Asp His Gly Asn  Pro Thr Pro Ser Leu  Lys Pro Val
    2030                2035                2040

acc ctg  cag cag gtg ctg ccg  acc gcg gcg ccg cgc  cgg ggg ttc       16599
Thr Leu  Gln Gln Val Leu Pro  Thr Ala Ala Pro Arg  Arg Gly Phe
    2045                2050                2055

aag cgc  gag ggc gag gat ctg  tac ccc acc atg cag  ctg atg gtg       16644
Lys Arg  Glu Gly Glu Asp Leu  Tyr Pro Thr Met Gln  Leu Met Val
    2060                2065                2070

ccc aag  cgc cag aag ctg gaa  gac gtg ctg gag acc  atg aag gtg       16689
Pro Lys  Arg Gln Lys Leu Glu  Asp Val Leu Glu Thr  Met Lys Val
    2075                2080                2085

gac ccg  gac gtg cag ccc gag  gtc aag gtg cgg ccc  atc aag cag       16734
Asp Pro  Asp Val Gln Pro Glu  Val Lys Val Arg Pro  Ile Lys Gln
    2090                2095                2100

gtg gcc  ccg ggc ctg ggc gtg  cag acc gtg gac atc  aag atc ccc       16779
Val Ala  Pro Gly Leu Gly Val  Gln Thr Val Asp Ile  Lys Ile Pro
    2105                2110                2115

acg gag  ccc atg gaa acg cag  acc gag ccc gtg aaa  ccc agc acc       16824
Thr Glu  Pro Met Glu Thr Gln  Thr Glu Pro Val Lys  Pro Ser Thr
    2120                2125                2130

agc acc  atg gag gtg cag acg  gat cct tgg atg cca  tcg gct act       16869
Ser Thr  Met Glu Val Gln Thr  Asp Pro Trp Met Pro  Ser Ala Thr
    2135                2140                2145

agc cga  aga ccc cgg cgc aag  tac ggc gcg gcc agc  ctg ctg atg       16914
Ser Arg  Arg Pro Arg Arg Lys  Tyr Gly Ala Ala Ser  Leu Leu Met
    2150                2155                2160

ccc aac  tac gcg ctg cat cct  tcc atc atc ccc acg  ccg ggc tac       16959
Pro Asn  Tyr Ala Leu His Pro  Ser Ile Ile Pro Thr  Pro Gly Tyr
    2165                2170                2175

cgc ggc  acg cgc ttc tac cgc  ggt cat aca agc cgc  cgc cgc aag       17004
Arg Gly  Thr Arg Phe Tyr Arg  Gly His Thr Ser Arg  Arg Arg Lys
    2180                2185                2190

acc acc  acc cgc cgc cgc cgt  cgc cgc aca acc gct  gct gca tct       17049
Thr Thr  Thr Arg Arg Arg Arg  Arg Arg Thr Thr Ala  Ala Ala Ser
    2195                2200                2205

acc cct  gcc gcc ctg gtg cgg  aga gtg tac cgc cgc  ggc cgc gcg       17094
Thr Pro  Ala Ala Leu Val Arg  Arg Val Tyr Arg Arg  Gly Arg Ala
    2210                2215                2220
```

```
cct ctg  acc ctg ccg cgc gcg  cgc tac cac ccg agc  att gcc att       17139
Pro Leu  Thr Leu Pro Arg Ala  Arg Tyr His Pro Ser  Ile Ala Ile
    2225                2230                2235

taaactttcg cctgctttgc agatca atg gcc  ctc aca tgc cgc ctc  cgc       17189
                              Met Ala  Leu Thr Cys Arg Leu  Arg
                                  2240                2245

gtt ccc att acg  ggc tac cga gga aga  aaa ccg cgc cgt aga  agg       17234
Val Pro Ile Thr  Gly Tyr Arg Gly Arg  Lys Pro Arg Arg Arg  Arg
            2250                2255                2260

ctg gcg ggg aac  ggg atg cgt cgc cac  cac cac cgg cgg cgg  cgc       17279
Leu Ala Gly Asn  Gly Met Arg Arg His  His His Arg Arg Arg  Arg
            2265                2270                2275

gcc atc agc aag  cgg ttg ggg gga ggc  ttc ctg ccc gcg ctg  atc       17324
Ala Ile Ser Lys  Arg Leu Gly Gly Gly  Phe Leu Pro Ala Leu  Ile
            2280                2285                2290

ccc atc atc gcc  gcg gcg atc ggg gcg  atc ccc ggc att gct  tcc       17369
Pro Ile Ile Ala  Ala Ala Ile Gly Ala  Ile Pro Gly Ile Ala  Ser
            2295                2300                2305

gtg gcg gtg cag  gcc tct cag cgc cac  tgagacacac ttggaaacat          17416
Val Ala Val Gln  Ala Ser Gln Arg His
            2310                2315

cttgtaataa acca atg gac tct gac gct  cct ggt cct gtg atg  tgt ttt    17466
                Met Asp Ser Asp Ala  Pro Gly Pro Val Met  Cys Phe
                              2320                2325

cgt aga cag  atg gaa gac atc aat  ttt tcg tcc ctg gct  ccg cga       17511
Arg Arg Gln  Met Glu Asp Ile Asn  Phe Ser Ser Leu Ala  Pro Arg
        2330                2335                2340

cac ggc acg  cgg ccg ttc atg ggc  acc tgg agc gac atc  ggc acc       17556
His Gly Thr  Arg Pro Phe Met Gly  Thr Trp Ser Asp Ile  Gly Thr
        2345                2350                2355

agc caa ctg  aac ggg ggc gcc ttc  aat tgg agc agt ctc  tgg agc       17601
Ser Gln Leu  Asn Gly Gly Ala Phe  Asn Trp Ser Ser Leu  Trp Ser
        2360                2365                2370

ggg ctt aag  aat ttc ggg tcc acg  ctt aaa acc tat ggc  agc aag       17646
Gly Leu Lys  Asn Phe Gly Ser Thr  Leu Lys Thr Tyr Gly  Ser Lys
        2375                2380                2385

gcg tgg aac  agc acc aca ggg cag  gcg ctg agg gat aag  ctg aaa       17691
Ala Trp Asn  Ser Thr Thr Gly Gln  Ala Leu Arg Asp Lys  Leu Lys
        2390                2395                2400

gag cag aac  ttc cag cag aag gtg  gtc gat ggc ctg gcc  tcg ggc       17736
Glu Gln Asn  Phe Gln Gln Lys Val  Val Asp Gly Leu Ala  Ser Gly
        2405                2410                2415

atc aac ggg  gtg gtg gac ctg gcc  aac cag gcc gtg cag  cgg cag       17781
Ile Asn Gly  Val Val Asp Leu Ala  Asn Gln Ala Val Gln  Arg Gln
        2420                2425                2430

atc aac agc  cgc ctg gac ccg gtg  ccg ccc gcc ggc tcc  gtg gag       17826
Ile Asn Ser  Arg Leu Asp Pro Val  Pro Pro Ala Gly Ser  Val Glu
        2435                2440                2445

atg ccg cag  gtg gag gag gag ctg  cct ccc ctg gac aag  cgg ggc       17871
Met Pro Gln  Val Glu Glu Glu Leu  Pro Pro Leu Asp Lys  Arg Gly
        2450                2455                2460
```

```
gag aag cga  ccc cgc ccc gac gcg  gag gag acg ctg ctg  acg cac       17916
Glu Lys Arg  Pro Arg Pro Asp Ala  Glu Glu Thr Leu Leu  Thr His
        2465                 2470                 2475

acg gac gag  ccg ccc ccg tac gag  gag gcg gtg aaa ctg  ggc ctg       17961
Thr Asp Glu  Pro Pro Pro Tyr Glu  Glu Ala Val Lys Leu  Gly Leu
        2480                 2485                 2490

ccc acc acg  cgg ccc atc gcg cct  ctg gcc acc ggg gtg  ctg aaa       18006
Pro Thr Thr  Arg Pro Ile Ala Pro  Leu Ala Thr Gly Val  Leu Lys
        2495                 2500                 2505

ccc gaa agt  agt aag ccc gcg acc  ctg gac ttg cct cct  ccc cag       18051
Pro Glu Ser  Ser Lys Pro Ala Thr  Leu Asp Leu Pro Pro  Pro Gln
        2510                 2515                 2520

cct tcc cgc  ccc tcc aca gtg gct  aag cct ctg ccg ccg  gtg gcc       18096
Pro Ser Arg  Pro Ser Thr Val Ala  Lys Pro Leu Pro Pro  Val Ala
        2525                 2530                 2535

gtg gcc cgc  gcg cga ccc ggg ggc  acc gcc cgc cct cat  gcg aac       18141
Val Ala Arg  Ala Arg Pro Gly Gly  Thr Ala Arg Pro His  Ala Asn
        2540                 2545                 2550

tgg cag agc  act ctg aac agc atc  gtg ggt ctg gga gtg  cag agt       18186
Trp Gln Ser  Thr Leu Asn Ser Ile  Val Gly Leu Gly Val  Gln Ser
        2555                 2560                 2565

gtg aag cgc  cgc cgc tgc tat taaacctacc gtagcgctta acttgcttgt       18237
Val Lys Arg  Arg Arg Cys Tyr
        2570

ctgtgtgtgt atgtattatg tcgccgccgc tgtcgccaga aggaggagtg aagaggcgcg   18297

tcgccgagtt gcaag atg  gcc acc cca tcg atg  ctg ccc cag tgg gcg       18345
                 Met  Ala Thr Pro Ser Met  Leu Pro Gln Trp Ala
                 2575                 2580                 2585

tac atg cac atc gcc  gga cag gac gct tcg  gag tac ctg agt ccg       18390
Tyr Met His Ile Ala  Gly Gln Asp Ala Ser  Glu Tyr Leu Ser Pro
                2590                 2595                 2600

ggt ctg gtg cag ttc  gcc cgc gcc aca gac  acc tac ttc agt ctg       18435
Gly Leu Val Gln Phe  Ala Arg Ala Thr Asp  Thr Tyr Phe Ser Leu
                2605                 2610                 2615

ggg aac aag ttt agg  aac ccc acg gtg gcg  ccc acg cac gat gtg       18480
Gly Asn Lys Phe Arg  Asn Pro Thr Val Ala  Pro Thr His Asp Val
                2620                 2625                 2630

acc acc gac cgc agc  cag cgg ctg acg ctg  cgc ttc gtg ccc gtg       18525
Thr Thr Asp Arg Ser  Gln Arg Leu Thr Leu  Arg Phe Val Pro Val
                2635                 2640                 2645

gac cgc gag gac aac  acc tac tcg tac aaa  gtg cgc tac acg ctg       18570
Asp Arg Glu Asp Asn  Thr Tyr Ser Tyr Lys  Val Arg Tyr Thr Leu
                2650                 2655                 2660

gcc gtg ggc gac aac  cgc gtg ctg gac atg  gcc agc acc tac ttt       18615
Ala Val Gly Asp Asn  Arg Val Leu Asp Met  Ala Ser Thr Tyr Phe
                2665                 2670                 2675

gac atc cgc ggc gtg  ctg gac cgg ggc cct  agc ttc aaa ccc tac       18660
Asp Ile Arg Gly Val  Leu Asp Arg Gly Pro  Ser Phe Lys Pro Tyr
                2680                 2685                 2690

tcc ggc acc gcc tac  aat gct ctg gcc ccc  aag gga gca ccc aac       18705
Ser Gly Thr Ala Tyr  Asn Ala Leu Ala Pro  Lys Gly Ala Pro Asn
                2695                 2700                 2705
```

```
act tgc cag tgg aca  tac aca gat aag caa  acc gaa aaa aca gcc        18750
Thr Cys Gln Trp Thr  Tyr Thr Asp Lys Gln  Thr Glu Lys Thr Ala
                2710                2715                2720

acg tat ggg aat gcg  cct gta caa ggc att  gcc atc aca aaa gat        18795
Thr Tyr Gly Asn Ala  Pro Val Gln Gly Ile  Ala Ile Thr Lys Asp
                2725                2730                2735

ggt att caa ctt gga  act gac agt gat gga  aat cct gta tat gct        18840
Gly Ile Gln Leu Gly  Thr Asp Ser Asp Gly  Asn Pro Val Tyr Ala
                2740                2745                2750

caa aag aca ttt gaa  ccc gaa cct caa gtg  ggt gat gca gaa tgg        18885
Gln Lys Thr Phe Glu  Pro Glu Pro Gln Val  Gly Asp Ala Glu Trp
                2755                2760                2765

cat gac act aca ggt  aca gat gaa aag tat  gga ggc agg gca ctt        18930
His Asp Thr Thr Gly  Thr Asp Glu Lys Tyr  Gly Gly Arg Ala Leu
                2770                2775                2780

aag cct gac acc aaa  atg aag cct tgc tat  ggt tct ttt gcc aaa        18975
Lys Pro Asp Thr Lys  Met Lys Pro Cys Tyr  Gly Ser Phe Ala Lys
                2785                2790                2795

ccc act aac aaa gaa  ggt gga cag gca aag  aac aga aca aaa act        19020
Pro Thr Asn Lys Glu  Gly Gly Gln Ala Lys  Asn Arg Thr Lys Thr
                2800                2805                2810

gat gga act ggc gaa  gag cct gat att gat  atg gca ttt ttt gac        19065
Asp Gly Thr Gly Glu  Glu Pro Asp Ile Asp  Met Ala Phe Phe Asp
                2815                2820                2825

ggc aga aat gca act  aca gct ggt ttg gct  cca gaa att gtt ttg        19110
Gly Arg Asn Ala Thr  Thr Ala Gly Leu Ala  Pro Glu Ile Val Leu
                2830                2835                2840

tat act gag aat gtg  gat ctg gag act cca  gat acc cat att gta        19155
Tyr Thr Glu Asn Val  Asp Leu Glu Thr Pro  Asp Thr His Ile Val
                2845                2850                2855

tac aaa gca ggc aca  gat gac agc agc tct  tcg att aat ttg ggg        19200
Tyr Lys Ala Gly Thr  Asp Asp Ser Ser Ser  Ser Ile Asn Leu Gly
                2860                2865                2870

cag caa tcc atg ccc  aac aga ccc aac tac  att ggg ttc aga gac        19245
Gln Gln Ser Met Pro  Asn Arg Pro Asn Tyr  Ile Gly Phe Arg Asp
                2875                2880                2885

aac ttt atc ggg ctc  atg tac tac aac agc  act ggc aat atg ggg        19290
Asn Phe Ile Gly Leu  Met Tyr Tyr Asn Ser  Thr Gly Asn Met Gly
                2890                2895                2900

gtg ctg gcc ggt cag  gct tct cag ctg aat  gct gtg gtt gac ttg        19335
Val Leu Ala Gly Gln  Ala Ser Gln Leu Asn  Ala Val Val Asp Leu
                2905                2910                2915

caa gac aga aac acc  gaa ctg tcc tac cag  ctc ttg ctt gac tct        19380
Gln Asp Arg Asn Thr  Glu Leu Ser Tyr Gln  Leu Leu Leu Asp Ser
                2920                2925                2930

ctg ggc gac aga acc  ctg tat ttc agt atg  tgg aat cag gcg gtg        19425
Leu Gly Asp Arg Thr  Leu Tyr Phe Ser Met  Trp Asn Gln Ala Val
                2935                2940                2945

gac agc tat gat cct  gat gtg cgc att att  gaa aac cat ggt gtg        19470
Asp Ser Tyr Asp Pro  Asp Val Arg Ile Ile  Glu Asn His Gly Val
                2950                2955                2960
```

```
gaa gat gaa ctt ccc  aac tat tgc ttc cct  ctg gat gct gtt ggt        19515
Glu Asp Glu Leu Pro  Asn Tyr Cys Phe Pro  Leu Asp Ala Val Gly
                2965                 2970                 2975

agg aca gat act tat  cag gga att aag ccc  aat gga ggc gat cca        19560
Arg Thr Asp Thr Tyr  Gln Gly Ile Lys Pro  Asn Gly Gly Asp Pro
                2980                 2985                 2990

gcc aca tgg gcc aaa  gat gac agc gcc aat  gat gct aat gaa atg        19605
Ala Thr Trp Ala Lys  Asp Asp Ser Ala Asn  Asp Ala Asn Glu Met
                2995                 3000                 3005

ggc aag ggc aat cca  ttc gcc atg gaa atc  aac atc caa gcc aac        19650
Gly Lys Gly Asn Pro  Phe Ala Met Glu Ile  Asn Ile Gln Ala Asn
                3010                 3015                 3020

ctg tgg agg aac ttc  ctc tac gcc aac gtg  gcc ctg tac cta ccc        19695
Leu Trp Arg Asn Phe  Leu Tyr Ala Asn Val  Ala Leu Tyr Leu Pro
                3025                 3030                 3035

gat tct tac aag tac  acg ccg gcc aac gtc  acc ctg ccc acc aac        19740
Asp Ser Tyr Lys Tyr  Thr Pro Ala Asn Val  Thr Leu Pro Thr Asn
                3040                 3045                 3050

acc aac acc tac gat  tat atg aac ggc cgg  gtg gtg gcg cct tcg        19785
Thr Asn Thr Tyr Asp  Tyr Met Asn Gly Arg  Val Val Ala Pro Ser
                3055                 3060                 3065

ctg gtg gac tcc tac  atc aac atc ggg gcg  cgc tgg tcg ctg gac        19830
Leu Val Asp Ser Tyr  Ile Asn Ile Gly Ala  Arg Trp Ser Leu Asp
                3070                 3075                 3080

ccc atg gac aac gtc  aat ccc ttc aac cac  cac cgc aac gcg ggc        19875
Pro Met Asp Asn Val  Asn Pro Phe Asn His  His Arg Asn Ala Gly
                3085                 3090                 3095

ttg cgc tac cgc tcc  atg ctc ctg ggc aac  ggg cgc tac gtg ccc        19920
Leu Arg Tyr Arg Ser  Met Leu Leu Gly Asn  Gly Arg Tyr Val Pro
                3100                 3105                 3110

ttc cac atc cag gtg  ccc cag aaa ttt ttc  gcc atc aag agc ctc        19965
Phe His Ile Gln Val  Pro Gln Lys Phe Phe  Ala Ile Lys Ser Leu
                3115                 3120                 3125

ctg ctc ctg ccc ggg  tcc tac acc tac gag  tgg aac ttc cgc aag        20010
Leu Leu Leu Pro Gly  Ser Tyr Thr Tyr Glu  Trp Asn Phe Arg Lys
                3130                 3135                 3140

gac gtc aac atg atc  ctg cag agc tcc ctc  ggc aac gac ctg cgc        20055
Asp Val Asn Met Ile  Leu Gln Ser Ser Leu  Gly Asn Asp Leu Arg
                3145                 3150                 3155

acg gac ggg gcc tcc  atc tcc ttc acc agc  atc aac ctc tac gcc        20100
Thr Asp Gly Ala Ser  Ile Ser Phe Thr Ser  Ile Asn Leu Tyr Ala
                3160                 3165                 3170

acc ttc ttc ccc atg  gcg cac aac acg gcc  tcc acg ctc gag gcc        20145
Thr Phe Phe Pro Met  Ala His Asn Thr Ala  Ser Thr Leu Glu Ala
                3175                 3180                 3185

atg ctg cgc aac gac  acc aac gac cag tcc  ttc aac gac tac ctc        20190
Met Leu Arg Asn Asp  Thr Asn Asp Gln Ser  Phe Asn Asp Tyr Leu
                3190                 3195                 3200

tcg gcg gcc aac atg  ctc tac ccc atc ccg  gcc aac gcc acc aac        20235
Ser Ala Ala Asn Met  Leu Tyr Pro Ile Pro  Ala Asn Ala Thr Asn
                3205                 3210                 3215

gtg ccc atc tcc atc  ccc tcg cgc aac tgg  gcc gcc ttc cgc ggc        20280
```

```
Val Pro Ile Ser Ile  Pro Ser Arg Asn Trp  Ala Ala Phe Arg Gly
                3220                3225                3230

tgg tcc ttc acg cgc  ctc aag acc aag gag  acg ccc tcg ctg ggc        20325
Trp Ser Phe Thr Arg  Leu Lys Thr Lys Glu  Thr Pro Ser Leu Gly
                3235                3240                3245

tcc ggg ttc gac ccc  tac ttc gtc tac tcg  ggc tcc atc ccc tac        20370
Ser Gly Phe Asp Pro  Tyr Phe Val Tyr Ser  Gly Ser Ile Pro Tyr
                3250                3255                3260

ctc gac ggc acc ttc  tac ctc aac cac acc  ttc aag aag gtc tcc        20415
Leu Asp Gly Thr Phe  Tyr Leu Asn His Thr  Phe Lys Lys Val Ser
                3265                3270                3275

atc acc ttc gac tcc  tcc gtc agc tgg ccc  ggc aac gac cgg ctc        20460
Ile Thr Phe Asp Ser  Ser Val Ser Trp Pro  Gly Asn Asp Arg Leu
                3280                3285                3290

ctg acg ccc aac gag  ttc gaa atc aag cgc  acc gtc gac ggc gag        20505
Leu Thr Pro Asn Glu  Phe Glu Ile Lys Arg  Thr Val Asp Gly Glu
                3295                3300                3305

ggc tac aac gtg gcc  cag tgc aac atg acc  aag gac tgg ttc ctg        20550
Gly Tyr Asn Val Ala  Gln Cys Asn Met Thr  Lys Asp Trp Phe Leu
                3310                3315                3320

gtc cag atg ctg gcc  cac tac aac atc ggc  tac cag ggc ttc tac        20595
Val Gln Met Leu Ala  His Tyr Asn Ile Gly  Tyr Gln Gly Phe Tyr
                3325                3330                3335

gtg ccc gag ggc tac  aag gac cgc atg tac  tcc ttc ttc cgc aac        20640
Val Pro Glu Gly Tyr  Lys Asp Arg Met Tyr  Ser Phe Phe Arg Asn
                3340                3345                3350

ttc cag ccc atg agc  cgc cag gtg gtg gac  gag gtc aac tac aag        20685
Phe Gln Pro Met Ser  Arg Gln Val Val Asp  Glu Val Asn Tyr Lys
                3355                3360                3365

gac tac cag gcc gtc  acc ctg gcc tac cag  cac aac aac tcg ggc        20730
Asp Tyr Gln Ala Val  Thr Leu Ala Tyr Gln  His Asn Asn Ser Gly
                3370                3375                3380

ttc gtc ggc tac ctc  gcg ccc acc atg cgc  cag ggc cag ccc tac        20775
Phe Val Gly Tyr Leu  Ala Pro Thr Met Arg  Gln Gly Gln Pro Tyr
                3385                3390                3395

ccc gcc aac tac ccg  tac ccg ctc atc ggc  aag agc gcc gtc acc        20820
Pro Ala Asn Tyr Pro  Tyr Pro Leu Ile Gly  Lys Ser Ala Val Thr
                3400                3405                3410

agc gtc acc cag aaa  aag ttc ctc tgc gac  agg gtc atg tgg cgc        20865
Ser Val Thr Gln Lys  Lys Phe Leu Cys Asp  Arg Val Met Trp Arg
                3415                3420                3425

atc ccc ttc tcc agc  aac ttc atg tcc atg  ggc gcg ctc acc gac        20910
Ile Pro Phe Ser Ser  Asn Phe Met Ser Met  Gly Ala Leu Thr Asp
                3430                3435                3440

ctc ggc cag aac atg  ctc tat gcc aac tcc  gcc cac gcg cta gac        20955
Leu Gly Gln Asn Met  Leu Tyr Ala Asn Ser  Ala His Ala Leu Asp
                3445                3450                3455

atg aat ttc gaa gtc  gac ccc atg gat gag  tcc acc ctt ctc tat        21000
Met Asn Phe Glu Val  Asp Pro Met Asp Glu  Ser Thr Leu Leu Tyr
                3460                3465                3470

gtt gtc ttc gaa gtc  ttc gac gtc gtc cga  gtg cac cag ccc cac        21045
Val Val Phe Glu Val  Phe Asp Val Val Arg  Val His Gln Pro His
```

```
                3475                3480                3485

cgc ggc gtc atc gag  gcc gtc tac ctg cgc  acc ccc ttc tcg gcc        21090
Arg Gly Val Ile Glu  Ala Val Tyr Leu Arg  Thr Pro Phe Ser Ala
                3490                3495                3500

ggt aac gcc acc acc  taaattgcta cttgc atg atg gct gag gcc  gcg       21138
Gly Asn Ala Thr Thr                  Met Met Ala Glu Ala  Ala
                3505                                3510

ggc tcc ggc gag  cag gag ctc agg gcc  atc atc cgc gac ctg  ggc       21183
Gly Ser Gly Glu  Gln Glu Leu Arg Ala  Ile Ile Arg Asp Leu  Gly
            3515                3520                3525

tgc ggg ccc tac  ttc ctg ggc acc ttc  gat aag cgc ttc ccg  gga       21228
Cys Gly Pro Tyr  Phe Leu Gly Thr Phe  Asp Lys Arg Phe Pro  Gly
            3530                3535                3540

ttc atg gcc ccg  cac aag ctg gcc tgc  gcc atc gtc aac acg  gcc       21273
Phe Met Ala Pro  His Lys Leu Ala Cys  Ala Ile Val Asn Thr  Ala
            3545                3550                3555

ggt cgc gag acc  ggg ggc gag cac tgg  ctg gcc ttc gcc tgg  aac       21318
Gly Arg Glu Thr  Gly Gly Glu His Trp  Leu Ala Phe Ala Trp  Asn
            3560                3565                3570

ccg cgc tcg aac  acc tgc tac ctc ttc  gac ccc ttc ggg ttc  tcg       21363
Pro Arg Ser Asn  Thr Cys Tyr Leu Phe  Asp Pro Phe Gly Phe  Ser
            3575                3580                3585

gac gag cgc ctc  aag cag atc tac cag  ttc gag tac gag ggc  ctg       21408
Asp Glu Arg Leu  Lys Gln Ile Tyr Gln  Phe Glu Tyr Glu Gly  Leu
            3590                3595                3600

ctg cgc cgc agc  gcc ctg gcc acc gag  gac cgc tgc gtc acc  ctg       21453
Leu Arg Arg Ser  Ala Leu Ala Thr Glu  Asp Arg Cys Val Thr  Leu
            3605                3610                3615

gaa aag tcc acc  cag acc gtg cag ggt  ccg cgc tcg gcc gcc  tgc       21498
Glu Lys Ser Thr  Gln Thr Val Gln Gly  Pro Arg Ser Ala Ala  Cys
            3620                3625                3630

ggg ctc ttc tgc  tgc atg ttc ctg cac  gcc ttc gtg cac tgg  ccc       21543
Gly Leu Phe Cys  Cys Met Phe Leu His  Ala Phe Val His Trp  Pro
            3635                3640                3645

gac cgc ccc atg  gac aag aac ccc acc  atg aac ttg ctg acg  ggg       21588
Asp Arg Pro Met  Asp Lys Asn Pro Thr  Met Asn Leu Leu Thr  Gly
            3650                3655                3660

gtg ccc aac ggc  atg ctc cag tcg ccc  cag gtg gaa ccc acc  ctg       21633
Val Pro Asn Gly  Met Leu Gln Ser Pro  Gln Val Glu Pro Thr  Leu
            3665                3670                3675

cgc cgc aac cag  gag gcg ctc tac cgc  ttc ctc aac tcc cac  tcc       21678
Arg Arg Asn Gln  Glu Ala Leu Tyr Arg  Phe Leu Asn Ser His  Ser
            3680                3685                3690

gcc tac ttt cgc  tcc cac cgc gcg cgc  atc gag aag gcc acc  gcc       21723
Ala Tyr Phe Arg  Ser His Arg Ala Arg  Ile Glu Lys Ala Thr  Ala
            3695                3700                3705

ttc gat cgc atg  aac aat caa gac atg  taaaccgtgt gtgtatgttt          21770
Phe Asp Arg Met  Asn Asn Gln Asp Met
            3710                3715

aaaatatctt ttaataaaca gcactttcat gttacacatg catctgagat gattatttag    21830

aaatcgaaag ggttctgccg ggtctcggca tggcccgcgg gcagggacac gttgcggaac    21890
```

```
tggtacttgg ccagccactt gaactcgggg atcagcagtt tcggcagcgg ggtgtcgggg    21950

aaggagtcgg tccacagctt ccgcgtcagt tgcagggcgc ccagcaggtc gggcgcggag    22010

atcttgaaat cgcagttggg acccgcgttc tgcgcgcgag agttgcggta cacggggttg    22070

cagcactgga acaccatcag ggccgggtgc ttcacgctcg ccagcaccgt cgcgtcggtg    22130

atgctctcca cgtcgaggtc ctcggcgttg gccatcccga agggggtcat cttgcaggtc    22190

tgccttccca tagtgggcac gcacccgggc ttgtggttgc aatcgcagtg caggggggatc    22250

agcatcatct gggcctggtc ggcgttcatc cccgggtaca tggccttcat gaaagcctcc    22310

aattgcctga aagcctgctg ggccttggct ccctcggtga agaagacccc gcaggacttg    22370

ctagagaact ggttggtagc gcacccggcg tcgtgcacgc agcagcgcgc gtcgttgttg    22430

gccagctgca ccacgctgcg cccccagcgg ttctgggtga tcttggcccg gtcggggttc    22490

tccttcagcg cgcgctgccc gttctcgctc gccacatcca tctcgatcat gtgctccttc    22550

tggatcatgg tggtcccgtg caggcaccgc agcttgccct cggtctcggt gcacccgtgc    22610

agccacagcg cgcacccggt gcactcccag ttcttgtggg cgatctggga atgcgcgtgc    22670

acgaacccct gcaggaagcg gcccatcatg gtggtcaggg tcttgttgct agtgaaggtc    22730

agcgggatgc cgcggtgctc ctcgttgatg tacaggtggc agatgcggcg gtacacctcg    22790

ccctgctcgg gcatcagctg gaagttggct ttcaggtcgg tctccacgcg gtagcggtcc    22850

atcagtatag tcatgatttc catacccttc tcccaggccg agacgatggg caggctcata    22910

gggttcttca ccatcatctt agcactagca gccgcggcca gggggtcgct ctcatccagg    22970

gtctcaaagc tccgcttgcc gtccttctcg gtgatccgca ccgggggggta gctgaagccc    23030

acggccgcca gctcctcctc ggcctgcctt tcgtcctcgc tgtcctggct gacgtcctgc    23090

aggaccacat gcttggtctt gcggggtttc ttcttgggcg gcagcggcgg cggagatgct    23150

tgtggcgagg gggagcgcga gttctcgctc accactacta tctcttcctc ttcgtggtcc    23210

gaggccacgc ggcggtaggt atgtctcttc gggggcagag gcggaggcga cgggctctcg    23270

ccgccgcgac ttggcggatg gctggcagag ccccttccgc gatcgggggt gcgctcccgg    23330

cggcgctctg actgacttcc tccgcggccg gccattgtgt tctcctaggg aggaacaaca    23390

agc atg gag act cag cca  tcg cca acc tcg cca  tct gcc ccc acc        23435
    Met Glu Thr Gln Pro  Ser Pro Thr Ser Pro  Ser Ala Pro Thr
                    3720                3725

acc  gcc gac gag aag cag  cag aat gaa agc tta  acc gcc ccg ccg       23480
Thr  Ala Asp Glu Lys Gln  Gln Asn Glu Ser Leu  Thr Ala Pro Pro
3730                3735                3740

ccc  agc ccc gcc acc tcc  gac gca gcc gcg gtc  cca gac atg caa       23525
Pro  Ser Pro Ala Thr Ser  Asp Ala Ala Ala Val  Pro Asp Met Gln
3745                3750                3755

gag  atg gag gaa tcc atc  gag att gac ctg ggc  tat gtg acg ccc       23570
Glu  Met Glu Glu Ser Ile  Glu Ile Asp Leu Gly  Tyr Val Thr Pro
3760                3765                3770

gcg  gag cac gag gag gag  ctg gca gtg cgc ttt  caa tcg tca agc       23615
Ala  Glu His Glu Glu Glu  Leu Ala Val Arg Phe  Gln Ser Ser Ser
```

```
3775                3780                3785

cag  gaa gat aaa gaa cag  cca gag cag gaa gca  gaa aac gag cag       23660
Gln  Glu Asp Lys Glu Gln  Pro Glu Gln Glu Ala  Glu Asn Glu Gln
3790                3795                3800

agt  cag gct ggg ctc gag  cat gac ggc gac tac  ctc cac ctg agc       23705
Ser  Gln Ala Gly Leu Glu  His Asp Gly Asp Tyr  Leu His Leu Ser
3805                3810                3815

ggg  gag gag gac gcg ctc  atc aag cat ctg gcc  cgg cag gcc atc       23750
Gly  Glu Glu Asp Ala Leu  Ile Lys His Leu Ala  Arg Gln Ala Ile
3820                3825                3830

atc  gtc aag gat gcg ctg  ctc gac cgc acc gag  gtg ccc ctc agc       23795
Ile  Val Lys Asp Ala Leu  Leu Asp Arg Thr Glu  Val Pro Leu Ser
3835                3840                3845

gtg  gag gag ctc agc cgc  gcc tac gag ctc aac  ctc ttc tcg ccg       23840
Val  Glu Glu Leu Ser Arg  Ala Tyr Glu Leu Asn  Leu Phe Ser Pro
3850                3855                3860

cgc  gtg ccc ccc aag cgc  cag ccc aac ggc acc  tgc gag ccc aac       23885
Arg  Val Pro Pro Lys Arg  Gln Pro Asn Gly Thr  Cys Glu Pro Asn
3865                3870                3875

ccg  cgc ctc aac ttc tac  ccg gtc ttc gcg gtg  ccc gag gcc ctg       23930
Pro  Arg Leu Asn Phe Tyr  Pro Val Phe Ala Val  Pro Glu Ala Leu
3880                3885                3890

gcc  acc tac cac atc ttt  ttc aag aac caa aag  atc ccc gtc tcc       23975
Ala  Thr Tyr His Ile Phe  Phe Lys Asn Gln Lys  Ile Pro Val Ser
3895                3900                3905

tgt  cgc gcc aac cgc acc  cgc gcc gac gcc ctc  ttc aac ctg ggc       24020
Cys  Arg Ala Asn Arg Thr  Arg Ala Asp Ala Leu  Phe Asn Leu Gly
3910                3915                3920

ccc  ggc gcc cgc cta cct  gat atc gcc tcc ttg  gaa gag gtt ccc       24065
Pro  Gly Ala Arg Leu Pro  Asp Ile Ala Ser Leu  Glu Glu Val Pro
3925                3930                3935

aag  atc ttc gag ggt ctg  ggc agc gac gag act  cgg gcc gca aac       24110
Lys  Ile Phe Glu Gly Leu  Gly Ser Asp Glu Thr  Arg Ala Ala Asn
3940                3945                3950

gct  ctg caa gga gaa gga  gga gag cat gag cac  cac agc gcc ctg       24155
Ala  Leu Gln Gly Glu Gly  Gly Glu His Glu His  His Ser Ala Leu
3955                3960                3965

gtc  gag ttg gaa ggc gac  aac gcg cgg ctg gcg  gtg ctc aaa cgc       24200
Val  Glu Leu Glu Gly Asp  Asn Ala Arg Leu Ala  Val Leu Lys Arg
3970                3975                3980

acg  gtc gag ctg acc cat  ttc gcc tac ccg gct  ctg aac ctg ccc       24245
Thr  Val Glu Leu Thr His  Phe Ala Tyr Pro Ala  Leu Asn Leu Pro
3985                3990                3995

ccc  aaa gtc atg agc gcg  gtc atg gac cag gtg  ctc atc aag cgc       24290
Pro  Lys Val Met Ser Ala  Val Met Asp Gln Val  Leu Ile Lys Arg
4000                4005                4010

gcg  tcg ccc atc tcc gag  gac gag ggc atg caa  gac tcc gag gat       24335
Ala  Ser Pro Ile Ser Glu  Asp Glu Gly Met Gln  Asp Ser Glu Asp
4015                4020                4025

ggc  aag ccc gtg gtc agc  gac gag cag ctg gcc  cgg tgg ctg ggt       24380
Gly  Lys Pro Val Val Ser  Asp Glu Gln Leu Ala  Arg Trp Leu Gly
4030                4035                4040
```

```
cct  aat gct agt ccc cag  agt ttg gaa gag cgg  cgc aag ctc atg       24425
Pro  Asn Ala Ser Pro Gln  Ser Leu Glu Glu Arg  Arg Lys Leu Met
4045                 4050                 4055

atg  gcc gtg gtc ctg gtg  acc gtg gag ctg gag  tgc ctg cgc cgc       24470
Met  Ala Val Val Leu Val  Thr Val Glu Leu Glu  Cys Leu Arg Arg
4060                 4065                 4070

ttc  ttc gcc gac gcg gag  acc ctg cgc aag gtc  gag gag aac ctg       24515
Phe  Phe Ala Asp Ala Glu  Thr Leu Arg Lys Val  Glu Glu Asn Leu
4075                 4080                 4085

cac  tac ctc ttc agg cac  ggg ttc gtg cgc cag  gcc tgc aag atc       24560
His  Tyr Leu Phe Arg His  Gly Phe Val Arg Gln  Ala Cys Lys Ile
4090                 4095                 4100

tcc  aac gtg gag ctg acc  aac ctg gtc tcc tac  atg ggc atc ttg       24605
Ser  Asn Val Glu Leu Thr  Asn Leu Val Ser Tyr  Met Gly Ile Leu
4105                 4110                 4115

cac  gag aac cgc ctg ggg  cag aac gtg ctg cac  acc acc ctg cgc       24650
His  Glu Asn Arg Leu Gly  Gln Asn Val Leu His  Thr Thr Leu Arg
4120                 4125                 4130

ggg  gag gcc cgc cgc gac  tac atc cgc gac tgc  gtc tac ctc tac       24695
Gly  Glu Ala Arg Arg Asp  Tyr Ile Arg Asp Cys  Val Tyr Leu Tyr
4135                 4140                 4145

ctc  tgc cac acc tgg cag  acg ggc atg ggc gtg  tgg cag cag tgt       24740
Leu  Cys His Thr Trp Gln  Thr Gly Met Gly Val  Trp Gln Gln Cys
4150                 4155                 4160

ctg  gag gag cag aac ctg  aaa gag ctc tgc aag  ctc ctg cag aag       24785
Leu  Glu Glu Gln Asn Leu  Lys Glu Leu Cys Lys  Leu Leu Gln Lys
4165                 4170                 4175

aac  ctc aag ggt ctg tgg  acc ggg ttc gac gag  cgg acc acc gcc       24830
Asn  Leu Lys Gly Leu Trp  Thr Gly Phe Asp Glu  Arg Thr Thr Ala
4180                 4185                 4190

tcg  gac ctg gcc gac ctc  atc ttc ccc gag cgc  ctc agg ctg acg       24875
Ser  Asp Leu Ala Asp Leu  Ile Phe Pro Glu Arg  Leu Arg Leu Thr
4195                 4200                 4205

ctg  cgc aac ggc ctg ccc  gac ttt atg agc caa  agc atg ttg caa       24920
Leu  Arg Asn Gly Leu Pro  Asp Phe Met Ser Gln  Ser Met Leu Gln
4210                 4215                 4220

aac  ttt cgc tct ttc atc  ctc gaa cgc tcc gga  atc ctg ccc gcc       24965
Asn  Phe Arg Ser Phe Ile  Leu Glu Arg Ser Gly  Ile Leu Pro Ala
4225                 4230                 4235

acc  tgc tcc gcg ctg ccc  tcg gac ttc gtg ccg  ctg acc ttc cgc       25010
Thr  Cys Ser Ala Leu Pro  Ser Asp Phe Val Pro  Leu Thr Phe Arg
4240                 4245                 4250

gag  tgc ccc ccg ccg ctg  tgg agc cac tgc tac  ctg ctg cgc ctg       25055
Glu  Cys Pro Pro Pro Leu  Trp Ser His Cys Tyr  Leu Leu Arg Leu
4255                 4260                 4265

gcc  aac tac ctg gcc tac  cac tcg gac gtg atc  gag gac gtc agc       25100
Ala  Asn Tyr Leu Ala Tyr  His Ser Asp Val Ile  Glu Asp Val Ser
4270                 4275                 4280

ggc  gag ggc ctg ctt gag  tgc cac tgc cgc tgc  aac ctc tgc acg       25145
Gly  Glu Gly Leu Leu Glu  Cys His Cys Arg Cys  Asn Leu Cys Thr
4285                 4290                 4295
```

```
ccg  cac cgc tcc ctg gcc  tgc aac ccc cag ctg  ctg agc gag acc       25190
Pro  His Arg Ser Leu Ala  Cys Asn Pro Gln Leu  Leu Ser Glu Thr
4300                 4305                 4310

cag  atc atc ggc acc ttc  gag ttg caa ggg ccc  agc gat gac ggc       25235
Gln  Ile Ile Gly Thr Phe  Glu Leu Gln Gly Pro  Ser Asp Asp Gly
4315                 4320                 4325

gag  gga gcc aag ggg ggt  ctg aaa ctc acc ccg  ggg ctg tgg acc       25280
Glu  Gly Ala Lys Gly Gly  Leu Lys Leu Thr Pro  Gly Leu Trp Thr
4330                 4335                 4340

tcg  gcc tac ttg cgc aag  ttc gtg ccc gag gac  tac cat ccc ttc       25325
Ser  Ala Tyr Leu Arg Lys  Phe Val Pro Glu Asp  Tyr His Pro Phe
4345                 4350                 4355

gag  atc agg ttc tac gag  gac caa tcc cag ccg  cct aag gcc gag       25370
Glu  Ile Arg Phe Tyr Glu  Asp Gln Ser Gln Pro  Pro Lys Ala Glu
4360                 4365                 4370

ctg  tcg gcc tgc gtc atc  acc cag ggg gcc atc  ctg gcc caa ttg       25415
Leu  Ser Ala Cys Val Ile  Thr Gln Gly Ala Ile  Leu Ala Gln Leu
4375                 4380                 4385

caa  gcc atc cag aaa tcc  cgc caa gaa ttc ttg  ctg aaa aag ggc       25460
Gln  Ala Ile Gln Lys Ser  Arg Gln Glu Phe Leu  Leu Lys Lys Gly
4390                 4395                 4400

cgc  ggg gtc tac ctc gac  ccc cag acc ggt gag  gag ctc aac ccc       25505
Arg  Gly Val Tyr Leu Asp  Pro Gln Thr Gly Glu  Glu Leu Asn Pro
4405                 4410                 4415

ggc  ttc ccc cag gat gcc  ccg agg aaa caa gaa  gct gaa agt gga       25550
Gly  Phe Pro Gln Asp Ala  Pro Arg Lys Gln Glu  Ala Glu Ser Gly
4420                 4425                 4430

gct  gcc gcc cgt gga gga  ttt gga gga aga ctg  gga gaa cag cag       25595
Ala  Ala Ala Arg Gly Gly  Phe Gly Gly Arg Leu  Gly Glu Gln Gln
4435                 4440                 4445

tca  ggc aga gga gga gat  gga gga aga ctg gga  cag cac tca ggc       25640
Ser  Gly Arg Gly Gly Asp  Gly Gly Arg Leu Gly  Gln His Ser Gly
4450                 4455                 4460

aga  gga gga cag cct gca  aga cag tct gga gga  aga cga gga gga       25685
Arg  Gly Gly Gln Pro Ala  Arg Gln Ser Gly Gly  Arg Arg Gly Gly
4465                 4470                 4475

ggc  aga ggt gga aga agc  agc cgc cgc cag acc  gtc gtc ctc ggc       25730
Gly  Arg Gly Gly Arg Ser  Ser Arg Arg Gln Thr  Val Val Leu Gly
4480                 4485                 4490

ggg  gga gaa agc aag cag  cac gga tac cat ctc  cgc tcc ggg tcg       25775
Gly  Gly Glu Ser Lys Gln  His Gly Tyr His Leu  Arg Ser Gly Ser
4495                 4500                 4505

ggg  tcc cgc tcg gcc cca  cag tagatgggac gagaccgggc gattcccgaa       25826
Gly  Ser Arg Ser Ala Pro  Gln
4510                 4515

ccccaccatc cagaccggta agaaggagcg gcagggatac aagtcctggc gggggcacaa    25886

aaacgccatc gtctcctgct tgcaggcctg cgggggcaac atctccttca ccaggcgcta    25946

cctgctcttc caccgcgggg tgaacttccc ccgcaacatc ttgcattact accgtcacct    26006

ccacagcccc tactacttcc aagaagaggc agcagcagaa aaagaccagc agaaaaccag    26066

cagctagaaa atccacagcg gcagcaggtg gactgaggat cgcggcgaac gagccggcgc    26126
```

```
agacccggga gctgaggaac cggatctttc ccaccctcta tgccatcttc cagcagagtc    26186

gggggcagga gcaggaactg aaagtcaaga accgttctct gcgctcgctc acccgcagtt    26246

gtctgtatca caagagcgaa gaccaacttc agcgcactct cgaggacgcc gaggctctct    26306

tcaacaagta ctgcgcgctc actcttaaag agtagcccgc gcccgcccag tcgcagaaaa    26366

aggcgggaat tacgtcacct gtgcccttcg ccctagccgc ctccacccat c atg agc     26423
                                                            Met Ser

aaa gag  att ccc acg cct tac  atg tgg agc tac cag  ccc cag atg       26468
Lys Glu  Ile Pro Thr Pro Tyr  Met Trp Ser Tyr Gln  Pro Gln Met
    4520                 4525                 4530

ggc ctg  gcc gcc ggc gcc gcc  cag gac tac tcc acc  cgc atg aat       26513
Gly Leu  Ala Ala Gly Ala Ala  Gln Asp Tyr Ser Thr  Arg Met Asn
    4535                 4540                 4545

tgg ctc  agc gcc ggg ccc gcg  atg atc tca cgg gtg  aat gac atc       26558
Trp Leu  Ser Ala Gly Pro Ala  Met Ile Ser Arg Val  Asn Asp Ile
    4550                 4555                 4560

cgc gcc  cac cga aac cag ata  ctc cta gaa cag tca  gcg ctc acc       26603
Arg Ala  His Arg Asn Gln Ile  Leu Leu Glu Gln Ser  Ala Leu Thr
    4565                 4570                 4575

gcc acg  ccc cgc aat cac ctc  aat ccg cgt aat tgg  ccc gcc gcc       26648
Ala Thr  Pro Arg Asn His Leu  Asn Pro Arg Asn Trp  Pro Ala Ala
    4580                 4585                 4590

ctg gtg  tac cag gaa att ccc  cag ccc acg acc gta  cta ctt ccg       26693
Leu Val  Tyr Gln Glu Ile Pro  Gln Pro Thr Thr Val  Leu Leu Pro
    4595                 4600                 4605

cga gac  gcc cag gcc gaa gtc  cag ctg act aac tca  ggt gtc cag       26738
Arg Asp  Ala Gln Ala Glu Val  Gln Leu Thr Asn Ser  Gly Val Gln
    4610                 4615                 4620

ctg gcg  ggc ggc gcc acc ctg  tgt cgt cac cgc ccc  gct cag ggt       26783
Leu Ala  Gly Gly Ala Thr Leu  Cys Arg His Arg Pro  Ala Gln Gly
    4625                 4630                 4635

ata aag  cgg ctg gtg atc cgg  ggc aga ggc aca cag  ctc aac gac       26828
Ile Lys  Arg Leu Val Ile Arg  Gly Arg Gly Thr Gln  Leu Asn Asp
    4640                 4645                 4650

gag gtg  gtg agc tct tcg ctg  ggt ctg cga cct gac  gga gtc ttc       26873
Glu Val  Val Ser Ser Ser Leu  Gly Leu Arg Pro Asp  Gly Val Phe
    4655                 4660                 4665

caa atc  gcc gga tcg ggg aga  tct tcc ttc acg cct  cgt cag gcg       26918
Gln Ile  Ala Gly Ser Gly Arg  Ser Ser Phe Thr Pro  Arg Gln Ala
    4670                 4675                 4680

gtc ctg  act ttg gag agt tcg  tcc tcg cag ccc cgc  tcg ggc ggc       26963
Val Leu  Thr Leu Glu Ser Ser  Ser Ser Gln Pro Arg  Ser Gly Gly
    4685                 4690                 4695

atc ggc  act ctc cag ttc gtg  gag gag ttc act ccc  tcg gtc tac       27008
Ile Gly  Thr Leu Gln Phe Val  Glu Glu Phe Thr Pro  Ser Val Tyr
    4700                 4705                 4710

ttc aac  ccc ttc tcc ggc tcc  ccc ggc cac tac ccg  gac gag ttc       27053
Phe Asn  Pro Phe Ser Gly Ser  Pro Gly His Tyr Pro  Asp Glu Phe
    4715                 4720                 4725
```

```
atc ccg  aac ttt gac gcc atc  agc gag tcg gtg gac  ggc tac gat       27098
Ile Pro  Asn Phe Asp Ala Ile  Ser Glu Ser Val Asp  Gly Tyr Asp
    4730                4735                4740

tga atg tcc  cat ggt ggc gcg gct  gac cta gct cgg ctt  cga cac       27143
    Met Ser  His Gly Gly Ala Ala  Asp Leu Ala Arg Leu  Arg His
        4745                4750                4755

ctg gac cac  tgc cgc cgc ttt cgc  tgc ttc gct cgg gac  ctc gcc       27188
Leu Asp His  Cys Arg Arg Phe Arg  Cys Phe Ala Arg Asp  Leu Ala
        4760                4765                4770

gag ttc acc  tac ttc gag ctg ccc  gag gag cat cct cag  ggc ccg       27233
Glu Phe Thr  Tyr Phe Glu Leu Pro  Glu Glu His Pro Gln  Gly Pro
        4775                4780                4785

gcc cac gga  gtg cgg atc gtc gtc  gaa ggg ggc cta gac  tcc cac       27278
Ala His Gly  Val Arg Ile Val Val  Glu Gly Gly Leu Asp  Ser His
        4790                4795                4800

ctg ctt cgg  atc ttc agc cag cgc  ccg atc ctg gtc gag  cgc caa       27323
Leu Leu Arg  Ile Phe Ser Gln Arg  Pro Ile Leu Val Glu  Arg Gln
        4805                4810                4815

cag ggc aac  acc ctc ctg acc ctc  tac tgc atc tgc gac  cac ccc       27368
Gln Gly Asn  Thr Leu Leu Thr Leu  Tyr Cys Ile Cys Asp  His Pro
        4820                4825                4830

ggc ctg cat  gaa agt ctt tgt tgt  ctg ctg tgt act gag  tat aat       27413
Gly Leu His  Glu Ser Leu Cys Cys  Leu Leu Cys Thr Glu  Tyr Asn
        4835                4840                4845

aaa agc tgagatcagc gactactccg gactcaactg tggtgtttct gcatccatca       27469
Lys Ser

accagtctct gaccttcacc gggaacgaga ccgagctcca gctccagtgt aagccccaca    27529

agaagtacct cacctggctg taccagggct ccccgatcgc cgttgttaac cactgcgacg    27589

acgacggagt cctgctgaac ggccccgcca accttacttt ttccacccgc agaagcaagc    27649

tactgctctt cagacccttc ctccccggga tctatcagtg catctcggga ccctgccatc    27709

acaccttcca cctgatcccg aataccacct cttccccagc accgctcccc actaacaacc    27769

aaactaacca ccaacgccac cgtcgagacc tttcctctga ttctaatacc actaccggag    27829

gtgagctccg aggtactaag aagtcctcac ctgggattta ttacggcccc tgggaggtgg    27889

tggggttaat agctttaggc ttagtagcgg gtgggctttt ggctctctgc tacctatacc    27949

tcccttgctg ttcctactta gtggtgcttt gttgctggtt taagaa atg  ggg aag      28004
                                                    Met  Gly Lys
                                                    4850

atc acc cta  gtg tgc ggt gtg ctg  gtg acg gtg gtg ctt  tcg att       28049
Ile Thr Leu  Val Cys Gly Val Leu  Val Thr Val Val Leu  Ser Ile
        4855                4860                4865

ctg gga ggg  gga agc gcg gct gta  gtg acg gag aag aag  gcc gat       28094
Leu Gly Gly  Gly Ser Ala Ala Val  Val Thr Glu Lys Lys  Ala Asp
        4870                4875                4880

ccc tgc ttg  act ttc aat ccc gat  aaa tgc cgg ctg agt  ttt cag       28139
Pro Cys Leu  Thr Phe Asn Pro Asp  Lys Cys Arg Leu Ser  Phe Gln
        4885                4890                4895

cca gat ggc  aat cgg tgc acg gtg  ctg atc aag tgc gga  tgg gaa       28184
```

```
Pro Asp Gly  Asn Arg Cys Thr Val  Leu Ile Lys Cys Gly  Trp Glu
        4900                 4905                 4910

tgc gag agc  gtg gcg atc cag tat  aaa aac aag acg cgg  aac aat       28229
Cys Glu Ser  Val Ala Ile Gln Tyr  Lys Asn Lys Thr Arg  Asn Asn
        4915                 4920                 4925

act ctc gcg  tcc aca tgg cag ccc  ggg gac ccc gag tgg  tac acc       28274
Thr Leu Ala  Ser Thr Trp Gln Pro  Gly Asp Pro Glu Trp  Tyr Thr
        4930                 4935                 4940

gtc tct gtc  cct ggt gct gac ggc  tcc ctc cac acg gtg  aac aac       28319
Val Ser Val  Pro Gly Ala Asp Gly  Ser Leu His Thr Val  Asn Asn
        4945                 4950                 4955

act ttc att  ttt gag cac atg tgc  gaa acc gcc atg ttc  atg agc       28364
Thr Phe Ile  Phe Glu His Met Cys  Glu Thr Ala Met Phe  Met Ser
        4960                 4965                 4970

aag cag tac  ggt atg tgg ccc cca  cga aaa gag aat atc  gtg gtc       28409
Lys Gln Tyr  Gly Met Trp Pro Pro  Arg Lys Glu Asn Ile  Val Val
        4975                 4980                 4985

ttc tcc atc  gct tac agc gcg tgc  acg gtg cta atc acc  gcg atc       28454
Phe Ser Ile  Ala Tyr Ser Ala Cys  Thr Val Leu Ile Thr  Ala Ile
        4990                 4995                 5000

gtg tgc ctg  agc att cac atg ctc  atc gct att cgc ccc  aga aat       28499
Val Cys Leu  Ser Ile His Met Leu  Ile Ala Ile Arg Pro  Arg Asn
        5005                 5010                 5015

aat gcc gag  aaa gag aaa cag cca  taacacactt ttttcacaca             28543
Asn Ala Glu  Lys Glu Lys Gln Pro
        5020                 5025

ccttgttttt tacagaca atg cgt ctg tta att  ttt gtt atc att aca  ctc    28594
                     Met Arg Leu Leu Ile  Phe Val Ile Ile Thr  Leu
                                    5030                 5035

agc ttt aac tat  gcc cat ggc tat gca  aat ata caa aaa acc  ctc       28639
Ser Phe Asn Tyr  Ala His Gly Tyr Ala  Asn Ile Gln Lys Thr  Leu
            5040                 5045                 5050

tat gta ggc tct  gac tct aca tta gaa  ggt act caa tct caa  gcc       28684
Tyr Val Gly Ser  Asp Ser Thr Leu Glu  Gly Thr Gln Ser Gln  Ala
            5055                 5060                 5065

agg gtt tca tgg  tat ttt tat aaa ggc  tct gat gac cca att  act       28729
Arg Val Ser Trp  Tyr Phe Tyr Lys Gly  Ser Asp Asp Pro Ile  Thr
            5070                 5075                 5080

ctt tgc aaa ggt  gat cag ggg cgc ata  aca aag cca cct atc  aca       28774
Leu Cys Lys Gly  Asp Gln Gly Arg Ile  Thr Lys Pro Pro Ile  Thr
            5085                 5090                 5095

ttt agc tgc acc  aga aca aac ctc acg  ctt tta tcc att aca  aaa       28819
Phe Ser Cys Thr  Arg Thr Asn Leu Thr  Leu Leu Ser Ile Thr  Lys
            5100                 5105                 5110

gaa tat gct ggc  act tat tac agc aca  aat ttt cat cgt ggg  caa       28864
Glu Tyr Ala Gly  Thr Tyr Tyr Ser Thr  Asn Phe His Arg Gly  Gln
            5115                 5120                 5125

gat aaa tat tat  act gtt aag gta gaa  aac cct acc acc cct  aga       28909
Asp Lys Tyr Tyr  Thr Val Lys Val Glu  Asn Pro Thr Thr Pro  Arg
            5130                 5135                 5140

aca act aca aag  ccc acc aca act aag  aag ccc act aca cct  aag       28954
Thr Thr Thr Lys  Pro Thr Thr Thr Lys  Lys Pro Thr Thr Pro  Lys
```

```
            5145                5150                5155

aag cct acc aca  ccc aaa acc act aag  aca aca act gct aag  acc       28999
Lys Pro Thr Thr  Pro Lys Thr Thr Lys  Thr Thr Thr Ala Lys  Thr
            5160                5165                5170

act acc aca aag  cca acc aca acc agc  acc aca ctt gct ata  act       29044
Thr Thr Thr Lys  Pro Thr Thr Thr Ser  Thr Thr Leu Ala Ile  Thr
            5175                5180                5185

aca cac aca cac  act gag ctg acc tca  cag gca act act gaa  aat       29089
Thr His Thr His  Thr Glu Leu Thr Ser  Gln Ala Thr Thr Glu  Asn
            5190                5195                5200

gat ttg gtt gcc  ctg ttg caa aag ggg  gag aac agt agc agc  agt       29134
Asp Leu Val Ala  Leu Leu Gln Lys Gly  Glu Asn Ser Ser Ser  Ser
            5205                5210                5215

cct ctg cct act  acc ccc agt gag gaa  ata ccc aag tcc atg  gtt       29179
Pro Leu Pro Thr  Thr Pro Ser Glu Glu  Ile Pro Lys Ser Met  Val
            5220                5225                5230

ggc att atc gct  gct gta gtg gtg tgt  atg ctg att atc atc  ttg       29224
Gly Ile Ile Ala  Ala Val Val Val Cys  Met Leu Ile Ile Ile  Leu
            5235                5240                5245

tgc atg atg tac  tat gcc tgc tac tac  aga aaa cac agg ctg  aac       29269
Cys Met Met Tyr  Tyr Ala Cys Tyr Tyr  Arg Lys His Arg Leu  Asn
            5250                5255                5260

aac aaa ctg gac  ccc tta ctg agt gtt  gat ttt taatttttta gaacc       29317
Asn Lys Leu Asp  Pro Leu Leu Ser Val  Asp Phe
            5265                5270

atg aag atc  cta agc ctt ttt gtt  ttt tct ata att att  acc tct       29362
Met Lys Ile  Leu Ser Leu Phe Val  Phe Ser Ile Ile Ile  Thr Ser
        5275                5280                5285

gct att tgt  gaa tca gtg gat aag  gac gtt act gtc acc  act ggc       29407
Ala Ile Cys  Glu Ser Val Asp Lys  Asp Val Thr Val Thr  Thr Gly
        5290                5295                5300

tct aat tat  aca cta aaa ggg cct  tcc tca ggt atg ctt  tcg tgg       29452
Ser Asn Tyr  Thr Leu Lys Gly Pro  Ser Ser Gly Met Leu  Ser Trp
        5305                5310                5315

tat tgt tat  ttt gga aat gat gat  aaa cag aca gag cta  tgt aac       29497
Tyr Cys Tyr  Phe Gly Asn Asp Asp  Lys Gln Thr Glu Leu  Cys Asn
        5320                5325                5330

ttt cag aac  ggc aaa acc aaa aat  tct aaa ata gat aac  tat caa       29542
Phe Gln Asn  Gly Lys Thr Lys Asn  Ser Lys Ile Asp Asn  Tyr Gln
        5335                5340                5345

tgc cag ggt  act aat tta gta ctg  atg aat atc acg aaa  gca tat       29587
Cys Gln Gly  Thr Asn Leu Val Leu  Met Asn Ile Thr Lys  Ala Tyr
        5350                5355                5360

gct ggc agt  tat tcc tgt cct gga  caa aac acc gag gaa  atg att       29632
Ala Gly Ser  Tyr Ser Cys Pro Gly  Gln Asn Thr Glu Glu  Met Ile
        5365                5370                5375

ttt tac aaa  tta att gta gtt gac  cct act act cca gca  cca ccc       29677
Phe Tyr Lys  Leu Ile Val Val Asp  Pro Thr Thr Pro Ala  Pro Pro
        5380                5385                5390

acc aca acc  aag gca cat acc aca  gac aca cag gaa acc  act cca       29722
Thr Thr Thr  Lys Ala His Thr Thr  Asp Thr Gln Glu Thr  Thr Pro
        5395                5400                5405
```

```
gag gca gaa  gta gca gag tta gca  aag cag att cat gaa  gat tca       29767
Glu Ala Glu  Val Ala Glu Leu Ala  Lys Gln Ile His Glu  Asp Ser
        5410                 5415                 5420

ttt gtt gcc  aat acc ccc aca cac  ccc gga ccg caa tgt  cca ggg       29812
Phe Val Ala  Asn Thr Pro Thr His  Pro Gly Pro Gln Cys  Pro Gly
        5425                 5430                 5435

cca tta gtc  agc ggc att gtc ggt  gtg ctt tgc ggg tta  gca gtt       29857
Pro Leu Val  Ser Gly Ile Val Gly  Val Leu Cys Gly Leu  Ala Val
        5440                 5445                 5450

ata atc atc  tgc atg ttc att ttt  gct tgc tgc tac aga  agg ctt       29902
Ile Ile Ile  Cys Met Phe Ile Phe  Ala Cys Cys Tyr Arg  Arg Leu
        5455                 5460                 5465

cac cga caa  aaa tca gac cca ctg  ctg aac ctc tat gtt  taatttttga    29951
His Arg Gln  Lys Ser Asp Pro Leu  Leu Asn Leu Tyr Val
        5470                 5475                 5480

ttttccagag cc atg aag gca ctt agc  act tta gta ttt ttg  tcc ttg      29999
              Met Lys Ala Leu Ser  Thr Leu Val Phe Leu  Ser Leu
                            5485                 5490

att ggc att  gtt ttc agt gct ggg  ttt ttg aaa aat ctt  acc att       30044
Ile Gly Ile  Val Phe Ser Ala Gly  Phe Leu Lys Asn Leu  Thr Ile
        5495                 5500                 5505

att gaa ggt  gat aat gca aca ctg  gta gga atc agc ggt  cag aat       30089
Ile Glu Gly  Asp Asn Ala Thr Leu  Val Gly Ile Ser Gly  Gln Asn
        5510                 5515                 5520

gtt agt tgg  cta aaa tat cat cta  gat ggg tgg aaa cct  att tgc       30134
Val Ser Trp  Leu Lys Tyr His Leu  Asp Gly Trp Lys Pro  Ile Cys
        5525                 5530                 5535

acc tgg aat  gtc agt gtg tac aca  tgc cat ggt gtt aac  ctc acc       30179
Thr Trp Asn  Val Ser Val Tyr Thr  Cys His Gly Val Asn  Leu Thr
        5540                 5545                 5550

att acc aat  gcc acc caa gat cag  aat ggc agg ttt aag  ggt cag       30224
Ile Thr Asn  Ala Thr Gln Asp Gln  Asn Gly Arg Phe Lys  Gly Gln
        5555                 5560                 5565

agt ttc act  agc aac aat ggg tat  gaa acc cat aac atg  ttc atc       30269
Ser Phe Thr  Ser Asn Asn Gly Tyr  Glu Thr His Asn Met  Phe Ile
        5570                 5575                 5580

tat gat gtc  act gtc ata tca aat  aag act aca cct acc  aca cag       30314
Tyr Asp Val  Thr Val Ile Ser Asn  Lys Thr Thr Pro Thr  Thr Gln
        5585                 5590                 5595

aca ccc act  aca cat agc tca act  cat gcc atg cag acc  act cag       30359
Thr Pro Thr  Thr His Ser Ser Thr  His Ala Met Gln Thr  Thr Gln
        5600                 5605                 5610

aca acc aca  tac act aca tct act  gag tcc acc acc acc  act aca       30404
Thr Thr Thr  Tyr Thr Thr Ser Thr  Glu Ser Thr Thr Thr  Thr Thr
        5615                 5620                 5625

gca gag gta  tcc agc aca gcg cct  cag ccc cag gca ttg  gct ttg       30449
Ala Glu Val  Ser Ser Thr Ala Pro  Gln Pro Gln Ala Leu  Ala Leu
        5630                 5635                 5640

atg gct cag  cct agc agc atg act  gct aaa acc aat gag  cag act       30494
Met Ala Gln  Pro Ser Ser Met Thr  Ala Lys Thr Asn Glu  Gln Thr
        5645                 5650                 5655
```

```
act gaa ttt  ttg tcc act att cag  agc agc acc aca gct  acc tcg       30539
Thr Glu Phe  Leu Ser Thr Ile Gln  Ser Ser Thr Thr Ala  Thr Ser
        5660                 5665                 5670

agt gcc ttc  tct agc acc gcc aat  ctc acc tcg ctt tcc  tct acg       30584
Ser Ala Phe  Ser Ser Thr Ala Asn  Leu Thr Ser Leu Ser  Ser Thr
        5675                 5680                 5685

cca atc agt  aac gct act acc tcc  ccc gct cct ctt ccc  act cct       30629
Pro Ile Ser  Asn Ala Thr Thr Ser  Pro Ala Pro Leu Pro  Thr Pro
        5690                 5695                 5700

ctg aag caa  tcc gag tct agc acg  cag ctg cag atc acc  ctg ctc       30674
Leu Lys Gln  Ser Glu Ser Ser Thr  Gln Leu Gln Ile Thr  Leu Leu
        5705                 5710                 5715

att gtg atc  ggg gtg gtc atc ctg  gca gtg ctg ctc tac  ttt atc       30719
Ile Val Ile  Gly Val Val Ile Leu  Ala Val Leu Leu Tyr  Phe Ile
        5720                 5725                 5730

ttc tgc cgc  cgc atc ccc aac gcg  aaa ccg gcc tac aag  ccc att       30764
Phe Cys Arg  Arg Ile Pro Asn Ala  Lys Pro Ala Tyr Lys  Pro Ile
        5735                 5740                 5745

gtt atc ggg  acg ccg gag ccg ctt  cag gtg gag gga ggt  cta agg       30809
Val Ile Gly  Thr Pro Glu Pro Leu  Gln Val Glu Gly Gly  Leu Arg
        5750                 5755                 5760

aat ctt ctc  ttc tct ttt aca gta  tgg tgatttgaac tatgattcct          30856
Asn Leu Leu  Phe Ser Phe Thr Val  Trp
        5765                 5770

agacatttca ttatcacttc tctaatctgt gtgctccaag tctgtgccac cctcgctctc    30916

gtggctaacg cgagtccaga ctgcattgga gcgttcgcct cctacgtgct ctttgccttc    30976

atcacctgca tctgctgctg tagcatagtc tgcctgctta tcaccttctt ccagttcgtt    31036

gactgggtct ttgtgcgcat cgcctacctg cgccaccacc cccagtaccg cgaccagaga    31096

gtggcgcaac tgttgagact catctg atg ata agc atg  cgg gct ctg cta       31146
                              Met Ile Ser Met  Arg Ala Leu Leu
                                           5775

cta  ctt ctc gcg ctt ctg  cta gct ccc ctc gcc  gcc ccc cta tcc       31191
Leu  Leu Leu Ala Leu Leu  Leu Ala Pro Leu Ala  Ala Pro Leu Ser
5780                 5785                 5790

ctc  aaa tcc ccc acc cag  tcc cct gaa gag gtt  cga aaa tgt aaa       31236
Leu  Lys Ser Pro Thr Gln  Ser Pro Glu Glu Val  Arg Lys Cys Lys
5795                 5800                 5805

ttc  caa gaa ccc tgg aaa  ttc ctt tca tgc tac  aaa ctc aaa tca       31281
Phe  Gln Glu Pro Trp Lys  Phe Leu Ser Cys Tyr  Lys Leu Lys Ser
5810                 5815                 5820

gaa  atg cac ccc agc tgg  atc atg atc gtt gga  atc gta aac atc       31326
Glu  Met His Pro Ser Trp  Ile Met Ile Val Gly  Ile Val Asn Ile
5825                 5830                 5835

ctt  gcc tgt acc ctc ttc  tcc ttt gtg att tac  ccc cgc ttt gac       31371
Leu  Ala Cys Thr Leu Phe  Ser Phe Val Ile Tyr  Pro Arg Phe Asp
5840                 5845                 5850

ttt  ggg tgg aac gca ccc  gag gcg ctc tgg ctc  ccg cct gat ccc       31416
Phe  Gly Trp Asn Ala Pro  Glu Ala Leu Trp Leu  Pro Pro Asp Pro
5855                 5860                 5865

gac  aca cca cca cag cag  cag caa aat cag gca  cag gca cat gca       31461
```

```
Asp  Thr Pro Pro Gln Gln  Gln Gln Asn Gln Ala  Gln Ala His Ala
5870                5875                5880

cca  cca cag cct agg cca  caa tac atg ccc atc  tta gac tat gag       31506
Pro  Pro Gln Pro Arg Pro  Gln Tyr Met Pro Ile  Leu Asp Tyr Glu
5885                5890                5895

gcc  gag cca cag cga gcc  atg ctt cct gct att  agt tac ttc aat       31551
Ala  Glu Pro Gln Arg Ala  Met Leu Pro Ala Ile  Ser Tyr Phe Asn
5900                5905                5910

cta  acc ggc gga gat gac  tgaccccatg gccaacaaca ccgtcaacga          31599
Leu  Thr Gly Gly Asp Asp
5915                5920

cctcctggac atggacggcc gcgcctcgga gcagcgactc gcccaactcc gcatccgcca    31659

gcagcaggag agagccgtca aggagctgca ggacgcggtg gccatccacc agtgcaagag    31719

aggcatcttc tgcctggtga agcaggccaa gatctccttc gaggtcacgt ccaccgacca    31779

tcgcctctcc tacgagctcc tgcagcagcg ccagaagttc acctgcctgg tcggagtcaa    31839

ccccatcgtc atcacccagc agtctggcga taccaagggt tgcatccact gctcctgcga    31899

ctcccccgag tgcgttcaca ccctgatcaa gaccctctgc ggcctccgcg acctcctccc    31959

catgaactaa tcaactaacc ccctacccct ttaccctcca gtaaaaataa agattaaaaa    32019

tgattgaatt gatcaataaa gaatcactta cttgaaatct gaaaccaggt ctctgtcc      32077

atg ttt tct gtc agc  agc act tca ctc ccc  tct tcc caa ctc tgg       32122
Met Phe Ser Val Ser  Ser Thr Ser Leu Pro  Ser Ser Gln Leu Trp
                5925                5930                5935

tac tgc agg ccc cgg  cgg gct gca aac ttc  ctc cac act ctg aag       32167
Tyr Cys Arg Pro Arg  Arg Ala Ala Asn Phe  Leu His Thr Leu Lys
                5940                5945                5950

ggg atg tca aat tcc  tcc tgt ccc tca atc  ttc att ttt atc ttc       32212
Gly Met Ser Asn Ser  Ser Cys Pro Ser Ile  Phe Ile Phe Ile Phe
                5955                5960                5965

tat cag atg tcc aaa  aag cgc gcg cgg gtg  gat gat ggc ttc gac       32257
Tyr Gln Met Ser Lys  Lys Arg Ala Arg Val  Asp Asp Gly Phe Asp
                5970                5975                5980

ccc gtg tac ccc tac  gat gca gac aac gca  ccg act gtg ccc ttc       32302
Pro Val Tyr Pro Tyr  Asp Ala Asp Asn Ala  Pro Thr Val Pro Phe
                5985                5990                5995

atc aac cct ccc ttc  gtc tct tca gat gga  ttc caa gaa aag ccc       32347
Ile Asn Pro Pro Phe  Val Ser Ser Asp Gly  Phe Gln Glu Lys Pro
                6000                6005                6010

ctg ggg gtg ttg tcc  ctg cga ctg gcc gac  ccc gtc acc acc aag       32392
Leu Gly Val Leu Ser  Leu Arg Leu Ala Asp  Pro Val Thr Thr Lys
                6015                6020                6025

aat ggg gct gtc acc  ctc aag ctg ggg gag  ggg gtg gac ctc gac       32437
Asn Gly Ala Val Thr  Leu Lys Leu Gly Glu  Gly Val Asp Leu Asp
                6030                6035                6040

gac tcg gga aaa ctc  atc tcc aaa aat gcc  acc aag gcc act gcc       32482
Asp Ser Gly Lys Leu  Ile Ser Lys Asn Ala  Thr Lys Ala Thr Ala
                6045                6050                6055

cct ctc agt att tcc  aac ggc acc att tcc  ctt aac atg gcc gcc       32527
Pro Leu Ser Ile Ser  Asn Gly Thr Ile Ser  Leu Asn Met Ala Ala
```

```
                6060                6065                6070

cct ttt tac aac aac  aat gga acg tta agt  ctc aat gtt tct aca       32572
Pro Phe Tyr Asn Asn  Asn Gly Thr Leu Ser  Leu Asn Val Ser Thr
                6075                6080                6085

cca tta gca gta ttt  ccc act ttt aac act  tta ggt atc agt ctt       32617
Pro Leu Ala Val Phe  Pro Thr Phe Asn Thr  Leu Gly Ile Ser Leu
                6090                6095                6100

gga aac ggt ctt caa  act tct aat aag ttg  ctg act gta cag tta       32662
Gly Asn Gly Leu Gln  Thr Ser Asn Lys Leu  Leu Thr Val Gln Leu
                6105                6110                6115

act cat cct ctt aca  ttc agc tca aat agc  atc aca gta aaa aca       32707
Thr His Pro Leu Thr  Phe Ser Ser Asn Ser  Ile Thr Val Lys Thr
                6120                6125                6130

gac aaa gga ctc tat  att aat tct agt gga  aac aga ggg ctt gag       32752
Asp Lys Gly Leu Tyr  Ile Asn Ser Ser Gly  Asn Arg Gly Leu Glu
                6135                6140                6145

gct aac ata agc cta  aaa aga gga ctg att  ttt gat ggt aat gct       32797
Ala Asn Ile Ser Leu  Lys Arg Gly Leu Ile  Phe Asp Gly Asn Ala
                6150                6155                6160

att gca aca tac ctt  gga agt ggt tta gac  tat gga tcc tat gat       32842
Ile Ala Thr Tyr Leu  Gly Ser Gly Leu Asp  Tyr Gly Ser Tyr Asp
                6165                6170                6175

agc gat ggg aaa aca  aga ccc atc atc acc  aaa att gga gca ggt       32887
Ser Asp Gly Lys Thr  Arg Pro Ile Ile Thr  Lys Ile Gly Ala Gly
                6180                6185                6190

ttg aat ttt gat gct  aat aat gcc atg gct  gtg aag cta ggc aca       32932
Leu Asn Phe Asp Ala  Asn Asn Ala Met Ala  Val Lys Leu Gly Thr
                6195                6200                6205

ggt tta agt ttt gac  tct gcc ggt gcc tta  aca gct gga aac aaa       32977
Gly Leu Ser Phe Asp  Ser Ala Gly Ala Leu  Thr Ala Gly Asn Lys
                6210                6215                6220

gag gat gac aag cta  aca ctt tgg act aca  cct gac cca agc cct       33022
Glu Asp Asp Lys Leu  Thr Leu Trp Thr Thr  Pro Asp Pro Ser Pro
                6225                6230                6235

aat tgt caa tta ctt  tca gac aga gat gcc  aaa ttt acc cta tgt       33067
Asn Cys Gln Leu Leu  Ser Asp Arg Asp Ala  Lys Phe Thr Leu Cys
                6240                6245                6250

ctt aca aaa tgc ggt  agt caa ata cta ggc  act gtt gca gta gct       33112
Leu Thr Lys Cys Gly  Ser Gln Ile Leu Gly  Thr Val Ala Val Ala
                6255                6260                6265

gct gtt act gta ggt  tca gca cta aat cca  att aat gac aca gta       33157
Ala Val Thr Val Gly  Ser Ala Leu Asn Pro  Ile Asn Asp Thr Val
                6270                6275                6280

aaa agc gcc ata gta  ttc ctt aga ttt gac  tct gac ggt gtg ctc       33202
Lys Ser Ala Ile Val  Phe Leu Arg Phe Asp  Ser Asp Gly Val Leu
                6285                6290                6295

atg tca aac tca tca  atg gta ggt gat tac  tgg aac ttt agg gaa       33247
Met Ser Asn Ser Ser  Met Val Gly Asp Tyr  Trp Asn Phe Arg Glu
                6300                6305                6310

gga cag acc acc caa  agt gtg gcc tat aca  aat gct gtg gga ttc       33292
Gly Gln Thr Thr Gln  Ser Val Ala Tyr Thr  Asn Ala Val Gly Phe
                6315                6320                6325
```

```
atg ccc aat cta ggt  gca tat cct aaa acc  caa agc aaa aca cca        33337
Met Pro Asn Leu Gly  Ala Tyr Pro Lys Thr  Gln Ser Lys Thr Pro
                6330                 6335                 6340

aaa aat agt ata gta  agt cag gta tat tta  aat gga gaa act act        33382
Lys Asn Ser Ile Val  Ser Gln Val Tyr Leu  Asn Gly Glu Thr Thr
                6345                 6350                 6355

atg cca atg aca ctg  aca ata act ttc aat  ggc act gat gaa aaa        33427
Met Pro Met Thr Leu  Thr Ile Thr Phe Asn  Gly Thr Asp Glu Lys
                6360                 6365                 6370

gac aca aca cct gtg  agc act tac tcc atg  act ttt aca tgg cag        33472
Asp Thr Thr Pro Val  Ser Thr Tyr Ser Met  Thr Phe Thr Trp Gln
                6375                 6380                 6385

tgg act gga gac tat  aag gac aag aat att  acc ttt gct acc aac        33517
Trp Thr Gly Asp Tyr  Lys Asp Lys Asn Ile  Thr Phe Ala Thr Asn
                6390                 6395                 6400

tcc ttt act ttc tcc  tac atg gcc caa gaa  taaaccctgc atgccaaccc      33567
Ser Phe Thr Phe Ser  Tyr Met Ala Gln Glu
                6405                 6410

cattgttccc accactatgg aaaactctga agcagaaaaa aataaagttc aagtgtttta    33627

ttgattcaac agttttcaca gaattcgagt agttattttc cctcctccct cccaactcat    33687

ggaatacacc accctctccc cacgcacagc cttaaacatc tgaatgccat tggtaatgga    33747

catggttttg gtctccacat tccacacagt ttcagagcga gccagtctcg ggtcggtcag    33807

ggagatgaaa ccctccgggc actcctgcat ctgcacctca aagttcagta gctgagggct    33867

gtcctcggtg gtcgggatca cagttatctg gaagaagagc ggtgagagtc ataatccgcg    33927

aacgggatcg ggcggttgtg gcgcatcagg ccccgcagca gtcgctgtct gcgccgctcc    33987

gtcaagctgc tgctcaaggg gtctgggtcc agggactccc tgcgcatgat gccgatggcc    34047

ctgagcatca gtcgcctggt gcggcgggcg cagcagcgga tgcggatctc actcaggtcg    34107

gagcagtacg tgcagcacag cactaccaag ttgttcaaca gtccatagtt caacgtgctc    34167

cagccaaaac tcatctgtgg aactatgctg cccacatgtc catcgtacca gatcctgatg    34227

taaatcaggt ggcgcccccc ccagaacaca ctgcccatgt acatgatctc cttgggcatg    34287

tgcaggttca ccacctcccg gtaccacatc acccgctggt tgaacatgca gccctggata    34347

atcctgcgga accagatggc cagcaccgcc ccgcccgcca tgcagcgcag ggaccccggg    34407

tcctggcaat ggcagtggag cacccaccgc tcacggccgt ggattaactg ggagctgaac    34467

aagtctatgt tggcacagca caggcacacg ctcatgcatg tcttcagcac tctcagttcc    34527

tcgggggtca ggaccatgtc ccagggcacg gggaactctt gcaggacagt gaacccggca    34587

gaacagggca gccctcgcac acaacttaca ttgtgcatgg acagggtatc gcaatcaggc    34647

agcaccggat gatcctccac cagagaagcg cgggtctcgg tctcctcaca gcgaggtaag    34707

ggggccggcg gttggtacgg atgatggcgg gatgacgcta atcgtgttct ggatcgtgtc    34767

atgatggagc tgtttcctga cattttcgta cttcacgaag cagaacctgg tacgggcact    34827

gcacaccgct cgccggcgac ggtctcggcg cttcgagcgc tcggtgttga agttatagaa    34887
```

cagccactcc ctcagagcgt gcagtatctc ctgagcctct tgggtgatga aaatcccatc 34947

cgctctgatg gctctgatca catcggccac ggtggaatgg gccagaccca gccagatgat 35007

gcaattttgt tgggtttcgg tgacggaggg agagggaaga acaggaagaa ccatgattaa 35067

ctttattcca aacggtctcg gagcacttca aaatgcaggt cccggaggtg gcacctctcg 35127

cccccactgt gttggtggaa aataacagcc aggtcaaagg tgacacggtt ctcgagatgt 35187

tccacggtgg cttccagcaa agcctccacg cgcacatcca gaaacaagag gacagcgaaa 35247

gcgggagcgt tttctaattc ctcaatcatc atattacact cctgcaccat ccccagataa 35307

ttttcatttt tccagccttg aatgattcgt attagttcct gaggtaaatc caagccagcc 35367

atgataaaaa gctcgcgcag agcgccctcc accggcattc ttaagcacac cctcataatt 35427

ccaagagatt ctgctcctgg ttcacctgca gcagattaac aatgggaata tcaaaatctc 35487

tgccgcgatc cctaagctcc tccctcaaca ataactgtat gtaatctttc atatcatctc 35547

cgaaattttt agccataggg ccgccaggaa taagagcagg gcaagccaca ttacagataa 35607

agcgaagtcc tccccagtga gcattgccaa atgtaagatt gaaataagca tgctggctag 35667

accctgtgat atcttccaga taactggaca gaaaatcagg caagcaattt ttaagaaaat 35727

caacaaaaga aaagtcgtcc aggtgcaggt ttagagcctc aggaacaacg atggaataag 35787

tgcaaggagt gcgttccagc atggttagtg ttttttggt gatctgtaga acaaaaaata 35847

aacatgcaat attaaaccat gctagcctgg cgaacaggtg ggtaaatcac tctttccagc 35907

accaggcagg ctacggggtc tccggcgcga ccctcgtaga agctgtcgcc atgattgaaa 35967

agcatcaccg agagaccttc ccggtggccg gcatggatga ttcgagaaga agcatacact 36027

ccgggaacat tggcatccgt gagtgaaaaa aagcgaccta taaagcctcg gggcactaca 36087

atgctcaatc tcaattccag caaagccacc ccatgcggat ggagcacaaa attggcaggt 36147

gcgtaaaaaa tgtaattact cccctcctgc acaggcagca aagcccccgc tccctccaga 36207

aacacataca aagcctcagc gtccatagct taccgagcac ggcaggcgca agagtcagag 36267

aaaaggctga gctctaacct gactgcccgc tcctgtgctc aatatatagc cctaacctac 36327

actgacgtaa aggccaaagt ctaaaaatac ccgccaaaat gacacacacg cccagcacac 36387

gcccagaaac cggtgacaca ctcaaaaaaa tacgtgcgct tcctcaaacg cccaaaccgg 36447

cgtcatttcc gggttcccac gctacgtcac cgctcagcga ctttcaaatt ccgtcgaccg 36507

ttaaaaacgt cactcgcccc gcccctaacg gtcgcccttc tctcggccaa tcaccttcct 36567

cccttcccaa attcaaacgc ctcatttgca tattaacgcg cacaaaaagt ttgaggtata 36627

ttattgatga tg 36639

<210> 78
<211> 188
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 78

Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Lys Thr Arg Gln Leu
1 5 10 15

Leu Glu Asn Ala Ser Asn Gly Val Ser Tyr Leu Trp Arg Phe Cys Phe
20 25 30

Gly Gly Asp Leu Ala Arg Leu Val Tyr Arg Ala Lys Gln Asp Tyr Ser
35 40 45

Glu Gln Phe Glu Val Ile Leu Arg Glu Cys Pro Gly Leu Phe Asp Ala
50 55 60

Leu Asn Leu Gly His Gln Ser His Phe Asn Gln Arg Ile Ser Arg Ala
65 70 75 80

Leu Asp Phe Thr Thr Pro Gly Arg Thr Thr Ala Ala Val Ala Phe Phe
85 90 95

Ala Phe Ile Leu Asp Lys Trp Ser Gln Glu Thr His Phe Ser Arg Asp
100 105 110

Tyr Gln Leu Asp Phe Leu Ala Val Ala Leu Trp Arg Thr Trp Lys Cys
115 120 125

Gln Arg Leu Asn Ala Ile Ser Gly Tyr Leu Pro Val Gln Pro Leu Asp
130 135 140

Thr Leu Arg Ile Leu Asn Leu Gln Glu Ser Pro Arg Ala Arg Gln Arg
145 150 155 160

Arg Gln Gln Gln Gln Arg Gln Gln Glu Glu Asp Gln Glu Glu Asn Pro
165 170 175

Arg Ala Gly Leu Asp Pro Pro Glu Glu Glu Glu Glu
180 185

<210> 79
<211> 394
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 79

Met His Pro Val Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln
1 5 10 15

Gln Gln Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln
20 25 30

Gln Gln Leu Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly

```
        35                  40                  45

Gln Thr Ser Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala
    50                  55                  60

Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys
65                  70                  75                  80

Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp
                85                  90                  95

Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ala Arg Phe His Ala
            100                 105                 110

Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp
        115                 120                 125

Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala
    130                 135                 140

His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys
145                 150                 155                 160

Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu
                165                 170                 175

Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu
            180                 185                 190

Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln
        195                 200                 205

Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Ala Phe Arg Glu
    210                 215                 220

Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu
225                 230                 235                 240

Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu
                245                 250                 255

Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys
            260                 265                 270

Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys
        275                 280                 285

Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu
    290                 295                 300

Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg
305                 310                 315                 320
```

```
Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met
                325                 330                 335

His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser
            340                 345                 350

Tyr Phe Asp Met Gly Ala Asp Leu His Trp Gln Pro Ser Arg Arg Ala
        355                 360                 365

Leu Glu Ala Ala Gly Gly Pro Pro Tyr Ile Glu Glu Val Asp Asp Glu
    370                 375                 380

Val Asp Glu Glu Gly Glu Tyr Leu Glu Asp
385                 390
```

<210> 80
<211> 589
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 80

```
Met Gln Gln Gln Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu Gln
1               5                   10                  15

Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala Met
            20                  25                  30

Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg Gln
        35                  40                  45

Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val Pro
    50                  55                  60

Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn Ala
65                  70                  75                  80

Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val Tyr
                85                  90                  95

Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val Gln
            100                 105                 110

Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ala Gln
        115                 120                 125

Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala Leu
    130                 135                 140

Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln Glu
```

```
145                 150                 155                 160

Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Thr Glu Val
                165                 170                 175

Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln Thr
            180                 185                 190

Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys Asn
        195                 200                 205

Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala Thr
    210                 215                 220

Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu Val
225                 230                 235                 240

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

Tyr Leu Ile Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val Asp
            260                 265                 270

Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly Gln
        275                 280                 285

Asp Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr Asn
    290                 295                 300

Arg Ser Gln Lys Ile Pro Pro Gln Tyr Thr Leu Ser Ala Glu Glu Glu
305                 310                 315                 320

Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met Gln
                325                 330                 335

Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn Met
            340                 345                 350

Glu Pro Ser Met Tyr Ala Ser Asn Arg Pro Phe Ile Asn Lys Leu Met
        355                 360                 365

Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr Asn
    370                 375                 380

Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr Gly
385                 390                 395                 400

Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp Val
                405                 410                 415

Asp Ser Ser Val Phe Ser Pro Arg Pro Gly Ala Asn Glu Arg Pro Leu
            420                 425                 430
```

```
Trp Lys Lys Glu Gly Ser Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly
        435                 440                 445

Arg Glu Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro
    450                 455                 460

Ser Leu Pro Phe Ser Leu Asn Ser Ile Arg Ser Ser Glu Leu Gly Arg
465                 470                 475                 480

Ile Thr Arg Pro Arg Leu Leu Gly Glu Glu Glu Tyr Leu Asn Asp Ser
                485                 490                 495

Leu Leu Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu
            500                 505                 510

Ser Leu Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala Gln Glu His
        515                 520                 525

Arg Asp Asp Pro Ser Gln Gly Ala Thr Ser Arg Gly Ser Ala Ala Arg
    530                 535                 540

Lys Arg Arg Trp His Asp Arg Gln Arg Gly Leu Met Trp Asp Asp Glu
545                 550                 555                 560

Asp Ser Ala Asp Asp Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Asn
                565                 570                 575

Pro Phe Ala His Leu Arg Pro Arg Ile Gly Arg Met Met
            580                 585
```

<210> 81
<211> 532
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 81

```
Met Met Arg Arg Ala Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1               5                   10                  15

Val Met Gln Gln Ala Met Ala Ala Ala Ala Ala Met Gln Pro Pro Leu
            20                  25                  30

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

Asn Ser Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg
    50                  55                  60

Leu Tyr Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr
```

65 70 75 80

Gln Asn Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp
85 90 95

Phe Thr Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg
100 105 110

Ser Arg Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro
115 120 125

Asn Val Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met
130 135 140

Val Ser Arg Lys Thr Pro Asn Gly Val Thr Val Thr Asp Gly Ser Gln
145 150 155 160

Asp Ile Leu Glu Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly Asn
165 170 175

Phe Ser Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile Asp
180 185 190

Asn Tyr Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp Ile
195 200 205

Gly Val Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro Val
210 215 220

Thr Glu Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His Pro
225 230 235 240

Asp Ile Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser Arg
245 250 255

Leu Ser Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu Gly
260 265 270

Phe Gln Ile Met Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala Leu
275 280 285

Leu Asp Val Asp Ala Tyr Glu Lys Ser Lys Glu Glu Ser Ala Ala Ala
290 295 300

Ala Thr Ala Ala Val Ala Thr Ala Ser Thr Glu Val Arg Gly Asp Asn
305 310 315 320

Phe Ala Ser Pro Ala Ala Val Ala Ala Ala Glu Ala Ala Glu Thr Glu
325 330 335

Ser Lys Ile Val Ile Gln Pro Val Glu Lys Asp Ser Lys Asp Arg Ser
340 345 350

```
Tyr Asn Val Leu Pro Asp Lys Ile Asn Thr Ala Tyr Arg Ser Trp Tyr
        355                 360                 365

Leu Ala Tyr Asn Tyr Gly Asp Pro Glu Lys Gly Val Arg Ser Trp Thr
    370                 375                 380

Leu Leu Thr Thr Ser Asp Val Thr Cys Gly Val Glu Gln Val Tyr Trp
385                 390                 395                 400

Ser Leu Pro Asp Met Met Gln Asp Pro Val Thr Phe Arg Ser Thr Arg
                405                 410                 415

Gln Val Ser Asn Tyr Pro Val Val Gly Ala Glu Leu Leu Pro Val Tyr
            420                 425                 430

Ser Lys Ser Phe Phe Asn Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg
        435                 440                 445

Ala Phe Thr Ser Leu Thr His Val Phe Asn Arg Phe Pro Glu Asn Gln
    450                 455                 460

Ile Leu Val Arg Pro Pro Ala Pro Thr Ile Thr Thr Val Ser Glu Asn
465                 470                 475                 480

Val Pro Ala Leu Thr Asp His Gly Thr Leu Pro Leu Arg Ser Ser Ile
                485                 490                 495

Arg Gly Val Gln Arg Val Thr Val Thr Asp Ala Arg Arg Arg Thr Cys
            500                 505                 510

Pro Tyr Val Tyr Lys Ala Leu Gly Ile Val Ala Pro Arg Val Leu Ser
        515                 520                 525

Ser Arg Thr Phe
    530
```

<210> 82
<211> 193
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 82

```
Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1               5                   10                  15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
            20                  25                  30

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
```

```
        35                  40                  45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
    50                  55                  60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Val Ser Thr
65                  70                  75                  80

Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
                85                  90                  95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
            100                 105                 110

Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
        115                 120                 125

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ala
    130                 135                 140

Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala Ala
145                 150                 155                 160

Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val Arg
                165                 170                 175

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

Thr
```

<210> 83
<211> 342
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 83

```
Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1               5                   10                  15

Glu Ile Tyr Gly Pro Ala Val Val Lys Glu Glu Arg Lys Pro Arg Lys
            20                  25                  30

Ile Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Glu Ser Asp Val Asp
        35                  40                  45

Gly Leu Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln
    50                  55                  60
```

```
Trp Arg Gly Arg Lys Val Arg Pro Val Leu Arg Pro Gly Thr Thr Val
65                  70                  75                  80

Val Phe Thr Pro Gly Glu Arg Ser Gly Thr Ala Ser Lys Arg Ser Tyr
                85                  90                  95

Asp Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu Gln Ala Ala Glu Arg
            100                 105                 110

Leu Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Ser Ala Pro Lys Glu
        115                 120                 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
    130                 135                 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Thr Ala Ala Pro Arg Arg
145                 150                 155                 160

Gly Phe Lys Arg Glu Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu Met
                165                 170                 175

Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu Thr Met Lys Val
            180                 185                 190

Asp Pro Asp Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln Val
        195                 200                 205

Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr Glu
    210                 215                 220

Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr Met
225                 230                 235                 240

Glu Val Gln Thr Asp Pro Trp Met Pro Ser Ala Thr Ser Arg Arg Pro
                245                 250                 255

Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn Tyr Ala Leu
            260                 265                 270

His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg Gly Thr Arg Phe Tyr
        275                 280                 285

Arg Gly His Thr Ser Arg Arg Arg Lys Thr Thr Thr Arg Arg Arg Arg
    290                 295                 300

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

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

His Pro Ser Ile Ala Ile
```

340

<210> 84
<211> 77
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 84

Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1 5 10 15

Arg Lys Pro Arg Arg Arg Arg Leu Ala Gly Asn Gly Met Arg Arg His
20 25 30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
35 40 45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
50 55 60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65 70 75

<210> 85
<211> 259
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 85

Met Asp Ser Asp Ala Pro Gly Pro Val Met Cys Phe Arg Arg Gln Met
1 5 10 15

Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg Pro
20 25 30

Phe Met Gly Thr Trp Ser Asp Ile Gly Thr Ser Gln Leu Asn Gly Gly
35 40 45

Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly Ser
50 55 60

Thr Leu Lys Thr Tyr Gly Ser Lys Ala Trp Asn Ser Thr Thr Gly Gln
65 70 75 80

Ala Leu Arg Asp Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val Val
85 90 95

Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn Gln
100 105 110

Ala Val Gln Arg Gln Ile Asn Ser Arg Leu Asp Pro Val Pro Pro Ala
115 120 125

Gly Ser Val Glu Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu Asp
130 135 140

Lys Arg Gly Glu Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu Leu
145 150 155 160

Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu Gly
165 170 175

Leu Pro Thr Thr Arg Pro Ile Ala Pro Leu Ala Thr Gly Val Leu Lys
180 185 190

Pro Glu Ser Ser Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Gln Pro
195 200 205

Ser Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val Ala
210 215 220

Arg Ala Arg Pro Gly Gly Thr Ala Arg Pro His Ala Asn Trp Gln Ser
225 230 235 240

Thr Leu Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg Arg
245 250 255

Arg Cys Tyr

<210> 86
<211> 931
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 86

Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr

65 70 75 80

Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
115 120 125

Ala Pro Asn Thr Cys Gln Trp Thr Tyr Thr Asp Lys Gln Thr Glu Lys
130 135 140

Thr Ala Thr Tyr Gly Asn Ala Pro Val Gln Gly Ile Ala Ile Thr Lys
145 150 155 160

Asp Gly Ile Gln Leu Gly Thr Asp Ser Asp Gly Asn Pro Val Tyr Ala
165 170 175

Gln Lys Thr Phe Glu Pro Glu Pro Gln Val Gly Asp Ala Glu Trp His
180 185 190

Asp Thr Thr Gly Thr Asp Glu Lys Tyr Gly Gly Arg Ala Leu Lys Pro
195 200 205

Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys Pro Thr Asn
210 215 220

Lys Glu Gly Gly Gln Ala Lys Asn Arg Thr Lys Thr Asp Gly Thr Gly
225 230 235 240

Glu Glu Pro Asp Ile Asp Met Ala Phe Phe Asp Gly Arg Asn Ala Thr
245 250 255

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

Leu Glu Thr Pro Asp Thr His Ile Val Tyr Lys Ala Gly Thr Asp Asp
275 280 285

Ser Ser Ser Ser Ile Asn Leu Gly Gln Gln Ser Met Pro Asn Arg Pro
290 295 300

Asn Tyr Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn
305 310 315 320

Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn
325 330 335

Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu
340 345 350

```
Leu Leu Asp Ser Leu Gly Asp Arg Thr Leu Tyr Phe Ser Met Trp Asn
        355                 360                 365

Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His
    370                 375                 380

Gly Val Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asp Ala Val
385                 390                 395                 400

Gly Arg Thr Asp Thr Tyr Gln Gly Ile Lys Pro Asn Gly Gly Asp Pro
                405                 410                 415

Ala Thr Trp Ala Lys Asp Asp Ser Ala Asn Asp Ala Asn Glu Met Gly
            420                 425                 430

Lys Gly Asn Pro Phe Ala Met Glu Ile Asn Ile Gln Ala Asn Leu Trp
        435                 440                 445

Arg Asn Phe Leu Tyr Ala Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr
    450                 455                 460

Lys Tyr Thr Pro Ala Asn Val Thr Leu Pro Thr Asn Thr Asn Thr Tyr
465                 470                 475                 480

Asp Tyr Met Asn Gly Arg Val Val Ala Pro Ser Leu Val Asp Ser Tyr
                485                 490                 495

Ile Asn Ile Gly Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn
            500                 505                 510

Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu
        515                 520                 525

Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys
    530                 535                 540

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

Glu Trp Asn Phe Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu
                565                 570                 575

Gly Asn Asp Leu Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile
            580                 585                 590

Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr
        595                 600                 605

Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp
    610                 615                 620
```

```
Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr
625                 630                 635                 640

Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly
                645                 650                 655

Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser
            660                 665                 670

Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp
        675                 680                 685

Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe
    690                 695                 700

Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn
705                 710                 715                 720

Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala
                725                 730                 735

Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His
            740                 745                 750

Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp
        755                 760                 765

Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val
    770                 775                 780

Val Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr
785                 790                 795                 800

Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg
                805                 810                 815

Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys
            820                 825                 830

Ser Ala Val Thr Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val
        835                 840                 845

Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu
    850                 855                 860

Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu
865                 870                 875                 880

Asp Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr Leu Leu Tyr
                885                 890                 895
```

```
Val Val Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg
            900                 905                 910

Gly Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn
        915                 920                 925

Ala Thr Thr
    930
```

<210> 87
<211> 210
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 87

```
Met Met Ala Glu Ala Ala Gly Ser Gly Glu Gln Glu Leu Arg Ala Ile
1               5                   10                  15

Ile Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys
            20                  25                  30

Arg Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val
        35                  40                  45

Asn Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala
    50                  55                  60

Trp Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe
65                  70                  75                  80

Ser Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu
                85                  90                  95

Leu Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu
            100                 105                 110

Lys Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu
        115                 120                 125

Phe Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro
    130                 135                 140

Met Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly
145                 150                 155                 160

Met Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu
                165                 170                 175

Ala Leu Tyr Arg Phe Leu Asn Ser His Ser Ala Tyr Phe Arg Ser His
            180                 185                 190
```

```
Arg Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Asn Gln
        195                 200                 205


Asp Met
    210


<210>  88
<211>  801
<212>  PRT
<213>  Unknown

<220>
<223>  Synthetic Construct

<400>  88

Met Glu Thr Gln Pro Ser Pro Thr Ser Pro Ser Ala Pro Thr Thr Ala
1               5                   10                  15


Asp Glu Lys Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro Pro Ser Pro
            20                  25                  30


Ala Thr Ser Asp Ala Ala Ala Val Pro Asp Met Gln Glu Met Glu Glu
        35                  40                  45


Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His Glu Glu
    50                  55                  60


Glu Leu Ala Val Arg Phe Gln Ser Ser Ser Gln Glu Asp Lys Glu Gln
65                  70                  75                  80


Pro Glu Gln Glu Ala Glu Asn Glu Gln Ser Gln Ala Gly Leu Glu His
                85                  90                  95


Asp Gly Asp Tyr Leu His Leu Ser Gly Glu Glu Asp Ala Leu Ile Lys
            100                 105                 110


His Leu Ala Arg Gln Ala Ile Ile Val Lys Asp Ala Leu Leu Asp Arg
        115                 120                 125


Thr Glu Val Pro Leu Ser Val Glu Glu Leu Ser Arg Ala Tyr Glu Leu
    130                 135                 140


Asn Leu Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr
145                 150                 155                 160


Cys Glu Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro
                165                 170                 175


Glu Ala Leu Ala Thr Tyr His Ile Phe Phe Lys Asn Gln Lys Ile Pro
            180                 185                 190


Val Ser Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Phe Asn Leu
        195                 200                 205
```

```
Gly Pro Gly Ala Arg Leu Pro Asp Ile Ala Ser Leu Glu Glu Val Pro
    210                 215                 220

Lys Ile Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala
225                 230                 235                 240

Leu Gln Gly Glu Gly Gly Glu His Glu His His Ser Ala Leu Val Glu
                245                 250                 255

Leu Glu Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu
            260                 265                 270

Leu Thr His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met
        275                 280                 285

Ser Ala Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Ile Ser
    290                 295                 300

Glu Asp Glu Gly Met Gln Asp Ser Glu Asp Gly Lys Pro Val Val Ser
305                 310                 315                 320

Asp Glu Gln Leu Ala Arg Trp Leu Gly Pro Asn Ala Ser Pro Gln Ser
                325                 330                 335

Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr Val
            340                 345                 350

Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu Arg
        355                 360                 365

Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val Arg
    370                 375                 380

Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr
385                 390                 395                 400

Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His Thr
                405                 410                 415

Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val Tyr
            420                 425                 430

Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln Gln
        435                 440                 445

Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln Lys
    450                 455                 460

Asn Leu Lys Gly Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala Ser
465                 470                 475                 480
```

```
Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu Arg
                485                 490                 495

Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe Arg
            500                 505                 510

Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser Ala
        515                 520                 525

Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro Pro
    530                 535                 540

Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala Tyr
545                 550                 555                 560

His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu Cys
                565                 570                 575

His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys Asn
            580                 585                 590

Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu Gln
        595                 600                 605

Gly Pro Ser Asp Asp Gly Glu Gly Ala Lys Gly Gly Leu Lys Leu Thr
    610                 615                 620

Pro Gly Leu Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp
625                 630                 635                 640

Tyr His Pro Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro Pro
                645                 650                 655

Lys Ala Glu Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu Ala
            660                 665                 670

Gln Leu Gln Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys
        675                 680                 685

Gly Arg Gly Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn Pro
    690                 695                 700

Gly Phe Pro Gln Asp Ala Pro Arg Lys Gln Glu Ala Glu Ser Gly Ala
705                 710                 715                 720

Ala Ala Arg Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Gln Ser Gly
                725                 730                 735

Arg Gly Gly Asp Gly Gly Arg Leu Gly Gln His Ser Gly Arg Gly Gly
            740                 745                 750
```

```
Gln Pro Ala Arg Gln Ser Gly Gly Arg Arg Gly Gly Gly Arg Gly Gly
        755                 760                 765

Arg Ser Ser Arg Arg Gln Thr Val Val Leu Gly Gly Gly Glu Ser Lys
    770                 775                 780

Gln His Gly Tyr His Leu Arg Ser Gly Ser Gly Ser Arg Ser Ala Pro
785                 790                 795                 800

Gln
```

<210> 89
<211> 227
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 89

```
Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1               5                   10                  15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
            20                  25                  30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
        35                  40                  45

Ala His Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Leu Thr Ala Thr
    50                  55                  60

Pro Arg Asn His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65                  70                  75                  80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
                85                  90                  95

Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
            100                 105                 110

Thr Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
        115                 120                 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
    130                 135                 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Ile Ala Gly Ser Gly Arg Ser
145                 150                 155                 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
                165                 170                 175
```

```
Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
            180                 185                 190


Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
        195                 200                 205


Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
    210                 215                 220


Gly Tyr Asp
225
```

<210> 90
<211> 106
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 90

```
Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1               5                   10                  15


His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Thr
            20                  25                  30


Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
        35                  40                  45


Arg Ile Val Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
    50                  55                  60


Ser Gln Arg Pro Ile Leu Val Glu Arg Gln Gln Gly Asn Thr Leu Leu
65                  70                  75                  80


Thr Leu Tyr Cys Ile Cys Asp His Pro Gly Leu His Glu Ser Leu Cys
                85                  90                  95


Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
            100                 105
```

<210> 91
<211> 176
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 91

```
Met Gly Lys Ile Thr Leu Val Cys Gly Val Leu Val Thr Val Val Leu
1               5                   10                  15
```

```
Ser Ile Leu Gly Gly Gly Ser Ala Ala Val Val Thr Glu Lys Lys Ala
            20                  25                  30

Asp Pro Cys Leu Thr Phe Asn Pro Asp Lys Cys Arg Leu Ser Phe Gln
        35                  40                  45

Pro Asp Gly Asn Arg Cys Thr Val Leu Ile Lys Cys Gly Trp Glu Cys
    50                  55                  60

Glu Ser Val Ala Ile Gln Tyr Lys Asn Lys Thr Arg Asn Asn Thr Leu
65                  70                  75                  80

Ala Ser Thr Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
                85                  90                  95

Pro Gly Ala Asp Gly Ser Leu His Thr Val Asn Asn Thr Phe Ile Phe
            100                 105                 110

Glu His Met Cys Glu Thr Ala Met Phe Met Ser Lys Gln Tyr Gly Met
        115                 120                 125

Trp Pro Pro Arg Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
    130                 135                 140

Ala Cys Thr Val Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145                 150                 155                 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
                165                 170                 175
```

<210> 92
<211> 247
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 92

```
Met Arg Leu Leu Ile Phe Val Ile Ile Thr Leu Ser Phe Asn Tyr Ala
1               5                   10                  15

His Gly Tyr Ala Asn Ile Gln Lys Thr Leu Tyr Val Gly Ser Asp Ser
            20                  25                  30

Thr Leu Glu Gly Thr Gln Ser Gln Ala Arg Val Ser Trp Tyr Phe Tyr
        35                  40                  45

Lys Gly Ser Asp Asp Pro Ile Thr Leu Cys Lys Gly Asp Gln Gly Arg
    50                  55                  60

Ile Thr Lys Pro Pro Ile Thr Phe Ser Cys Thr Arg Thr Asn Leu Thr
65                  70                  75                  80
```

```
Leu Leu Ser Ile Thr Lys Glu Tyr Ala Gly Thr Tyr Tyr Ser Thr Asn
                85                  90                  95

Phe His Arg Gly Gln Asp Lys Tyr Tyr Thr Val Lys Val Glu Asn Pro
            100                 105                 110

Thr Thr Pro Arg Thr Thr Thr Lys Pro Thr Thr Thr Lys Lys Pro Thr
        115                 120                 125

Thr Pro Lys Lys Pro Thr Thr Pro Lys Thr Thr Lys Thr Thr Thr Ala
    130                 135                 140

Lys Thr Thr Thr Thr Lys Pro Thr Thr Thr Ser Thr Thr Leu Ala Ile
145                 150                 155                 160

Thr Thr His Thr His Thr Glu Leu Thr Ser Gln Ala Thr Thr Glu Asn
                165                 170                 175

Asp Leu Val Ala Leu Leu Gln Lys Gly Glu Asn Ser Ser Ser Ser Pro
            180                 185                 190

Leu Pro Thr Thr Pro Ser Glu Glu Ile Pro Lys Ser Met Val Gly Ile
        195                 200                 205

Ile Ala Ala Val Val Val Cys Met Leu Ile Ile Ile Leu Cys Met Met
    210                 215                 220

Tyr Tyr Ala Cys Tyr Tyr Arg Lys His Arg Leu Asn Asn Lys Leu Asp
225                 230                 235                 240

Pro Leu Leu Ser Val Asp Phe
                245
```

<210> 93
<211> 208
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 93

```
Met Lys Ile Leu Ser Leu Phe Val Phe Ser Ile Ile Ile Thr Ser Ala
1               5                   10                  15

Ile Cys Glu Ser Val Asp Lys Asp Val Thr Val Thr Thr Gly Ser Asn
            20                  25                  30

Tyr Thr Leu Lys Gly Pro Ser Ser Gly Met Leu Ser Trp Tyr Cys Tyr
        35                  40                  45

Phe Gly Asn Asp Asp Lys Gln Thr Glu Leu Cys Asn Phe Gln Asn Gly
    50                  55                  60
```

```
Lys Thr Lys Asn Ser Lys Ile Asp Asn Tyr Gln Cys Gln Gly Thr Asn
65                  70                  75                  80

Leu Val Leu Met Asn Ile Thr Lys Ala Tyr Ala Gly Ser Tyr Ser Cys
                85                  90                  95

Pro Gly Gln Asn Thr Glu Glu Met Ile Phe Tyr Lys Leu Ile Val Val
            100                 105                 110

Asp Pro Thr Thr Pro Ala Pro Pro Thr Thr Thr Lys Ala His Thr Thr
        115                 120                 125

Asp Thr Gln Glu Thr Thr Pro Glu Ala Glu Val Ala Glu Leu Ala Lys
    130                 135                 140

Gln Ile His Glu Asp Ser Phe Val Ala Asn Thr Pro Thr His Pro Gly
145                 150                 155                 160

Pro Gln Cys Pro Gly Pro Leu Val Ser Gly Ile Val Gly Val Leu Cys
                165                 170                 175

Gly Leu Ala Val Ile Ile Ile Cys Met Phe Ile Phe Ala Cys Cys Tyr
            180                 185                 190

Arg Arg Leu His Arg Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
        195                 200                 205
```

<210> 94
<211> 291
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 94

```
Met Lys Ala Leu Ser Thr Leu Val Phe Leu Ser Leu Ile Gly Ile Val
1               5                   10                  15

Phe Ser Ala Gly Phe Leu Lys Asn Leu Thr Ile Ile Glu Gly Asp Asn
            20                  25                  30

Ala Thr Leu Val Gly Ile Ser Gly Gln Asn Val Ser Trp Leu Lys Tyr
        35                  40                  45

His Leu Asp Gly Trp Lys Pro Ile Cys Thr Trp Asn Val Ser Val Tyr
    50                  55                  60

Thr Cys His Gly Val Asn Leu Thr Ile Thr Asn Ala Thr Gln Asp Gln
65                  70                  75                  80

Asn Gly Arg Phe Lys Gly Gln Ser Phe Thr Ser Asn Asn Gly Tyr Glu
```

```
                85                  90                  95

Thr His Asn Met Phe Ile Tyr Asp Val Thr Val Ile Ser Asn Lys Thr
            100                 105                 110

Thr Pro Thr Thr Gln Thr Pro Thr Thr His Ser Ser Thr His Ala Met
        115                 120                 125

Gln Thr Thr Gln Thr Thr Thr Tyr Thr Thr Ser Thr Glu Ser Thr Thr
    130                 135                 140

Thr Thr Thr Ala Glu Val Ser Ser Thr Ala Pro Gln Pro Gln Ala Leu
145                 150                 155                 160

Ala Leu Met Ala Gln Pro Ser Ser Met Thr Ala Lys Thr Asn Glu Gln
                165                 170                 175

Thr Thr Glu Phe Leu Ser Thr Ile Gln Ser Ser Thr Thr Ala Thr Ser
            180                 185                 190

Ser Ala Phe Ser Ser Thr Ala Asn Leu Thr Ser Leu Ser Ser Thr Pro
        195                 200                 205

Ile Ser Asn Ala Thr Thr Ser Pro Ala Pro Leu Pro Thr Pro Leu Lys
    210                 215                 220

Gln Ser Glu Ser Ser Thr Gln Leu Gln Ile Thr Leu Leu Ile Val Ile
225                 230                 235                 240

Gly Val Val Ile Leu Ala Val Leu Leu Tyr Phe Ile Phe Cys Arg Arg
                245                 250                 255

Ile Pro Asn Ala Lys Pro Ala Tyr Lys Pro Ile Val Ile Gly Thr Pro
            260                 265                 270

Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser Phe
        275                 280                 285

Thr Val Trp
    290


<210>  95
<211>  149
<212>  PRT
<213>  Unknown

<220>
<223>  Synthetic Construct

<400>  95

Met Ile Ser Met Arg Ala Leu Leu Leu Leu Leu Ala Leu Leu Leu Ala
1               5                   10                  15
```

```
Pro Leu Ala Ala Pro Leu Ser Leu Lys Ser Pro Thr Gln Ser Pro Glu
            20                  25                  30

Glu Val Arg Lys Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Ser Cys
        35                  40                  45

Tyr Lys Leu Lys Ser Glu Met His Pro Ser Trp Ile Met Ile Val Gly
    50                  55                  60

Ile Val Asn Ile Leu Ala Cys Thr Leu Phe Ser Phe Val Ile Tyr Pro
65                  70                  75                  80

Arg Phe Asp Phe Gly Trp Asn Ala Pro Glu Ala Leu Trp Leu Pro Pro
                85                  90                  95

Asp Pro Asp Thr Pro Pro Gln Gln Gln Asn Gln Ala Gln Ala His
            100                 105                 110

Ala Pro Pro Gln Pro Arg Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu
        115                 120                 125

Ala Glu Pro Gln Arg Ala Met Leu Pro Ala Ile Ser Tyr Phe Asn Leu
    130                 135                 140

Thr Gly Gly Asp Asp
145
```

<210> 96
<211> 490
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 96

```
Met Phe Ser Val Ser Ser Thr Ser Leu Pro Ser Ser Gln Leu Trp Tyr
1               5                   10                  15

Cys Arg Pro Arg Arg Ala Ala Asn Phe Leu His Thr Leu Lys Gly Met
            20                  25                  30

Ser Asn Ser Ser Cys Pro Ser Ile Phe Ile Phe Ile Phe Tyr Gln Met
        35                  40                  45

Ser Lys Lys Arg Ala Arg Val Asp Asp Gly Phe Asp Pro Val Tyr Pro
    50                  55                  60

Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro Phe
65                  70                  75                  80

Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser Leu
                85                  90                  95
```

```
Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Ala Val Thr Leu Lys
            100                 105                 110

Leu Gly Glu Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser Lys
        115                 120                 125

Asn Ala Thr Lys Ala Thr Ala Pro Leu Ser Ile Ser Asn Gly Thr Ile
    130                 135                 140

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

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

Gly Ile Ser Leu Gly Asn Gly Leu Gln Thr Ser Asn Lys Leu Leu Thr
            180                 185                 190

Val Gln Leu Thr His Pro Leu Thr Phe Ser Ser Asn Ser Ile Thr Val
        195                 200                 205

Lys Thr Asp Lys Gly Leu Tyr Ile Asn Ser Ser Gly Asn Arg Gly Leu
    210                 215                 220

Glu Ala Asn Ile Ser Leu Lys Arg Gly Leu Ile Phe Asp Gly Asn Ala
225                 230                 235                 240

Ile Ala Thr Tyr Leu Gly Ser Gly Leu Asp Tyr Gly Ser Tyr Asp Ser
                245                 250                 255

Asp Gly Lys Thr Arg Pro Ile Ile Thr Lys Ile Gly Ala Gly Leu Asn
            260                 265                 270

Phe Asp Ala Asn Asn Ala Met Ala Val Lys Leu Gly Thr Gly Leu Ser
        275                 280                 285

Phe Asp Ser Ala Gly Ala Leu Thr Ala Gly Asn Lys Glu Asp Asp Lys
    290                 295                 300

Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Gln Leu Leu
305                 310                 315                 320

Ser Asp Arg Asp Ala Lys Phe Thr Leu Cys Leu Thr Lys Cys Gly Ser
                325                 330                 335

Gln Ile Leu Gly Thr Val Ala Val Ala Ala Val Thr Val Gly Ser Ala
            340                 345                 350

Leu Asn Pro Ile Asn Asp Thr Val Lys Ser Ala Ile Val Phe Leu Arg
        355                 360                 365
```

Phe Asp Ser Asp Gly Val Leu Met Ser Asn Ser Ser Met Val Gly Asp
370 375 380

Tyr Trp Asn Phe Arg Glu Gly Gln Thr Thr Gln Ser Val Ala Tyr Thr
385 390 395 400

Asn Ala Val Gly Phe Met Pro Asn Leu Gly Ala Tyr Pro Lys Thr Gln
405 410 415

Ser Lys Thr Pro Lys Asn Ser Ile Val Ser Gln Val Tyr Leu Asn Gly
420 425 430

Glu Thr Thr Met Pro Met Thr Leu Thr Ile Thr Phe Asn Gly Thr Asp
435 440 445

Glu Lys Asp Thr Thr Pro Val Ser Thr Tyr Ser Met Thr Phe Thr Trp
450 455 460

Gln Trp Thr Gly Asp Tyr Lys Asp Lys Asn Ile Thr Phe Ala Thr Asn
465 470 475 480

Ser Phe Thr Phe Ser Tyr Met Ala Gln Glu
485 490

<210> 97
<211> 31980
<212> DNA
<213> Unknown

<220>
<223> Simian adenovirus A1337

<220>
<221> CDS
<222> (1906)..(3405)
<223> E1b\55K

<220>
<221> CDS
<222> (25519)..(26070)
<223> 22K

<220>
<221> CDS
<222> (27376)..(28011)
<223> E3\CR1-alpha

<220>
<221> CDS
<222> (31565)..(31966)
<223> E3\14.7K

<400> 97
catcatcaat aatatacctc aaacttttg tgcgcgttaa tatgcaaatg aggcgtttga 60

atttgggaag ggaggaaggt gattggccga gagaagggcg accgttaggg gcggggcgag 120

tgacgttttg atgacgtggc cgcgaggagg agccagtttg caagttctcg tgggaaaagt 180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca 240

```
ggaaatgagg tgtttttggg cggatgcaag ttaaaacggg ccattttcgc gcgaaaactg      300

aatgaggaag tgaaaatctg agtaatttcg cgtttatggc agggaggagt atttgccgag      360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtgtttt tcacctaaat      420

ttccgcgtac ggtgtcaaag tccggtgttt ttacgtaggt gtcagctgat cgccagggta      480

tttaaacctg cgctctccag tcaagaggcc actcttgagt gccagcgaga agagttttct      540

cctccgcgcc gcgagtcaga tctacacttt gaaagatgag gcacctgaga gacctgcccg      600

atgagaaaat catcatcgct tccgggaacg agattctgga actggtggta aatgccatga      660

tgggcgacga ccctccggag ccccccaccc catttgaggt accttcgcta cacgatttgt      720

atgatctgga ggtggatgtg cccgaggacg accccaacga ggaggcggta aatgatttat      780

ttagcgatgc cgcgctgcta gctgccgagg aggcttcgag ccctagctca gacagcgact      840

cttcactgca tacccctaga cccggcagag gtgagaaaaa gatccccgag cttaaagggg      900

aagagatgga cttgcgctgc tatgaggaat gcttgccccc gagcgatgat gaggacgagc      960

aggcgatcca gaacgcagcg agccagggag tgcaagccgc cagcgagagc tttgcgctgg     1020

actgcccgcc tctgcccgga cacggctgta agtcttgtga atttcatcgc atgaatactg     1080

gagataaagc tgtgttatgt gcactttgct atatgagagc ttacaaccat tgtgtttaca     1140

gtaagtgtga ttaagttgaa ctttagaggg aggcagagag cagggtgact gggcgatgac     1200

tggtttattt atgtatatat gttctttata taggtcccgt ctctgacgca gatgatgaga     1260

cccccactac agagtccact tcgtcacccc cagaaattgg cacatctcca cctgagaata     1320

ttgttagacc agttcctgtt agagccactg ggaggagagc agctgtggaa tgtttggatg     1380

acttgctaca gggtggggat gaacctttgg acttgtgtac ccggaaacgc cccaggcact     1440

aagtgccaca catgtgtgtt tacttgaggt gatgtcagta tttatagggt gtggagtgca     1500

ataaaaaatg tgttgacttt aagtgcgtgg tttatgactc aggggtgggg actgtgggta     1560

tataagcagg tgcagacctg tgtggttagc tcagagcggc atggagattt ggacggtctt     1620

ggaagacttt cacaagacta gacagctgct agagaacgcc tcgaacggag tctcttacct     1680

gtggagattc tgcttcggtg gcgacctagc taggctagtc tacagggcca aacaggatta     1740

tagtgaacaa tttgaggtta ttttgagaga gtgtcctggt ctttttgacg ctcttaactt     1800

gggccatcag tctcacttta accagaggat ttcgagagcc cttgacttta ctactcctgg     1860

cagaaccact gcagcagtag cctttttttgc ttttattctt gacaa atg gag tca aga     1917
                                                  Met Glu Ser Arg
                                                  1

aac cca ttt cag cag gga tta cca gct gga ttt ctt agc agt agc ttt      1965
Asn Pro Phe Gln Gln Gly Leu Pro Ala Gly Phe Leu Ser Ser Ser Phe
5                   10                  15                  20

gtg gag aac atg gaa gtg cca gcg cct gaa tgc aat ctc cgg cta ctt      2013
Val Glu Asn Met Glu Val Pro Ala Pro Glu Cys Asn Leu Arg Leu Leu
                25                  30                  35

gcc ggt aca gcc gct aga cac tct gag gat cct gaa tct cca gga gag      2061
Ala Gly Thr Ala Ala Arg His Ser Glu Asp Pro Glu Ser Pro Gly Glu
```

```
            40                  45                  50

tcc cag ggc acg cca acg tcg cca gca gca gca gcg gca gca gga gga       2109
Ser Gln Gly Thr Pro Thr Ser Pro Ala Ala Ala Ala Ala Ala Gly Gly
        55                  60                  65

gga tca aga aga gaa ccc gag agc cgg cct gga ccc tcc gga gga gga       2157
Gly Ser Arg Arg Glu Pro Glu Ser Arg Pro Gly Pro Ser Gly Gly Gly
    70                  75                  80

gga gga gta gct gac ctg ttt cct gaa ctg cgc cgg gtg ctg act agg       2205
Gly Gly Val Ala Asp Leu Phe Pro Glu Leu Arg Arg Val Leu Thr Arg
85                  90                  95                  100

tct tcg agt ggt cgg gag agg ggg att aag cgg gag agg cat gat gag       2253
Ser Ser Ser Gly Arg Glu Arg Gly Ile Lys Arg Glu Arg His Asp Glu
                105                 110                 115

act aat cac aga act gaa ctg act gtc agt ctg atg agc cgc aag cgc       2301
Thr Asn His Arg Thr Glu Leu Thr Val Ser Leu Met Ser Arg Lys Arg
            120                 125                 130

cca gaa aca gtg tgg tgg cat gag gtg cag tcg act ggc aca gat gag       2349
Pro Glu Thr Val Trp Trp His Glu Val Gln Ser Thr Gly Thr Asp Glu
        135                 140                 145

gtg tca gtg atg cat gag aag ttt tct cta gaa caa gtc aag act tgt       2397
Val Ser Val Met His Glu Lys Phe Ser Leu Glu Gln Val Lys Thr Cys
    150                 155                 160

tgg tta gag cct gag gat gat tgg gaa gta gcc atc agg aat tat gcc       2445
Trp Leu Glu Pro Glu Asp Asp Trp Glu Val Ala Ile Arg Asn Tyr Ala
165                 170                 175                 180

aag ctg gct ctg atg cca gac aag aag tac aag att act aag ctg ata       2493
Lys Leu Ala Leu Met Pro Asp Lys Lys Tyr Lys Ile Thr Lys Leu Ile
                185                 190                 195

aat atc aga aat gcc tgc tac atc tca ggg aat ggg gct gaa gtg gag       2541
Asn Ile Arg Asn Ala Cys Tyr Ile Ser Gly Asn Gly Ala Glu Val Glu
            200                 205                 210

att tgt ctc cag gat aga gtg gct ttc aga tgc tgc atg atg aat atg       2589
Ile Cys Leu Gln Asp Arg Val Ala Phe Arg Cys Cys Met Met Asn Met
        215                 220                 225

tac ccg gga gtg gtg ggc atg gat ggg gtc acc ttt atg aac atg agg       2637
Tyr Pro Gly Val Val Gly Met Asp Gly Val Thr Phe Met Asn Met Arg
    230                 235                 240

ttc agg gga gat ggg tat aat ggt acg gtc ttt atg gcc aat acc aag       2685
Phe Arg Gly Asp Gly Tyr Asn Gly Thr Val Phe Met Ala Asn Thr Lys
245                 250                 255                 260

ctg aca gtc cat ggc tgc tcc ttc ttt ggg ttt aat aac act tgc att       2733
Leu Thr Val His Gly Cys Ser Phe Phe Gly Phe Asn Asn Thr Cys Ile
                265                 270                 275

gag gcc tgg ggc cag gta ggc gtg agg ggc tgc agt ttt tca gcc aac       2781
Glu Ala Trp Gly Gln Val Gly Val Arg Gly Cys Ser Phe Ser Ala Asn
            280                 285                 290

tgg atg ggg gtc gtg ggc agg acc aag agt atg ctg tcc gtg aag aaa       2829
Trp Met Gly Val Val Gly Arg Thr Lys Ser Met Leu Ser Val Lys Lys
        295                 300                 305

tgc ttg ttt gag agg tgc cac ctg ggg gtg atg agc gag ggc gaa gcc       2877
Cys Leu Phe Glu Arg Cys His Leu Gly Val Met Ser Glu Gly Glu Ala
    310                 315                 320
```

```
aga atc cgc cac tgc gcc tct acc gag acg ggc tgc ttc gtg ctg tgc       2925
Arg Ile Arg His Cys Ala Ser Thr Glu Thr Gly Cys Phe Val Leu Cys
325                 330                 335                 340

aag ggc aat gcc aag atc aag cat aat atg atc tgt gga gcc tcg gac       2973
Lys Gly Asn Ala Lys Ile Lys His Asn Met Ile Cys Gly Ala Ser Asp
                345                 350                 355

gag cgc ggc tac cag atg ctg acc tgt gcc ggt ggg aac agc cat atg       3021
Glu Arg Gly Tyr Gln Met Leu Thr Cys Ala Gly Gly Asn Ser His Met
            360                 365                 370

ctg gcc acc gtg cat gtg gct tcc cat gcc cgc aag ccc tgg ccc gag       3069
Leu Ala Thr Val His Val Ala Ser His Ala Arg Lys Pro Trp Pro Glu
        375                 380                 385

ttc gag cac aat gtc atg acc agg tgc aat atg cat ctg ggg tct cgc       3117
Phe Glu His Asn Val Met Thr Arg Cys Asn Met His Leu Gly Ser Arg
    390                 395                 400

cga ggc atg ttc atg ccc tac cag tgc aac ctg aat tat gtg aag gtg       3165
Arg Gly Met Phe Met Pro Tyr Gln Cys Asn Leu Asn Tyr Val Lys Val
405                 410                 415                 420

ctg ctg gag ccc gat gcc atg tcc aga gtg agc ctg acg ggg gtg ttt       3213
Leu Leu Glu Pro Asp Ala Met Ser Arg Val Ser Leu Thr Gly Val Phe
                425                 430                 435

gac atg aat gtg gag gtg tgg aag att ctg aga tat gat gaa tcc aag       3261
Asp Met Asn Val Glu Val Trp Lys Ile Leu Arg Tyr Asp Glu Ser Lys
            440                 445                 450

acc agg tgc cga gcc tgc gag tgc gga ggg aag cat gcc agg ttc cag       3309
Thr Arg Cys Arg Ala Cys Glu Cys Gly Gly Lys His Ala Arg Phe Gln
        455                 460                 465

ccc gtg tgt gtg gat gtg acg gag gac ctg cga ccc gat cat ttg gtg       3357
Pro Val Cys Val Asp Val Thr Glu Asp Leu Arg Pro Asp His Leu Val
    470                 475                 480

ttg tcc tgc acc ggg acg gag ttc ggt tcc agc ggg gaa gaa tct gac       3405
Leu Ser Cys Thr Gly Thr Glu Phe Gly Ser Ser Gly Glu Glu Ser Asp
485                 490                 495                 500

tagagtgagt agtgttctgg ggcgggggag gacctgcatg agggccagaa tgattgaaat     3465

ctgtgctttt ctgtgtgttg cagcagcatg agcggaagcg gctcctttga gggaggggta     3525

ttcagccctt atctgacggg gcgtctcccc tcctgggcgg gagtgcgtca gaatgtgatg     3585

ggatccacgg tggacggccg gcccgtgcag cccgcgaact cttcaaccct gacctatgca     3645

accctgagct cttcgtcggt ggacgcagct gccgccgcag ctgctgcatc tgccgccagc     3705

gccgtgcgcg gaatggccat gggcgccggc tactacggca ctctggtggc caactcgagt     3765

tccaccaata atcccgccag cctgaacgag gagaagctgc tgctgctgat ggcccagctc     3825

gaggccttga cccagcgcct gggcgagctg acccagcagg tggctcagct gcaggagcag     3885

acgcgggccg cggttgccac ggtgaaatcc aaataaaaaa tgaatcaata ataaacgga      3945

gacggttgtt gattttaaca cagagtctga atctttattt gatttttcgc gcgcggtagg     4005

ccctggacca ccggtctcga tcattgagca ctcggtggat cttttccagg acccggtaga     4065

ggtgggcttg gatgttgagg tacatgggca tgagcccgtc ccgggggtgg aggtagctcc     4125
```

attgcagggc ctcgtgctcg ggggtggtgt tgtaaatcac ccagtcatag caggggcgca 4185

gggcatggtg ttgcacaata tctttgagga ggagactgat ggccacgggc agccctttgg 4245

tgtaggtgtt tacaaatctg ttgagctggg agggatgcat gcgggggggag atgaggtgca 4305

tcttggcctg gatcttgaga ttggcgatgt taccgcccag atcccgcctg gggttcatgt 4365

tgtgcaggac caccagcacg gtgtatccgg tgcacttggg gaatttatca tgcaacttgg 4425

aagggaaggc gtgaaagaat ttggcgacgc ccttgtgccc gcccaggttt tccatgcact 4485

catccatgat gatggcgatg gggccgtggg cggcggcctg ggcaaaaacg tttcgggggt 4545

cggacacatc atagttgtgg tcctgggtga gatcatcata ggccatttta atgaatttgg 4605

ggcggagggt gccggactgg gggacaaagg taccctcgat cccgggggcg tagttcccct 4665

cacagatctg catctcccag gctttgagct cggaggggggg gatcatgtcc acctgcgggg 4725

cgataaagaa cacggtttcc ggggcgggag agatgagctg ggccgaaagc aagttccgga 4785

gcagctggga cttgccgcag ccggtggggc cgtagatgac cccgatgacc ggttgcaggt 4845

ggtagttgag ggagagacag ctgccgtcct cccggaggag gggggccacc tcgttcatca 4905

tctcgcgcac gtgcatgttc tcgcgcacca gttccgccag gaggcgctct ccccccaggg 4965

ataggagctc ctggagcgag gcgaagtttt tcagcggctt gagtccgtcg gccatgggca 5025

ttttggagag ggtctgttgc aagagttcca agcggtccca gagctcggtg atgtgctcta 5085

cggcatctcg atccagcaga cctcctcgtt tcgcgggttg gggcggctgc gggagtaggg 5145

caccagacga tgggcgtcca gcgcagccag ggtccggtcc ttccagggtc gcagcgtccg 5205

cgtcagggtg gtctccgtca cggtgaaggg gtgcgcgccg ggctgggcgc ttgcgagggt 5265

gcgcttcagg ctcatccggc tggtcgaaaa ccgctcccga tcggcgccct gcgcgtcggc 5325

caggtagcaa ttgaccatga gttcgtaatt gagcgcctcg gccgcgtgac ctttggcgcg 5385

gagcttacct ttggaagtct gcccgcaggt gggacagagg agggacttga gggcgtagag 5445

cttgggggcg aggaagacgg actcgggggc gtaggcgtcc gcgccgcagt gggcgcagac 5505

ggtctcgcac tccacgagcc aggtgaggtc gggctggtcg gggtcaaaaa ccagtttccc 5565

gccgttcttt ttgatgcgtt tcttaccttt ggtctccatg agctcgtgtc cccgctgggt 5625

gacaaagagg ctgtccgtgt ccccgtagac cgactttatg ggccggtcct cgagcggtgt 5685

gccgcggtcc tcctcgtaga ggaaccccgc ccactccgag acgaaagccc gggtccaggc 5745

cagcacgaag gaggccacgt gggacgggta gcggtcgttg tccaccagcg ggtccacctt 5805

ctccagggta tgcaaacaca tgtccccctc gtccacatcc aggaaggtga ttggcttgta 5865

agtgtaggcc acgtgaccgg gggtcccagc cgggggggta taaaaggggg cgggcccctg 5925

ctcgtcctca ctgtcttccg gatcgctgtc caggagcgcc agctgttggg gtaggtattc 5985

cctctcgaag gcgggcatga cctcggcact caggttgtca gtttctagaa acgaggagga 6045

tttgatattg acggtgccgg cggagatgcc tttcaagagc ccctcgtcca tctggtcaga 6105

aaagacgatc tttttgttgt cgagtttggt ggcgaaggag ccgtagaggg cattggagag 6165

gagcttggcg atagagcgca tggtctggtt tttttccttg tcggcgcgct ccttggccgc 6225

gatgttgagc tgcacgtact cgcgcgccac gcacttccat tcggggaaga cggtggtcag 6285
ctcgtcgggc acgattctga cttgccagcc ccggttatgc agggtgatga ggtccacact 6345
ggtgcccacc tcgccgcgca ggggctcgtt ggtccagcag agtcgaccgc ccttgcgcga 6405
gcagaagggg ggcagggggt ccagcatgac ctcgtcgggg gggtcggcat cgatggtgaa 6465
gatgcctggc aggagatcgg ggtcgaagta gctgatggaa gtggccagat cgtccagggc 6525
agcttgccat tcgcgcacgg ccagcgcgcg ctcgtaggga ctgaggggcg tgccccaagg 6585
catggggtgt gtgagcgcgg aggcgtacat gccgcagatg tcgtagacgt agaggggctc 6645
ctcgaggatg ccgatgtagg tggggtaaca gcgccccccg cggatgctgg cgcgcacgta 6705
gtcatacagc tcatgcgagg gggcgaggag ccccgggccc aggttggtgc gactgggctt 6765
ttcggcgcgg tagacgatct ggcgaaagat ggcatgcgag ttggaggaga tggtgggcct 6825
ttggaagatg ttgaagtggg cgtggggcag accgaccgag tcgcggatga agtgggcgta 6885
ggagtcttgc agtttggcga cgagctcggc ggtgacgagg acgtccagag cgcagtagtc 6945
gagggtctcc tggatgatgt catacttgag ctggcccttt tgtttccaca gctcgcggtt 7005
gagaaggaac tcttcgcggt ccttccagta ctcttcgagg gggaacccgt cctgatctgc 7065
acggtaagag cctagcatgt agaactggtt gacggccttg taggcgcagc agcccttctc 7125
cacggggagg gcgtaggcct gggcggcctt gcgcagggag gtgtgcgtga gggcgaaggt 7185
gtccctgacc atgaccttga ggaactggtg cttgaaatcg atatcgtcgc agccccctg 7245
ctcccagagc tggaagtccg tgcgcttctt gtaggcgggg ttgggcaaag cgaaagtaac 7305
atcgttgaaa aggatcttgc ccgcgcgggg cataaagttg cgagtgatgc ggaaaggctg 7365
gggcacctcg gcccggttgt tgatgacctg ggcggcgagc acgatctcgt cgaaaccgtt 7425
gatgttgtgg cccacgatgt agagttccac gaatcgcggg cggcccttga cgtggggcag 7485
cttcttgagc tcctcgtagg tgagctcgtc ggggtcgctg agaccgtgct gctcgagcgc 7545
ccagtcggcg agatgggggt tggcgcggag gaaggaagtc cagagatcca cggccagggc 7605
ggtttgcaga cggtcccggt actgacggaa ctgctgcccg acggccattt tttcgggggt 7665
gacgcagtag aaggtgcggg ggtccccgtg ccagcggtcc catttgagct ggagggcgag 7725
atcgagggcg agctcgacga ggcggtcgtc cccggagagt ttcatgacca gcatgaaggg 7785
gacgagctgc ttgccgaagg accccatcca ggtgtaggtt tccacatcgt aggtgaggaa 7845
gagcctttcg gtgcgaggat gcgagccgat ggggaagaac tggatctcct gccaccaatt 7905
ggaggaatgg ctgttgatgt gatggaagta gaaatgccga cggcgcgccg aacactcgtg 7965
cttgtgttta tacaagcggc cacagtgctc gcaacgctgc acgggatgca cgtgctgcac 8025
gagctgtacc tgagttcctt tgacgaggaa tttcagtggg aagtggagtc gtggcgcctg 8085
catctcgtgc tgtactacgt cgtggtggtc ggcctggccc tcttctgcct cgatggtggt 8145
catgctgacg agcccgcgcg ggaggcaggt ccagacctcg gcgcgagcgg gtcggagagc 8205
gaggacgagg gcgcgcaggc cggagctgtc cagggtcctg agacgctgcg gagtcaggtc 8265

agtgggcagc ggcggcgcgc ggttgacttg caggagtttt tccagggcgc gcgggaggtc 8325
cagatggtac ttgatctcca ccgcgccgtt ggtggcgacg tcgatggctt gcagggtccc 8385
gtgcccctgg ggtgtgacca ccgtcccccg tttcttcttg ggcggctggg gcgacggggg 8445
cggtgcctct tccatggtta gaagcggcgg cgaggacgcg cgccgggcgg cagaggcggc 8505
tcggggcccg gaggcagggg cggcaggggc acgtcggcgc cgcgcgcggg taggttctgg 8565
tactgcgccc ggagaagact ggcgtgagcg acgacgcgac ggttgacgtc ctggatctga 8625
cgcctctggg tgaaggccac gggacccgtg agtttgaacc tgaaagagag ttcgacagaa 8685
tcaatctcgg tatcgttgac ggcggcctgc cgcaggatct cttgcacgtc gcccgagttg 8745
tcctggtagg cgatctcggt catgaactgc tcgatctcct cctcctgaag gtctccgcgg 8805
ccggcgcgct ccacggtggc cgcgaggtcg ttggagatgc ggcccatgag ctgcgagaag 8865
gcgttcatgc ccgcctcgtt ccagacgcgg ctgtagacca cgacgccctc gggatcgcgg 8925
gcgcgcatga ccacctgggc gaggttgagc tccacgtggc gcgtgaagac cgcgtagttg 8985
cagaggcgct ggtagaggta gttgagcgtg gtggcgatgt gctcggtgac gaagaaatac 9045
atgatccagc ggcggagcgg catctcgctg acgtcgccca gcgcctccaa gcgttccatg 9105
gcctcgtaaa agtccacggc gaagttgaaa aactgggagt tgcgcgccga gacggtcaac 9165
tcctcctcca gaagacggat gagctcggcg atggtggcgc gcacctcgcg ctcgaaggcc 9225
cccgggagtt cctcctcttc catctcctct tcttcctcct ccactaacat ctcttctact 9285
tcctcctcag gcggtggtgg cgggggaggg ggcctgcgtc gccggcggcg cacgggcaga 9345
cggtcgatga agcgctcgat ggtctcgccg cgccggcgtc gcatggtctc ggtgacggcg 9405
cgcccgtcct cgcggggccg cagcgtgaag acgccgccgc gcatctccag gtggccgggg 9465
gggtccccgt tgggcaggga gagggcgctg acgatgcatc ttatcaattg ccccgtaggg 9525
actccgcgca aggacctgag cgtctcgaga tccacgggat ctgaaaaccg ttgaacgaag 9585
gcttcgagcc agtcgcagtc gcaaggtagg ctgagcacgg tttcttctgg cgggtcatgt 9645
tggggagcgg ggcgggcgat gctgctggtg atgaagttga aataggcggt tctgagacgg 9705
cggatggtgg cgaggagcac caggtctttg ggcccggctt gctggatgcg cagacggtcg 9765
gccatgcccc aggcgtggtc ctgacacctg gccaggtcct tgtagtagtc ctgcatgagc 9825
cgctccacgg gcacctcctc ctcgcccgcg cggccgtgca tgcgcgtgag cccgaagccg 9885
cgctggggct ggacgagcgc caggtcggcg acgacgcgct cggcgaggat ggcctgctgg 9945
atctgggtga gggtggtctg gaagtcgtca aagtcgacga agcggtggta ggctccggtg 10005
ttgatggtgt aggagcagtt ggccatgacg gaccagttga cggtctggtg gcccggacgc 10065
acgagctcgt ggtacttgag gcgcgagtag gcgcgcgtgt cgaagatgta gtcgttgcag 10125
gtgcgcacca ggtactggta gccgatgagg aagtgcggcg gcggctggcg gtagagcggc 10185
catcgctcgg tggcgggggc gccgggcgcg aggtcctcga gcatggtgcg gtggtagccg 10245
tagatgtacc tggacatcca ggtgatgccg gcggcggtgg tggaggcgcg cgggaactcg 10305
cggacgcggt tccagatgtt gcgcagcggc aggaagtagt tcatggtggg cacggtctgg 10365

cccgtgaggc gcgcgcagtc gtggatgctc tatacgggca aaaacgaaag cggtcagcgg 10425

ctcgactccg tggcctggag gctaagcgaa cgggttgggc tgcgcgtgta ccccggttcg 10485

aatctcgaat caggctggag ccgcagctaa cgtggtactg gcactcccgt ctcgacccaa 10545

gcctgcacca accctccagg atacggaggc gggtcgtttt gcaacttttt ttcggaggcc 10605

ggaaatgaag actagtaagc gcggaaagcg gccgaccgcg atggctcgct gccgtagtct 10665

ggagaagaat cgccagggtt gcgttgcggt gtgccccggt tcgaggccgg ccggattccg 10725

cggctaacga gggcgtggct gccccgtcgt ttccaagacc ccctagccag ccgacttctc 10785

cagttacgga gcgagcccct cttttgtttt gtttgttttt gccagatgca tcccgtactg 10845

cggcagatgc gcccccacca ccctccaccg caacaacagc cccctccaca gccggcgctt 10905

ctgcccccgc cccagcagca gcagcaactt ccagccacga ccgccgcggc cgccgtgagc 10965

ggggctggac agacttctca gtatgacctg gccttggaag agggcgaggg gctggcgcgc 11025

ctgggggcgt cgtcgccgga gcggcacccg cgcgtgcaga tgaaaaggga cgctcgcgag 11085

gcctacgtgc ccaagcagaa cctgttcaga gacaggagcg gcgaggagcc cgaggagatg 11145

cgcgcggccc ggttccacgc ggggcgggag ctgcggcgcg gcctggaccg aaagagggtg 11205

ctgagggacg aggatttcga ggcggacgag ctgacgggga tcagccccgc gcgcgcgcac 11265

gtggccgcgg ccaacctggt cacggcgtac gagcagaccg tgaaggagga gagcaacttc 11325

caaaaatcct tcaacaacca cgtgcgcacc ctgatcgcgc gcgaggaggt gaccctgggc 11385

ctgatgcacc tgtgggacct gctggaggcc atcgtgcaga accccaccag caagccgctg 11445

acggcgcagc tgttcctggt ggtgcagcat agtcgggaca acgaggcgtt cagggaggcg 11505

ctgctgaata tcaccgagcc cgagggccgc tggctcctgg acctggtgaa cattctgcag 11565

agcatcgtgg tgcaggagcg cgggctgccg ctgtccgaga agctggcggc catcaacttc 11625

tcggtgctga gtctgggcaa gtactacgct aggaagatct acaagacccc gtacgtgccc 11685

atagacaagg aggtgaagat cgacgggttt tacatgcgca tgaccctgaa agtgctgacc 11745

ctgagcgacg atctgggggt gtaccgcaac gacaggatgc accgcgcggt gagcgccagc 11805

aggcggcgcg agctgagcga ccaggagctg atgcatagtc tgcagcgggc cctgaccggg 11865

gccgggaccg agggggagag ctactttgac atgggcgcgg acctgcactg gcagcccagc 11925

cgccgggcct tggaggcggc aggcggtccc ccctacatag aagaggtgga cgatgaggtg 11985

gacgaggagg gcgagtacct ggaagactga tggcgcgacc gtatttttgc tagatgcaac 12045

aacagccacc tcctgatccc gcgatgcggg cggcgctgca gagccagccg tccggcatta 12105

actcctcgga cgattggacc caggccatgc aacgcatcat ggcgctgacg acccgcaacc 12165

ccgaagcctt tagacagcag ccccaggcca accggctctc ggccatcctg gaggccgtgg 12225

tgccctcgcg ctccaacccc acgcacgaga aggtcctggc catcgtgaac gcgctggtgg 12285

agaacaaggc catccgcggc gacgaggccg gcctggtgta caacgcgctg ctggagcgcg 12345

tggcccgcta caacagcacc aacgtgcaga ccaacctgga ccgcatggtg accgacgtgc 12405

gcgaggccgt ggcccagcgc gagcggttcc accgcgagtc caacctggga tccatggtgg 12465

cgctgaacgc cttcctcagc acccagcccg ccaacgtgcc ccggggccag gaggactaca 12525

ccaacttcat cagcgccctg cgcctgatgg tgaccgaggt gccccagagc gaggtgtacc 12585

agtccgggcc ggactacttc ttccagacca gtcgccaggg cttgcagacc gtgaacctga 12645

gccaggcgtt caagaacttg cagggcctgt ggggcgtgca ggccccggtc ggggaccgcg 12705

cgacggtgtc gagcctgctg acgccgaact cgcgcctgct gctgctgctg gtggcccccc 12765

tcacggacag cggcagcatc aaccgcaact cgtacctggg ctacctgatt aacctgtacc 12825

gcgaggccat cggccaggcg cacgtggacg agcagaccta ccaggagatc acccacgtga 12885

gccgcgccct gggccaggac gacccgggca atctggaagc caccctgaac tttttgctga 12945

ccaaccggtc gcagaagatc ccgccccagt acacgctcag cgccgaggag gagcgcatcc 13005

tgcgatacgt gcagcagagc gtgggcctgt tcctgatgca ggaggggggcc acccccagcg 13065

ccgcgctcga catgaccgcg cgcaacatgg agcccagcat gtacgccagc aaccgcccgt 13125

tcatcaataa actgatggac tacttgcatc gggcggccgc catgaactct gactatttca 13185

ccaacgccat cctgaatccc cactggctcc cgccgccggg gttctacacg ggcgagtacg 13245

acatgcccga ccccaatgac gggttcctgt gggacgatgt ggacagcagc gtgttctccc 13305

cccgaccggg tgctaacgag cgccccttgt ggaagaagga aggcagcgac cgacgcccgt 13365

cctcggcgct gtccggccgc gagggtgctg ccgcggcggt gcccgaggcc gccagtcctt 13425

tcccgagctt gcccttctcg ctgaacagta ttcgcagcag cgagctgggc aggatcacgc 13485

gcccgcgctt gctgggcgag gaggagtact tgaatgactc gctgttgaga cccgagcggg 13545

agaagaactt ccccaataac gggatagaga gcctggtgga caagatgagc cgctggaaga 13605

cgtatgcgca ggagcacagg gacgatccgt cgcaggggggc cacgagccgg ggcagcgccg 13665

cccgtaaacg ccggtggcac gacaggcagc ggggactgat gtgggacgat gaggattccg 13725

ccgacgacag cagcgtgttg gacttgggtg ggagtggtaa cccgttcgct cacctgcgcc 13785

cccgcatcgg gcgcatgatg taagagaaac cgaaaataaa tgatactcac caaggccatg 13845

gcgaccagcg tgcgttcgtt tcttctctgt tgttgtatct agtatgatga ggcgtgcgta 13905

cccggagggt cctcctccct cgtacgagag cgtgatgcag caggcgatgg cggcggcggc 13965

ggcgatgcag cccccgctgg aggctcctta cgtgcccccg cggtacctgg cgcctacgga 14025

ggggcggaac agcattcgtt actcggagct ggcacccttg tacgatacca cccggttgta 14085

cctggtggac aacaagtcgg cggacatcgc ctcgctgaac taccagaacg accacagcaa 14145

cttcctgacc accgtggtgc agaacaatga cttcaccccc acggaggcca gcacccagac 14205

catcaacttt gacgagcgct cgcggtgggg cggtcagctg aaaaccatca tgcacaccaa 14265

catgcccaac gtgaacgagt tcatgtacag caacaagttc aaggcgcggg tgatggtctc 14325

ccgcaagacc cccaacgggg tgacagtgac agatggtagt caggatatct tggagtatga 14385

atgggtggag tttgagctgc ccgaaggcaa cttctcggtg accatgacca tcgacctgat 14445

gaacaacgcc atcatcgaca attacttggc ggtggggcgg cagaacgggg tcctggagag 14505

cgatatcggc gtgaagttcg acactaggaa cttcaggctg ggctgggacc ccgtgaccga 14565
gctggtcatg cccggggtgt acaccaacga ggccttccac cccgatattg tcttgctgcc 14625
cggctgcggg gtggacttca ccgagagccg cctcagcaac ctgctgggca ttcgcaagag 14685
gcagcccttc caggagggct tccagatcat gtacgaggat ctggaggggg gcaacatccc 14745
cgcgctcctg gatgtcgacg cctatgagaa aagcaaggag gagagcgccg ccgcggcgac 14805
tgcagctgta gccaccgcct ctaccgaggt caggggcgat aattttgcca gccctgcagc 14865
agtggcagcg gccgaggcgg ctgaaaccga aagtaagata gtcattcagc cggtggagaa 14925
ggatagcaag gacaggagct acaacgtgct gccggacaag ataaacaccg cctaccgcag 14985
ctggtacctg gcctacaact atggcgaccc cgagaagggc gtgcgctcct ggacgctgct 15045
caccacctcg gacgtcacct gcggcgtgga gcaagtctac tggtcgctgc ccgacatgat 15105
gcaagacccg gtcaccttcc gctccacgcg tcaagttagc aactacccgg tggtgggcgc 15165
cgagctcctg cccgtctact ccaagagctt cttcaacgag caggccgtct actcgcagca 15225
gctgcgcgcc ttcacctcgc tcacgcacgt cttcaaccgc ttccccgaga accagatcct 15285
cgtccgcccg cccgcgccca ccattaccac cgtcagtgaa aacgttcctg ctctcacaga 15345
tcacgggacc ctgccgctgc gcagcagtat ccggggagtc cagcgcgtga ccgttactga 15405
cgccagacgc cgcacctgcc cctacgtcta caaggccctg ggcatagtcg cgccgcgcgt 15465
cctctcgagc cgcaccttct aaaaaatgtc cattctcatc tcgcccagta ataacaccgg 15525
ttggggcctg cgcgcgccca gcaagatgta cggaggcgct cgccaacgct ccacgcaaca 15585
ccccgtgcgc gtgcgcgggc acttccgcgc tccctggggc gccctcaagg gccgcgtgcg 15645
gtcgcgcacc accgtcgacg acgtgatcga ccaggtggtg gccgacgcgc gcaactacac 15705
ccccgccgcc gcgcccgtct ccaccgtgga cgccgtcatc gacagcgtgg tggccgacgc 15765
gcgccggtac gcccgcgcca agagccggcg gcggcgcatc gcccggcggc accggagcac 15825
ccccgccatg cgcgcggcgc gagccttgct gcgcagggcc aggcgcacgg gacgcagggc 15885
catgctcagg gcggccagac gcgcggcctc aggcgccagc gccggcagga cccggagacg 15945
cgcggccacg gcggcggcag cggccatcgc cagcatgtcc cgcccgcggc gagggaacgt 16005
gtactgggtg cgcgacgccg ccaccggtgt gcgcgtgccc gtgcgcaccc gccccctcg 16065
cacttgaaga tgttcacttc gcgatgttga tgtgtcccag cggcgaggat gtccaagcgc 16125
aaattcaagg aagagatgct ccaggtcatc gcgcctgaga tctacggccc cgcggtggtg 16185
aaggaggaaa gaaagccccg caaaatcaag cgggtcaaaa aggacaaaaa ggaagaagaa 16245
agtgatgtgg acggactggt ggagtttgtg cgcgagttcg ccccccggcg gcgcgtgcag 16305
tggcgcgggc ggaaggtgcg cccggtgctg agaccaggca ctacggtggt cttcacgccc 16365
ggcgagcgct ccggcaccgc ttccaagcgc tcctacgacg aggtgtacgg ggacgaggac 16425
atcctcgagc aggcggccga gcgcctgggc gagtttgctt acggcaagcg cagccgctcc 16485
gcgccgaagg aagaggcggt gtccatcccg ctggaccacg gcaaccccac gccgagcctc 16545

aagcccgtga ccctgcagca ggtgctgccg accgcggcgc cgcgccgggg gttcaagcgc 16605

gagggcgagg atctgtaccc caccatgcag ctgatggtgc ccaagcgcca gaagctggaa 16665

gacgtgctgg agaccatgaa ggtggacccg gacgtgcagc ccgaggtcaa ggtgcggccc 16725

atcaagcagg tggccccggg cctgggcgtg cagaccgtgg acatcaagat ccccacggag 16785

cccatggaaa cgcagaccga gcccgtgaaa cccagcacca gcaccatgga ggtgcagacg 16845

gatccttgga tgccatcggc tactagccga agaccccggc gcaagtacgg cgcggccagc 16905

ctgctgatgc ccaactacgc gctgcatcct tccatcatcc ccacgccggg ctaccgcggc 16965

acgcgcttct accgcggtca tacaagccgc cgccgcaaga ccaccacccg ccgccgccgt 17025

cgccgcacaa ccgctgctgc atctacccct gccgccctgg tgcggagagt gtaccgccgc 17085

ggccgcgcgc ctctgaccct gccgcgcgcg cgctaccacc cgagcattgc catttaaact 17145

ttcgcctgct ttgcagatca atggccctca catgccgcct ccgcgttccc attacgggct 17205

accgaggaag aaaaccgcgc cgtagaaggc tggcggggaa cgggatgcgt cgccaccacc 17265

accggcggcg gcgcgccatc agcaagcggt tgggggggagg cttcctgccc gcgctgatcc 17325

ccatcatcgc cgcggcgatc ggggcgatcc ccggcattgc ttccgtggcg gtgcaggcct 17385

ctcagcgcca ctgagacaca cttggaaaca tcttgtaata aaccaatgga ctctgacgct 17445

cctggtcctg tgatgtgttt tcgtagacag atggaagaca tcaatttttc gtccctggct 17505

ccgcgacacg gcacgcggcc gttcatgggc acctggagcg acatcggcac cagccaactg 17565

aacgggggcg ccttcaattg gagcagtctc tggagcgggc ttaagaattt cgggtccacg 17625

cttaaaacct atggcagcaa ggcgtggaac agcaccacag ggcaggcgct gagggataag 17685

ctgaaagagc agaacttcca gcagaaggtg gtcgatggcc tggcctcggg catcaacggg 17745

gtggtggacc tggccaacca ggccgtgcag cggcagatca acagccgcct ggacccggtg 17805

ccgcccgccg gctccgtgga gatgccgcag gtggaggagg agctgcctcc cctggacaag 17865

cggggcgaga agcgaccccg ccccgacgcg gaggagacgc tgctgacgca cacggacgag 17925

ccgccccccgt acgaggaggc ggtgaaactg ggcctgccca ccacgcggcc catcgcgcct 17985

ctggccaccg gggtgctgaa acccgaaagt agtaagcccg cgaccctgga cttgcctcct 18045

ccccagcctt cccgcccctc cacagtggct aagcctctgc cgccggtggc cgtggcccgc 18105

gcgcgacccg ggggcaccgc ccgccctcat gcgaactggc agagcactct gaacagcatc 18165

gtgggtctgg gagtgcagag tgtgaagcgc cgccgctgct attaaaccta ccgtagcgct 18225

taacttgctt gtctgtgtgt gtatgtatta tgtcgccgcc gctgtcgcca gaaggaggag 18285

tgaagaggcg cgtcgccgag ttgcaagatg gccaccccat cgatgctgcc ccagtgggcg 18345

tacatgcaca tcgccggaca ggacgcttcg gagtacctga gtccgggtct ggtgcagttc 18405

gcccgcgcca cagacaccta cttcagtctg gggaacaagt ttaggaaccc cacggtggcg 18465

cccacgcacg atgtgaccac cgaccgcagc cagcggctga cgctgcgctt cgtgcccgtg 18525

gaccgcgagg acaacaccta ctcgtacaaa gtgcgctaca cgctggccgt gggcgacaac 18585

cgcgtgctgg acatggccag cacctacttt gacatccgcg gcgtgctgga ccggggccct 18645

agcttcaaac cctactccgg caccgcctac aatgctctgg cccccaaggg agcacccaac 18705
acttgccagt ggacatacac agataagcaa accgaaaaaa cagccacgta tgggaatgcg 18765
cctgtacaag gcattgccat cacaaaagat ggtattcaac ttggaactga cagtgatgga 18825
aatcctgtat atgctcaaaa gacatttgaa cccgaacctc aagtgggtga tgcagaatgg 18885
catgacacta caggtacaga tgaaaagtat ggaggcaggg cacttaagcc tgacaccaaa 18945
atgaagcctt gctatggttc ttttgccaaa cccactaaca aagaaggtgg acaggcaaag 19005
aacagaacaa aaactgatgg aactggcgaa gagcctgata ttgatatggc atttttgac 19065
ggcagaaatg caactacagc tggtttggct ccagaaattg ttttgtatac tgagaatgtg 19125
gatctggaga ctccagatac ccatattgta tacaaagcag gcacagatga cagcagctct 19185
tcgattaatt tggggcagca atccatgccc aacagaccca actacattgg gttcagagac 19245
aactttatcg ggctcatgta ctacaacagc actggcaata tgggggtgct ggccggtcag 19305
gcttctcagc tgaatgctgt ggttgacttg caagacagaa acaccgaact gtcctaccag 19365
ctcttgcttg actctctggg cgacagaacc ctgtatttca gtatgtggaa tcaggcggtg 19425
gacagctatg atcctgatgt gcgcattatt gaaaaccatg gtgtggaaga tgaacttccc 19485
aactattgct tccctctgga tgctgttggt aggacagata cttatcaggg aattaagccc 19545
aatggaggcg atccagccac atgggccaaa gatgacagcg ccaatgatgc taatgaaatg 19605
ggcaagggca atccattcgc catggaaatc aacatccaag ccaacctgtg gaggaacttc 19665
ctctacgcca acgtggccct gtacctaccc gattcttaca agtacacgcc ggccaacgtc 19725
accctgccca ccaacaccaa cacctacgat tatatgaacg gccgggtggt ggcgccttcg 19785
ctggtggact cctacatcaa catcggggcg cgctggtcgc tggaccccat ggacaacgtc 19845
aatcccttca accaccaccg caacgcgggc ttgcgctacc gctccatgct cctgggcaac 19905
gggcgctacg tgcccttcca catccaggtg ccccagaaat ttttcgccat caagagcctc 19965
ctgctcctgc ccgggtccta cacctacgag tggaacttcc gcaaggacgt caacatgatc 20025
ctgcagagct ccctcggcaa cgacctgcgc acggacgggg cctccatctc cttcaccagc 20085
atcaacctct acgccacctt cttccccatg gcgcacaaca cggcctccac gctcgaggcc 20145
atgctgcgca acgacaccaa cgaccagtcc ttcaacgact acctctcggc ggccaacatg 20205
ctctacccca tcccggccaa cgccaccaac gtgcccatct ccatcccctc gcgcaactgg 20265
gccgccttcc gcggctggtc cttcacgcgc ctcaagacca aggagacgcc ctcgctgggc 20325
tccgggttcg acccctactt cgtctactcg ggctccatcc cctacctcga cggcaccttc 20385
tacctcaacc acaccttcaa gaaggtctcc atcaccttcg actcctccgt cagctggccc 20445
ggcaacgacc ggctcctgac gcccaacgag ttcgaaatca agcgcaccgt cgacggcgag 20505
ggctacaacg tggcccagtg caacatgacc aaggactggt tcctggtcca gatgctggcc 20565
cactacaaca tcggctacca gggcttctac gtgcccgagg gctacaagga ccgcatgtac 20625
tccttcttcc gcaacttcca gcccatgagc cgccaggtgg tggacgaggt caactacaag 20685

gactaccagg ccgtcaccct ggcctaccag cacaacaact cgggcttcgt cggctacctc 20745

gcgcccacca tgcgccaggg ccagccctac cccgccaact acccgtaccc gctcatcggc 20805

aagagcgccg tcaccagcgt cacccagaaa aagttcctct gcgacagggt catgtggcgc 20865

atccccttct ccagcaactt catgtccatg ggcgcgctca ccgacctcgg ccagaacatg 20925

ctctatgcca actccgccca cgcgctagac atgaatttcg aagtcgaccc catggatgag 20985

tccacccttc tctatgttgt cttcgaagtc ttcgacgtcg tccgagtgca ccagccccac 21045

cgcggcgtca tcgaggccgt ctacctgcgc acccccttct cggccggtaa cgccaccacc 21105

taaattgcta cttgcatgat ggctgaggcc gcgggctccg gcgagcagga gctcagggcc 21165

atcatccgcg acctgggctg cgggccctac ttcctgggca ccttcgataa gcgcttcccg 21225

ggattcatgg ccccgcacaa gctggcctgc gccatcgtca acacggccgg tcgcgagacc 21285

gggggcgagc actggctggc cttcgcctgg aacccgcgct cgaacacctg ctacctcttc 21345

gacccccttcg ggttctcgga cgagcgcctc aagcagatct accagttcga gtacgagggc 21405

ctgctgcgcc gcagcgccct ggccaccgag gaccgctgcg tcaccctgga aaagtccacc 21465

cagaccgtgc agggtccgcg ctcggccgcc tgcgggctct tctgctgcat gttcctgcac 21525

gccttcgtgc actggcccga ccgccccatg gacaagaacc ccaccatgaa cttgctgacg 21585

ggggtgccca acggcatgct ccagtcgccc caggtggaac ccaccctgcg ccgcaaccag 21645

gaggcgctct accgcttcct caactcccac tccgcctact ttcgctccca ccgcgcgcgc 21705

atcgagaagg ccaccgcctt cgatcgcatg aacaatcaag acatgtaaac cgtgtgtgta 21765

tgtttaaaat atcttttaat aaacagcact ttcatgttac acatgcatct gagatgatta 21825

tttagaaatc gaaagggttc tgccgggtct cggcatggcc cgcgggcagg gacacgttgc 21885

ggaactggta cttggccagc cacttgaact cggggatcag cagtttcggc agcggggtgt 21945

cggggaagga gtcggtccac agcttccgcg tcagttgcag ggcgcccagc aggtcgggcg 22005

cggagatctt gaaatcgcag ttgggacccg cgttctgcgc gcgagagttg cggtacacgg 22065

ggttgcagca ctggaacacc atcagggccg ggtgcttcac gctcgccagc accgtcgcgt 22125

cggtgatgct ctccacgtcg aggtcctcgg cgttggccat cccgaagggg gtcatcttgc 22185

aggtctgcct tcccatagtg ggcacgcacc cgggcttgtg gttgcaatcg cagtgcaggg 22245

ggatcagcat catctgggcc tggtcggcgt tcatccccgg gtacatggcc ttcatgaaag 22305

cctccaattg cctgaaagcc tgctgggcct tggctccctc ggtgaagaag accccgcagg 22365

acttgctaga gaactggttg gtagcgcacc cggcgtcgtg cacgcagcag cgcgcgtcgt 22425

tgttggccag ctgcaccacg ctgcgccccc agcggttctg ggtgatcttg gcccggtcgg 22485

ggttctcctt cagcgcgcgc tgcccgttct cgctcgccac atccatctcg atcatgtgct 22545

ccttctggat catggtggtc ccgtgcaggc accgcagctt gccctcggtc tcggtgcacc 22605

cgtgcagcca cagcgcgcac ccggtgcact cccagttctt gtgggcgatc tgggaatgcg 22665

cgtgcacgaa cccctgcagg aagcggccca tcatggtggt cagggtcttg ttgctagtga 22725

aggtcagcgg gatgccgcgg tgctcctcgt tgatgtacag gtggcagatg cggcggtaca 22785

cctcgccctg ctcgggcatc agctggaagt tggctttcag gtcggtctcc acgcggtagc 22845

ggtccatcag tatagtcatg atttccatac ccttctccca ggccgagacg atgggcaggc 22905

tcatagggtt cttcaccatc atcttagcac tagcagccgc ggccaggggg tcgctctcat 22965

ccagggtctc aaagctccgc ttgccgtcct tctcggtgat ccgcaccggg gggtagctga 23025

agcccacggc cgccagctcc tcctcggcct gcctttcgtc ctcgctgtcc tggctgacgt 23085

cctgcaggac cacatgcttg gtcttgcggg gtttcttctt gggcggcagc ggcggcggag 23145

atgcttgtgg cgagggggag cgcgagttct cgctcaccac tactatctct tcctcttcgt 23205

ggtccgaggc cacgcggcgg taggtatgtc tcttcggggg cagaggcgga ggcgacgggc 23265

tctcgccgcc gcgacttggc ggatggctgg cagagcccct tccgcgatcg ggggtgcgct 23325

cccggcggcg ctctgactga cttcctccgc ggccggccat tgtgttctcc tagggaggaa 23385

caacaagcat ggagactcag ccatcgccaa cctcgccatc tgcccccacc accgccgacg 23445

agaagcagca gaatgaaagc ttaaccgccc cgccgcccag ccccgccacc tccgacgcag 23505

ccgcggtccc agacatgcaa gagatggagg aatccatcga gattgacctg ggctatgtga 23565

cgcccgcgga gcacgaggag gagctggcag tgcgctttca atcgtcaagc caggaagata 23625

aagaacagcc agagcaggaa gcagaaaacg agcagagtca ggctgggctc gagcatgacg 23685

gcgactacct ccacctgagc ggggaggagg acgcgctcat caagcatctg gcccggcagg 23745

ccatcatcgt caaggatgcg ctgctcgacc gcaccgaggt gcccctcagc gtggaggagc 23805

tcagccgcgc ctacgagctc aacctcttct cgccgcgcgt gccccccaag cgccagccca 23865

acggcacctg cgagcccaac ccgcgcctca acttctaccc ggtcttcgcg gtgcccgagg 23925

ccctggccac ctaccacatc tttttcaaga accaaaagat ccccgtctcc tgtcgcgcca 23985

accgcacccg cgccgacgcc ctcttcaacc tgggccccgg cgcccgccta cctgatatcg 24045

cctccttgga agaggttccc aagatcttcg agggtctggg cagcgacgag actcgggccg 24105

caaacgctct gcaaggagaa ggaggagagc atgagcacca cagcgccctg gtcgagttgg 24165

aaggcgacaa cgcgcggctg gcggtgctca aacgcacggt cgagctgacc catttcgcct 24225

acccggctct gaacctgccc cccaaagtca tgagcgcggt catggaccag gtgctcatca 24285

agcgcgcgtc gcccatctcc gaggacgagg gcatgcaaga ctccgaggat ggcaagcccg 24345

tggtcagcga cgagcagctg gcccggtggc tgggtcctaa tgctagtccc cagagtttgg 24405

aagagcggcg caagctcatg atggccgtgg tcctggtgac cgtggagctg gagtgcctgc 24465

gccgcttctt cgccgacgcg gagaccctgc gcaaggtcga ggagaacctg cactacctct 24525

tcaggcacgg gttcgtgcgc caggcctgca agatctccaa cgtggagctg accaacctgg 24585

tctcctacat gggcatcttg cacgagaacc gcctggggca gaacgtgctg cacaccaccc 24645

tgcgcgggga ggcccgccgc gactacatcc gcgactgcgt ctacctctac ctctgccaca 24705

cctggcagac gggcatgggc gtgtggcagc agtgtctgga ggagcagaac ctgaaagagc 24765

tctgcaagct cctgcagaag aacctcaagg gtctgtggac cgggttcgac gagcggacca 24825

```
ccgcctcgga cctggccgac ctcatcttcc ccgagcgcct caggctgacg ctgcgcaacg    24885

gcctgcccga ctttatgagc caaagcatgt tgcaaaactt tcgctctttc atcctcgaac    24945

gctccggaat cctgcccgcc acctgctccg cgctgccctc ggacttcgtg ccgctgacct    25005

tccgcgagtg ccccccgccg ctgtggagcc actgctacct gctgcgcctg gccaactacc    25065

tggcctacca ctcggacgtg atcgaggacg tcagcggcga gggcctgctt gagtgccact    25125

gccgctgcaa cctctgcacg ccgcaccgct ccctggcctg caacccccag ctgctgagcg    25185

agacccagat catcggcacc ttcgagttgc aagggcccag cgatgacggc gagggagcca    25245

agggggtct gaaactcacc ccggggctgt ggacctcggc ctacttgcgc aagttcgtgc    25305

ccgaggacta ccatcccttc gagatcaggt tctacgagga ccaatcccag ccgcctaagg    25365

ccgagctgtc ggcctgcgtc atcacccagg gggccatcct ggcccaattg caagccatcc    25425

agaaatcccg ccaagaattc ttgctgaaaa agggccgcgg ggtctacctc gacccccaga    25485

ccggtgagga gctcaacccc ggcttccccc agg atg ccc cga gga aac aag aag     25539
                                      Met Pro Arg Gly Asn Lys Lys
                                                      505

ctg aaa gtg gag ctg ccg ccc gtg gag gat ttg gag gaa gac tgg gag      25587
Leu Lys Val Glu Leu Pro Pro Val Glu Asp Leu Glu Glu Asp Trp Glu
        510                 515                 520

aac agc agt cag gca gag gag gag atg gag gaa gac tgg gac agc act      25635
Asn Ser Ser Gln Ala Glu Glu Glu Met Glu Glu Asp Trp Asp Ser Thr
    525                 530                 535

cag gca gag gag gac agc ctg caa gac agt ctg gag gaa gac gag gag      25683
Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu Glu Glu Asp Glu Glu
540                 545                 550                 555

gag gca gag gtg gaa gaa gca gcc gcc gcc aga ccg tcg tcc tcg gcg      25731
Glu Ala Glu Val Glu Glu Ala Ala Ala Ala Arg Pro Ser Ser Ser Ala
                560                 565                 570

ggg gag aaa gca agc agc acg gat acc atc tcc gct ccg ggt cgg ggt      25779
Gly Glu Lys Ala Ser Ser Thr Asp Thr Ile Ser Ala Pro Gly Arg Gly
            575                 580                 585

ccc gct cgg ccc cac agt aga tgg gac gag acc ggg cga ttc ccg aac      25827
Pro Ala Arg Pro His Ser Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn
        590                 595                 600

ccc acc atc cag acc ggt aag aag gag cgg cag gga tac aag tcc tgg      25875
Pro Thr Ile Gln Thr Gly Lys Lys Glu Arg Gln Gly Tyr Lys Ser Trp
    605                 610                 615

cgg ggg cac aaa aac gcc atc gtc tcc tgc ttg cag gcc tgc ggg ggc      25923
Arg Gly His Lys Asn Ala Ile Val Ser Cys Leu Gln Ala Cys Gly Gly
620                 625                 630                 635

aac atc tcc ttc acc agg cgc tac ctg ctc ttc cac cgc ggg gtg aac      25971
Asn Ile Ser Phe Thr Arg Arg Tyr Leu Leu Phe His Arg Gly Val Asn
                640                 645                 650

ttc ccc cgc aac atc ttg cat tac tac cgt cac ctc cac agc ccc tac      26019
Phe Pro Arg Asn Ile Leu His Tyr Tyr Arg His Leu His Ser Pro Tyr
            655                 660                 665

tac ttc caa gaa gag gca gca gca gaa aaa gac cag cag aaa acc agc      26067
Tyr Phe Gln Glu Glu Ala Ala Ala Glu Lys Asp Gln Gln Lys Thr Ser
        670                 675                 680
```

```
agc tagaaaatcc acagcggcag caggtggact gaggatcgcg gcgaacgagc           26120
Ser

cggcgcagac ccgggagctg aggaaccgga tctttcccac cctctatgcc atcttccagc    26180

agagtcgggg gcaggagcag gaactgaaag tcaagaaccg ttctctgcgc tcgctcaccc    26240

gcagttgtct gtatcacaag agcgaagacc aacttcagcg cactctcgag gacgccgagg    26300

ctctcttcaa caagtactgc gcgctcactc ttaaagagta gcccgcgccc gcccagtcgc    26360

agaaaaaggc gggaattacg tcacctgtgc ccttcgccct agccgcctcc acccatcatg    26420

agcaaagaga ttcccacgcc ttacatgtgg agctaccagc cccagatggg cctggccgcc    26480

ggcgccgccc aggactactc cacccgcatg aattggctca gcgccgggcc cgcgatgatc    26540

tcacgggtga atgacatccg cgcccaccga aaccagatac tcctagaaca gtcagcgctc    26600

accgccacgc cccgcaatca cctcaatccg cgtaattggc ccgccgccct ggtgtaccag    26660

gaaattcccc agcccacgac cgtactactt ccgcgagacg cccaggccga agtccagctg    26720

actaactcag gtgtccagct ggcgggcggc gccaccctgt gtcgtcaccg ccccgctcag    26780

ggtataaagc ggctggtgat ccggggcaga ggcacacagc tcaacgacga ggtggtgagc    26840

tcttcgctgg gtctgcgacc tgacggagtc ttccaaatcg ccggatcggg gagatcttcc    26900

ttcacgcctc gtcaggcggt cctgactttg gagagttcgt cctcgcagcc ccgctcgggc    26960

ggcatcggca ctctccagtt cgtggaggag ttcactccct cggtctactt caacccccttc    27020

tccggctccc ccggccacta cccggacgag ttcatcccga actttgacgc catcagcgag    27080

tcggtggacg gctacgattg aatgtcccat ggtggcgcgg ctgacctagc tcggcttcga    27140

cacctggacc actgccgccg ctttcgctgc ttcgctcggg acctcgccga gttcacctac    27200

ttcgagctgc ccgaggagca tcctcagggc ccggcccacg gagtgcggat cgtcgtcgaa    27260

gggggcctag actcccacct gcttcggatc ttcagccagc gcccgatcct ggtcgagcgc    27320

caacagggca acaccctcct gaccctctac tgcatctgcg accaccccgg cctgc atg     27378
                                                            Met
                                                            685

aaa gtc ttt gtt gtc tgc tgt gta ctg agt ata ata aaa gct gag atc      27426
Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu Ile
                690                 695                 700

agc gac tac tcc gga ctc aac tgt ggt gtt tct gca tcc atc aac cag      27474
Ser Asp Tyr Ser Gly Leu Asn Cys Gly Val Ser Ala Ser Ile Asn Gln
            705                 710                 715

tct ctg acc ttc acc ggg aac gag acc gag ctc cag ctc cag tgt aag      27522
Ser Leu Thr Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys
        720                 725                 730

ccc cac aag aag tac ctc acc tgg ctg tac cag ggc tcc ccg atc gcc      27570
Pro His Lys Lys Tyr Leu Thr Trp Leu Tyr Gln Gly Ser Pro Ile Ala
    735                 740                 745

gtt gtt aac cac tgc gac gac gac gga gtc ctg ctg aac ggc ccc gcc      27618
Val Val Asn His Cys Asp Asp Asp Gly Val Leu Leu Asn Gly Pro Ala
750                 755                 760                 765
```

```
aac ctt act ttt tcc acc cgc aga agc aag cta ctg ctc ttc aga ccc      27666
Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Leu Leu Phe Arg Pro
                770                 775                 780

ttc ctc ccc ggg atc tat cag tgc atc tcg gga ccc tgc cat cac acc      27714
Phe Leu Pro Gly Ile Tyr Gln Cys Ile Ser Gly Pro Cys His His Thr
            785                 790                 795

ttc cac ctg atc ccg aat acc acc tct tcc cca gca ccg ctc ccc act      27762
Phe His Leu Ile Pro Asn Thr Thr Ser Ser Pro Ala Pro Leu Pro Thr
        800                 805                 810

aac aac caa act aac cac caa cgc cac cgt cga gac ctt tcc tct gat      27810
Asn Asn Gln Thr Asn His Gln Arg His Arg Arg Asp Leu Ser Ser Asp
    815                 820                 825

tct aat acc act acc gga ggt gag ctc cga ggt act aag aag tcc tca      27858
Ser Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Thr Lys Lys Ser Ser
830                 835                 840                 845

cct ggg att tat tac ggc ccc tgg gag gtg gtg ggg tta ata gct tta      27906
Pro Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu
                850                 855                 860

ggc tta gta gcg ggt ggg ctt ttg gct ctc tgc tac cta tac ctc cct      27954
Gly Leu Val Ala Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro
            865                 870                 875

tgc tgt tcc tac tta gtg gtg ctt tgt tgc tgg ttt aag aaa tgg gga      28002
Cys Cys Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly
        880                 885                 890

aga tca ccc tagtgtgcgg tgtgctggtg acggtggtgc tttcgattct              28051
Arg Ser Pro
    895

gggaggggga agcgcggctg tagtgacgga gaagaaggcc gatccctgct tgactttcaa    28111

tcccgataaa tgccggctga gttttcagcc agatggcaat cggtgcacgg tgctgatcaa    28171

gtgcggatgg gaatgcgaga gcgtggcgat ccagtataaa aacaagacgc ggaacaatac    28231

tctcgcgtcc acatggcagc ccggggaccc cgagtggtac accgtctctg tccctggtgc    28291

tgacggctcc ctccacacgg tgaacaacac tttcattttt gagcacatgt gcgaaaccgc    28351

catgttcatg agcaagcagt acggtatgtg gcccccacga aaagagaata tcgtggtctt    28411

ctccatcgct tacagcgcgt gcacggtgct aatcaccgcg atcgtgtgcc tgagcattca    28471

catgctcatc gctattcgcc ccagaaataa tgccgagaaa gagaaacagc cataacacac    28531

ttttttcaca caccttgttt tttacagaca atgcgtctgt taatttttgt tatcattaca    28591

ctcagcttta actatgccca tggctatgca aatatacaaa aaaccctcta tgtaggctct    28651

gactctacat tagaaggtac tcaatctcaa gccagggttt catggtattt ttataaaggc    28711

tctgatgacc caattactct ttgcaaaggt gatcaggggc gcataacaaa gccacctatc    28771

acatttagct gcaccagaac aaacctcacg cttttatcca ttacaaaaga atatgctggc    28831

acttattaca gcacaaattt tcatcgtggg caagataaat attatactgt taaggtagaa    28891

aaccctacca cccctagaac aactacaaag cccaccacaa ctaagaagcc cactacacct    28951

aagaagccta ccacacccaa aaccactaag acaacaactg ctaagaccac taccacaaag    29011

ccaaccacaa ccagcaccac acttgctata actacacaca cacacactga gctgacctca    29071
```

caggcaacta ctgaaaatga tttggttgcc ctgttgcaaa agggggagaa cagtagcagc 29131
agtcctctgc ctactacccc cagtgaggaa atacccaagt ccatggttgg cattatcgct 29191
gctgtagtgg tgtgtatgct gattatcatc ttgtgcatga tgtactatgc ctgctactac 29251
agaaaacaca ggctgaacaa caaactggac cccttactga gtgttgattt ttaatttttt 29311
agaaccatga agatcctaag ccttttttgtt ttttctataa ttattacctc tgctatttgt 29371
gaatcagtgg ataaggacgt tactgtcacc actggctcta attatacact aaaagggcct 29431
tcctcaggta tgctttcgtg gtattgttat tttggaaatg atgataaaca gacagagcta 29491
tgtaactttc agaacggcaa aaccaaaaat tctaaaatag ataactatca atgccagggt 29551
actaatttag tactgatgaa tatcacgaaa gcatatgctg gcagttattc ctgtcctgga 29611
caaaacaccg aggaaatgat tttttacaaa ttaattgtag ttgaccctac tactccagca 29671
ccacccacca caaccaaggc acataccaca gacacacagg aaaccactcc agaggcagaa 29731
gtagcagagt tagcaaagca gattcatgaa gattcatttg ttgccaatac ccccacacac 29791
cccggaccgc aatgtccagg gccattagtc agcggcattg tcggtgtgct ttgcgggtta 29851
gcagttataa tcatctgcat gttcattttt gcttgctgct acagaaggct tcaccgacaa 29911
aaatcagacc cactgctgaa cctctatgtt taatttttga ttttccagag ccatgaaggc 29971
acttagcact ttagtatttt tgtccttgat tggcattgtt ttcagtgctg ggtttttgaa 30031
aaatcttacc attattgaag gtgataatgc aacactggta ggaatcagcg gtcagaatgt 30091
tagttggcta aaatatcatc tagatgggtg gaaacctatt tgcacctgga atgtcagtgt 30151
gtacacatgc catggtgtta acctcaccat taccaatgcc acccaagatc agaatggcag 30211
gtttaagggt cagagtttca ctagcaacaa tgggtatgaa acccataaca tgttcatcta 30271
tgatgtcact gtcatatcaa ataagactac acctaccaca cagacaccca ctacacatag 30331
ctcaactcat gccatgcaga ccactcagac aaccacatac actacatcta ctgagtccac 30391
caccaccact acagcagagg tatccagcac agcgcctcag ccccaggcat tggctttgat 30451
ggctcagcct agcagcatga ctgctaaaac caatgagcag actactgaat ttttgtccac 30511
tattcagagc agcaccacag ctacctcgag tgccttctct agcaccgcca atctcacctc 30571
gctttcctct acgccaatca gtaacgctac tacctccccc gctcctcttc ccactcctct 30631
gaagcaatcc gagtctagca cgcagctgca gatcaccctg ctcattgtga tcggggtggt 30691
catcctggca gtgctgctct actttatctt ctgccgccgc atccccaacg cgaaaccggc 30751
ctacaagccc attgttatcg ggacgccgga gccgcttcag gtggagggag gtctaaggaa 30811
tcttctcttc tcttttacag tatggtgatt tgaactatga ttcctagaca tttcattatc 30871
acttctctaa tctgtgtgct ccaagtctgt gccaccctcg ctctcgtggc taacgcgagt 30931
ccagactgca ttggagcgtt cgcctcctac gtgctctttg ccttcatcac ctgcatctgc 30991
tgctgtagca tagtctgcct gcttatcacc ttcttccagt tcgttgactg ggtctttgtg 31051
cgcatcgcct acctgcgcca ccacccccag taccgcgacc agagagtggc gcaactgttg 31111

```
agactcatct gatgataagc atgcgggctc tgctactact tctcgcgctt ctgctagctc    31171

ccctcgccgc ccccctatcc ctcaaatccc ccacccagtc ccctgaagag gttcgaaaat    31231

gtaaattcca agaaccctgg aaattccttt catgctacaa actcaaatca gaaatgcacc    31291

ccagctggat catgatcgtt ggaatcgtaa acatccttgc ctgtaccctc ttctcctttg    31351

tgatttaccc ccgctttgac tttgggtgga acgcacccga ggcgctctgg ctcccgcctg    31411

atcccgacac accaccacag cagcagcaaa atcaggcaca ggcacatgca ccaccacagc    31471

ctaggccaca atacatgccc atcttagact atgaggccga gccacagcga gccatgcttc    31531

ctgctattag ttacttcaat ctaaccggcg gag atg act gac ccc atg gcc aac     31585
                                     Met Thr Asp Pro Met Ala Asn
                                                     900

aac acc gtc aac gac ctc ctg gac atg gac ggc cgc gcc tcg gag cag      31633
Asn Thr Val Asn Asp Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln
    905                 910                 915

cga ctc gcc caa ctc cgc atc cgc cag cag cag gag aga gcc gtc aag      31681
Arg Leu Ala Gln Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys
920                 925                 930                 935

gag ctg cag gac gcg gtg gcc atc cac cag tgc aag aga ggc atc ttc      31729
Glu Leu Gln Asp Ala Val Ala Ile His Gln Cys Lys Arg Gly Ile Phe
                940                 945                 950

tgc ctg gtg aag cag gcc aag atc tcc ttc gag gtc acg tcc acc gac      31777
Cys Leu Val Lys Gln Ala Lys Ile Ser Phe Glu Val Thr Ser Thr Asp
            955                 960                 965

cat cgc ctc tcc tac gag ctc ctg cag cag cgc cag aag ttc acc tgc      31825
His Arg Leu Ser Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe Thr Cys
        970                 975                 980

ctg gtc gga gtc aac ccc atc gtc atc acc cag cag tct ggc gat acc      31873
Leu Val Gly Val Asn Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr
    985                 990                 995

aag  ggt tgc atc cac tgc  tcc tgc gac tcc ccc  gag tgc gtt cac       31918
Lys  Gly Cys Ile His Cys  Ser Cys Asp Ser Pro  Glu Cys Val His
1000                1005                1010

acc  ctg atc aag acc ctc  tgc ggc ctc cgc gac  ctc ctc ccc atg       31963
Thr  Leu Ile Lys Thr Leu  Cys Gly Leu Arg Asp  Leu Leu Pro Met
1015                1020                1025

aac  taatcaacta accc                                                31980
Asn
1030


<210>  98
<211>  500
<212>  PRT
<213>  Unknown

<220>
<223>  Synthetic Construct

<400>  98

Met Glu Ser Arg Asn Pro Phe Gln Gln Gly Leu Pro Ala Gly Phe Leu
1               5                   10                  15
```

```
Ser Ser Ser Phe Val Glu Asn Met Glu Val Pro Ala Pro Glu Cys Asn
            20                  25                  30

Leu Arg Leu Leu Ala Gly Thr Ala Ala Arg His Ser Glu Asp Pro Glu
        35                  40                  45

Ser Pro Gly Glu Ser Gln Gly Thr Pro Thr Ser Pro Ala Ala Ala Ala
    50                  55                  60

Ala Ala Gly Gly Gly Ser Arg Arg Glu Pro Glu Ser Arg Pro Gly Pro
65                  70                  75                  80

Ser Gly Gly Gly Gly Gly Val Ala Asp Leu Phe Pro Glu Leu Arg Arg
                85                  90                  95

Val Leu Thr Arg Ser Ser Ser Gly Arg Glu Arg Gly Ile Lys Arg Glu
            100                 105                 110

Arg His Asp Glu Thr Asn His Arg Thr Glu Leu Thr Val Ser Leu Met
        115                 120                 125

Ser Arg Lys Arg Pro Glu Thr Val Trp Trp His Glu Val Gln Ser Thr
    130                 135                 140

Gly Thr Asp Glu Val Ser Val Met His Glu Lys Phe Ser Leu Glu Gln
145                 150                 155                 160

Val Lys Thr Cys Trp Leu Glu Pro Glu Asp Asp Trp Glu Val Ala Ile
                165                 170                 175

Arg Asn Tyr Ala Lys Leu Ala Leu Met Pro Asp Lys Lys Tyr Lys Ile
            180                 185                 190

Thr Lys Leu Ile Asn Ile Arg Asn Ala Cys Tyr Ile Ser Gly Asn Gly
        195                 200                 205

Ala Glu Val Glu Ile Cys Leu Gln Asp Arg Val Ala Phe Arg Cys Cys
    210                 215                 220

Met Met Asn Met Tyr Pro Gly Val Val Gly Met Asp Gly Val Thr Phe
225                 230                 235                 240

Met Asn Met Arg Phe Arg Gly Asp Gly Tyr Asn Gly Thr Val Phe Met
                245                 250                 255

Ala Asn Thr Lys Leu Thr Val His Gly Cys Ser Phe Phe Gly Phe Asn
            260                 265                 270

Asn Thr Cys Ile Glu Ala Trp Gly Gln Val Gly Val Arg Gly Cys Ser
        275                 280                 285

Phe Ser Ala Asn Trp Met Gly Val Val Gly Arg Thr Lys Ser Met Leu
```

290 295 300

Ser Val Lys Lys Cys Leu Phe Glu Arg Cys His Leu Gly Val Met Ser
305 310 315 320

Glu Gly Glu Ala Arg Ile Arg His Cys Ala Ser Thr Glu Thr Gly Cys
325 330 335

Phe Val Leu Cys Lys Gly Asn Ala Lys Ile Lys His Asn Met Ile Cys
340 345 350

Gly Ala Ser Asp Glu Arg Gly Tyr Gln Met Leu Thr Cys Ala Gly Gly
355 360 365

Asn Ser His Met Leu Ala Thr Val His Val Ala Ser His Ala Arg Lys
370 375 380

Pro Trp Pro Glu Phe Glu His Asn Val Met Thr Arg Cys Asn Met His
385 390 395 400

Leu Gly Ser Arg Arg Gly Met Phe Met Pro Tyr Gln Cys Asn Leu Asn
405 410 415

Tyr Val Lys Val Leu Leu Glu Pro Asp Ala Met Ser Arg Val Ser Leu
420 425 430

Thr Gly Val Phe Asp Met Asn Val Glu Val Trp Lys Ile Leu Arg Tyr
435 440 445

Asp Glu Ser Lys Thr Arg Cys Arg Ala Cys Glu Cys Gly Gly Lys His
450 455 460

Ala Arg Phe Gln Pro Val Cys Val Asp Val Thr Glu Asp Leu Arg Pro
465 470 475 480

Asp His Leu Val Leu Ser Cys Thr Gly Thr Glu Phe Gly Ser Ser Gly
485 490 495

Glu Glu Ser Asp
500

<210> 99
<211> 184
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 99

Met Pro Arg Gly Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val Glu
1 5 10 15

```
Asp Leu Glu Glu Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Glu Met
            20                  25                  30

Glu Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp
        35                  40                  45

Ser Leu Glu Glu Asp Glu Glu Glu Ala Glu Val Glu Glu Ala Ala Ala
    50                  55                  60

Ala Arg Pro Ser Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr Asp Thr
65                  70                  75                  80

Ile Ser Ala Pro Gly Arg Gly Pro Ala Arg Pro His Ser Arg Trp Asp
                85                  90                  95

Glu Thr Gly Arg Phe Pro Asn Pro Thr Ile Gln Thr Gly Lys Lys Glu
            100                 105                 110

Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser
        115                 120                 125

Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu
    130                 135                 140

Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr
145                 150                 155                 160

Arg His Leu His Ser Pro Tyr Tyr Phe Gln Glu Glu Ala Ala Ala Glu
                165                 170                 175

Lys Asp Gln Gln Lys Thr Ser Ser
            180
```

<210> 100
<211> 212
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 100

```
Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1               5                   10                  15

Ile Ser Asp Tyr Ser Gly Leu Asn Cys Gly Val Ser Ala Ser Ile Asn
            20                  25                  30

Gln Ser Leu Thr Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys
        35                  40                  45

Lys Pro His Lys Lys Tyr Leu Thr Trp Leu Tyr Gln Gly Ser Pro Ile
    50                  55                  60
```

```
Ala Val Val Asn His Cys Asp Asp Asp Gly Val Leu Leu Asn Gly Pro
65                  70                  75                  80

Ala Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Leu Leu Phe Arg
                85                  90                  95

Pro Phe Leu Pro Gly Ile Tyr Gln Cys Ile Ser Gly Pro Cys His His
            100                 105                 110

Thr Phe His Leu Ile Pro Asn Thr Thr Ser Ser Pro Ala Pro Leu Pro
        115                 120                 125

Thr Asn Asn Gln Thr Asn His Gln Arg His Arg Arg Asp Leu Ser Ser
    130                 135                 140

Asp Ser Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Thr Lys Lys Ser
145                 150                 155                 160

Ser Pro Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala
                165                 170                 175

Leu Gly Leu Val Ala Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu
            180                 185                 190

Pro Cys Cys Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp
        195                 200                 205

Gly Arg Ser Pro
    210
```

<210> 101
<211> 134
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 101

```
Met Thr Asp Pro Met Ala Asn Asn Thr Val Asn Asp Leu Leu Asp Met
1               5                   10                  15

Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg Gln
            20                  25                  30

Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Ala Val Ala Ile His
        35                  40                  45

Gln Cys Lys Arg Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile Ser
    50                  55                  60

Phe Glu Val Thr Ser Thr Asp His Arg Leu Ser Tyr Glu Leu Leu Gln
65                  70                  75                  80
```

```
Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val Ile
                85                  90                  95

Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys Asp
            100                 105                 110

Ser Pro Glu Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu Arg
        115                 120                 125

Asp Leu Leu Pro Met Asn
    130
```

<210> 102
<211> 1440
<212> DNA
<213> Unknown

<220>
<223> Simian adenovirus A1337

<220>
<221> CDS
<222> (576)..(1151)
<223> E1a

<220>
<221> CDS
<222> (1236)..(1439)
<223> E1a

<400> 102

```
catcatcaat aatatacctc aaacttttg tgcgcgttaa tatgcaaatg aggcgtttga       60

atttgggaag ggaggaaggt gattggccga gagaagggcg accgttaggg gcggggcgag      120

tgacgttttg atgacgtggc cgcgaggagg agccagtttg caagttctcg tgggaaaagt      180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca      240

ggaaatgagg tgtttttggg cggatgcaag ttaaaacggg ccattttcgc gcgaaaactg      300

aatgaggaag tgaaaatctg agtaatttcg cgtttatggc agggaggagt atttgccgag      360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtgtttt tcacctaaat      420

ttccgcgtac ggtgtcaaag tccggtgttt ttacgtaggt gtcagctgat cgccagggta      480

tttaaacctg cgctctccag tcaagaggcc actcttgagt gccagcgaga agagttttct      540

cctccgcgcc gcgagtcaga tctacacttt gaaag atg agg cac ctg aga gac          593
                                       Met Arg His Leu Arg Asp
                                       1               5

ctg ccc gat gag aaa atc atc atc gct tcc ggg aac gag att ctg gaa          641
Leu Pro Asp Glu Lys Ile Ile Ile Ala Ser Gly Asn Glu Ile Leu Glu
            10                  15                  20

ctg gtg gta aat gcc atg atg ggc gac gac cct ccg gag ccc ccc acc          689
Leu Val Val Asn Ala Met Met Gly Asp Asp Pro Pro Glu Pro Pro Thr
        25                  30                  35

cca ttt gag gta cct tcg cta cac gat ttg tat gat ctg gag gtg gat          737
```

```
Pro Phe Glu Val Pro Ser Leu His Asp Leu Tyr Asp Leu Glu Val Asp
    40                  45                  50

gtg ccc gag gac gac ccc aac gag gag gcg gta aat gat tta ttt agc        785
Val Pro Glu Asp Asp Pro Asn Glu Glu Ala Val Asn Asp Leu Phe Ser
55                  60                  65                  70

gat gcc gcg ctg cta gct gcc gag gag gct tcg agc cct agc tca gac        833
Asp Ala Ala Leu Leu Ala Ala Glu Glu Ala Ser Ser Pro Ser Ser Asp
                75                  80                  85

agc gac tct tca ctg cat acc cct aga ccc ggc aga ggt gag aaa aag        881
Ser Asp Ser Ser Leu His Thr Pro Arg Pro Gly Arg Gly Glu Lys Lys
            90                  95                  100

atc ccc gag ctt aaa ggg gaa gag atg gac ttg cgc tgc tat gag gaa        929
Ile Pro Glu Leu Lys Gly Glu Glu Met Asp Leu Arg Cys Tyr Glu Glu
        105                 110                 115

tgc ttg ccc ccg agc gat gat gag gac gag cag gcg atc cag aac gca        977
Cys Leu Pro Pro Ser Asp Asp Glu Asp Glu Gln Ala Ile Gln Asn Ala
    120                 125                 130

gcg agc cag gga gtg caa gcc gcc agc gag agc ttt gcg ctg gac tgc       1025
Ala Ser Gln Gly Val Gln Ala Ala Ser Glu Ser Phe Ala Leu Asp Cys
135                 140                 145                 150

ccg cct ctg ccc gga cac ggc tgt aag tct tgt gaa ttt cat cgc atg       1073
Pro Pro Leu Pro Gly His Gly Cys Lys Ser Cys Glu Phe His Arg Met
                155                 160                 165

aat act gga gat aaa gct gtg tta tgt gca ctt tgc tat atg aga gct       1121
Asn Thr Gly Asp Lys Ala Val Leu Cys Ala Leu Cys Tyr Met Arg Ala
            170                 175                 180

tac aac cat tgt gtt tac agt aag tgt gat taagttgaac tttagaggga        1171
Tyr Asn His Cys Val Tyr Ser Lys Cys Asp
        185                 190

ggcagagagc agggtgactg ggcgatgact ggtttattta tgtatatatg ttctttatat    1231

aggt ccc gtc tct gac gca gat gat gag acc ccc act aca gag tcc act      1280
     Pro Val Ser Asp Ala Asp Asp Glu Thr Pro Thr Thr Glu Ser Thr
             195                 200                 205

tcg tca ccc cca gaa att ggc aca tct cca cct gag aat att gtt aga       1328
Ser Ser Pro Pro Glu Ile Gly Thr Ser Pro Pro Glu Asn Ile Val Arg
        210                 215                 220

cca gtt cct gtt aga gcc act ggg agg aga gca gct gtg gaa tgt ttg       1376
Pro Val Pro Val Arg Ala Thr Gly Arg Arg Ala Ala Val Glu Cys Leu
    225                 230                 235

gat gac ttg cta cag ggt ggg gat gaa cct ttg gac ttg tgt acc cgg       1424
Asp Asp Leu Leu Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg
240                 245                 250                 255

aaa cgc ccc agg cac t                                                1440
Lys Arg Pro Arg His
                260
```

<210> 103
<211> 260
<212> PRT
<213> Unknown

<220>
<223> Synthetic Construct

<400> 103

Met Arg His Leu Arg Asp Leu Pro Asp Glu Lys Ile Ile Ile Ala Ser
1 5 10 15

Gly Asn Glu Ile Leu Glu Leu Val Val Asn Ala Met Met Gly Asp Asp
20 25 30

Pro Pro Glu Pro Pro Thr Pro Phe Glu Val Pro Ser Leu His Asp Leu
35 40 45

Tyr Asp Leu Glu Val Asp Val Pro Glu Asp Asp Pro Asn Glu Glu Ala
50 55 60

Val Asn Asp Leu Phe Ser Asp Ala Ala Leu Leu Ala Ala Glu Glu Ala
65 70 75 80

Ser Ser Pro Ser Ser Asp Ser Asp Ser Ser Leu His Thr Pro Arg Pro
85 90 95

Gly Arg Gly Glu Lys Lys Ile Pro Glu Leu Lys Gly Glu Glu Met Asp
100 105 110

Leu Arg Cys Tyr Glu Glu Cys Leu Pro Pro Ser Asp Asp Glu Asp Glu
115 120 125

Gln Ala Ile Gln Asn Ala Ala Ser Gln Gly Val Gln Ala Ala Ser Glu
130 135 140

Ser Phe Ala Leu Asp Cys Pro Pro Leu Pro Gly His Gly Cys Lys Ser
145 150 155 160

Cys Glu Phe His Arg Met Asn Thr Gly Asp Lys Ala Val Leu Cys Ala
165 170 175

Leu Cys Tyr Met Arg Ala Tyr Asn His Cys Val Tyr Ser Lys Cys Asp
180 185 190

Pro Val Ser Asp Ala Asp Asp Glu Thr Pro Thr Thr Glu Ser Thr Ser
195 200 205

Ser Pro Pro Glu Ile Gly Thr Ser Pro Pro Glu Asn Ile Val Arg Pro
210 215 220

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

Asp Leu Leu Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg Lys
245 250 255

Arg Pro Arg His
260

<210> 104
<211> 38561
<212> DNA
<213> Artificial Sequence

<220>
<223> Simian adenovirus A1302 clone

<220>
<221> misc_feature
<222> (1030)..(2651)
<223> IVa2 complement (1030..2360,2640..2651)

<220>
<221> misc_feature
<222> (2640)..(10880)
<223> pol complement (2640..5699,10872..10880)

<220>
<221> misc_feature
<222> (3530)..(3530)
<223> is c or g

<220>
<221> misc_feature
<222> (5607)..(10880)
<223> pTP complement (5607..7438,10872..10880)

<220>
<221> CDS
<222> (7875)..(9053)
<223> 52K

<220>
<221> CDS
<222> (9080)..(10837)
<223> pIIIa

<220>
<221> CDS
<222> (10920)..(12503)
<223> penton

<220>
<221> CDS
<222> (12510)..(13091)
<223> pVII

<220>
<221> CDS
<222> (13139)..(14170)
<223> V

<220>
<221> CDS
<222> (14196)..(14426)
<223> pX

<220>
<221> CDS
<222> (14498)..(15220)
<223> pVI

<220>
<221> CDS
<222> (15264)..(18113)

<223> hexon

<220>
<221> CDS
<222> (18132)..(18758)
<223> protease

<220>
<221> misc_feature
<222> (18843)..(20375)
<223> DBP complement (18843..20375)

<220>
<221> CDS
<222> (20401)..(22791)
<223> 100K

<220>
<221> misc_feature
<222> (22767)..(22767)
<223> is a or g

<220>
<221> CDS
<222> (23414)..(24094)
<223> pVIII

<220>
<221> CDS
<222> (24098)..(24415)
<223> E3\12.5K

<220>
<221> CDS
<222> (24977)..(25504)
<223> E3\gp19K

<220>
<221> CDS
<222> (25537)..(26130)
<223> E3\CR1-beta

<220>
<221> CDS
<222> (26772)..(27644)
<223> E3\CR1-delta

<220>
<221> CDS
<222> (27936)..(28364)
<223> E3\RID-beta

<220>
<221> CDS
<222> (29061)..(30380)
<223> fiber

<220>
<221> misc_feature
<222> (29549)..(29549)
<223> is a or c

<220>
<221> misc_feature
<222> (30478)..(31811)
<223> E4\orf6/7 complement (30478..30728,31461..31811)

<220>
<221> misc_feature

<222> (30729)..(31631)
<223> E4\orf6 complement (30729..31631)

<220>
<221> misc_feature
<222> (31540)..(31902)
<223> E4\orf4 complement (31540..31902)

<220>
<221> misc_feature
<222> (31915)..(32265)
<223> E4\orf3 complement (31915..32265)

<220>
<221> rep_origin
<222> (33737)..(33737)
<223> ORI

<220>
<221> misc_feature
<222> (34495)..(35358)
<223> AP(R) complement (34495..35358)

<220>
<221> repeat_region
<222> (35583)..(35705)
<223> ITR

<220>
<221> enhancer
<222> (36444)..(36704)
<223> Enhancer

<220>
<221> misc_feature
<222> (36705)..(36932)
<223> CMV\promoter

<220>
<221> TATA_signal
<222> (36906)..(36909)
<223> TATA

<220>
<221> CDS
<222> (37028)..(38119)
<223> Gag\short

<220>
<221> polyA_signal
<222> (38272)..(38474)
<223> BGH-PolyA

<220>
<221> misc_feature
<222> (38561)..(38561)
<223> PI-SceI recognition sequence

<400> 104
ggagaaagag gtaatgaaat ggcattatgg gtattatggg tctgcattaa tgaatcggcc 60

agatatcata tgctggccac cgtgcatgtg gcctcgcacc cccgcaagac atggcccgag 120

ttcgagcata acgtcatgac ccgctgcaat gtgcacctgg gctcccgccg aggcatgttc 180

atgccctacc agtgcaacat gcaatttgtg aaggtgctgc tggagcccga tgccatgtcc 240

agagtgagtc tgacgggggt gtttgacatg aatgtggaga tgtggaaaat tctgagatat 300

gatgaatcca agaccaggtg ccgggcctgc gaatgcggag gcaaacacgc caggcttcag 360
cccgtgtgtg tggaggtgac ggaggacctg cgacccgatc atttggtgtt gtcctgcaac 420
gggacggagt tcggctccag cggggaagaa tctgactaga gtgagtagtg tttggggctg 480
ggtgggagcc tgcatgatgg gcagaatgac taaaatctgt gtttttctgc gcagcatcat 540
gagcggaagc gcctcctttg agggaggggt attcagccct tatctgacgg ggcgtctccc 600
ctcctgggcg ggagtgcgtc agaatgtgat gggatccacg gtggacggcc ggcccgtgca 660
gcccgcgaac tcttcaaccc tgacctacgc gaccctgagc tcctcgtccg tagacgcagc 720
tgccgccgca gctgctgctt ccgccgccag cgccgtgcgc ggaatggccc tgggcgccgg 780
ctactacagc tctctggtgg ccaactcgag ttccaccaat aatcccgcca gcctgaacga 840
ggagaagctg ctgctgctga tggcccagct cgaggccctg acccagcgcc tgggcgagct 900
gacccagcag gtggctcagc tgcaggcgga gacgcgggcc gcggttgcca cggtgaaaac 960
caaataaaaa atgaatcaat aaataaacgg agacggttgt tgattttaac acagagtctt 1020
gaatctttat ttgatttttc gcgcgcggta ggccctggac caccggtctc gatcattgag 1080
cacccggtgg atttttttcca ggacccggta gaggtgggct tggatgttga ggtacatggg 1140
catgagcccg tcccgggggt ggaggtagct ccattgcagg gcctcgtgct cgggggtggt 1200
gttgtaaatc acccagtcat agcaggggcg cagggcgtgg tgctgcacga tgtccttgag 1260
gaggagactg atggccacgg gcagcccctt ggtgtaggtg ttgacgaacc tgttgagctg 1320
ggagggatgc atgcgggggg agatgagatg catcttggcc tggatcttga gattggcgat 1380
gttcccgccc agatcccgcc gggggttcat gttgtgcagg accaccagca cggtgtatcc 1440
ggtgcacttg gggaatttgt catgcaactt ggaagggaag gcgtgaaaga atttggagac 1500
gcccttgtga ccgcccaggt tttccatgca ctcatccatg atgatggcga tgggcccgtg 1560
ggcggcggcc tgggcaaaga cgtttcgggg gtcggacaca tcgtagttgt ggtcctgggt 1620
gagctcgtca taggccattt taatgaattt ggggcggagg gtgcccgact gggggacaaa 1680
ggtgccctcg atcccggggg cgtagtttcc ctcgcagatc tgcatctccc aggccttgag 1740
ctcggagggg gggatcatgt ccacctgcgg ggcgatgaaa aaaacggttt ccggggcggg 1800
ggagatgagc tgggccgaaa gcaggttccg gagcagctgg gacttgccgc agccggtggg 1860
gccgtagatg accccgatga ccggctgcag gtggtagttg agggagagac agctgccgtc 1920
ctcgcggagg agggggggcca cctcgttcat catctcgcgc acatgcatgt tctcgcgcac 1980
gagttccgcc aggaggcgct cgccccccag cgagaggagc tcttgcagcg aggcgaagtt 2040
tttcagcggt ttgagcccgt cggccatggg cattttggag agggtctgtt gcaagagttc 2100
cagacggtcc cagagctcgg tgatgtgctc tagggcatct cgatccagca gacctcctcg 2160
tttcgcgggt tggggcgact gcgggagtag ggcaccaggc gatgggcgtc cagcgaggcc 2220
agggtccggt ccttccaggg gcgcagggtc cgcgtcagcg tggtctccgt cacggtgaag 2280
gggtgcgcgc cgggctgggc gcttgcgagg gtgcgcttca ggctcatccg gctggtcgag 2340
aaccgctccc ggtcggcgcc ctgcgcgtcg gccaggtagc aattgagcat gagttcgtag 2400

ttgagcgcct cggccgcgtg gcccttggcg cggagcttac ctttggaagt gtgtccgcag 2460
acgggacaga ggagggactt gagggcgtag agcttggggg cgaggaagac ggactcgggg 2520
gcgtaggcgt ccgcgccgca gctggcgcag acggtctcgc actccacgag ccaggtgagg 2580
tcggggcggt cggggtcaaa aacgaggttt cctccgtgct ttttgatgcg tttcttacct 2640
ctggtctcca tgagctcgtg tccccgctgg gtgacaaaga ggctgtccgt gtccccgtag 2700
accgacttta tgggccggtc ctcgagcggg gtgccgcggt cctcgtcgta gaggaacccc 2760
gcccactccg agacgaaggc ccgggtccag gccagcacga aggaggccac gtgggagggg 2820
tagcggtcgt tgtccaccag cgggtccacc ttctccaggg tatgcaagca catgtccccc 2880
tcgtccacat ccaggaaggt gattggcttg taagtgtagg ccacgtgacc gggggtcccg 2940
gccggggggg tataaaaggg ggcgggcccc tgctcgtcct cactgtcttc cggatcgctg 3000
tccaggagcg ccagctgttg gggtaggtat tccctctcga aggcgggcat gacctcggca 3060
ctcaggttgt cagtttctag aaacgaggag gatttgatat tgacggtgcc gttggagacg 3120
cctttcatga gcccctcgtc catctggtca gaaaagacga tctttttgtt gtcgagcttg 3180
gtggcgaagg agccgtagag ggcattggag aggagcttgg cgatggagcg catggtctgg 3240
ttcttttcct tgtcggcgcg ctccttggcg gcgatgttga gctgcacgta ctcgcgcgcc 3300
acgcacttcc attcggggaa gacggtggtg agctcgtcgg gcacgattct gacccgccag 3360
ccgcggttgt gcagggtgat gaggtccacg ctggtggcca cctcgccgcg caggggctcg 3420
ttggtccagc agaggcgccc gcccttgcgc gagcagaagg ggggcagcgg gtccagcatg 3480
agctcgtcgg gggggtcggc gtccacggtg aagatgccgg gcaggagctc ggggtcgaag 3540
tagctgatgc aggtgcccag atcgtccagc gccgcttgcc agtcgcgcac ggccagcgcg 3600
cgctcgtagg ggctgagggg cgtgccccag ggcatggggt gcgtgagcgc ggaggcgtac 3660
atgccgcaga tgtcgtagac gtagaggggc tcctcgagga cgccgatgta ggtggggtag 3720
cagcgccccc cgcggatgct ggcgcgcacg tagtcgtaca gctcgtgcga gggcgcgagg 3780
agccccgcgc cgaggttgga gcgctgcggc ttttcggcgc ggtagacgat ctggcggaag 3840
atggcgtggg agttggagga gatggtgggc ctctggaaga tgttgaagtg ggcgtggggc 3900
aggccgaccg agtccctgat gaagtgggcg taggagtcct gcagcttggc gacgagctcg 3960
gcggtgacga ggacgtccag ggcgcagtag tcgagggtct cttggatgat gtcgtacttg 4020
agctggccct tctgcttcca cagctcgcgg ttgagaagga actcttcgcg gtccttccag 4080
tactcttcga gggggaaccc gtcctgatcg gcacggtaag agcccaccat gtagaactgg 4140
ttgacggcct tgtaggcgca gcagcccttc tccacgggga gggcataagc ttgcgcggcc 4200
ttgcgcaggg aggtgtgggt gagggcgaag gtgtcgcgca ccatgacctt gaggaactgg 4260
tgcttgaagt cgaggtcgtc gcagccgccc tgctcccaga gttggaagtc cgtgcgcttc 4320
ttgtaggcgg ggttgggcaa agcgaaagta acatcgttga agaggatctt gcccgcgcgg 4380
ggcatgaagt tgcgagtgat gcggaaaggc tggggcacct cggcccggtt gttgatgacc 4440

tgggcggcga ggacgatctc gtcgaagccg ttgatgttgt gcccgacgat gtagagttcc 4500

acgaatcgcg ggcggccctt gacgtggggc agcttcttga gctcgtcgta ggtgagctcg 4560

gcggggtcgc tgagtccgtg ctgctcaagg gcccagtcgg cgacgtgggg gttggcgctg 4620

aggaaggaag tccagagatc cacggccagg gcggtttgca agcggtcccg gtactgacgg 4680

aactgctggc ccacggccat tttttcgggg gtgatgcagt agaaggtgcg ggggtcgccg 4740

tgccagcggt cccacttgag ctggagggcg aggtcgtggg cgagctcgac gagcggcggg 4800

tccccggaga gtttcatgac cagcatgaag gggacgagct gcttgccgaa ggaccccatc 4860

caggtgtagg tttccacatc gtaggtgagg aagagccttt cggtgcgagg atgcgagccg 4920

atggggaaga actggatctc ctgccaccag ttggaggaat ggctgttgat gtgatggaag 4980

tagaaatgcc gacggcgcgc cgagcactcg tgcttgtgtt tatacaagcg tccgcagtgc 5040

tcgcaacgct gcacgggatg cacgtgctgc acgagctgta cctgagttcc tttgacgagg 5100

aatttcagtg ggcagtggag cgctggcggc tgcatctggt gctgtactac gtcctggcca 5160

tcggcgtggc catcgtctgc ctcgatggtg gtcatgctga cgagcccgcg cgggaggcag 5220

gtccagacct cgactcggac gggtcggaga gcgaggacga gggcgcgcag gccggagctg 5280

tccagggtcc tgagacgctg cggagtcagg tcagtgggca gcggcggcgc gcggttgact 5340

tgcaggagct tttccagggc gcgcgggagg tccagatggt acttgatctc cacggcgccg 5400

ttggtggcga cgtccacggc ttgcagggtc ccgtgcccct ggggcgccac caccgtgccc 5460

cgtttcttct tgggcgctgg cgttggcgct gcttccatgt cggtcagaag cggcggcgag 5520

gacgcgcgcc gggcggcagg ggcggctcgg ggcccggagg caggggcggc aggggcacgt 5580

cggcgccgcg cgcgggcagg ttctggtact gcgcccggag aagactggcg tgagcgacga 5640

cgcgacggtt gacgtcctgg atctgacgcc tctgggtgaa ggccacggga cccgtgagtt 5700

tgaacctgaa agagagttcg acagaatcaa tctcggtatc gttgacggcg gcctgccgca 5760

ggatctcttg cacgtcgccc gagttgtcct ggtaggcgat ctcggtcatg aactgctcga 5820

tctcctcctc ctgaaggtct ccgcggccgg cgcgctccac ggtggccgcg aggtcgttgg 5880

agatgcggcc catgagctgc gagaaggcgt tcatgcccgc ctcgttccag acgcggctgt 5940

agaccacgac gccctcggga tcgcgggcgc gcatgaccac ctgggcgagg ttgagctcca 6000

cgtggcgcgt gaagaccgcg tagttgcaga ggcgctggta gaggtagttg agcgtggtgg 6060

cgatgtgctc ggtgacgaag aaatacatga tccagcggcg gagcggcatc tcgctgacgt 6120

cgcccagcgc ctccaagcgt tccatggcct cgtaaaagtc cacggcgaag ttgaaaaact 6180

gggagttgcg cgccgagacg gtcaactcct cctccagaag acggatgagc tcggcgatgg 6240

tggcgcgcac ctcgcgctcg aaggcccccg ggagttcctc cacttcctct tcttcttcct 6300

cctccactaa catctcttct acttcctcct caggcggtgg tggcggggga gggggcctgc 6360

gtcgccggcg gcgcacgggc agacggtcga tgaagcgctc gatggtctcg ccgcgccggc 6420

gtcgcatggt ctcggtgacg gcgcgcccgt cctcgcgggg ccgcagcgtg aagacgccgc 6480

cgcgcatctc caggtggccg ggggggtccc cgttgggcag ggagagggcg ctgacgatgc 6540

```
atcttatcaa ttgccccgta gggactccgc gcaaggacct gagcgtctcg agatccacgg     6600

gatctgaaaa ccgttgaacg aaggcttcga gccagtcgca gtcgcaaggt aggctgagca     6660

cggtttcttc tggcgggtca tgttggttgg agggagcggg gcgggcgatg ctgctggtga     6720

tgaagttgaa ataggcggtt ctgagacggc ggatggtggc gaggagcacc aggtctttgg     6780

gcccggcttg ctggatgcgc agacggtcgg ccatgcccca ggcgtggtcc tgacacctgg     6840

ccaggtcctt gtagtagtcc tgcatgagcc gctccacggg cacctcctcc tcgcccgcgc     6900

ggccgtgcat gcgcgtgagc ccgaacccgc gctgcggctg gacgagcgcc aggtcggcga     6960

cgacgcgctc ggcgaggatg gcctgctgga tctgggtgag ggtggtctgg aagtcgtcaa     7020

agtcgacgaa gcggtggtag gctccggtgt tgatggtgta ggagcagttg gccatgacgg     7080

accagttgac ggtctggtgg cccggacgca cgagctcgtg gtacttgagg cgcgagtagg     7140

cgcgcgtgtc gaagatgtag tcgttgcagg tgcgcaccag gtattggtag ccgatgagga     7200

agtgcggcgg cggctggcgg tagagcggcc atcgctcggt ggcgggggcg ccgggcgcga     7260

ggtcctcgag catgaggcgg tggtagccgt agatgtacct ggacatccag gtgatgccgg     7320

cggcggtggt ggaggcgcgc gggaactcgc ggacgcggtt ccagatgttg cgcagcggca     7380

ggaagtagtt catggtggcc gcggtctggc ccgtgaggcg cgcgcagtcg tggatgctct     7440

agacatacgg gcaaaaacga aagcggtcag cggctcgact ccgtggcctg gaggctaagc     7500

gaacgggttg ggctgcgcgt gtaccccggt tcgaatctcg aatcaggctg gagccgcagc     7560

taacgtggta ctggcactcc cgtctcgacc caagcctgct aacgaaacct ccaggatacg     7620

gaggcgggtc gttttggcat ttttcgtcag gccggaaatg aaactagtaa gcgcggaaag     7680

cggccgaccg cgatggctcg ctgccgtagt ctggagaaga atcgccaggg ttgcgttgcg     7740

gtgtgccccg gttcgaggcc ggccggattc cgcggctaac gagggcgtgg ctgccccgtc     7800

gtttccaaga cccctagcca gccgacttct ccagttacgg agcgagcccc tcttttgttt     7860

tttgtttttg ccag atg cat ccc gta ctg cgg cag atg cgc ccc cac cac       7910
                Met His Pro Val Leu Arg Gln Met Arg Pro His His
                1               5                   10

cct cca ccg caa caa cag ccc cct cca cag ccg gcg ctt ctg ccc ccg       7958
Pro Pro Pro Gln Gln Gln Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro
        15                  20                  25

ccc cag cag cag cag caa ctt cca gcc acg acc gcc gcg gcc gcc gtg       8006
Pro Gln Gln Gln Gln Gln Leu Pro Ala Thr Thr Ala Ala Ala Ala Val
    30                  35                  40

agc ggg gct gga cag agt tat gac cac cag ctg gcc ttg gaa gag ggc       8054
Ser Gly Ala Gly Gln Ser Tyr Asp His Gln Leu Ala Leu Glu Glu Gly
45                  50                  55                  60

gag ggg ctg gcg cgg ctg ggg gcg tcg tcg ccg gag cgg cac ccg cgc       8102
Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg
                65                  70                  75

gtg cag atg aaa agg gac gct cgc gag gcc tac gtg ccc aag cag aac       8150
Val Gln Met Lys Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn
            80                  85                  90
```

```
ctg ttc aga gac agg agc ggc gag gag ccc gag gag atg cgc gcc tcc       8198
Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ser
        95                  100                 105

cgc ttc cac gcg ggg cgg gag ctg cgg cgc ggc ctg gac cga aag cgg       8246
Arg Phe His Ala Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg
    110                 115                 120

gtg ctg agg gac gag gat ttc gag gcg gac gag ctg acg ggg atc agc       8294
Val Leu Arg Asp Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser
125                 130                 135                 140

ccc gcg cgc gcg cac gtg gcc gcg gcc aac ctg gtc acg gcg tac gag       8342
Pro Ala Arg Ala His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu
                145                 150                 155

cag acc gtg aag gag gag agc aac ttc caa aaa tcc ttc aac aac cac       8390
Gln Thr Val Lys Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His
            160                 165                 170

gtg cgc acc ttg atc gcg cgc gag gag gtg acc ctg ggc ctg atg cac       8438
Val Arg Thr Leu Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His
        175                 180                 185

ctg tgg gac ctg ctg gag gcc atc gtg cag aac ccc acg agc aag ccg       8486
Leu Trp Asp Leu Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro
    190                 195                 200

ctg acg gcg cag ctg ttt ctg gtg gtg cag cac agt cgg gac aac gag       8534
Leu Thr Ala Gln Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu
205                 210                 215                 220

acg ttc agg gag gcg ctg ctg aat atc acc gag ccc gag ggc cgt tgg       8582
Thr Phe Arg Glu Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp
                225                 230                 235

ctc ctg gac ctg gtg aac att ctg cag agc atc gtg gtg cag gag cgc       8630
Leu Leu Asp Leu Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg
            240                 245                 250

ggg ctg ccg ctg tcc gag aag ctg gcg gcc atc aac ttc tcg gtg ctg       8678
Gly Leu Pro Leu Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu
        255                 260                 265

agc ctg ggc aag tac tac gct agg aag atc tac aag acc ccg tac gtg       8726
Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val
    270                 275                 280

ccc ata gac aag gag gtg aag atc gat ggg ttt tac atg cgc atg acc       8774
Pro Ile Asp Lys Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr
285                 290                 295                 300

ctg aaa gtg ctg acc ctg agc gac gat ctg ggg gtg tac cgc aac gac       8822
Leu Lys Val Leu Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp
                305                 310                 315

agg atg cac cgc gcg gtg agc gcc agc cgc cgg cgc gag ctg agc gac       8870
Arg Met His Arg Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp
            320                 325                 330

cag gag ctg atg cac agc ctg cag cgg gcc ctg acc ggg gcc ggg acc       8918
Gln Glu Leu Met His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr
        335                 340                 345

gag ggg gag agc tac ttt gac atg ggc gcg gac ctg cgc tgg cag ccc       8966
Glu Gly Glu Ser Tyr Phe Asp Met Gly Ala Asp Leu Arg Trp Gln Pro
    350                 355                 360

agc cgc cgg gcc ttg gaa gct gcc ggc ggc gtg ccc tac gtg gag gag       9014
```

```
Ser Arg Arg Ala Leu Glu Ala Ala Gly Gly Val Pro Tyr Val Glu Glu
365                 370                 375                 380

gtg gac gat gag gag gag gag ggc gag tac ctg gaa gac tgatggcgcg        9063
Val Asp Asp Glu Glu Glu Glu Gly Glu Tyr Leu Glu Asp
                385                 390

accgtatttt tgctag atg cag caa cag cca ccg cct cct gat ccc gcg atg     9115
                  Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met
                      395                 400                 405

cgg gcg gcg ctg cag agc cag ccg tcc ggc att aac tcc tcg gac gat       9163
Arg Ala Ala Leu Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp
                410                 415                 420

tgg acc cag gcc atg caa cgc atc atg gcg ctg acg acc cgc aat ccc       9211
Trp Thr Gln Ala Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro
            425                 430                 435

gaa gcc ttt aga cag cag cct cag gcc aac cgg ctc tcg gcc atc ctg       9259
Glu Ala Phe Arg Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu
        440                 445                 450

gag gcc gtg gtg ccc tcg cgc tcg aac ccc acg cac gag aag gtg ctg       9307
Glu Ala Val Val Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu
    455                 460                 465

gcc atc gtg aac gcg ctg gtg gag aac aag gcc atc cgc ggc gac gag       9355
Ala Ile Val Asn Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu
470                 475                 480                 485

gcc ggg ctg gtg tac aac gcg ctg ctg gag cgc gtg gcc cgc tac aac       9403
Ala Gly Leu Val Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn
                490                 495                 500

agc acc aac gtg cag acg aac ctg gac cgc atg gtg acc gac gtg cgc       9451
Ser Thr Asn Val Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg
            505                 510                 515

gag gcg gtg tcg cag cgc gag cgg ttc cac cgc gag tcg aac ctg ggc       9499
Glu Ala Val Ser Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly
        520                 525                 530

tcc atg gtg gcg ctg aac gcc ttc ctg agc acg cag ccc gcc aac gtg       9547
Ser Met Val Ala Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val
    535                 540                 545

ccc cgg ggc cag gag gac tac acc aac ttc atc agc gcg ctg cgg ctg       9595
Pro Arg Gly Gln Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu
550                 555                 560                 565

atg gtg gcc gag gtg ccc cag agc gag gtg tac cag tcg ggg ccg gac       9643
Met Val Ala Glu Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp
                570                 575                 580

tac ttc ttc cag acc agt cgc cag ggc ttg cag acc gtg aac ctg agc       9691
Tyr Phe Phe Gln Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser
            585                 590                 595

cag gct ttc aag aac ttg cag gga ctg tgg ggc gtg cag gcc ccg gtc       9739
Gln Ala Phe Lys Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val
        600                 605                 610

ggg gac cgc gcg acg gtg tcg agc ctg ctg acg ccg aac tcg cgc ctg       9787
Gly Asp Arg Ala Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu
    615                 620                 625

ctg ctg ctg ctg gtg gcg ccc ttc acg gac agc ggc agc gtg agc cgc       9835
Leu Leu Leu Leu Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg
```

```
630                 635                 640                 645

gac tcg tac ctg ggc tac ctg ctt aac ctg tac cgc gag gcc atc ggg       9883
Asp Ser Tyr Leu Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly
                650                 655                 660

cag gcg cac gtg gac gag cag acc tac cag gag atc acc cac gtg agc       9931
Gln Ala His Val Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser
            665                 670                 675

cgc gcg ctg ggg cag gag gac ccg ggc aac ctg gag gcc acc ctg aac       9979
Arg Ala Leu Gly Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn
        680                 685                 690

ttc ctg ctg acc aac cgg tcg cag aag atc ccg ccc cag tac gcg ctg      10027
Phe Leu Leu Thr Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu
    695                 700                 705

agc acc gag gag gag cgc atc ctg cgc tac gtg cag cag agc gtg ggg      10075
Ser Thr Glu Glu Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly
710                 715                 720                 725

ctg ttc ctg atg cag gag ggg gcc acg ccc agc gcc gcg ctc gac atg      10123
Leu Phe Leu Met Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met
                730                 735                 740

acc gcg cgc aac atg gag ccc agc atg tac gcc cgc aac cgc ccg ttc      10171
Thr Ala Arg Asn Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe
            745                 750                 755

atc aat aag ctg atg gac tac ttg cat cgg gcg gcc gcc atg aac tcg      10219
Ile Asn Lys Leu Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser
        760                 765                 770

gac tac ttt acc aac gcc atc ttg aac ccg cac tgg ctc ccg ccg ccc      10267
Asp Tyr Phe Thr Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro
    775                 780                 785

ggg ttc tac acg ggc gag tac gac atg ccc gac ccc aac gac ggg ttc      10315
Gly Phe Tyr Thr Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe
790                 795                 800                 805

ctg tgg gac gac gtg gac agc agc gtg ttc tcg ccg cgc ccc acc acc      10363
Leu Trp Asp Asp Val Asp Ser Ser Val Phe Ser Pro Arg Pro Thr Thr
                810                 815                 820

acc gtg tgg aag aaa gag ggc ggg gac cgg cgg ccg tcc tcg gcg ctg      10411
Thr Val Trp Lys Lys Glu Gly Gly Asp Arg Arg Pro Ser Ser Ala Leu
            825                 830                 835

tcc ggt cgc gcg ggt gct gcc gcg gcg gtg ccc gag gcc gcc agc ccc      10459
Ser Gly Arg Ala Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro
        840                 845                 850

ttc ccg agc ctg ccc ttt tcg ctg aac agc gtg cgc agc agc gag ctg      10507
Phe Pro Ser Leu Pro Phe Ser Leu Asn Ser Val Arg Ser Ser Glu Leu
    855                 860                 865

ggt cgg ctg acg cgg ccg cgc ctg ctg ggc gag gag gag tac ctg aac      10555
Gly Arg Leu Thr Arg Pro Arg Leu Leu Gly Glu Glu Tyr Leu Asn
870                 875                 880                 885

gac tcc ttg ttg agg ccc gag cgc gag aaa aac ttc ccc aat aac ggg      10603
Asp Ser Leu Leu Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly
                890                 895                 900

ata gag agc ctg gtg gac aag atg agc cgc tgg aag acg tac gcg cac      10651
Ile Glu Ser Leu Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala His
            905                 910                 915
```

```
gag cac agg gac gag ccc cga gct agc agc agc acc ggc gcc cgt aga      10699
Glu His Arg Asp Glu Pro Arg Ala Ser Ser Ser Thr Gly Ala Arg Arg
        920                 925                 930

cgc cag cgg cac gac agg cag cgg gga ctg gtg tgg gac gat gag gat      10747
Arg Gln Arg His Asp Arg Gln Arg Gly Leu Val Trp Asp Asp Glu Asp
    935                 940                 945

tcc gcc gac gac agc agc gtg ttg gac ttg ggt ggg agt ggt ggt ggt      10795
Ser Ala Asp Asp Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Gly Gly
950                 955                 960                 965

aac ccg ttc gct cac ctg cgc ccc cgt atc ggg cgc ctg atg              10837
Asn Pro Phe Ala His Leu Arg Pro Arg Ile Gly Arg Leu Met
                970                 975

taagaatctg aaaaaataaa aaaacggtac tcaccaaggc catggcgacc agcgtgcgtt    10897

cttctctgtt gtttgtagta gt atg atg agg cgc gtg tac ccg gag ggt cct     10949
                        Met Met Arg Arg Val Tyr Pro Glu Gly Pro
                        980                 985

cct ccc tcg tac gag agc gtg atg cag cag gcg  gtg gcg gcg gcg atg     10997
Pro Pro Ser Tyr Glu Ser Val Met Gln Gln Ala  Val Ala Ala Ala Met
990                 995                 1000                1005

cag ccc ccg ctg gag  gcg cct tac gtg ccc  ccg cgg tac ctg gcg        11042
Gln Pro Pro Leu Glu  Ala Pro Tyr Val Pro  Pro Arg Tyr Leu Ala
                1010                1015                1020

cct acg gag ggg cgg  aac agc att cgt tac  tcg gag ctg gca ccc        11087
Pro Thr Glu Gly Arg  Asn Ser Ile Arg Tyr  Ser Glu Leu Ala Pro
                1025                1030                1035

ttg tac gat acc acc  cgg ttg tac ctg gtg  gac aac aag tcg gcg        11132
Leu Tyr Asp Thr Thr  Arg Leu Tyr Leu Val  Asp Asn Lys Ser Ala
                1040                1045                1050

gac atc gcc tcg ctg  aac tac cag aac gac  cac agc aac ttc ctg        11177
Asp Ile Ala Ser Leu  Asn Tyr Gln Asn Asp  His Ser Asn Phe Leu
                1055                1060                1065

acc acc gtg gtg cag  aac aac gat ttc acc  ccc acg gag gcc agc        11222
Thr Thr Val Val Gln  Asn Asn Asp Phe Thr  Pro Thr Glu Ala Ser
                1070                1075                1080

acc cag acc atc aac  ttt gac gag cgc tcg  cgg tgg ggc ggc cag        11267
Thr Gln Thr Ile Asn  Phe Asp Glu Arg Ser  Arg Trp Gly Gly Gln
                1085                1090                1095

ctg aaa acc atc atg  cac acc aac atg ccc  aac gtg aac gag ttc        11312
Leu Lys Thr Ile Met  His Thr Asn Met Pro  Asn Val Asn Glu Phe
                1100                1105                1110

atg tac agc aac aag  ttc aag gcg cgg gtg  atg gtc tcg cgc aag        11357
Met Tyr Ser Asn Lys  Phe Lys Ala Arg Val  Met Val Ser Arg Lys
                1115                1120                1125

acc ccc aac ggg gtc  aca gta aca gat ggt  agt cag gac gag ctg        11402
Thr Pro Asn Gly Val  Thr Val Thr Asp Gly  Ser Gln Asp Glu Leu
                1130                1135                1140

acc tac gag tgg gtg  gag ttt gag ctg ccc  gag ggc aac ttc tcg        11447
Thr Tyr Glu Trp Val  Glu Phe Glu Leu Pro  Glu Gly Asn Phe Ser
                1145                1150                1155

gtg acc atg acc atc  gat ctg atg aac aac  gcc atc atc gac aac        11492
Val Thr Met Thr Ile  Asp Leu Met Asn Asn  Ala Ile Ile Asp Asn
```

```
                1160                1165                1170

tac ttg gcg gtg gga  cgg cag aac ggg gtg  ctg gag agc gac atc        11537
Tyr Leu Ala Val Gly  Arg Gln Asn Gly Val  Leu Glu Ser Asp Ile
                1175                1180                1185

ggc gtg aag ttc gac  acg cgc aac ttc cgg  ctg ggc tgg gac ccc        11582
Gly Val Lys Phe Asp  Thr Arg Asn Phe Arg  Leu Gly Trp Asp Pro
                1190                1195                1200

gtg acc gag ctg gtg  atg ccg ggc gtg tac  acc aac gag gcc ttc        11627
Val Thr Glu Leu Val  Met Pro Gly Val Tyr  Thr Asn Glu Ala Phe
                1205                1210                1215

cac ccc gac att gtc  ctg ctg ccc ggc tgc  ggc gtg gac ttc acc        11672
His Pro Asp Ile Val  Leu Leu Pro Gly Cys  Gly Val Asp Phe Thr
                1220                1225                1230

gag agc cgc ctc agc  aac ctg ctg ggc atc  cgc aag cgg cag ccc        11717
Glu Ser Arg Leu Ser  Asn Leu Leu Gly Ile  Arg Lys Arg Gln Pro
                1235                1240                1245

ttc cag gag ggc ttc  cag atc ctg tac gag  gac ctg gag ggg ggc        11762
Phe Gln Glu Gly Phe  Gln Ile Leu Tyr Glu  Asp Leu Glu Gly Gly
                1250                1255                1260

aac atc ccc gcg ctg  ctg gac gtg gac gcc  tac gag aaa agc aag        11807
Asn Ile Pro Ala Leu  Leu Asp Val Asp Ala  Tyr Glu Lys Ser Lys
                1265                1270                1275

gag gag agc gcc gcc  gcg gcg acc gca gcc  gtg gcc acc gcc tct        11852
Glu Glu Ser Ala Ala  Ala Ala Thr Ala Ala  Val Ala Thr Ala Ser
                1280                1285                1290

acc gag gtg cgg ggc  gat aat ttt gct agc  gcc gcg gca gtg gcc        11897
Thr Glu Val Arg Gly  Asp Asn Phe Ala Ser  Ala Ala Ala Val Ala
                1295                1300                1305

gag gcg gct gaa acc  gaa agt aag ata gtg  atc cag ccg gtg gag        11942
Glu Ala Ala Glu Thr  Glu Ser Lys Ile Val  Ile Gln Pro Val Glu
                1310                1315                1320

aag gac agc aag gac  agg agc tac aac gtg  ctc gcg gac aag aaa        11987
Lys Asp Ser Lys Asp  Arg Ser Tyr Asn Val  Leu Ala Asp Lys Lys
                1325                1330                1335

aac acc gcc tac cgc  agc tgg tac ctg gcc  tac aac tac ggc gac        12032
Asn Thr Ala Tyr Arg  Ser Trp Tyr Leu Ala  Tyr Asn Tyr Gly Asp
                1340                1345                1350

ccc gag aag ggc gtg  cgc tcc tgg acg ctg  ctc acc acc tcg gac        12077
Pro Glu Lys Gly Val  Arg Ser Trp Thr Leu  Leu Thr Thr Ser Asp
                1355                1360                1365

gtc acc tgc ggc gtg  gag caa gtc tac tgg  tcg ctg ccc gac atg        12122
Val Thr Cys Gly Val  Glu Gln Val Tyr Trp  Ser Leu Pro Asp Met
                1370                1375                1380

atg caa gac ccg gtc  acc ttc cgc tcc acg  cga caa gtt agc aac        12167
Met Gln Asp Pro Val  Thr Phe Arg Ser Thr  Arg Gln Val Ser Asn
                1385                1390                1395

tac ccg gtg gtg ggc  gcc gag ctc ctg ccc  gtc tac tcc aag agc        12212
Tyr Pro Val Val Gly  Ala Glu Leu Leu Pro  Val Tyr Ser Lys Ser
                1400                1405                1410

ttc ttc aac gag cag  gcc gtc tac tcg cag  cag ctg cgc gcc ttc        12257
Phe Phe Asn Glu Gln  Ala Val Tyr Ser Gln  Gln Leu Arg Ala Phe
                1415                1420                1425
```

```
acc tcg ctc acg cac  gtc ttc aac cgc ttc  ccc gag aac cag atc        12302
Thr Ser Leu Thr His  Val Phe Asn Arg Phe  Pro Glu Asn Gln Ile
                1430                1435                1440

ctc gtc cgc ccg ccc  gcg ccc acc att acc  acc gtc agt gaa aac        12347
Leu Val Arg Pro Pro  Ala Pro Thr Ile Thr  Thr Val Ser Glu Asn
                1445                1450                1455

gtt cct gct ctc aca  gat cac ggg acc ctg  ccg ctg cgc agc agt        12392
Val Pro Ala Leu Thr  Asp His Gly Thr Leu  Pro Leu Arg Ser Ser
                1460                1465                1470

atc cgg gga gtc cag  cgc gtg acc gtc act  gac gcc aga cgc cgc        12437
Ile Arg Gly Val Gln  Arg Val Thr Val Thr  Asp Ala Arg Arg Arg
                1475                1480                1485

acc tgc ccc tac gtc  tac aag gcc ctg ggc  gta gtc gcg ccg cgc        12482
Thr Cys Pro Tyr Val  Tyr Lys Ala Leu Gly  Val Val Ala Pro Arg
                1490                1495                1500

gtc ctc tcg agc cgc  acc ttc taaaaa atg tcc att  ctc atc tcg ccc     12530
Val Leu Ser Ser Arg  Thr Phe        Met Ser Ile  Leu Ile Ser Pro
                1505                      1510

agt  aat aac acc ggt tgg  ggc ctg cgc gcg ccc  agc aag atg tac       12575
Ser  Asn Asn Thr Gly Trp  Gly Leu Arg Ala Pro  Ser Lys Met Tyr
1515                1520                1525

gga  ggc gct cgc caa cgc  tcc acg caa cac ccc  gtg cgc gtg cgc       12620
Gly  Gly Ala Arg Gln Arg  Ser Thr Gln His Pro  Val Arg Val Arg
1530                1535                1540

ggg  cac ttc cgc gct ccc  tgg ggc gcc ctc aag  ggt cgc gtg cgc       12665
Gly  His Phe Arg Ala Pro  Trp Gly Ala Leu Lys  Gly Arg Val Arg
1545                1550                1555

tcg  cgc acc acc gtc gac  gac gtg atc gac cag  gtg gtg gcc gac       12710
Ser  Arg Thr Thr Val Asp  Asp Val Ile Asp Gln  Val Val Ala Asp
1560                1565                1570

gcg  cgc aac tac acg ccc  gcc gcc gcg ccc gcc  tcc acc gtg gac       12755
Ala  Arg Asn Tyr Thr Pro  Ala Ala Ala Pro Ala  Ser Thr Val Asp
1575                1580                1585

gcc  gtc atc gac agc gtg  gtg gcc gac gcg cgc  cgg tac gcc cgc       12800
Ala  Val Ile Asp Ser Val  Val Ala Asp Ala Arg  Arg Tyr Ala Arg
1590                1595                1600

gcc  aag agc cgg cgg cgg  cgc atc gcc cgg cgg  cac cgg agc acc       12845
Ala  Lys Ser Arg Arg Arg  Arg Ile Ala Arg Arg  His Arg Ser Thr
1605                1610                1615

ccc  gcc atg cgc gcg gcg  cga gcc ttg ctg cgc  agg gcc agg cgc       12890
Pro  Ala Met Arg Ala Ala  Arg Ala Leu Leu Arg  Arg Ala Arg Arg
1620                1625                1630

acg  gga cgc agg gcc atg  ctc agg gcg gcc aga  cgc gcg gcc tcc       12935
Thr  Gly Arg Arg Ala Met  Leu Arg Ala Ala Arg  Arg Ala Ala Ser
1635                1640                1645

ggc  agc agc agc gcc ggc  agg acc cgc aga cgc  gcg gcc acg gcg       12980
Gly  Ser Ser Ser Ala Gly  Arg Thr Arg Arg Arg  Ala Ala Thr Ala
1650                1655                1660

gcg  gcg gcg gcc atc gcc  agc atg tcc cgc ccg  cgg cgc ggc aac       13025
Ala  Ala Ala Ala Ile Ala  Ser Met Ser Arg Pro  Arg Arg Gly Asn
1665                1670                1675
```

```
gtg  tac tgg gtg cgc gac  gcc gcc acc ggt gtg  cgc gtg ccc gtg       13070
Val  Tyr Trp Val Arg Asp  Ala Ala Thr Gly Val  Arg Val Pro Val
1680                1685                1690

cgc  acc cgc ccc cct cgc  act tgaagatgct gacttcgcga tgttgatgtg       13121
Arg  Thr Arg Pro Pro Arg  Thr
1695                1700

tcccagcggc gaggagg atg tcc aag cgc  aaa ttc aag gaa gag  atg ctc     13171
                  Met Ser Lys Arg  Lys Phe Lys Glu Glu  Met Leu
                              1705                1710

cag gtc atc  gcg cct gag atc tac  ggc ccc gcg gcg gcg  gtg aag       13216
Gln Val Ile  Ala Pro Glu Ile Tyr  Gly Pro Ala Ala Ala  Val Lys
        1715                1720                1725

gag gaa aga  aag ccc cgc aaa ctg  aag cgg gtc aaa aag  gac aaa       13261
Glu Glu Arg  Lys Pro Arg Lys Leu  Lys Arg Val Lys Lys  Asp Lys
        1730                1735                1740

aag gaa gaa  gat gtg gac gat atg  gtg gag ttt gtg cgc  gag ttc       13306
Lys Glu Glu  Asp Val Asp Asp Met  Val Glu Phe Val Arg  Glu Phe
        1745                1750                1755

gcc ccc cgg  cgg cgc gtg cag tgg  cgc ggg cgg aag gtg  cgc ccg       13351
Ala Pro Arg  Arg Arg Val Gln Trp  Arg Gly Arg Lys Val  Arg Pro
        1760                1765                1770

gtg ctg aga  ccc ggc acc acg gtg  gtc ttc acg ccc gga  gag cgc       13396
Val Leu Arg  Pro Gly Thr Thr Val  Val Phe Thr Pro Gly  Glu Arg
        1775                1780                1785

tct ggc acc  gcc tcc aag cgc tcc  tac gac gag gtg tac  ggg gat       13441
Ser Gly Thr  Ala Ser Lys Arg Ser  Tyr Asp Glu Val Tyr  Gly Asp
        1790                1795                1800

gat gat att  ctg gag cag gcg gcc  gag cgc ctg ggc gag  ttt gct       13486
Asp Asp Ile  Leu Glu Gln Ala Ala  Glu Arg Leu Gly Glu  Phe Ala
        1805                1810                1815

tac ggc aag  cgc agc cgc ccc gcg  ccc ttg aaa gag gag  gcg gtg       13531
Tyr Gly Lys  Arg Ser Arg Pro Ala  Pro Leu Lys Glu Glu  Ala Val
        1820                1825                1830

tcc atc ccg  ctg gac cac ggc aac  ccc acg ccg agc ctg  aag ccg       13576
Ser Ile Pro  Leu Asp His Gly Asn  Pro Thr Pro Ser Leu  Lys Pro
        1835                1840                1845

gtg acc ctg  cag cag gtg ctg cca  gcc gcg gcg ccg cgc  cgg ggg       13621
Val Thr Leu  Gln Gln Val Leu Pro  Ala Ala Ala Pro Arg  Arg Gly
        1850                1855                1860

ttc aag cgc  gag ggc gag gat ctg  tac ccc acc atg cag  ctg atg       13666
Phe Lys Arg  Glu Gly Glu Asp Leu  Tyr Pro Thr Met Gln  Leu Met
        1865                1870                1875

gtg ccc aag  cgc cag aag ctg gag  gac gtg ctg gag cac  atg aag       13711
Val Pro Lys  Arg Gln Lys Leu Glu  Asp Val Leu Glu His  Met Lys
        1880                1885                1890

gtg gac ccg  gac gtg cag ccc gag  gtc aag gtg cgg ccc  atc aag       13756
Val Asp Pro  Asp Val Gln Pro Glu  Val Lys Val Arg Pro  Ile Lys
        1895                1900                1905

cag gtg gcc  ccg ggc ctg ggc gtg  cag acc gtg gac atc  aag atc       13801
Gln Val Ala  Pro Gly Leu Gly Val  Gln Thr Val Asp Ile  Lys Ile
        1910                1915                1920

ccc acg gag  ccc atg gaa acg cag  act gag ccc gtg aag  ccc agc       13846
```

```
Pro Thr Glu  Pro Met Glu Thr Gln  Thr Glu Pro Val Lys  Pro Ser
        1925                1930                1935

acc agc acc  atg gag gtg cag acg  gat ccc tgg atg cca  gcg gct       13891
Thr Ser Thr  Met Glu Val Gln Thr  Asp Pro Trp Met Pro  Ala Ala
        1940                1945                1950

tcc acc acc  act cgc cga aga cgc  aag tac ggc gcg gcc  agc ctg       13936
Ser Thr Thr  Thr Arg Arg Arg Arg  Lys Tyr Gly Ala Ala  Ser Leu
        1955                1960                1965

ctg atg ccc  aac tac gcg ctg cat  cct tcc atc atc ccc  acg ccg       13981
Leu Met Pro  Asn Tyr Ala Leu His  Pro Ser Ile Ile Pro  Thr Pro
        1970                1975                1980

ggc tac cgc  ggc acg cgc ttc tac  cgc ggc tac acc agc  agc cgc       14026
Gly Tyr Arg  Gly Thr Arg Phe Tyr  Arg Gly Tyr Thr Ser  Ser Arg
        1985                1990                1995

cgc cgc aag  acc acc acc cgc cgc  cgc cgt cgt cgc agc  cgc cgc       14071
Arg Arg Lys  Thr Thr Thr Arg Arg  Arg Arg Arg Arg Ser  Arg Arg
        2000                2005                2010

agc agc acc  gcg act tcc gcc ttg  gtg cgg aga gtg tac  cgc agc       14116
Ser Ser Thr  Ala Thr Ser Ala Leu  Val Arg Arg Val Tyr  Arg Ser
        2015                2020                2025

ggg cgc gag  cct ctg acc ctg ccg  cgc gcg cgc tac cac  ccg agc       14161
Gly Arg Glu  Pro Leu Thr Leu Pro  Arg Ala Arg Tyr His  Pro Ser
        2030                2035                2040

atc gcc att  taactaccgc ctcctacttg cagat atg gcc ctc aca tgc  cgc    14213
Ile Ala Ile                             Met Ala Leu Thr Cys  Arg
        2045                                                2050

ctc cgc gtc ccc  att acg ggc tac cga  gga aga aag ccg cgc  cgt       14258
Leu Arg Val Pro  Ile Thr Gly Tyr Arg  Gly Arg Lys Pro Arg  Arg
            2055                2060                2065

aga agg ctg acg  ggg aac ggg ctg cgt  cgc cat cac cac cgg  cgg       14303
Arg Arg Leu Thr  Gly Asn Gly Leu Arg  Arg His His His Arg  Arg
            2070                2075                2080

cgg cgc gcc atc  agc aag cgg ttg ggg  gga ggc ttc ctg ccc  gcg       14348
Arg Arg Ala Ile  Ser Lys Arg Leu Gly  Gly Gly Phe Leu Pro  Ala
            2085                2090                2095

ctg atc ccc atc  atc gcc gcg gcg atc  ggg gcg atc ccc ggc  ata       14393
Leu Ile Pro Ile  Ile Ala Ala Ala Ile  Gly Ala Ile Pro Gly  Ile
            2100                2105                2110

gct tcc gtg gcg  gtg cag gcc tct cag  cgc cac tgagacacag             14436
Ala Ser Val Ala  Val Gln Ala Ser Gln  Arg His
            2115                2120

cttggaaaat ttgtaataaa aaatggactg acgctcctgg tcctgtgatg tgtgttttta   14496

g atg gaa gac  atc aat ttt tcg tcc  ctg gca ccg cga cac  ggc acg     14542
  Met Glu Asp  Ile Asn Phe Ser Ser  Leu Ala Pro Arg His  Gly Thr
          2125                2130                2135

cgg ccg ttt  atg ggc acc tgg agc  gac atc ggc aac agc  caa ctg       14587
Arg Pro Phe  Met Gly Thr Trp Ser  Asp Ile Gly Asn Ser  Gln Leu
        2140                2145                2150

aac ggg ggc  gcc ttc aat tgg agc  agt ctc tgg agc ggg  ctt aag       14632
Asn Gly Gly  Ala Phe Asn Trp Ser  Ser Leu Trp Ser Gly  Leu Lys
        2155                2160                2165
```

```
aat ttc ggg  tcc acg ctc aaa acc  tat ggc aac aag gcg  tgg aac       14677
Asn Phe Gly  Ser Thr Leu Lys Thr  Tyr Gly Asn Lys Ala  Trp Asn
        2170                 2175                 2180

agc agc aca  ggg cag gcg ctg agg  gaa aag ctg aaa gag  cag aac       14722
Ser Ser Thr  Gly Gln Ala Leu Arg  Glu Lys Leu Lys Glu  Gln Asn
        2185                 2190                 2195

ttc cag cag  aag gtg gtc gat ggc  ctg gcc tcg ggc atc  aac ggg       14767
Phe Gln Gln  Lys Val Val Asp Gly  Leu Ala Ser Gly Ile  Asn Gly
        2200                 2205                 2210

gtg gtg gac  ctg gcc aac cag gcc  gtg cag aaa cag atc  aac agc       14812
Val Val Asp  Leu Ala Asn Gln Ala  Val Gln Lys Gln Ile  Asn Ser
        2215                 2220                 2225

cgc ctg gac  gcg gtc ccg ccc gcg  ggg tcc gtg gac atg  ccc cag       14857
Arg Leu Asp  Ala Val Pro Pro Ala  Gly Ser Val Asp Met  Pro Gln
        2230                 2235                 2240

gtg gag gag  gag ctg cct ccc ctg  gac aag cgc ggc gac  aag cga       14902
Val Glu Glu  Glu Leu Pro Pro Leu  Asp Lys Arg Gly Asp  Lys Arg
        2245                 2250                 2255

ccg cgt ccc  gac gct gag gag acg  ctg ctg acg cac acg  gac gag       14947
Pro Arg Pro  Asp Ala Glu Glu Thr  Leu Leu Thr His Thr  Asp Glu
        2260                 2265                 2270

ccg ccc ccg  tac gag gag gcg gtg  aaa ctg ggt ctg ccc  acc acg       14992
Pro Pro Pro  Tyr Glu Glu Ala Val  Lys Leu Gly Leu Pro  Thr Thr
        2275                 2280                 2285

cgg ccc gtg  gcg cct ctg gcc acc  ggg gtg ctg aaa ccc  agc agc       15037
Arg Pro Val  Ala Pro Leu Ala Thr  Gly Val Leu Lys Pro  Ser Ser
        2290                 2295                 2300

agc agc agc  cag ccc gcg acc ctg  gac ttg cct cca cct  cgc ccc       15082
Ser Ser Ser  Gln Pro Ala Thr Leu  Asp Leu Pro Pro Pro  Arg Pro
        2305                 2310                 2315

tcc aca gtg  gct aag ccc ctg ccg  ccg gtg gcc gtc gcg  tcg cgc       15127
Ser Thr Val  Ala Lys Pro Leu Pro  Pro Val Ala Val Ala  Ser Arg
        2320                 2325                 2330

gcc ccc cga  ggc cgc ccc cag gcg  aac tgg cag agc act  ctg aac       15172
Ala Pro Arg  Gly Arg Pro Gln Ala  Asn Trp Gln Ser Thr  Leu Asn
        2335                 2340                 2345

agc atc gtg  ggt ctg gga gtg cag  agt gtg aag cgc cgc  cgc tgc       15217
Ser Ile Val  Gly Leu Gly Val Gln  Ser Val Lys Arg Arg  Arg Cys
        2350                 2355                 2360

tat taaaagacac tgtagcgctt aacttgcttg tctgtgtgtg tat atg tat  gtc     15272
Tyr                                                 Met Tyr  Val
                                                        2365

cgc cga cca gaa  gga gga aga ggc gcg  tcg ccg agt tgc aag  atg       15317
Arg Arg Pro Glu  Gly Gly Arg Gly Ala  Ser Pro Ser Cys Lys  Met
            2370                 2375                 2380

gcc acc cca tcg  atg ctg ccc cag tgg  gcg tac atg cac atc  gcc       15362
Ala Thr Pro Ser  Met Leu Pro Gln Trp  Ala Tyr Met His Ile  Ala
            2385                 2390                 2395

gga cag gac gct  tcg gag tac ctg agt  ccg ggt ctg gtg cag  ttc       15407
Gly Gln Asp Ala  Ser Glu Tyr Leu Ser  Pro Gly Leu Val Gln  Phe
            2400                 2405                 2410

gcc cgc gcc aca  gac acc tac ttc agt  ctg ggg aac aag ttt  agg       15452
```

```
Ala Arg Ala Thr  Asp Thr Tyr Phe Ser  Leu Gly Asn Lys Phe  Arg
            2415                2420                2425

aac ccc acg gtg  gcg ccc acg cac gat  gtg acc acc gac cgc  agc       15497
Asn Pro Thr Val  Ala Pro Thr His Asp  Val Thr Thr Asp Arg  Ser
            2430                2435                2440

cag cgg ctg acg  ctg cgc ttc gtg ccc  gtg gac cgc gag gac  aac       15542
Gln Arg Leu Thr  Leu Arg Phe Val Pro  Val Asp Arg Glu Asp  Asn
            2445                2450                2455

acc tac tcg tac  aaa gtg cgc tac acg  ctg gcc gtg ggc gac  aac       15587
Thr Tyr Ser Tyr  Lys Val Arg Tyr Thr  Leu Ala Val Gly Asp  Asn
            2460                2465                2470

cgc gtg ctg gac  atg gcc agc acc tac  ttt gac atc cgc ggc  gtg       15632
Arg Val Leu Asp  Met Ala Ser Thr Tyr  Phe Asp Ile Arg Gly  Val
            2475                2480                2485

ctg gat cgg ggc  ccc agc ttc aaa ccc  tac tcc ggc acc gcc  tac       15677
Leu Asp Arg Gly  Pro Ser Phe Lys Pro  Tyr Ser Gly Thr Ala  Tyr
            2490                2495                2500

aac agc ctg gct  ccc aag gga gcg ccc  aac acc tca caa tgg  ata       15722
Asn Ser Leu Ala  Pro Lys Gly Ala Pro  Asn Thr Ser Gln Trp  Ile
            2505                2510                2515

acc aaa gac aag  aca tac agt ttt gga  aat gct cca gtc aga  gga       15767
Thr Lys Asp Lys  Thr Tyr Ser Phe Gly  Asn Ala Pro Val Arg  Gly
            2520                2525                2530

ttg gac att aca  gaa gag ggt ctc caa  ata gta acc gat gag  tca       15812
Leu Asp Ile Thr  Glu Glu Gly Leu Gln  Ile Val Thr Asp Glu  Ser
            2535                2540                2545

ggg ggt gaa agc  aag aaa att ttt gca  gac aaa acc tat cag  cct       15857
Gly Gly Glu Ser  Lys Lys Ile Phe Ala  Asp Lys Thr Tyr Gln  Pro
            2550                2555                2560

gaa cct cag ctt  gga gat gag gaa tgg  cat gat act att gga  gct       15902
Glu Pro Gln Leu  Gly Asp Glu Glu Trp  His Asp Thr Ile Gly  Ala
            2565                2570                2575

gaa gac aag tat  gga ggc aga gcg ctt  aaa cct gcc acc aac  atg       15947
Glu Asp Lys Tyr  Gly Gly Arg Ala Leu  Lys Pro Ala Thr Asn  Met
            2580                2585                2590

aaa ccc tgc tat  ggg tct ttc gcc aag  cca act aat gct aag  gga       15992
Lys Pro Cys Tyr  Gly Ser Phe Ala Lys  Pro Thr Asn Ala Lys  Gly
            2595                2600                2605

ggt cag gct aaa  agc aga acc aag gac  gat ggc act act gag  cct       16037
Gly Gln Ala Lys  Ser Arg Thr Lys Asp  Asp Gly Thr Thr Glu  Pro
            2610                2615                2620

gat att gac atg  gcc ttt ttt gac gat  cgc agt cag caa gct  agt       16082
Asp Ile Asp Met  Ala Phe Phe Asp Asp  Arg Ser Gln Gln Ala  Ser
            2625                2630                2635

ttc agt cca gaa  ctt gtt ttg tat act  gag aat gtc gat ctg  gac       16127
Phe Ser Pro Glu  Leu Val Leu Tyr Thr  Glu Asn Val Asp Leu  Asp
            2640                2645                2650

acc ccg gat acc  cac att att tac aaa  cct ggc act gat gaa  aca       16172
Thr Pro Asp Thr  His Ile Ile Tyr Lys  Pro Gly Thr Asp Glu  Thr
            2655                2660                2665

agt tct tct ttc  aac ttg ggt cag cag  tcc atg ccc aac aga  ccc       16217
Ser Ser Ser Phe  Asn Leu Gly Gln Gln  Ser Met Pro Asn Arg  Pro
```

```
            2670                2675                2680

aat tac att ggc  ttc aga gac aac ttt  atc gga ctc atg tac  tac       16262
Asn Tyr Ile Gly  Phe Arg Asp Asn Phe  Ile Gly Leu Met Tyr  Tyr
            2685                2690                2695

aac agc act ggc  aat atg ggt gta ctg  gct gga cag gcc tcc  cag       16307
Asn Ser Thr Gly  Asn Met Gly Val Leu  Ala Gly Gln Ala Ser  Gln
            2700                2705                2710

ctg aat gct gtg  gtg gac ttg cag gac  aga aac acc gaa ctg  tcc       16352
Leu Asn Ala Val  Val Asp Leu Gln Asp  Arg Asn Thr Glu Leu  Ser
            2715                2720                2725

tac cag ctc ttg  ctt gac tct ctg ggc  gac aga acc agg tat  ttc       16397
Tyr Gln Leu Leu  Leu Asp Ser Leu Gly  Asp Arg Thr Arg Tyr  Phe
            2730                2735                2740

agt atg tgg aat  cag gcg gtg gac agc  tat gac ccc gat gtg  cgc       16442
Ser Met Trp Asn  Gln Ala Val Asp Ser  Tyr Asp Pro Asp Val  Arg
            2745                2750                2755

att att gaa aat  cac ggt gtg gag gat  gaa ctt ccc aac tat  tgc       16487
Ile Ile Glu Asn  His Gly Val Glu Asp  Glu Leu Pro Asn Tyr  Cys
            2760                2765                2770

ttc cct ttg aat  ggt gtg ggc ttt aca  gat tca ttc cag gga  att       16532
Phe Pro Leu Asn  Gly Val Gly Phe Thr  Asp Ser Phe Gln Gly  Ile
            2775                2780                2785

aag gtt aaa act  acc aat aac gga aca  gca aac gct aca gag  tgg       16577
Lys Val Lys Thr  Thr Asn Asn Gly Thr  Ala Asn Ala Thr Glu  Trp
            2790                2795                2800

gaa tct gat acc  tct gtc aat aat gct  aat gag att gcc aag  ggc       16622
Glu Ser Asp Thr  Ser Val Asn Asn Ala  Asn Glu Ile Ala Lys  Gly
            2805                2810                2815

aat cct ttc gcc  atg gag atc aac atc  cag gcc aac ctg tgg  cgg       16667
Asn Pro Phe Ala  Met Glu Ile Asn Ile  Gln Ala Asn Leu Trp  Arg
            2820                2825                2830

aac ttc ctc tac  gcg aac gtg gcg ctg  tac ctg ccc gac tcc  tac       16712
Asn Phe Leu Tyr  Ala Asn Val Ala Leu  Tyr Leu Pro Asp Ser  Tyr
            2835                2840                2845

aag tac acg ccg  gcc aac atc acg ctg  ccc acc aac acc aac  acc       16757
Lys Tyr Thr Pro  Ala Asn Ile Thr Leu  Pro Thr Asn Thr Asn  Thr
            2850                2855                2860

tac gat tac atg  aac ggc cgc gtg gtg  gcg ccc tcg ctg gtg  gac       16802
Tyr Asp Tyr Met  Asn Gly Arg Val Val  Ala Pro Ser Leu Val  Asp
            2865                2870                2875

gcc tac atc aac  atc ggg gcg cgc tgg  tcg ctg gac ccc atg  gac       16847
Ala Tyr Ile Asn  Ile Gly Ala Arg Trp  Ser Leu Asp Pro Met  Asp
            2880                2885                2890

aac gtc aac ccc  ttc aac cac cac cgc  aac gcg ggc ctg cga  tac       16892
Asn Val Asn Pro  Phe Asn His His Arg  Asn Ala Gly Leu Arg  Tyr
            2895                2900                2905

cgc tcc atg ctc  ctg ggc aac ggg cgc  tac gtg ccc ttc cac  atc       16937
Arg Ser Met Leu  Leu Gly Asn Gly Arg  Tyr Val Pro Phe His  Ile
            2910                2915                2920

cag gtg ccc caa  aag ttt ttc gcc atc  aag agc ctc ctg ctc  ctg       16982
Gln Val Pro Gln  Lys Phe Phe Ala Ile  Lys Ser Leu Leu Leu  Leu
            2925                2930                2935
```

```
ccc ggg tcc tac  acc tac gag tgg aac  ttc cgc aag gac gtc  aac       17027
Pro Gly Ser Tyr  Thr Tyr Glu Trp Asn  Phe Arg Lys Asp Val  Asn
            2940                 2945                 2950

atg atc ctg cag  agc tcc ctc ggc aac  gac ctg cgc acg gac  ggg       17072
Met Ile Leu Gln  Ser Ser Leu Gly Asn  Asp Leu Arg Thr Asp  Gly
            2955                 2960                 2965

gcc tcc atc tcc  ttc acc agc atc aac  ctc tac gcc acc ttc  ttc       17117
Ala Ser Ile Ser  Phe Thr Ser Ile Asn  Leu Tyr Ala Thr Phe  Phe
            2970                 2975                 2980

ccc atg gcg cac  aac acg gcc tcc acg  ctc gag gcc atg ctg  cgc       17162
Pro Met Ala His  Asn Thr Ala Ser Thr  Leu Glu Ala Met Leu  Arg
            2985                 2990                 2995

aac gac acc aac  gac cag tcc ttc aac  gac tac ctc tcg gcg  gcc       17207
Asn Asp Thr Asn  Asp Gln Ser Phe Asn  Asp Tyr Leu Ser Ala  Ala
            3000                 3005                 3010

aac atg ctc tac  ccc atc ccg gcc aac  gcc acc aac gtg ccc  atc       17252
Asn Met Leu Tyr  Pro Ile Pro Ala Asn  Ala Thr Asn Val Pro  Ile
            3015                 3020                 3025

tcc atc ccc tcg  cgc aac tgg gcc gcc  ttc cgc ggc tgg tcc  ttc       17297
Ser Ile Pro Ser  Arg Asn Trp Ala Ala  Phe Arg Gly Trp Ser  Phe
            3030                 3035                 3040

acg cgt ctc aag  acc aag gag acg ccc  tcg ctg ggc tcc ggg  ttc       17342
Thr Arg Leu Lys  Thr Lys Glu Thr Pro  Ser Leu Gly Ser Gly  Phe
            3045                 3050                 3055

gac ccc tac ttc  gtc tac tcg ggc tcc  atc ccc tac ctc gac  ggc       17387
Asp Pro Tyr Phe  Val Tyr Ser Gly Ser  Ile Pro Tyr Leu Asp  Gly
            3060                 3065                 3070

acc ttc tac ctc  aac cac acc ttc aag  aag gtc tcc atc acc  ttc       17432
Thr Phe Tyr Leu  Asn His Thr Phe Lys  Lys Val Ser Ile Thr  Phe
            3075                 3080                 3085

gac tcc tcc gtc  agc tgg ccc ggc aac  gac cgc ctc ctg acg  ccc       17477
Asp Ser Ser Val  Ser Trp Pro Gly Asn  Asp Arg Leu Leu Thr  Pro
            3090                 3095                 3100

aac gag ttc gaa  atc aag cgc acc gtc  gac gga gag ggg tac  aac       17522
Asn Glu Phe Glu  Ile Lys Arg Thr Val  Asp Gly Glu Gly Tyr  Asn
            3105                 3110                 3115

gtg gcc cag tgc  aac atg acc aag gac  tgg ttc ctg gtc cag  atg       17567
Val Ala Gln Cys  Asn Met Thr Lys Asp  Trp Phe Leu Val Gln  Met
            3120                 3125                 3130

ctg gcc cac tac  aac atc ggc tac cag  ggc ttc tac gtg ccc  gag       17612
Leu Ala His Tyr  Asn Ile Gly Tyr Gln  Gly Phe Tyr Val Pro  Glu
            3135                 3140                 3145

ggc tac aag gac  cgc atg tac tcc ttc  ttc cgc aac ttc cag  ccc       17657
Gly Tyr Lys Asp  Arg Met Tyr Ser Phe  Phe Arg Asn Phe Gln  Pro
            3150                 3155                 3160

atg agc cgc cag  gtc gtg gac gag gtc  aac tac aag gac tac  cag       17702
Met Ser Arg Gln  Val Val Asp Glu Val  Asn Tyr Lys Asp Tyr  Gln
            3165                 3170                 3175

gcc gtc acc ctg  gcc tac cag cac aac  aac tcg ggc ttc gtc  ggc       17747
Ala Val Thr Leu  Ala Tyr Gln His Asn  Asn Ser Gly Phe Val  Gly
            3180                 3185                 3190
```

```
tac ctc gcg ccc  acc atg cgc cag ggg  cag ccc tac ccc gcc  aac       17792
Tyr Leu Ala Pro  Thr Met Arg Gln Gly  Gln Pro Tyr Pro Ala  Asn
            3195                 3200                 3205

tac ccg tac ccg  ctc atc ggc aag agc  gcc gtc acc agc gtc  acc       17837
Tyr Pro Tyr Pro  Leu Ile Gly Lys Ser  Ala Val Thr Ser Val  Thr
            3210                 3215                 3220

cag aaa aag ttc  ctc tgc gac cgg gtc  atg tgg cgc atc ccc  ttc       17882
Gln Lys Lys Phe  Leu Cys Asp Arg Val  Met Trp Arg Ile Pro  Phe
            3225                 3230                 3235

tcc agc aac ttc  atg tcc atg ggc gcg  ctc acc gac ctc ggc  cag       17927
Ser Ser Asn Phe  Met Ser Met Gly Ala  Leu Thr Asp Leu Gly  Gln
            3240                 3245                 3250

aac atg ctc tat  gcc aac tcc gcc cac  gcg cta gac atg aat  ttc       17972
Asn Met Leu Tyr  Ala Asn Ser Ala His  Ala Leu Asp Met Asn  Phe
            3255                 3260                 3265

gaa gtc gac ccc  atg gat gag tcc acc  ctt ctc tat gtt gtc  ttc       18017
Glu Val Asp Pro  Met Asp Glu Ser Thr  Leu Leu Tyr Val Val  Phe
            3270                 3275                 3280

gaa gtc ttc gac  gtc gtc cga gtg cac  cag ccc cac cgc ggc  gtc       18062
Glu Val Phe Asp  Val Val Arg Val His  Gln Pro His Arg Gly  Val
            3285                 3290                 3295

atc gag gcc gtc  tac ctg cgc acc ccc  ttc tcg gcc ggt aac  gcc       18107
Ile Glu Ala Val  Tyr Leu Arg Thr Pro  Phe Ser Ala Gly Asn  Ala
            3300                 3305                 3310

acc acc taagctcttg cttcttgc atg atg  gct gag ccc acg ggc  tcc ggc    18158
Thr Thr                     Met Met  Ala Glu Pro Thr Gly  Ser Gly
                                3315                 3320

gag cag gag  ctc agg gcc atc atc  cgc gac ctg ggc tgc  ggg ccc       18203
Glu Gln Glu  Leu Arg Ala Ile Ile  Arg Asp Leu Gly Cys  Gly Pro
        3325                 3330                 3335

tac ttc ctg  ggc acc ttc gat aag  cgc ttc ccg gga ttc  atg gcc       18248
Tyr Phe Leu  Gly Thr Phe Asp Lys  Arg Phe Pro Gly Phe  Met Ala
        3340                 3345                 3350

ccg cac aag  ctg gcc tgc gcc atc  gtc aac acg gcc ggt  cgc gag       18293
Pro His Lys  Leu Ala Cys Ala Ile  Val Asn Thr Ala Gly  Arg Glu
        3355                 3360                 3365

acc ggg ggc  gag cac tgg ctg gcc  ttc gcc tgg aac ccg  cgc tcg       18338
Thr Gly Gly  Glu His Trp Leu Ala  Phe Ala Trp Asn Pro  Arg Ser
        3370                 3375                 3380

aac acc tgc  tac ctc ttc gac ccc  ttc ggg ttc tcg gac  gag cgc       18383
Asn Thr Cys  Tyr Leu Phe Asp Pro  Phe Gly Phe Ser Asp  Glu Arg
        3385                 3390                 3395

ctc aag cag  atc tac cag ttc gag  tac gag ggc ctg ctg  cgc cgc       18428
Leu Lys Gln  Ile Tyr Gln Phe Glu  Tyr Glu Gly Leu Leu  Arg Arg
        3400                 3405                 3410

agc gcc ctg  gcc acc gag gac cgc  tgc gtc acc ctg gaa  aag tcc       18473
Ser Ala Leu  Ala Thr Glu Asp Arg  Cys Val Thr Leu Glu  Lys Ser
        3415                 3420                 3425

acc cag acc  gtg cag ggt ccg cgc  tcg gcc gcc tgc ggg  ctc ttc       18518
Thr Gln Thr  Val Gln Gly Pro Arg  Ser Ala Ala Cys Gly  Leu Phe
        3430                 3435                 3440

tgc tgc atg  ttc ctg cac gcc ttc  gtg cac tgg ccc gac  cgc ccc       18563
```

```
Cys Cys Met  Phe Leu His Ala Phe  Val His Trp Pro Asp  Arg Pro
        3445                 3450                 3455

atg gac aag  aac ccc acc atg aac  ttg ctg acg ggg gtg  ccc aac       18608
Met Asp Lys  Asn Pro Thr Met Asn  Leu Leu Thr Gly Val  Pro Asn
        3460                 3465                 3470

ggc atg ctc  cag tcg ccc cag gtg  gaa ccc acc ctg cgc  cgc aac       18653
Gly Met Leu  Gln Ser Pro Gln Val  Glu Pro Thr Leu Arg  Arg Asn
        3475                 3480                 3485

cag gag gcg  ctc tac cgc ttc ctc  aac gcc cac tcc gcc  tac ttt       18698
Gln Glu Ala  Leu Tyr Arg Phe Leu  Asn Ala His Ser Ala  Tyr Phe
        3490                 3495                 3500

cgc tcc cac  cgc gcg cgc atc gag  aag gcc acc gcc ttc  gac cgc       18743
Arg Ser His  Arg Ala Arg Ile Glu  Lys Ala Thr Ala Phe  Asp Arg
        3505                 3510                 3515

atg aat caa  gac atg taaaccgtgt gtgtatgtga atgctttatt cataataaac     18798
Met Asn Gln  Asp Met
        3520

agcacatgtt tatgccacct tctctgaggc tctgacttta tttagaaatc gaaggggttc    18858

tgccggctct cggcgtgccc cgcgggcagg gatacgttgc ggaactggta cttgggcagc    18918

cacttgaact cggggatcag cagcttcggc acggggaggt cggggaacga gtcgctccac    18978

agcttgcgcg tgagttgcag ggcgcccagc aggtcgggcg cggagatctt gaaatcgcag    19038

ttgggacccg cgttctgcgc gcgagagttg cggtacacgg ggttgcagca ctggaacacc    19098

atcagggccg ggtgcttcac gctcgccagc accgtcgcgt cggtgatgcc ctccacgtcc    19158

agatcctcgg cgttggccat cccgaagggg gtcatcttgc aggtctgccg ccccatgctg    19218

ggcacgcagc cgggcttgtg gttgcaatcg cagtgcaggg ggatcagcat catctgggcc    19278

tgctcggagc tcatgcccgg gtacatggcc ttcatgaaag cctccagctg gcggaaggcc    19338

tgctgcgcct tgccgccctc ggtgaagaag accccgcagg acttgctaga gaactggttg    19398

gtagcgcagc ccgcgtcgtg cacgcagcag cgcgcgtcgt tgttggccag ctgcaccacg    19458

ctgcgccccc agcggttctg ggtgatcttg gcccggtcgg ggttctcctt cagcgcgcgc    19518

tgcccgttct cgctcgccac atccatctcg atcgtgtgct ccttctggat catcacggtc    19578

ccgtgcaggc accgcagctt gccctcggcc tcggtgcagc cgtgcagcca cagcgcgcag    19638

ccggtgctct cccagttctt gtgggcgatc tgggagtgcg agtgcacgaa gccctgcagg    19698

aagcggccca tcatcgcggt cagggtcttg ttgctggtga aggtcagcgg gatgccgcgg    19758

tgctcctcgt tcacatacag gtggcagatg cggcggtaca cctcgccctg ctcgggcatc    19818

agctggaagg cggacttcag gtcgctctcc acgcggtacc gctccatcag cagcgtcatc    19878

acttccatgc ccttctccca ggccgaaacg atcggcaggc tcaggggttt cttcaccgtc    19938

atcttagtcg ccgccgccga ggtcaggggg tcgttctcgt ccagggtctc aaacactcgc    19998

ttgccgtcct tctcggtgat gcgcacgggg gggaaggcga agcccacggc cgccagctcc    20058

tcctcggcct gcctttcgtc ctcgctgtcc tggctgatgt cttgcaaagg cacatgcttg    20118

gtcttgcggg gtttcttttt gggcggcaga ggcggcggcg gagacgtgct gggcgagcgc    20178
```

```
gagttctcgc tcaccacgac tatttcttct tcttggccgt cgtccgagac cacgcggcgg    20238

taggcatgcc tcttctgggg cagaggcgga ggcgacgggc tctcgcggtt cgacgggcgg    20298

ctggcagagc cccttccgcg ttcgggggtg cgctcctggc ggcgctgctc tgactgactt    20358

cctccgcggc cggccattgt gttctcctag ggagcaacaa gc atg gag act  cag      20412
                                                 Met Glu Thr  Gln
                                                            3525

cca tcg tcg cca  aca tcg cca tct gcc  ccc gcc gcc gcc gac  gag       20457
Pro Ser Ser Pro  Thr Ser Pro Ser Ala  Pro Ala Ala Ala Asp  Glu
            3530                3535                3540

aac cag cag cag  cag aat gaa agc tta  acc gcc ccg ccg ccc  agc       20502
Asn Gln Gln Gln  Gln Asn Glu Ser Leu  Thr Ala Pro Pro Pro  Ser
            3545                3550                3555

ccc acc tcc gac  gcc gcc gca gcc cca  gac atg caa gag atg  gag       20547
Pro Thr Ser Asp  Ala Ala Ala Ala Pro  Asp Met Gln Glu Met  Glu
            3560                3565                3570

gaa tcc atc gag  att gac ctg ggc tac  gtg acg ccc gcg gag  cac       20592
Glu Ser Ile Glu  Ile Asp Leu Gly Tyr  Val Thr Pro Ala Glu  His
            3575                3580                3585

gag gag gag ctg  gca gcg cgc ttt tca  gcc ccg gaa gag aac  cac       20637
Glu Glu Glu Leu  Ala Ala Arg Phe Ser  Ala Pro Glu Glu Asn  His
            3590                3595                3600

caa gag cag cca  gag cag gaa gca gag  agc gag cag cag cag  gct       20682
Gln Glu Gln Pro  Glu Gln Glu Ala Glu  Ser Glu Gln Gln Gln  Ala
            3605                3610                3615

ggg ctc gag cat  ggc gac tac ctg agc  ggg gca gag gac gtg  ctc       20727
Gly Leu Glu His  Gly Asp Tyr Leu Ser  Gly Ala Glu Asp Val  Leu
            3620                3625                3630

atc aag cat ctg  gcc cgc caa tgc atc  atc gtc aag gac gcg  ctg       20772
Ile Lys His Leu  Ala Arg Gln Cys Ile  Ile Val Lys Asp Ala  Leu
            3635                3640                3645

ctc gac cgc gcc  gag gtg ccc ctc agc  gtg gcg gag ctc agc  cgc       20817
Leu Asp Arg Ala  Glu Val Pro Leu Ser  Val Ala Glu Leu Ser  Arg
            3650                3655                3660

gcc tac gag cgc  aac ctc ttc tcg ccg  cgc gtg ccc ccc aag  cgc       20862
Ala Tyr Glu Arg  Asn Leu Phe Ser Pro  Arg Val Pro Pro Lys  Arg
            3665                3670                3675

cag ccc aac ggc  acc tgc gag ccc aac  ccg cgc ctc aac ttc  tac       20907
Gln Pro Asn Gly  Thr Cys Glu Pro Asn  Pro Arg Leu Asn Phe  Tyr
            3680                3685                3690

ccg gtc ttc gcg  gtg ccc gag gcc ctg  gcc acc tac cac ctc  ttt       20952
Pro Val Phe Ala  Val Pro Glu Ala Leu  Ala Thr Tyr His Leu  Phe
            3695                3700                3705

ttc aag aac caa  agg atc ccc gtc tcc  tgc cgc gcc aac cgc  acc       20997
Phe Lys Asn Gln  Arg Ile Pro Val Ser  Cys Arg Ala Asn Arg  Thr
            3710                3715                3720

cgc gcc gac gcc  ctg ctc aac ctg ggc  ccc ggc gcc cgc cta  cct       21042
Arg Ala Asp Ala  Leu Leu Asn Leu Gly  Pro Gly Ala Arg Leu  Pro
            3725                3730                3735

gat atc gcc tcc  ttg gaa gag gtt ccc  aag atc ttc gag ggt  ctg       21087
Asp Ile Ala Ser  Leu Glu Glu Val Pro  Lys Ile Phe Glu Gly  Leu
            3740                3745                3750
```

```
ggc agc gac gag  act cgg gcc gcg aac  gct ctg caa gga agc  gga       21132
Gly Ser Asp Glu  Thr Arg Ala Ala Asn  Ala Leu Gln Gly Ser  Gly
            3755                 3760                 3765

gag gag cat gag  cac cac agc gcc ctg  gtg gag ttg gaa ggc  gac       21177
Glu Glu His Glu  His His Ser Ala Leu  Val Glu Leu Glu Gly  Asp
            3770                 3775                 3780

aac gcg cgc ctg  gcg gtc ctc aag cgc  acg gtc gag ctg acc  cac       21222
Asn Ala Arg Leu  Ala Val Leu Lys Arg  Thr Val Glu Leu Thr  His
            3785                 3790                 3795

ttc gcc tac cca  gcg ctc aac ctg ccc  ccc aag gtc atg agc  gcc       21267
Phe Ala Tyr Pro  Ala Leu Asn Leu Pro  Pro Lys Val Met Ser  Ala
            3800                 3805                 3810

gtc atg gac cag  gtg ctc atc aag cgc  gcc tcg ccc ctc tcg  gag       21312
Val Met Asp Gln  Val Leu Ile Lys Arg  Ala Ser Pro Leu Ser  Glu
            3815                 3820                 3825

gag gag atg cag  gac ccc gag agc tcg  gac gag ggc aag ccc  gtg       21357
Glu Glu Met Gln  Asp Pro Glu Ser Ser  Asp Glu Gly Lys Pro  Val
            3830                 3835                 3840

gtc agc gac gag  cag ctg gcg cgc tgg  ctg gga gcg agt agc  acc       21402
Val Ser Asp Glu  Gln Leu Ala Arg Trp  Leu Gly Ala Ser Ser  Thr
            3845                 3850                 3855

ccc cag agc ctg  gaa gag cgg cgc aag  ctc atg atg gcc gtg  gtc       21447
Pro Gln Ser Leu  Glu Glu Arg Arg Lys  Leu Met Met Ala Val  Val
            3860                 3865                 3870

ctg gtg acc gtg  gag ctg gag tgt ctg  cgc cgc ttc ttt gcc  gac       21492
Leu Val Thr Val  Glu Leu Glu Cys Leu  Arg Arg Phe Phe Ala  Asp
            3875                 3880                 3885

gcg gag acc ctg  cgc aag gtc gag gag  aac ctg cac tac ctc  ttc       21537
Ala Glu Thr Leu  Arg Lys Val Glu Glu  Asn Leu His Tyr Leu  Phe
            3890                 3895                 3900

agg cac ggg ttc  gtg cgc cag gcc tgc  aag atc tcc aac gtg  gag       21582
Arg His Gly Phe  Val Arg Gln Ala Cys  Lys Ile Ser Asn Val  Glu
            3905                 3910                 3915

ctg acc aac ctg  gtc tcc tac atg ggc  atc ctg cac gag aac  cgc       21627
Leu Thr Asn Leu  Val Ser Tyr Met Gly  Ile Leu His Glu Asn  Arg
            3920                 3925                 3930

ctg ggg cag aac  gtg ctg cac acc acc  ctg cgc ggg gag gcc  cgc       21672
Leu Gly Gln Asn  Val Leu His Thr Thr  Leu Arg Gly Glu Ala  Arg
            3935                 3940                 3945

cgc gac tac atc  cgc gac tgc gtc tac  ctg tac ctc tgc cac  acc       21717
Arg Asp Tyr Ile  Arg Asp Cys Val Tyr  Leu Tyr Leu Cys His  Thr
            3950                 3955                 3960

tgg cag acg ggc  atg ggc gtg tgg cag  cag tgc ctg gag gag  cag       21762
Trp Gln Thr Gly  Met Gly Val Trp Gln  Gln Cys Leu Glu Glu  Gln
            3965                 3970                 3975

aac ctg aaa gag  ctc tgc aag ctc ctg  cag aag aac ctc aag  gcc       21807
Asn Leu Lys Glu  Leu Cys Lys Leu Leu  Gln Lys Asn Leu Lys  Ala
            3980                 3985                 3990

ctg tgg acc ggg  ttc gac gag cgc acc  acc gcc tcg gac ctg  gcc       21852
Leu Trp Thr Gly  Phe Asp Glu Arg Thr  Thr Ala Ser Asp Leu  Ala
            3995                 4000                 4005
```

```
gac ctc atc ttc  ccc gag cgc ctg cgg  ctg acg ctg cgc aac  ggg       21897
Asp Leu Ile Phe  Pro Glu Arg Leu Arg  Leu Thr Leu Arg Asn  Gly
            4010                 4015                 4020

ctg ccc gac ttt  atg agc caa agc atg  ttg caa aac ttt cgc  tct       21942
Leu Pro Asp Phe  Met Ser Gln Ser Met  Leu Gln Asn Phe Arg  Ser
            4025                 4030                 4035

ttc atc ctc gaa  cgc tcc ggg atc ctg  ccc gcc acc tgc tcc  gca       21987
Phe Ile Leu Glu  Arg Ser Gly Ile Leu  Pro Ala Thr Cys Ser  Ala
            4040                 4045                 4050

ctg ccc tcg gac  ttc gtg ccg ctg acc  ttc cgc gag tgc ccc  ccg       22032
Leu Pro Ser Asp  Phe Val Pro Leu Thr  Phe Arg Glu Cys Pro  Pro
            4055                 4060                 4065

ccg ctc tgg agc  cac tgc tac ctg ctg  cgc ctg gcc aac tac  ctg       22077
Pro Leu Trp Ser  His Cys Tyr Leu Leu  Arg Leu Ala Asn Tyr  Leu
            4070                 4075                 4080

gcc tac cac tcg  gac gtg atc gag gac  gtc agc ggc gag ggt  ctg       22122
Ala Tyr His Ser  Asp Val Ile Glu Asp  Val Ser Gly Glu Gly  Leu
            4085                 4090                 4095

ctc gag tgc cac  tgc cgc tgc aac ctc  tgc acg ccg cac cgc  tcc       22167
Leu Glu Cys His  Cys Arg Cys Asn Leu  Cys Thr Pro His Arg  Ser
            4100                 4105                 4110

ctg gcc tgc aac  ccc cag ctg ctg agc  gag acc cag atc atc  ggc       22212
Leu Ala Cys Asn  Pro Gln Leu Leu Ser  Glu Thr Gln Ile Ile  Gly
            4115                 4120                 4125

acc ttc gag ttg  caa ggg ccc ggt gac  ggc aag ggg ggt ctg  aaa       22257
Thr Phe Glu Leu  Gln Gly Pro Gly Asp  Gly Lys Gly Gly Leu  Lys
            4130                 4135                 4140

ctc acc ccg ggg  ctg tgg acc tcg gcc  tac ttg cgc aag ttc  gtg       22302
Leu Thr Pro Gly  Leu Trp Thr Ser Ala  Tyr Leu Arg Lys Phe  Val
            4145                 4150                 4155

ccc gag gac tac  cat ccc ttc gag atc  agg ttc tac gag gac  caa       22347
Pro Glu Asp Tyr  His Pro Phe Glu Ile  Arg Phe Tyr Glu Asp  Gln
            4160                 4165                 4170

tcc cag ccg ccc  aag gcc gag ctg tcg  gcc tgc gtc atc acc  cag       22392
Ser Gln Pro Pro  Lys Ala Glu Leu Ser  Ala Cys Val Ile Thr  Gln
            4175                 4180                 4185

ggg gcc atc ctg  gcc caa ttg caa gcc  atc cag aaa tcc cgc  caa       22437
Gly Ala Ile Leu  Ala Gln Leu Gln Ala  Ile Gln Lys Ser Arg  Gln
            4190                 4195                 4200

gaa ttt ctg ctg  aaa aag ggc cac ggg  gtc tac ctg gac ccc  cag       22482
Glu Phe Leu Leu  Lys Lys Gly His Gly  Val Tyr Leu Asp Pro  Gln
            4205                 4210                 4215

acc gga gag gag  ctc aac ccc agc ttc  ccc cag gat gcc ccg  agg       22527
Thr Gly Glu Glu  Leu Asn Pro Ser Phe  Pro Gln Asp Ala Pro  Arg
            4220                 4225                 4230

aag cag caa gaa  gct gaa agt gga gct  gcc gcc gga gga ttt  gga       22572
Lys Gln Gln Glu  Ala Glu Ser Gly Ala  Ala Ala Gly Gly Phe  Gly
            4235                 4240                 4245

gga aga ctg gga  gag cag tca ggc aga  gga gat gga aga ctg  gga       22617
Gly Arg Leu Gly  Glu Gln Ser Gly Arg  Gly Asp Gly Arg Leu  Gly
            4250                 4255                 4260

cag cac tca ggc  aga gga gga cag cct  gca aga cag tct gga  aga       22662
```

```
Gln His Ser Gly  Arg Gly Gly Gln Pro  Ala Arg Gln Ser Gly  Arg
            4265                 4270                 4275

cga ggt gga gga  gga ggc aga gga aga  agc agc cgc cgc cag  acc       22707
Arg Gly Gly Gly  Gly Gly Arg Gly Arg  Ser Ser Arg Arg Gln  Thr
            4280                 4285                 4290

gtc gtc ctc ggc  gga gga gga gaa agc  aag cag cac gga tac  cat       22752
Val Val Leu Gly  Gly Gly Gly Glu Ser  Lys Gln His Gly Tyr  His
            4295                 4300                 4305

ctc cgc tcc ggg  tcr ggg tcg cgg cgg  ccg ggc cca cag taggtgggac     22801
Leu Arg Ser Gly  Xaa Gly Ser Arg Arg  Pro Gly Pro Gln
            4310                 4315

gagaccgggc gcttcccgaa ccccaccacc cagaccggta agaaggagcg gcagggatac    22861

aagtcctggc gggggcacaa aaacgccatc gtctcctgct tgcaagcctg cgggggcaac    22921

atctccttca cccggcgcta cctgctcttc caccgcgggg tgaacttccc ccgcaacatc    22981

ttgcattact accgtcacct ccacagcccc tactactgtt tccaagaaga ggcagaaacc    23041

cagcagcagc agaaaaccag cggcagctag aaaatccaca gcggcggcgg caggtggact    23101

gaggatcgcg gcgaacgagc cggcgcagac ccgggagctg aggaaccgga tctttcccac    23161

cctctatgcc atcttccagc agagtcgggg gcaggagcag gaactgaaag tcaagaaccg    23221

ttctctgcgc tcgctcaccc gcagttgtct gtatcacaag agcgaagacc aacttcagcg    23281

cactctcgag gacgccgagg ctctcttcaa caagtactgc gcgctcactc ttaaagagta    23341

gcccgcgccc gcccacacac ggaaaaaggc gggaattacg tcaccacctg cgcccttcgc    23401

ccgaccatca tc atg  agc aaa gag att ccc  acg cct tac atg tgg  agc     23449
              Met  Ser Lys Glu Ile Pro  Thr Pro Tyr Met Trp  Ser
              4320                 4325                 4330

tac cag ccc cag  atg ggc ctg gcc gcc  ggc gcc gcc cag gac  tac       23494
Tyr Gln Pro Gln  Met Gly Leu Ala Ala  Gly Ala Ala Gln Asp  Tyr
            4335                 4340                 4345

tcc acc cgc atg  aac tgg ctc agt gcc  ggg ccc gcg atg atc  tca       23539
Ser Thr Arg Met  Asn Trp Leu Ser Ala  Gly Pro Ala Met Ile  Ser
            4350                 4355                 4360

cgg gtg aat gac  atc cgc gcc cac cga  aac cag ata ctc cta  gaa       23584
Arg Val Asn Asp  Ile Arg Ala His Arg  Asn Gln Ile Leu Leu  Glu
            4365                 4370                 4375

cag tca gcg atc  acc gcc acg ccc cgc  cat cac ctt aat ccg  cgt       23629
Gln Ser Ala Ile  Thr Ala Thr Pro Arg  His His Leu Asn Pro  Arg
            4380                 4385                 4390

aat tgg ccc gcc  gcc ctg gtg tac cag  gaa att ccc cag ccc  acg       23674
Asn Trp Pro Ala  Ala Leu Val Tyr Gln  Glu Ile Pro Gln Pro  Thr
            4395                 4400                 4405

acc gta cta ctt  ccg cga gac gcc cag  gcc gaa gtc cag ctg  act       23719
Thr Val Leu Leu  Pro Arg Asp Ala Gln  Ala Glu Val Gln Leu  Thr
            4410                 4415                 4420

aac tca ggt gtc  cag ctg gcc ggc ggc  gcc acc ctg tgt cgt  cac       23764
Asn Ser Gly Val  Gln Leu Ala Gly Gly  Ala Thr Leu Cys Arg  His
            4425                 4430                 4435

cgc ccc gct cag  ggt ata aag cgg ctg  gtg atc cga ggc aga  ggc       23809
Arg Pro Ala Gln  Gly Ile Lys Arg Leu  Val Ile Arg Gly Arg  Gly
```

```
            4440                4445                4450

aca cag ctc aac  gac gag gtg gtg agc  tct tcg ctg ggt ctg  cga       23854
Thr Gln Leu Asn  Asp Glu Val Val Ser  Ser Ser Leu Gly Leu  Arg
            4455                4460                4465

cct gac gga gtc  ttc caa ctc gcc gga  tcg ggg aga tct tcc  ttc       23899
Pro Asp Gly Val  Phe Gln Leu Ala Gly  Ser Gly Arg Ser Ser  Phe
            4470                4475                4480

acg cct cgt cag  gcc gtc ctg act ttg  gag agt tcg tcc tca  cag       23944
Thr Pro Arg Gln  Ala Val Leu Thr Leu  Glu Ser Ser Ser Ser  Gln
            4485                4490                4495

ccc cgc tcg ggc  ggc atc ggc act ctc  cag ttc gtg gag gag  ttc       23989
Pro Arg Ser Gly  Gly Ile Gly Thr Leu  Gln Phe Val Glu Glu  Phe
            4500                4505                4510

act ccc tcg gtc  tac ttc aac ccc ttc  tcc ggc tcc ccc ggc  cac       24034
Thr Pro Ser Val  Tyr Phe Asn Pro Phe  Ser Gly Ser Pro Gly  His
            4515                4520                4525

tac ccg gac gag  ttc atc ccg aac ttc  gac gcc atc agc gag  tcg       24079
Tyr Pro Asp Glu  Phe Ile Pro Asn Phe  Asp Ala Ile Ser Glu  Ser
            4530                4535                4540

gtg gac ggc tac  gat tga atg tcc cat ggt  ggc gtg gct gac cta       24124
Val Asp Gly Tyr  Asp     Met Ser His Gly  Gly Val Ala Asp Leu
            4545                    4550                4555

gct cgg ctt cga cac  ctg gac cac tgc cgc  cgc ttc cgc tgc ttc       24169
Ala Arg Leu Arg His  Leu Asp His Cys Arg  Arg Phe Arg Cys Phe
                4560                4565                4570

gct cgg gat ctc gcc  gag ttt gcc tac ttt  gag ctg ccc gag gag       24214
Ala Arg Asp Leu Ala  Glu Phe Ala Tyr Phe  Glu Leu Pro Glu Glu
                4575                4580                4585

cac cct cag ggc ccg  gcc cac gga gtg cgg  atc atc gtc gaa ggg       24259
His Pro Gln Gly Pro  Ala His Gly Val Arg  Ile Ile Val Glu Gly
                4590                4595                4600

ggt ctc gac tcc cac  ctg ctt cgg atc ttc  agc cag cga ccg atc       24304
Gly Leu Asp Ser His  Leu Leu Arg Ile Phe  Ser Gln Arg Pro Ile
                4605                4610                4615

ctg gtc gag cgc gag  caa gga cag acc cgt  ctg acc ctg tac tgc       24349
Leu Val Glu Arg Glu  Gln Gly Gln Thr Arg  Leu Thr Leu Tyr Cys
                4620                4625                4630

atc tgc aac cac ccc  ggc ctg cat gaa agt  ctt tgt tgt ctg ctg       24394
Ile Cys Asn His Pro  Gly Leu His Glu Ser  Leu Cys Cys Leu Leu
                4635                4640                4645

tgt act gag tat aat  aaa agc tgagatcagc gactactccg gactcgattg       24445
Cys Thr Glu Tyr Asn  Lys Ser
                4650

tggtgttcct gctatcaacc agtccctgtt cttcaccggg aacgagaccg agctccagct    24505

ccagtgtaag ccccacaaga agtatctcac ctggctgttc cagggctccc cgatcgccgt    24565

tgtcaaccac tgcgacaacg acggagtcct gctgagcggc cctgccaacc ttacttttc     24625

cacccgcaga agcaagctcc agctcttcca acccttcctc cccgggacct atcagtgcgt    24685

ctcgggaccc tgccatcaca ccttccacct gatcccgaat accacagcgc cgctccccgc    24745

tactaacaac caaactaccc accaacgcca ccgtcgcgac ctttcctctg aatctaatac    24805
```

```
cactaccgga ggtgagctcc gaggtcgacc aacctctggg atttactacg gcccctggga    24865

ggtggtgggg ttaatagcgc taggcctagt tgtgggtggg cttttggctc tctgctacct    24925

atacctccct tgctgttcgt acttagtggt gctgtgttgc tggtttaaga a atg ggg     24982
                                                          Met Gly

cag  atc acc cta gtg agc  tgc ggt gtg ctg gtg  gcg gtg ctt tcg       25027
Gln  Ile Thr Leu Val Ser  Cys Gly Val Leu Val  Ala Val Leu Ser
4655                 4660                 4665

att  gtg gga ctg ggc ggc  gcg gct gta gtg aag  gag gag aag gcc       25072
Ile  Val Gly Leu Gly Gly  Ala Ala Val Val Lys  Glu Glu Lys Ala
4670                 4675                 4680

gat  ccc tgc ttg cat ttc  aat ccc gac aaa tgc  cag ctg agt ttt       25117
Asp  Pro Cys Leu His Phe  Asn Pro Asp Lys Cys  Gln Leu Ser Phe
4685                 4690                 4695

cag  ccc gat ggc aat cgg  tgc gcg gtg ctg atc  aag tgc gga tgg       25162
Gln  Pro Asp Gly Asn Arg  Cys Ala Val Leu Ile  Lys Cys Gly Trp
4700                 4705                 4710

gaa  tgc gag aac gtg aga  atc gag tac aat aac  aag act cgg aac       25207
Glu  Cys Glu Asn Val Arg  Ile Glu Tyr Asn Asn  Lys Thr Arg Asn
4715                 4720                 4725

aat  act ctc gcg tcc gtg  tgg cag ccc ggg gac  ccc gag tgg tac       25252
Asn  Thr Leu Ala Ser Val  Trp Gln Pro Gly Asp  Pro Glu Trp Tyr
4730                 4735                 4740

acc  gtc tct gtc ccc ggt  gct gac ggc tcc ccg  cgc acc gtg aac       25297
Thr  Val Ser Val Pro Gly  Ala Asp Gly Ser Pro  Arg Thr Val Asn
4745                 4750                 4755

aat  act ttc att ttt gcg  cac atg tgc gac acg  gtc atg tgg atg       25342
Asn  Thr Phe Ile Phe Ala  His Met Cys Asp Thr  Val Met Trp Met
4760                 4765                 4770

agc  aag cag tac gat atg  tgg ccc ccc acg aag  gag aac atc gtg       25387
Ser  Lys Gln Tyr Asp Met  Trp Pro Pro Thr Lys  Glu Asn Ile Val
4775                 4780                 4785

gtc  ttc tcc atc gct tac  agc ctg tgc acg gtg  cta atc acc gct       25432
Val  Phe Ser Ile Ala Tyr  Ser Leu Cys Thr Val  Leu Ile Thr Ala
4790                 4795                 4800

atc  gtg tgc ctg agc att  cac atg ctc atc gct  att cgc ccc aga       25477
Ile  Val Cys Leu Ser Ile  His Met Leu Ile Ala  Ile Arg Pro Arg
4805                 4810                 4815

aat  aat gcc gaa aaa gaa  aaa cag cca taacacgttt tttcacacac          25524
Asn  Asn Ala Glu Lys Glu  Lys Gln Pro
4820                 4825

ctttttcaga cc atg gcc  tct gtt aaa ttt ttg  ctt tta ttt gcc agt      25572
             Met Ala  Ser Val Lys Phe Leu  Leu Leu Phe Ala Ser
                 4830                 4835                 4840

ctc att act gtt ata  agt aat gag aaa ctc  act att tac att ggc       25617
Leu Ile Thr Val Ile  Ser Asn Glu Lys Leu  Thr Ile Tyr Ile Gly
               4845                 4850                 4855

act aac cac act cta  gaa gga att cca aaa  tcc tca tgg tat tgc       25662
Thr Asn His Thr Leu  Glu Gly Ile Pro Lys  Ser Ser Trp Tyr Cys
               4860                 4865                 4870
```

```
tat ttt gat caa gat  cca gac tta act ata  gaa ctg tgt ggt aac        25707
Tyr Phe Asp Gln Asp  Pro Asp Leu Thr Ile  Glu Leu Cys Gly Asn
                4875                4880                4885

aat gga caa aat aca  agc att cat tta att  aac ttt aaa tgc gga        25752
Asn Gly Gln Asn Thr  Ser Ile His Leu Ile  Asn Phe Lys Cys Gly
                4890                4895                4900

gac gat ttg aaa tta  att aat atc act aaa  gag tat gga ggt atg        25797
Asp Asp Leu Lys Leu  Ile Asn Ile Thr Lys  Glu Tyr Gly Gly Met
                4905                4910                4915

tat tac tat gtt gca  gaa aat aac aac atg  cag ttt tat gaa gtt        25842
Tyr Tyr Tyr Val Ala  Glu Asn Asn Asn Met  Gln Phe Tyr Glu Val
                4920                4925                4930

act gta act aat ccc  acc aca cct aga aca  aca aca acc acc aca        25887
Thr Val Thr Asn Pro  Thr Thr Pro Arg Thr  Thr Thr Thr Thr Thr
                4935                4940                4945

aaa act aca cct gtt  acc act atg cag ctc  gct acc aat aac att        25932
Lys Thr Thr Pro Val  Thr Thr Met Gln Leu  Ala Thr Asn Asn Ile
                4950                4955                4960

ttt gcc atg cgt caa  atg gtc aac aat agc  act caa ccc acc cca        25977
Phe Ala Met Arg Gln  Met Val Asn Asn Ser  Thr Gln Pro Thr Pro
                4965                4970                4975

ccc agt gag gaa att  ccc aaa tcc atg att  ggc att att gtt gct        26022
Pro Ser Glu Glu Ile  Pro Lys Ser Met Ile  Gly Ile Ile Val Ala
                4980                4985                4990

gta gtg gtg tgc atg  ttg atc atc gcc ttg  tgc atg gtg tac tat        26067
Val Val Val Cys Met  Leu Ile Ile Ala Leu  Cys Met Val Tyr Tyr
                4995                5000                5005

gcc ttc tgc tac aga  aag cac aga ctg aac  gac aag ctg gaa cac        26112
Ala Phe Cys Tyr Arg  Lys His Arg Leu Asn  Asp Lys Leu Glu His
                5010                5015                5020

tta cta agt gtt gaa  ttt taatttttta gaaccatgaa gatcctaggc            26160
Leu Leu Ser Val Glu  Phe
                5025

cttttagttt tttctatcat tacctctgct ctttgtgaat cagtggataa agatgttact    26220

attaccactg gttctaacta tacactgaaa gggccaccct caggtatgct ttcgtggtat    26280

tgctattttg gaaatgacgc agagcaaact gagctttgca atgcaatgaa aggccaaatg    26340

ccaaccacaa aaattaaaca taaatgtgat ggtagtgatc taatactact caatgtcacg    26400

aaagcatatg gtggcagtta ttcatgccct gctgccaaca ctgaggatat gatttttac     26460

aaagtggaag tggttgatcc cactactcca ccacccacca ccacaactac tcacaccaca    26520

cacacagaac aaaccacagc agaggaggca gcaaagttag ccttgcaggt ccaagacagt    26580

tcatttgttg gcattacccc tacacccgat cagcggtgtc cggggctgct cgtcagcggc    26640

attgtcggtg tgctttcggg attagcagtc ataatcatct gcatgttcat ttttgcttgc    26700

tgctatagaa ggctttaccg acaaaaatca gacccactgc tgaacctcta tgtttaattt    26760

tttccagagc c atg aag gca gtt  agc act cta att ttt  tgt tct ttg        26807
            Met Lys Ala Val  Ser Thr Leu Ile Phe  Cys Ser Leu
                        5030                5035

att ggc  act gtt ttt agt gtt  agc ttt ttg aaa caa  att aat gtt        26852
```

```
Ile Gly  Thr Val Phe Ser Val  Ser Phe Leu Lys Gln  Ile Asn Val
    5040                5045                5050

act gag  ggg gaa aat gtg aca  ctg gta ggc gta gaa  ggt gct caa       26897
Thr Glu  Gly Glu Asn Val Thr  Leu Val Gly Val Glu  Gly Ala Gln
    5055                5060                5065

aat acc  acc tgg aca aaa tac  cac ctc gat ggg tgg  aaa gat att       26942
Asn Thr  Thr Trp Thr Lys Tyr  His Leu Asp Gly Trp  Lys Asp Ile
    5070                5075                5080

tgc aat  tgg agt gtc att act  tac aca tgt gag gga  gtt aat ttg       26987
Cys Asn  Trp Ser Val Ile Thr  Tyr Thr Cys Glu Gly  Val Asn Leu
    5085                5090                5095

acc ata  gtc aat gcc agc caa  aat cag aag ggt tgg  att aaa ggg       27032
Thr Ile  Val Asn Ala Ser Gln  Asn Gln Lys Gly Trp  Ile Lys Gly
    5100                5105                5110

caa tct  gtt agt gtt acc agc  cag ggg tac tat acc  cag cat act       27077
Gln Ser  Val Ser Val Thr Ser  Gln Gly Tyr Tyr Thr  Gln His Thr
    5115                5120                5125

ctt att  tat gac att gta gtt  ata ccg ctg cca acg  cct agc cca       27122
Leu Ile  Tyr Asp Ile Val Val  Ile Pro Leu Pro Thr  Pro Ser Pro
    5130                5135                5140

cct agc  acc act aca caa aca  acc cac act aca cag  aca acc aca       27167
Pro Ser  Thr Thr Thr Gln Thr  Thr His Thr Thr Gln  Thr Thr Thr
    5145                5150                5155

tac agt  aca tca aat caa cct  acc acc act aca gca  gca gag gtt       27212
Tyr Ser  Thr Ser Asn Gln Pro  Thr Thr Thr Thr Ala  Ala Glu Val
    5160                5165                5170

gcc agc  tcg tct ggg gtc cga  gtg gca ttt ttg tta  ttg gcc cca       27257
Ala Ser  Ser Ser Gly Val Arg  Val Ala Phe Leu Leu  Leu Ala Pro
    5175                5180                5185

tct agc  agt ccc act gct agt  acc aat gag cag act  act gat ttt       27302
Ser Ser  Ser Pro Thr Ala Ser  Thr Asn Glu Gln Thr  Thr Asp Phe
    5190                5195                5200

ttg tcc  act gtc gag agc cac  acc aca gct acc tcg  agt gcc ttc       27347
Leu Ser  Thr Val Glu Ser His  Thr Thr Ala Thr Ser  Ser Ala Phe
    5205                5210                5215

tct agc  acc gcc aat ctc tcc  tcg ctt tcc tct aca  cca atc agt       27392
Ser Ser  Thr Ala Asn Leu Ser  Ser Leu Ser Ser Thr  Pro Ile Ser
    5220                5225                5230

ccc gct  act act cct agc ccc  gct cct ctt ccc act  ccc ctg aag       27437
Pro Ala  Thr Thr Pro Ser Pro  Ala Pro Leu Pro Thr  Pro Leu Lys
    5235                5240                5245

caa aca  gac ggc ggc atg caa  tgg cag atc acc ctg  ctc att gtg       27482
Gln Thr  Asp Gly Gly Met Gln  Trp Gln Ile Thr Leu  Leu Ile Val
    5250                5255                5260

atc ggg  ttg gtc atc ctg gcc  gtg ttg ctc tac tac  atc ttc tgc       27527
Ile Gly  Leu Val Ile Leu Ala  Val Leu Leu Tyr Tyr  Ile Phe Cys
    5265                5270                5275

cgc cgc  att ccc aac gcg cac  cgc aag ccg gcc tac  aag ccc atc       27572
Arg Arg  Ile Pro Asn Ala His  Arg Lys Pro Ala Tyr  Lys Pro Ile
    5280                5285                5290

gtt atc  ggg cag ccg gag ccg  ctt cag gtg gaa ggg  ggt cta agg       27617
Val Ile  Gly Gln Pro Glu Pro  Leu Gln Val Glu Gly  Gly Leu Arg
```

```
    5295                5300                5305

aat ctt  ctc ttc tct ttt aca  gta tgg tgattgaact atgattccta          27664
Asn Leu  Leu Phe Ser Phe Thr  Val Trp
    5310                5315

gacaattctt gatcactatt cttatctgcc tcctccaagt ctgtgccacc ctcgctctgg    27724

tggccaacgc cagtccagac tgtattgggc ccttcgcctc ctacgtgctc tttgccttcg    27784

tcacctgcat ctgctgctgt agcatagtct gcctgcttat caccttcttc cagttcattg    27844

actggatctt tgtgcgcatc gcctacctgc gccaccaccc ccagtaccgc gaccagcgag    27904

tggcgcggct gctcaggctc ctctgataag c atg cgg gct  ctg cta ctt ctc      27956
                                  Met Arg Ala  Leu Leu Leu Leu
                                             5320

gcg  ctt ctg ctg tta gtg  ctc ccc cgt ccc gtc  gac ccc cgg tcc       28001
Ala  Leu Leu Leu Leu Val  Leu Pro Arg Pro Val  Asp Pro Arg Ser
5325                5330                5335

ccc  act cag tcc ccc gag  gag gtc cgc aaa tgc  aaa ttc caa gaa       28046
Pro  Thr Gln Ser Pro Glu  Glu Val Arg Lys Cys  Lys Phe Gln Glu
5340                5345                5350

ccc  tgg aaa ttc ctc aaa  tgc tac cgc caa aaa  tca gac atg cat       28091
Pro  Trp Lys Phe Leu Lys  Cys Tyr Arg Gln Lys  Ser Asp Met His
5355                5360                5365

ccc  agc tgg atc atg atc  att ggg atc gtg aac  att ctg gcc tgc       28136
Pro  Ser Trp Ile Met Ile  Ile Gly Ile Val Asn  Ile Leu Ala Cys
5370                5375                5380

acc  ctc atc tcc ttt gtg  att tac ccc tac ttt  gac ttt ggt tgg       28181
Thr  Leu Ile Ser Phe Val  Ile Tyr Pro Tyr Phe  Asp Phe Gly Trp
5385                5390                5395

aac  tcg cca gag gcg ctc  tat ctc ccg cct gaa  cct gac aca cca       28226
Asn  Ser Pro Glu Ala Leu  Tyr Leu Pro Pro Glu  Pro Asp Thr Pro
5400                5405                5410

cca  cag caa cct cag gca  cac gca cta cca cca  cca cag cct agg       28271
Pro  Gln Gln Pro Gln Ala  His Ala Leu Pro Pro  Pro Gln Pro Arg
5415                5420                5425

cca  caa tac atg ccc ata  tta gac tat gag gcc  gag cca cag cga       28316
Pro  Gln Tyr Met Pro Ile  Leu Asp Tyr Glu Ala  Glu Pro Gln Arg
5430                5435                5440

ccc  atg ctc ccc gct att  agt tac ttc aat cta  acc ggc gga gat       28361
Pro  Met Leu Pro Ala Ile  Ser Tyr Phe Asn Leu  Thr Gly Gly Asp
5445                5450                5455

gac  tgacccactg gccaacaaca acgtcaacga ccttctcctg gacatggacg          28414
Asp
5460

gccgcgcctc ggagcagcga ctcgcccaac ttcgcattcg ccagcagcag gagagagccg    28474

tcaaggagct gcaggacggc atagccatcc accagtgcaa gaaaggcatc ttctgcctgg    28534

tgaaacaggc caagatctcc tacgaggtca cccagaccga ccatcgcctc tcctacgagc    28594

tcctgcagca gcgccagaag ttcacctgcc tggtcggagt caaccccatc gtcatcaccc    28654

agcagtcggg agataccaag gggtgcatcc actgctcctg cgactccccc gactgcgtcc    28714

acactctgat caagaccctc tgcggcctcc gcgacctcct ccccatgaac taatcacccc    28774
```

```
cttatccagt gaaataaaga tcatattgat gattaaataa aaaaaataat catttgattt    28834

gaaataaaga tacaatcata ttgatgattt gagtttaata aaaataaaga atcacttact    28894

tgaaatctga taccaggtct ctgtccatgt tttctgccaa caccacttca ctcccctctt    28954

cccagctctg gtactgcagg ccccggcggg ctgcaaactt cctccacacc ctgaagggga    29014

tgtcaaattc ctcctgtccc tcaatcttca ttttatcttc tatcag atg tcc aaa       29069
                                                  Met Ser Lys

aag cgc  gtc cgg gtg gat gat  gac ttc gac ccc gtc  tac ccc tac       29114
Lys Arg  Val Arg Val Asp Asp  Asp Phe Asp Pro Val  Tyr Pro Tyr
    5465                 5470                 5475

gat gca  gac aac gca ccg acc  gtg ccc ttc atc aac  ccc ccc ttc       29159
Asp Ala  Asp Asn Ala Pro Thr  Val Pro Phe Ile Asn  Pro Pro Phe
    5480                 5485                 5490

gtc tct  tca gat gga ttc caa  gag aag ccc ctg ggg  gtg ttg tcc       29204
Val Ser  Ser Asp Gly Phe Gln  Glu Lys Pro Leu Gly  Val Leu Ser
    5495                 5500                 5505

ctg cga  ctg gcc gac ccc gtc  acc acc aag aac ggg  gaa atc acc       29249
Leu Arg  Leu Ala Asp Pro Val  Thr Thr Lys Asn Gly  Glu Ile Thr
    5510                 5515                 5520

ctc aag  ctg gga gag ggg gtg  gac ctc gac gac tcg  gga aaa ctc       29294
Leu Lys  Leu Gly Glu Gly Val  Asp Leu Asp Asp Ser  Gly Lys Leu
    5525                 5530                 5535

atc tcc  aaa aat gcc acc aag  gcc act gcc cct ctc  agt att tcc       29339
Ile Ser  Lys Asn Ala Thr Lys  Ala Thr Ala Pro Leu  Ser Ile Ser
    5540                 5545                 5550

aac agc  acc att tcc ctt aac  atg gat gcc cct ctt  tac aac aac       29384
Asn Ser  Thr Ile Ser Leu Asn  Met Asp Ala Pro Leu  Tyr Asn Asn
    5555                 5560                 5565

aat gga  aag tta ggc ata aga  ata gga gca cct cta  aag gta gta       29429
Asn Gly  Lys Leu Gly Ile Arg  Ile Gly Ala Pro Leu  Lys Val Val
    5570                 5575                 5580

gac tta  cta aac act tta gct  gta gcc tat gga tcg  ggt cta ggt       29474
Asp Leu  Leu Asn Thr Leu Ala  Val Ala Tyr Gly Ser  Gly Leu Gly
    5585                 5590                 5595

ctc aag  aat aat gcc ctt aca  gtt cag tta gtt tct  cca ctc act       29519
Leu Lys  Asn Asn Ala Leu Thr  Val Gln Leu Val Ser  Pro Leu Thr
    5600                 5605                 5610

ttt gat  aac aaa ggc aat gta  aaa att aam tta ggg  aaa ggc cca       29564
Phe Asp  Asn Lys Gly Asn Val  Lys Ile Xaa Leu Gly  Lys Gly Pro
    5615                 5620                 5625

tta aca  gtt gcg gca aac cga  ctg agt gtt acc tgc  aaa aga ggt       29609
Leu Thr  Val Ala Ala Asn Arg  Leu Ser Val Thr Cys  Lys Arg Gly
    5630                 5635                 5640

tta tat  gtc act act aca gga  gat gca ctc gaa agc  aac ata agc       29654
Leu Tyr  Val Thr Thr Thr Gly  Asp Ala Leu Glu Ser  Asn Ile Ser
    5645                 5650                 5655

tgg gct  aaa ggt ata aga ttt  gaa gga aat gca ata  gca gca aat       29699
Trp Ala  Lys Gly Ile Arg Phe  Glu Gly Asn Ala Ile  Ala Ala Asn
    5660                 5665                 5670
```

```
att ggc  aaa ggg ctt gaa ttt  ggt act act agt tca  gag tca gat       29744
Ile Gly  Lys Gly Leu Glu Phe  Gly Thr Thr Ser Ser  Glu Ser Asp
    5675                 5680                 5685

gtc agc  aat gct tat cct atc  caa gta aaa cta ggt  act ggt ctc       29789
Val Ser  Asn Ala Tyr Pro Ile  Gln Val Lys Leu Gly  Thr Gly Leu
    5690                 5695                 5700

acc ttt  gac agc aca ggt gcc  att gtt gct tgg aac  aaa gag gat       29834
Thr Phe  Asp Ser Thr Gly Ala  Ile Val Ala Trp Asn  Lys Glu Asp
    5705                 5710                 5715

gac aag  ctt aca ttg tgg acc  aca gcc gac cca tcg  cca aat tgc       29879
Asp Lys  Leu Thr Leu Trp Thr  Thr Ala Asp Pro Ser  Pro Asn Cys
    5720                 5725                 5730

aaa ata  tac tct gaa aag gat  gca aaa ctt aca ctt  tgc ttg aca       29924
Lys Ile  Tyr Ser Glu Lys Asp  Ala Lys Leu Thr Leu  Cys Leu Thr
    5735                 5740                 5745

aag tgt  ggt agt caa ata ttg  ggc act gtg aca gta  ttg gct gtt       29969
Lys Cys  Gly Ser Gln Ile Leu  Gly Thr Val Thr Val  Leu Ala Val
    5750                 5755                 5760

aac aat  ggg agc tta aac ccc  att aca aac aca gtg  agc act gca       30014
Asn Asn  Gly Ser Leu Asn Pro  Ile Thr Asn Thr Val  Ser Thr Ala
    5765                 5770                 5775

att gta  tat ctc aag ttt gat  gct aat gga gtc ttg  cta agc aac       30059
Ile Val  Tyr Leu Lys Phe Asp  Ala Asn Gly Val Leu  Leu Ser Asn
    5780                 5785                 5790

tca aca  cta aac aaa gaa tat  tgg aat ttc aga aag  gga gat gtt       30104
Ser Thr  Leu Asn Lys Glu Tyr  Trp Asn Phe Arg Lys  Gly Asp Val
    5795                 5800                 5805

aca cct  gcc gaa gca tac act  aat gct ata ggt ttt  atg cct aac       30149
Thr Pro  Ala Glu Ala Tyr Thr  Asn Ala Ile Gly Phe  Met Pro Asn
    5810                 5815                 5820

ata aag  gcc tat cct aaa aac  aca tct gca gct tca  aaa agt cat       30194
Ile Lys  Ala Tyr Pro Lys Asn  Thr Ser Ala Ala Ser  Lys Ser His
    5825                 5830                 5835

att gtt  ggc caa gtt tac cta  aat gga gat gaa acc  aaa cct ctt       30239
Ile Val  Gly Gln Val Tyr Leu  Asn Gly Asp Glu Thr  Lys Pro Leu
    5840                 5845                 5850

atg cta  att atc aca ttt aat  gaa act gat gat gca  acc tgc acc       30284
Met Leu  Ile Ile Thr Phe Asn  Glu Thr Asp Asp Ala  Thr Cys Thr
    5855                 5860                 5865

tac tgc  att act ttt caa tgg  aaa tgg gat aat agt  aag tac aca       30329
Tyr Cys  Ile Thr Phe Gln Trp  Lys Trp Asp Asn Ser  Lys Tyr Thr
    5870                 5875                 5880

ggt gaa  aca ctt gca acc agc  tcc ttt ccc ttc tcc  tac att gcc       30374
Gly Glu  Thr Leu Ala Thr Ser  Ser Phe Pro Phe Ser  Tyr Ile Ala
    5885                 5890                 5895

caa gaa  taaaccaccc tgcatgacac cccttgtccc actgctctac aatggaaaac      30430
Gln Glu
    5900

tctgaagcag aaaaataaag ttcaagtgtt ttattgattc aacagtttta caggactcga    30490

gcagttattt ttcctccacc ctcccaggac atggaataca ccacctctc cccccgcaca     30550

gccttgaaca tctgaatgtc attggtgatg gacatgcttt tggtctccac gttccacaca    30610
```

gtttcagagc gagccagtct cgggtcggtc agggagatga aaccctccgg gcactcccgc 30670
atctgcacct cacagctcaa cagctgagga ttgtcctcgg tggtcgggat cacggttatc 30730
tggaagaagc agaagagcgg cggtgggaat catagtccgc gaacgggatc ggccggtggt 30790
gtcgcatcag gccccgcagc agtcgctgtc gccgccgctc cgtcaaactg ctgctcaggg 30850
ggtccgggtc cagggactcc ctcagcatga tgcccacggc cctcagcatc agtcgcctgg 30910
tgcggcgggc gcagcagcgc atgcggatct cgctcaggtc gctgcagtac gtgcaacaca 30970
ggaccaccag gttgttcaac agtccatagt tcaacacgct ccagccgaaa ctcatcgcgg 31030
gaaggatgct acccacgtgg ccgtcgtacc agatcctcag gtaaatcaag tggcgctccc 31090
tccagaacac gctgcccaca tacatgatct ccttgggcat gtggcggttc accacctccc 31150
ggtaccacat caccctctgg ttgaacatgc agccccggat gatcctgcgg aaccacaggg 31210
ccagcaccgc cccgcccgcc atgcagcgaa gagaccccgg gtcccggcaa tggcaatgga 31270
ggacccaccg ctcgtacccg tggatcatct gggagctgaa caagtctatg ttggcacagc 31330
acaggcacac gctcatgcat ctcttcagca ctctcagctc ctcgggggtc aaaaccatat 31390
cccagggcac ggggaactct tgcaggacag cgaaccccgc agaacagggc aatcctcgca 31450
cataacttac attgtgcatg gacagggtat cgcaatcagg cagcaccggg tgatcctcca 31510
ccagagaagc gcgggtctcg gtttcctcac agcgtggtaa gggggccggc cgatacgggt 31570
gatggcggga cgcggctgat cgtgttctcg accgtgtcat gatgcagttg ctttcggaca 31630
ttttcgtact tgctgtagca gaacctggtc cgggcgctgc acaccgatcg ccggcggcgg 31690
tctcggcgct tggaacgctc ggtgttgaaa ttgtaaaaca gccactctct cagaccgtgc 31750
agcagatcta gggcctcagg agtgatgaag atcccatcat gcctgatggc tctgatcaca 31810
tcgaccaccg tggaatgggc cagacccagc cagatgatgc aattttgttg ggtttcggtg 31870
acggcggggg agggaagaac aggaagaacc atgattaact tttaatccaa acggtctcgg 31930
agcacttcaa aatgaaggtc gcggagatgg cacctctcgc ccccgctgtg ttggtggaaa 31990
ataacagcca ggtcaaaggt gatacggttc tcgagatgtt ccacggtggc ttccagcaaa 32050
gcctccacgc gcacatccag aaacaagaca atagcgaaag cgggagggtt ctctaattcc 32110
tcaatcatca tgttacactc ctgcaccatc cccagataat tttcattttt ccagccttga 32170
atgattcgaa ctagttcctg aggtaaatcc aagccagcca tgataaagag ctcgcgcaga 32230
gcgccctcca ccggcattct taagcacacc ctcataattc caagatattc tgctcctggt 32290
tcacctgcag cagattgaca agcggaatat caaaatctct gccgcgatcc ctgagctcct 32350
ccctcagcaa taactgtaag tactctttca tatcctctcc aaaatttta gccataggac 32410
caccaggaat aagattagga caagccacag tacagataaa ccgaagtcct ccccagtgag 32470
cattgccaaa tgcaagactg ctataagcat gctggctaga cccggtgata tcttccagat 32530
aactggacag aaaatcgccc aggcaatttt taagaaaatc aacaaaagaa aaatcctcca 32590
ggtgcacgtt tagagcctcg ggaacaacga tggagtaaat gcaagcggtg cgttccagca 32650

tggttagtta gctgatctgt agaaaaaaca aaaatgaaca ttaaaccatg ctagcctggc 32710

gaacaggtgg gtaaatcgtt ctctccagca ccaggcaggc cacggggtct ccggcgcgac 32770

cctcgtaaaa attgtcgcta tgattgaaaa ccatcacaga gagacgttcc cggtggccgg 32830

cgtggatgat tcgacaagat gaatacaccc ccggaacatt ggcgtccgcg agtgaaaaaa 32890

agcgcccaag gaagcaataa ggcactacaa tgctcagtct caagtccagc aaagcgatgc 32950

catgcggatg aagcacaaaa ttctcaggtg cgtacaaaat gtaattactc ccctcctgca 33010

caggcagcaa agcccccgat ccctccagat acacatacaa agcctcagcg tccatagctt 33070

accgagcagc agcacacaac aggcgcaaga gtcagagaaa ggctgagctc taacctgtcc 33130

acccgctctc tgctcaatat atagcccaga tctacactga cgtaaaggcc aaagtctaaa 33190

aatacccgcc aaataatcac acacgcccaa cacacgccca gaaaccggtg acacactcag 33250

aaaaatacgc gcacttcctc aaacgcccaa actgccgtca tttccgggtt cccacgctac 33310

gtcatcagaa ttcgactttc aaattccgtc gaccgttaaa aacgtcaccc gccccgcccc 33370

taacggtcgc cgctcccgca gccaatcaca gccccgcagc cccaaattca aacgcctcat 33430

ttgcatatta acacgcacaa aaagtttgag gtatattatt gatgatgtaa gctagatatc 33490

gtttaaacta tgcggtgtga aataccgcac agatgcgtaa ggagaaaata ccgcatcagg 33550

cgctcttccg cttcctcgct cactgactcg ctgcgctcgg tcgttcggct gcggcgagcg 33610

gtatcagctc actcaaaggc ggtaatacgg ttatccacag aatcagggga taacgcagga 33670

aagaacatgt gagcaaaagg ccagcaaaag gccaggaacc gtaaaaaggc cgcgttgctg 33730

gcgtttttcc ataggctccg ccccccctgac gagcatcaca aaaatcgacg ctcaagtcag 33790

aggtggcgaa acccgacagg actataaaga taccaggcgt ttcccccctgg aagctccctc 33850

gtgcgctctc ctgttccgac cctgccgctt accggatacc tgtccgcctt tctcccttcg 33910

ggaagcgtgg cgctttctca tagctcacgc tgtaggtatc tcagttcggt gtaggtcgtt 33970

cgctccaagc tgggctgtgt gcacgaaccc cccgttcagc ccgaccgctg cgccttatcc 34030

ggtaactatc gtcttgagtc caacccggta agacacgact tatcgccact ggcagcagcc 34090

actggtaaca ggattagcag agcgaggtat gtaggcggtg ctacagagtt cttgaagtgg 34150

tggcctaact acggctacac tagaaggaca gtatttggta tctgcgctct gctgaagcca 34210

gttaccttcg gaaaaagagt tggtagctct tgatccggca aacaaaccac cgctggtagc 34270

ggtggttttt ttgtttgcaa gcagcagatt acgcgcagaa aaaaaggatc tcaagaagat 34330

cctttgatct tttctacggg gtctgacgct cagtggaacg aaaactcacg ttaagggatt 34390

ttggtcatga gattatcaaa aaggatcttc acctagatcc ttttaaatta aaaatgaagt 34450

tttaaatcaa tctaaagtat atatgagtaa acttggtctg acagttacca atgcttaatc 34510

agtgaggcac ctatctcagc gatctgtcta tttcgttcat ccatagttgc ctgactcccc 34570

gtcgtgtaga taactacgat acgggagggc ttaccatctg gccccagtgc tgcaatgata 34630

ccgcgagacc cacgctcacc ggctccagat ttatcagcaa taaaccagcc agccggaagg 34690

gccgagcgca gaagtggtcc tgcaacttta tccgcctcca tccagtctat taattgttgc 34750

cgggaagcta gagtaagtag ttcgccagtt aatagtttgc gcaacgttgt tgccattgct 34810
gcaggcatcg tggtgtcacg ctcgtcgttt ggtatggctt cattcagctc cggttcccaa 34870
cgatcaaggc gagttacatg atcccccatg ttgtgcaaaa aagcggttag ctccttcggt 34930
cctccgatcg ttgtcagaag taagttggcc gcagtgttat cactcatggt tatggcagca 34990
ctgcataatt ctcttactgt catgccatcc gtaagatgct tttctgtgac tggtgagtac 35050
tcaaccaagt cattctgaga atagtgtatg cggcgaccga gttgctcttg cccggcgtca 35110
acacgggata ataccgcgcc acatagcaga actttaaaag tgctcatcat tggaaaacgt 35170
tcttcggggc gaaaactctc aaggatctta ccgctgttga gatccagttc gatgtaaccc 35230
actcgtgcac ccaactgatc ttcagcatct tttactttca ccagcgtttc tgggtgagca 35290
aaaacaggaa ggcaaaatgc cgcaaaaaag ggaataaggg cgacacggaa atgttgaata 35350
ctcatactct tccttttca atattattga agcatttatc agggttattg tctcatgagc 35410
ggatacatat ttgaatgtat ttagaaaaat aaacaaatag gggttccgcg cacatttccc 35470
cgaaaagtgc cacctgacgt ctaagaaacc attattatca tgacattaac ctataaaaat 35530
aggcgtatca cgaggccctt tcgtcttcaa gaattgttta aactaccatc atcaataata 35590
tacctcaaac tttttgtgcg tgttaatatg caaatgaggc gtttgaattt ggggctgcgg 35650
ggctgtgatt ggctgcggga gcggcgaccg ttaggggcgg ggcgggtgac gtttcgatga 35710
cgtgacgtga ggcggagccg gtttgcaagt tctcgtggga aaagtgacgt caaacgaggt 35770
gtggtttgaa cacggaaata ctcaattttc ccgcgctctc tgacaggaaa tgaggtgttt 35830
ctgggcggat gcaagtgaaa acgggccatt ttcgcgcgaa aactaaatga ggaagtgaaa 35890
atctgagtaa ttccgcgttt atggcaggga ggagtatttg ccgagggccg agtagacttt 35950
gaccgattac gtgggggttt cgattaccgt atttttcacc taaatttccg cgtacggtgt 36010
caaagtccgg tgtttttacg ggctgcagga attcgatatc atttccccga aaagtgccac 36070
ctgacgtaac tataacggtc ctaaggtagc gaaagctcag atctggatct cccgatcccc 36130
tatggcgact ctcagtacaa tctgctctga tgccgcatag ttaagccagt atctgctccc 36190
tgcttgtgtg ttggaggtcg ctgagtagtg cgcgagcaaa atttaagcta caacaaggca 36250
aggcttgacc gacaattgca tgaagaatct gcttagggtt aggcgttttg cgctgcttcg 36310
cgatgtacgg gccagatata cgcgttgaca ttgattattg actagttatt aatagtaatc 36370
aattacgggg tcattagttc atagcccata tatggagttc cgcgttacat aacttacggt 36430
aaatggcccg cctggctgac cgcccaacga cccccgccca ttgacgtcaa taatgacgta 36490
tgttcccata gtaacgccaa tagggacttt ccattgacgt caatgggtgg actatttacg 36550
gtaaactgcc cacttggcag tacatcaagt gtatcatatg ccaagtacgc cccctattga 36610
cgtcaatgac ggtaaatggc ccgcctggca ttatgcccag tacatgacct tatgggactt 36670
tcctacttgg cagtacatct acgtattagt catcgctatt accatggtga tgcggttttg 36730
gcagtacatc aatgggcgtg gatagcggtt tgactcacgg ggatttccaa gtctccaccc 36790

```
cattgacgtc aatgggagtt tgttttggca ccaaaatcaa cgggactttc caaaatgtcg    36850

taacaactcc gccccattga cgcaaatggg cggtaggcgt gtacggtggg aggtctatat    36910

aagcagagct cgtttagtga accgtcagat cgcctggaga cgccatccac gctgttttga    36970

cctccataga agacaccggg accgatccag cctccgcggg cgcgcgtcga cagagag       37027

atg ggt gcg aga gcg  tca gta tta agc ggg  gga gaa tta gat cga         37072
Met Gly Ala Arg Ala  Ser Val Leu Ser Gly  Gly Glu Leu Asp Arg
                5905                5910                5915

tgg gaa aaa att cgg  tta agg cca ggg gga  aag aag aag tac aag         37117
Trp Glu Lys Ile Arg  Leu Arg Pro Gly Gly  Lys Lys Lys Tyr Lys
                5920                5925                5930

cta aag cac atc gta  tgg gca agc agg gag  cta gaa cga ttc gca         37162
Leu Lys His Ile Val  Trp Ala Ser Arg Glu  Leu Glu Arg Phe Ala
                5935                5940                5945

gtt aat cct ggc ctg  tta gaa aca tca gaa  ggc tgt aga caa ata         37207
Val Asn Pro Gly Leu  Leu Glu Thr Ser Glu  Gly Cys Arg Gln Ile
                5950                5955                5960

ctg gga cag cta caa  cca tcc ctt cag aca  gga tca gag gag ctt         37252
Leu Gly Gln Leu Gln  Pro Ser Leu Gln Thr  Gly Ser Glu Glu Leu
                5965                5970                5975

cga tca cta tac aac  aca gta gca acc ctc  tat tgt gtg cac cag         37297
Arg Ser Leu Tyr Asn  Thr Val Ala Thr Leu  Tyr Cys Val His Gln
                5980                5985                5990

cgg atc gag atc aag  gac acc aag gaa gct  tta gac aag ata gag         37342
Arg Ile Glu Ile Lys  Asp Thr Lys Glu Ala  Leu Asp Lys Ile Glu
                5995                6000                6005

gaa gag caa aac aag  tcc aag aag aag gcc  cag cag gca gca gct         37387
Glu Glu Gln Asn Lys  Ser Lys Lys Lys Ala  Gln Gln Ala Ala Ala
                6010                6015                6020

gac aca gga cac agc  aat cag gtc agc caa  aat tac cct ata gtg         37432
Asp Thr Gly His Ser  Asn Gln Val Ser Gln  Asn Tyr Pro Ile Val
                6025                6030                6035

cag aac atc cag ggg  caa atg gta cat cag  gcc ata tca cct aga         37477
Gln Asn Ile Gln Gly  Gln Met Val His Gln  Ala Ile Ser Pro Arg
                6040                6045                6050

act tta aat gca tgg  gta aaa gta gta gaa  gag aag gct ttc agc         37522
Thr Leu Asn Ala Trp  Val Lys Val Val Glu  Glu Lys Ala Phe Ser
                6055                6060                6065

cca gaa gtg ata ccc  atg ttt tca gca tta  tca gaa gga gcc acc         37567
Pro Glu Val Ile Pro  Met Phe Ser Ala Leu  Ser Glu Gly Ala Thr
                6070                6075                6080

cca cag gac ctg aac  acg atg ttg aac acc  gtg ggg gga cat caa         37612
Pro Gln Asp Leu Asn  Thr Met Leu Asn Thr  Val Gly Gly His Gln
                6085                6090                6095

gca gcc atg caa atg  tta aaa gag acc atc  aat gag gaa gct gca         37657
Ala Ala Met Gln Met  Leu Lys Glu Thr Ile  Asn Glu Glu Ala Ala
                6100                6105                6110

gat tgg gat aga gtg  cat cca gtg cat gca  ggg cct att gca cca         37702
Asp Trp Asp Arg Val  His Pro Val His Ala  Gly Pro Ile Ala Pro
                6115                6120                6125

ggc cag atg aga gaa  cca agg gga agt gac  ata gca gga act act         37747
```

```
Gly Gln Met Arg Glu  Pro Arg Gly Ser Asp  Ile Ala Gly Thr Thr
                6130                6135                6140

agt acc ctt cag gaa  caa ata gga tgg atg  aca aat aat cca cct        37792
Ser Thr Leu Gln Glu  Gln Ile Gly Trp Met  Thr Asn Asn Pro Pro
                6145                6150                6155

atc cca gta gga gag  atc tac aag agg tgg  ata atc ctg gga ttg        37837
Ile Pro Val Gly Glu  Ile Tyr Lys Arg Trp  Ile Ile Leu Gly Leu
                6160                6165                6170

aac aag atc gtg agg  atg tat agc cct acc  agc att ctg gac ata        37882
Asn Lys Ile Val Arg  Met Tyr Ser Pro Thr  Ser Ile Leu Asp Ile
                6175                6180                6185

aga caa gga cca aag  gaa ccc ttt aga gac  tat gta gac cgg ttc        37927
Arg Gln Gly Pro Lys  Glu Pro Phe Arg Asp  Tyr Val Asp Arg Phe
                6190                6195                6200

tat aaa act cta aga  gct gag caa gct tca  cag gag gta aaa aat        37972
Tyr Lys Thr Leu Arg  Ala Glu Gln Ala Ser  Gln Glu Val Lys Asn
                6205                6210                6215

tgg atg aca gaa acc  ttg ttg gtc caa aat  gcg aac cca gat tgt        38017
Trp Met Thr Glu Thr  Leu Leu Val Gln Asn  Ala Asn Pro Asp Cys
                6220                6225                6230

aag acc atc ctg aag  gct ctc ggc cca gcg  gct aca cta gaa gaa        38062
Lys Thr Ile Leu Lys  Ala Leu Gly Pro Ala  Ala Thr Leu Glu Glu
                6235                6240                6245

atg atg aca gca tgt  cag gga gta gga gga  ccc ggc cat aag gca        38107
Met Met Thr Ala Cys  Gln Gly Val Gly Gly  Pro Gly His Lys Ala
                6250                6255                6260

aga gtt ttg tag ggatccacta gttctagact cgaggggggg cccggtacct         38159
Arg Val Leu

ttaagaccaa tgacttacaa ggcagctgta gatcttagcc acttttaaa agaaaagggg    38219

ggactggaag ggctaattca ctcccaaaga agacaagata aaccgctgat cagcctcgac    38279

tgtgccttct agttgccagc catctgttgt ttgcccctcc cccgtgcctt ccttgaccct    38339

ggaaggtgcc actcccactg tcctttccta ataaaatgag gaaattgcat cgcattgtct    38399

gagtaggtgt cattctattc tgggggggtgg ggtggggcag gacagcaagg gggaggattg    38459

ggaagacaat agcaggcatg ctggggatgc ggtgggctct atggcttctg aggcggaaag    38519

aaccagcaga tctgcagatc tgaattcatc tatgtcgggt gc                       38561


<210>  105
<211>  393
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  105

Met His Pro Val Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln
1               5                  10                  15


Gln Gln Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln
```

```
            20                  25                  30

Gln Gln Leu Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly
        35                  40                  45

Gln Ser Tyr Asp His Gln Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala
    50                  55                  60

Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys
65                  70                  75                  80

Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp
                85                  90                  95

Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ser Arg Phe His Ala
            100                 105                 110

Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp
        115                 120                 125

Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala
    130                 135                 140

His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys
145                 150                 155                 160

Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu
                165                 170                 175

Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu
            180                 185                 190

Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln
        195                 200                 205

Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Thr Phe Arg Glu
    210                 215                 220

Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu
225                 230                 235                 240

Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu
                245                 250                 255

Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys
            260                 265                 270

Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys
        275                 280                 285

Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu
    290                 295                 300
```

Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg
305 310 315 320

Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met
325 330 335

His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser
340 345 350

Tyr Phe Asp Met Gly Ala Asp Leu Arg Trp Gln Pro Ser Arg Arg Ala
355 360 365

Leu Glu Ala Ala Gly Gly Val Pro Tyr Val Glu Glu Val Asp Asp Glu
370 375 380

Glu Glu Glu Gly Glu Tyr Leu Glu Asp
385 390

<210> 106
<211> 586
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 106

Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu
1 5 10 15

Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala
20 25 30

Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg
35 40 45

Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val
50 55 60

Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn
65 70 75 80

Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val
85 90 95

Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val
100 105 110

Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser
115 120 125

Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala

```
    130                 135                 140

Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln
145                 150                 155                 160

Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu
                165                 170                 175

Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln
            180                 185                 190

Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys
        195                 200                 205

Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala
    210                 215                 220

Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu
225                 230                 235                 240

Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu
                245                 250                 255

Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val
            260                 265                 270

Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly
        275                 280                 285

Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr
    290                 295                 300

Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu
305                 310                 315                 320

Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met
                325                 330                 335

Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn
            340                 345                 350

Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu
        355                 360                 365

Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr
    370                 375                 380

Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr
385                 390                 395                 400

Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp
                405                 410                 415
```

```
Val Asp Ser Ser Val Phe Ser Pro Arg Pro Thr Thr Thr Val Trp Lys
            420                 425                 430

Lys Glu Gly Gly Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly Arg Ala
        435                 440                 445

Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro Ser Leu
    450                 455                 460

Pro Phe Ser Leu Asn Ser Val Arg Ser Ser Glu Leu Gly Arg Leu Thr
465                 470                 475                 480

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

Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu Ser Leu
            500                 505                 510

Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala His Glu His Arg Asp
        515                 520                 525

Glu Pro Arg Ala Ser Ser Ser Thr Gly Ala Arg Arg Arg Gln Arg His
    530                 535                 540

Asp Arg Gln Arg Gly Leu Val Trp Asp Asp Glu Asp Ser Ala Asp Asp
545                 550                 555                 560

Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe Ala
                565                 570                 575

His Leu Arg Pro Arg Ile Gly Arg Leu Met
            580                 585


<210>  107
<211>  528
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  107

Met Met Arg Arg Val Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1               5                   10                  15

Val Met Gln Gln Ala Val Ala Ala Ala Met Gln Pro Pro Leu Glu Ala
            20                  25                  30

Pro Tyr Val Pro Pro Arg Tyr Leu Ala Pro Thr Glu Gly Arg Asn Ser
        35                  40                  45

Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg Leu Tyr
```

```
    50                  55                  60

Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr Gln Asn
65                  70                  75                  80

Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp Phe Thr
                85                  90                  95

Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg Ser Arg
            100                 105                 110

Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro Asn Val
        115                 120                 125

Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met Val Ser
    130                 135                 140

Arg Lys Thr Pro Asn Gly Val Thr Val Thr Asp Gly Ser Gln Asp Glu
145                 150                 155                 160

Leu Thr Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly Asn Phe Ser
                165                 170                 175

Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile Asp Asn Tyr
            180                 185                 190

Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp Ile Gly Val
        195                 200                 205

Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro Val Thr Glu
    210                 215                 220

Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His Pro Asp Ile
225                 230                 235                 240

Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser Arg Leu Ser
                245                 250                 255

Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu Gly Phe Gln
            260                 265                 270

Ile Leu Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala Leu Leu Asp
        275                 280                 285

Val Asp Ala Tyr Glu Lys Ser Lys Glu Glu Ser Ala Ala Ala Ala Thr
    290                 295                 300

Ala Ala Val Ala Thr Ala Ser Thr Glu Val Arg Gly Asp Asn Phe Ala
305                 310                 315                 320

Ser Ala Ala Ala Val Ala Glu Ala Ala Glu Thr Glu Ser Lys Ile Val
                325                 330                 335
```

```
Ile Gln Pro Val Glu Lys Asp Ser Lys Asp Arg Ser Tyr Asn Val Leu
            340                 345                 350

Ala Asp Lys Lys Asn Thr Ala Tyr Arg Ser Trp Tyr Leu Ala Tyr Asn
        355                 360                 365

Tyr Gly Asp Pro Glu Lys Gly Val Arg Ser Trp Thr Leu Leu Thr Thr
    370                 375                 380

Ser Asp Val Thr Cys Gly Val Glu Gln Val Tyr Trp Ser Leu Pro Asp
385                 390                 395                 400

Met Met Gln Asp Pro Val Thr Phe Arg Ser Thr Arg Gln Val Ser Asn
                405                 410                 415

Tyr Pro Val Val Gly Ala Glu Leu Leu Pro Val Tyr Ser Lys Ser Phe
            420                 425                 430

Phe Asn Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg Ala Phe Thr Ser
        435                 440                 445

Leu Thr His Val Phe Asn Arg Phe Pro Glu Asn Gln Ile Leu Val Arg
    450                 455                 460

Pro Pro Ala Pro Thr Ile Thr Thr Val Ser Glu Asn Val Pro Ala Leu
465                 470                 475                 480

Thr Asp His Gly Thr Leu Pro Leu Arg Ser Ser Ile Arg Gly Val Gln
                485                 490                 495

Arg Val Thr Val Thr Asp Ala Arg Arg Arg Thr Cys Pro Tyr Val Tyr
            500                 505                 510

Lys Ala Leu Gly Val Val Ala Pro Arg Val Leu Ser Ser Arg Thr Phe
        515                 520                 525


<210>  108
<211>  194
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  108

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1               5                   10                  15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
            20                  25                  30

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
```

```
        35                  40                  45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
    50                  55                  60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Ala Ser Thr
65                  70                  75                  80

Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
                85                  90                  95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
            100                 105                 110

Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
        115                 120                 125

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ser
    130                 135                 140

Ser Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala
145                 150                 155                 160

Ala Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val
                165                 170                 175

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

Arg Thr
```

<210> 109
<211> 344
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 109

```
Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1               5                   10                  15

Glu Ile Tyr Gly Pro Ala Ala Ala Val Lys Glu Glu Arg Lys Pro Arg
            20                  25                  30

Lys Leu Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Asp Val Asp Asp
        35                  40                  45

Met Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln Trp
    50                  55                  60
```

```
Arg Gly Arg Lys Val Arg Pro Val Leu Arg Pro Gly Thr Thr Val Val
65                  70                  75                  80

Phe Thr Pro Gly Glu Arg Ser Gly Thr Ala Ser Lys Arg Ser Tyr Asp
                85                  90                  95

Glu Val Tyr Gly Asp Asp Asp Ile Leu Glu Gln Ala Ala Glu Arg Leu
            100                 105                 110

Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Pro Ala Pro Leu Lys Glu
        115                 120                 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
    130                 135                 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Ala Ala Ala Pro Arg Arg
145                 150                 155                 160

Gly Phe Lys Arg Glu Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu Met
                165                 170                 175

Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu His Met Lys Val
            180                 185                 190

Asp Pro Asp Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln Val
        195                 200                 205

Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr Glu
    210                 215                 220

Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr Met
225                 230                 235                 240

Glu Val Gln Thr Asp Pro Trp Met Pro Ala Ala Ser Thr Thr Thr Arg
                245                 250                 255

Arg Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn Tyr Ala
            260                 265                 270

Leu His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg Gly Thr Arg Phe
        275                 280                 285

Tyr Arg Gly Tyr Thr Ser Ser Arg Arg Arg Lys Thr Thr Thr Arg Arg
    290                 295                 300

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

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

Arg Tyr His Pro Ser Ile Ala Ile
```

340

<210> 110
<211> 77
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 110

Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1 5 10 15

Arg Lys Pro Arg Arg Arg Arg Leu Thr Gly Asn Gly Leu Arg Arg His
20 25 30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
35 40 45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
50 55 60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65 70 75

<210> 111
<211> 241
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 111

Met Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg
1 5 10 15

Pro Phe Met Gly Thr Trp Ser Asp Ile Gly Asn Ser Gln Leu Asn Gly
20 25 30

Gly Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly
35 40 45

Ser Thr Leu Lys Thr Tyr Gly Asn Lys Ala Trp Asn Ser Ser Thr Gly
50 55 60

Gln Ala Leu Arg Glu Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val
65 70 75 80

Val Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn
85 90 95

Gln Ala Val Gln Lys Gln Ile Asn Ser Arg Leu Asp Ala Val Pro Pro
100 105 110

```
Ala Gly Ser Val Asp Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu
        115                 120                 125

Asp Lys Arg Gly Asp Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu
    130                 135                 140

Leu Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu
145                 150                 155                 160

Gly Leu Pro Thr Thr Arg Pro Val Ala Pro Leu Ala Thr Gly Val Leu
                165                 170                 175

Lys Pro Ser Ser Ser Ser Ser Gln Pro Ala Thr Leu Asp Leu Pro Pro
            180                 185                 190

Pro Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val Ala
        195                 200                 205

Ser Arg Ala Pro Arg Gly Arg Pro Gln Ala Asn Trp Gln Ser Thr Leu
    210                 215                 220

Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg Arg Arg Cys
225                 230                 235                 240

Tyr
```

<210> 112
<211> 950
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 112

```
Met Tyr Val Arg Arg Pro Glu Gly Gly Arg Gly Ala Ser Pro Ser Cys
1               5                   10                  15

Lys Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile
            20                  25                  30

Ala Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe
        35                  40                  45

Ala Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn
    50                  55                  60

Pro Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg
65                  70                  75                  80

Leu Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser
```

```
                85                  90                  95

Tyr Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp
            100                 105                 110

Met Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro
        115                 120                 125

Ser Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys
    130                 135                 140

Gly Ala Pro Asn Thr Ser Gln Trp Ile Thr Lys Asp Lys Thr Tyr Ser
145                 150                 155                 160

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

Gln Ile Val Thr Asp Glu Ser Gly Gly Glu Ser Lys Lys Ile Phe Ala
            180                 185                 190

Asp Lys Thr Tyr Gln Pro Glu Pro Gln Leu Gly Asp Glu Glu Trp His
        195                 200                 205

Asp Thr Ile Gly Ala Glu Asp Lys Tyr Gly Gly Arg Ala Leu Lys Pro
    210                 215                 220

Ala Thr Asn Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys Pro Thr Asn
225                 230                 235                 240

Ala Lys Gly Gly Gln Ala Lys Ser Arg Thr Lys Asp Asp Gly Thr Thr
                245                 250                 255

Glu Pro Asp Ile Asp Met Ala Phe Phe Asp Asp Arg Ser Gln Gln Ala
            260                 265                 270

Ser Phe Ser Pro Glu Leu Val Leu Tyr Thr Glu Asn Val Asp Leu Asp
        275                 280                 285

Thr Pro Asp Thr His Ile Ile Tyr Lys Pro Gly Thr Asp Glu Thr Ser
    290                 295                 300

Ser Ser Phe Asn Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr
305                 310                 315                 320

Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr
                325                 330                 335

Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val
            340                 345                 350

Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu
        355                 360                 365
```

```
Asp Ser Leu Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala
    370                 375                 380

Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His Gly Val
385                 390                 395                 400

Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asn Gly Val Gly Phe
                405                 410                 415

Thr Asp Ser Phe Gln Gly Ile Lys Val Lys Thr Thr Asn Asn Gly Thr
            420                 425                 430

Ala Asn Ala Thr Glu Trp Glu Ser Asp Thr Ser Val Asn Asn Ala Asn
        435                 440                 445

Glu Ile Ala Lys Gly Asn Pro Phe Ala Met Glu Ile Asn Ile Gln Ala
    450                 455                 460

Asn Leu Trp Arg Asn Phe Leu Tyr Ala Asn Val Ala Leu Tyr Leu Pro
465                 470                 475                 480

Asp Ser Tyr Lys Tyr Thr Pro Ala Asn Ile Thr Leu Pro Thr Asn Thr
                485                 490                 495

Asn Thr Tyr Asp Tyr Met Asn Gly Arg Val Val Ala Pro Ser Leu Val
            500                 505                 510

Asp Ala Tyr Ile Asn Ile Gly Ala Arg Trp Ser Leu Asp Pro Met Asp
        515                 520                 525

Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg
    530                 535                 540

Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val
545                 550                 555                 560

Pro Gln Lys Phe Phe Ala Ile Lys Ser Leu Leu Leu Leu Pro Gly Ser
                565                 570                 575

Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Ile Leu Gln
            580                 585                 590

Ser Ser Leu Gly Asn Asp Leu Arg Thr Asp Gly Ala Ser Ile Ser Phe
        595                 600                 605

Thr Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr
    610                 615                 620

Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser
625                 630                 635                 640
```

```
Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala
                645                 650                 655

Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala
            660                 665                 670

Phe Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser
        675                 680                 685

Leu Gly Ser Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro
    690                 695                 700

Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser
705                 710                 715                 720

Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu
                725                 730                 735

Thr Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr
            740                 745                 750

Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met
        755                 760                 765

Leu Ala His Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly
    770                 775                 780

Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser
785                 790                 795                 800

Arg Gln Val Val Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr
                805                 810                 815

Leu Ala Tyr Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro
            820                 825                 830

Thr Met Arg Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu
        835                 840                 845

Ile Gly Lys Ser Ala Val Thr Ser Val Thr Gln Lys Lys Phe Leu Cys
    850                 855                 860

Asp Arg Val Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met
865                 870                 875                 880

Gly Ala Leu Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala
                885                 890                 895

His Ala Leu Asp Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr
            900                 905                 910
```

Leu Leu Tyr Val Val Phe Glu Val Phe Asp Val Val Arg Val His Gln
915 920 925

Pro His Arg Gly Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser
930 935 940

Ala Gly Asn Ala Thr Thr
945 950

<210> 113
<211> 209
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 113

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

Ile Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys
20 25 30

Arg Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val
35 40 45

Asn Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala
50 55 60

Trp Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe
65 70 75 80

Ser Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu
85 90 95

Leu Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu
100 105 110

Lys Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu
115 120 125

Phe Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro
130 135 140

Met Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly
145 150 155 160

Met Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu
165 170 175

Ala Leu Tyr Arg Phe Leu Asn Ala His Ser Ala Tyr Phe Arg Ser His
180 185 190

Arg Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Gln Asp
195 200 205

Met

<210> 114
<211> 797
<212> PRT
<213> Artificial Sequence

<220>
<221> misc_feature
<222> (789)..(789)
<223> The 'Xaa' at location 789 stands for Ser.

<220>
<223> Synthetic Construct

<400> 114

Met Glu Thr Gln Pro Ser Ser Pro Thr Ser Pro Ser Ala Pro Ala Ala
1 5 10 15

Ala Asp Glu Asn Gln Gln Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro
20 25 30

Pro Ser Pro Thr Ser Asp Ala Ala Ala Ala Pro Asp Met Gln Glu Met
35 40 45

Glu Glu Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His
50 55 60

Glu Glu Glu Leu Ala Ala Arg Phe Ser Ala Pro Glu Glu Asn His Gln
65 70 75 80

Glu Gln Pro Glu Gln Glu Ala Glu Ser Glu Gln Gln Gln Ala Gly Leu
85 90 95

Glu His Gly Asp Tyr Leu Ser Gly Ala Glu Asp Val Leu Ile Lys His
100 105 110

Leu Ala Arg Gln Cys Ile Ile Val Lys Asp Ala Leu Leu Asp Arg Ala
115 120 125

Glu Val Pro Leu Ser Val Ala Glu Leu Ser Arg Ala Tyr Glu Arg Asn
130 135 140

Leu Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr Cys
145 150 155 160

Glu Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro Glu
165 170 175

Ala Leu Ala Thr Tyr His Leu Phe Phe Lys Asn Gln Arg Ile Pro Val

```
            180                 185                 190

Ser Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Leu Asn Leu Gly
        195                 200                 205

Pro Gly Ala Arg Leu Pro Asp Ile Ala Ser Leu Glu Glu Val Pro Lys
    210                 215                 220

Ile Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala Leu
225                 230                 235                 240

Gln Gly Ser Gly Glu Glu His Glu His His Ser Ala Leu Val Glu Leu
                245                 250                 255

Glu Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu Leu
            260                 265                 270

Thr His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met Ser
        275                 280                 285

Ala Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Leu Ser Glu
    290                 295                 300

Glu Glu Met Gln Asp Pro Glu Ser Ser Asp Glu Gly Lys Pro Val Val
305                 310                 315                 320

Ser Asp Glu Gln Leu Ala Arg Trp Leu Gly Ala Ser Ser Thr Pro Gln
                325                 330                 335

Ser Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr
            340                 345                 350

Val Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu
        355                 360                 365

Arg Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val
    370                 375                 380

Arg Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser
385                 390                 395                 400

Tyr Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His
                405                 410                 415

Thr Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val
            420                 425                 430

Tyr Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln
        435                 440                 445

Gln Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln
    450                 455                 460
```

```
Lys Asn Leu Lys Ala Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala
465                 470                 475                 480

Ser Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu
                485                 490                 495

Arg Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe
            500                 505                 510

Arg Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser
        515                 520                 525

Ala Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro
    530                 535                 540

Pro Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala
545                 550                 555                 560

Tyr His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu
                565                 570                 575

Cys His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys
            580                 585                 590

Asn Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu
        595                 600                 605

Gln Gly Pro Gly Asp Gly Lys Gly Gly Leu Lys Leu Thr Pro Gly Leu
    610                 615                 620

Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp Tyr His Pro
625                 630                 635                 640

Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro Pro Lys Ala Glu
                645                 650                 655

Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu Ala Gln Leu Gln
            660                 665                 670

Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys Gly His Gly
        675                 680                 685

Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn Pro Ser Phe Pro
    690                 695                 700

Gln Asp Ala Pro Arg Lys Gln Gln Glu Ala Glu Ser Gly Ala Ala Ala
705                 710                 715                 720

Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Ser Gly Arg Gly Asp Gly
                725                 730                 735
```

Arg Leu Gly Gln His Ser Gly Arg Gly Gly Gln Pro Ala Arg Gln Ser
740 745 750

Gly Arg Arg Gly Gly Gly Gly Gly Arg Gly Arg Ser Ser Arg Arg Gln
755 760 765

Thr Val Val Leu Gly Gly Gly Gly Glu Ser Lys Gln His Gly Tyr His
770 775 780

Leu Arg Ser Gly Xaa Gly Ser Arg Arg Pro Gly Pro Gln
785 790 795

<210> 115
<211> 227
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 115

Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1 5 10 15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
20 25 30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala His Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Ile Thr Ala Thr
50 55 60

Pro Arg His His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
100 105 110

Thr Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
115 120 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
130 135 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Leu Ala Gly Ser Gly Arg Ser
145 150 155 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
165 170 175

```
Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
            180                 185                 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
        195                 200                 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
    210                 215                 220

Gly Tyr Asp
225
```

<210> 116
<211> 106
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 116

```
Met Ser His Gly Gly Val Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1               5                   10                  15

His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Ala
            20                  25                  30

Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
        35                  40                  45

Arg Ile Ile Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
    50                  55                  60

Ser Gln Arg Pro Ile Leu Val Glu Arg Glu Gln Gly Gln Thr Arg Leu
65                  70                  75                  80

Thr Leu Tyr Cys Ile Cys Asn His Pro Gly Leu His Glu Ser Leu Cys
                85                  90                  95

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
            100                 105
```

<210> 117
<211> 176
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 117

```
Met Gly Gln Ile Thr Leu Val Ser Cys Gly Val Leu Val Ala Val Leu
1               5                   10                  15
```

```
Ser Ile Val Gly Leu Gly Gly Ala Ala Val Val Lys Glu Glu Lys Ala
            20                  25                  30

Asp Pro Cys Leu His Phe Asn Pro Asp Lys Cys Gln Leu Ser Phe Gln
        35                  40                  45

Pro Asp Gly Asn Arg Cys Ala Val Leu Ile Lys Cys Gly Trp Glu Cys
    50                  55                  60

Glu Asn Val Arg Ile Glu Tyr Asn Asn Lys Thr Arg Asn Asn Thr Leu
65                  70                  75                  80

Ala Ser Val Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
                85                  90                  95

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

Ala His Met Cys Asp Thr Val Met Trp Met Ser Lys Gln Tyr Asp Met
        115                 120                 125

Trp Pro Pro Thr Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
    130                 135                 140

Leu Cys Thr Val Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145                 150                 155                 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
                165                 170                 175
```

<210> 118
<211> 198
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 118

```
Met Ala Ser Val Lys Phe Leu Leu Leu Phe Ala Ser Leu Ile Thr Val
1               5                   10                  15

Ile Ser Asn Glu Lys Leu Thr Ile Tyr Ile Gly Thr Asn His Thr Leu
            20                  25                  30

Glu Gly Ile Pro Lys Ser Ser Trp Tyr Cys Tyr Phe Asp Gln Asp Pro
        35                  40                  45

Asp Leu Thr Ile Glu Leu Cys Gly Asn Asn Gly Gln Asn Thr Ser Ile
    50                  55                  60

His Leu Ile Asn Phe Lys Cys Gly Asp Asp Leu Lys Leu Ile Asn Ile
65                  70                  75                  80
```

```
Thr Lys Glu Tyr Gly Gly Met Tyr Tyr Tyr Val Ala Glu Asn Asn Asn
                85                  90                  95

Met Gln Phe Tyr Glu Val Thr Val Thr Asn Pro Thr Thr Pro Arg Thr
            100                 105                 110

Thr Thr Thr Thr Thr Lys Thr Thr Pro Val Thr Thr Met Gln Leu Ala
        115                 120                 125

Thr Asn Asn Ile Phe Ala Met Arg Gln Met Val Asn Asn Ser Thr Gln
    130                 135                 140

Pro Thr Pro Pro Ser Glu Glu Ile Pro Lys Ser Met Ile Gly Ile Ile
145                 150                 155                 160

Val Ala Val Val Val Cys Met Leu Ile Ile Ala Leu Cys Met Val Tyr
                165                 170                 175

Tyr Ala Phe Cys Tyr Arg Lys His Arg Leu Asn Asp Lys Leu Glu His
            180                 185                 190

Leu Leu Ser Val Glu Phe
        195
```

<210> 119
<211> 291
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 119

```
Met Lys Ala Val Ser Thr Leu Ile Phe Cys Ser Leu Ile Gly Thr Val
1               5                   10                  15

Phe Ser Val Ser Phe Leu Lys Gln Ile Asn Val Thr Glu Gly Glu Asn
            20                  25                  30

Val Thr Leu Val Gly Val Glu Gly Ala Gln Asn Thr Thr Trp Thr Lys
        35                  40                  45

Tyr His Leu Asp Gly Trp Lys Asp Ile Cys Asn Trp Ser Val Ile Thr
    50                  55                  60

Tyr Thr Cys Glu Gly Val Asn Leu Thr Ile Val Asn Ala Ser Gln Asn
65                  70                  75                  80

Gln Lys Gly Trp Ile Lys Gly Gln Ser Val Ser Val Thr Ser Gln Gly
                85                  90                  95

Tyr Tyr Thr Gln His Thr Leu Ile Tyr Asp Ile Val Val Ile Pro Leu
```

```
            100                 105                 110

Pro Thr Pro Ser Pro Pro Ser Thr Thr Thr Gln Thr Thr His Thr Thr
        115                 120                 125

Gln Thr Thr Thr Tyr Ser Thr Ser Asn Gln Pro Thr Thr Thr Thr Ala
    130                 135                 140

Ala Glu Val Ala Ser Ser Ser Gly Val Arg Val Ala Phe Leu Leu Leu
145                 150                 155                 160

Ala Pro Ser Ser Ser Pro Thr Ala Ser Thr Asn Glu Gln Thr Thr Asp
                165                 170                 175

Phe Leu Ser Thr Val Glu Ser His Thr Thr Ala Thr Ser Ser Ala Phe
            180                 185                 190

Ser Ser Thr Ala Asn Leu Ser Ser Leu Ser Ser Thr Pro Ile Ser Pro
        195                 200                 205

Ala Thr Thr Pro Ser Pro Ala Pro Leu Pro Thr Pro Leu Lys Gln Thr
    210                 215                 220

Asp Gly Gly Met Gln Trp Gln Ile Thr Leu Leu Ile Val Ile Gly Leu
225                 230                 235                 240

Val Ile Leu Ala Val Leu Leu Tyr Tyr Ile Phe Cys Arg Arg Ile Pro
                245                 250                 255

Asn Ala His Arg Lys Pro Ala Tyr Lys Pro Ile Val Ile Gly Gln Pro
            260                 265                 270

Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser Phe
        275                 280                 285

Thr Val Trp
    290


<210>  120
<211>  143
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  120

Met Arg Ala Leu Leu Leu Leu Ala Leu Leu Leu Leu Val Leu Pro Arg
1               5                   10                  15

Pro Val Asp Pro Arg Ser Pro Thr Gln Ser Pro Glu Glu Val Arg Lys
            20                  25                  30
```

```
Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Lys Cys Tyr Arg Gln Lys
        35                  40                  45

Ser Asp Met His Pro Ser Trp Ile Met Ile Ile Gly Ile Val Asn Ile
    50                  55                  60

Leu Ala Cys Thr Leu Ile Ser Phe Val Ile Tyr Pro Tyr Phe Asp Phe
65                  70                  75                  80

Gly Trp Asn Ser Pro Glu Ala Leu Tyr Leu Pro Pro Glu Pro Asp Thr
                85                  90                  95

Pro Pro Gln Gln Pro Gln Ala His Ala Leu Pro Pro Pro Gln Pro Arg
            100                 105                 110

Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala Glu Pro Gln Arg Pro
        115                 120                 125

Met Leu Pro Ala Ile Ser Tyr Phe Asn Leu Thr Gly Gly Asp Asp
    130                 135                 140
```

<210> 121
<211> 440
<212> PRT
<213> Artificial Sequence

<220>
<221> misc_feature
<222> (163)..(163)
<223> The 'Xaa' at location 163 stands for Lys, or Asn.

<220>
<223> Synthetic Construct

<400> 121

```
Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
1               5                   10                  15

Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
            20                  25                  30

Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
        35                  40                  45

Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
    50                  55                  60

Lys Leu Gly Glu Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser
65                  70                  75                  80

Lys Asn Ala Thr Lys Ala Thr Ala Pro Leu Ser Ile Ser Asn Ser Thr
                85                  90                  95

Ile Ser Leu Asn Met Asp Ala Pro Leu Tyr Asn Asn Asn Gly Lys Leu
            100                 105                 110
```

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

Leu Ala Val Ala Tyr Gly Ser Gly Leu Gly Leu Lys Asn Asn Ala Leu
    130                 135                 140

Thr Val Gln Leu Val Ser Pro Leu Thr Phe Asp Asn Lys Gly Asn Val
145                 150                 155                 160

Lys Ile Xaa Leu Gly Lys Gly Pro Leu Thr Val Ala Ala Asn Arg Leu
                165                 170                 175

Ser Val Thr Cys Lys Arg Gly Leu Tyr Val Thr Thr Thr Gly Asp Ala
            180                 185                 190

Leu Glu Ser Asn Ile Ser Trp Ala Lys Gly Ile Arg Phe Glu Gly Asn
        195                 200                 205

Ala Ile Ala Ala Asn Ile Gly Lys Gly Leu Glu Phe Gly Thr Thr Ser
    210                 215                 220

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

Thr Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile Val Ala Trp Asn Lys
                245                 250                 255

Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala Asp Pro Ser Pro Asn
            260                 265                 270

Cys Lys Ile Tyr Ser Glu Lys Asp Ala Lys Leu Thr Leu Cys Leu Thr
        275                 280                 285

Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Thr Val Leu Ala Val Asn
    290                 295                 300

Asn Gly Ser Leu Asn Pro Ile Thr Asn Thr Val Ser Thr Ala Ile Val
305                 310                 315                 320

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

Asn Lys Glu Tyr Trp Asn Phe Arg Lys Gly Asp Val Thr Pro Ala Glu
            340                 345                 350

Ala Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn Ile Lys Ala Tyr Pro
        355                 360                 365

Lys Asn Thr Ser Ala Ala Ser Lys Ser His Ile Val Gly Gln Val Tyr
    370                 375                 380
```

Leu Asn Gly Asp Glu Thr Lys Pro Leu Met Leu Ile Ile Thr Phe Asn
385 390 395 400

Glu Thr Asp Asp Ala Thr Cys Thr Tyr Cys Ile Thr Phe Gln Trp Lys
405 410 415

Trp Asp Asn Ser Lys Tyr Thr Gly Glu Thr Leu Ala Thr Ser Ser Phe
420 425 430

Pro Phe Ser Tyr Ile Ala Gln Glu
435 440

<210> 122
<211> 363
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 122

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

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
20 25 30

His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
35 40 45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
50 55 60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65 70 75 80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
100 105 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val
115 120 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His
130 135 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
145 150 155 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
165 170 175

```
Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
            180                 185                 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
        195                 200                 205

Ala Ala Asp Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala
    210                 215                 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225                 230                 235                 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
                245                 250                 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
            260                 265                 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
        275                 280                 285

Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
    290                 295                 300

Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr
305                 310                 315                 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
                325                 330                 335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
            340                 345                 350

Val Gly Gly Pro Gly His Lys Ala Arg Val Leu
        355                 360


<210>  123
<211>  28800
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Simian adenovirus A1302 clone


<220>
<221>  CDS
<222>  (22517)..(23068)
<223>  22K

<220>
<221>  CDS
<222>  (24372)..(24992)
<223>  E3\CR1-alpha
```

<220>
<221> CDS
<222> (28360)..(28764)
<223> E3\14.7K

<400> 123
ggagaaagag gtaatgaaat ggcattatgg gtattatggg tctgcattaa tgaatcggcc 60

agatatcata tgctggccac cgtgcatgtg gcctcgcacc cccgcaagac atggcccgag 120

ttcgagcata acgtcatgac ccgctgcaat gtgcacctgg gctcccgccg aggcatgttc 180

atgccctacc agtgcaacat gcaatttgtg aaggtgctgc tggagcccga tgccatgtcc 240

agagtgagtc tgacgggggt gtttgacatg aatgtggaga tgtggaaaat tctgagatat 300

gatgaatcca agaccaggtg ccgggcctgc gaatgcggag gcaaacacgc caggcttcag 360

cccgtgtgtg tggaggtgac ggaggacctg cgacccgatc atttggtgtt gtcctgcaac 420

gggacggagt tcggctccag cggggaagaa tctgactaga gtgagtagtg tttggggctg 480

ggtgggagcc tgcatgatgg gcagaatgac taaaatctgt gtttttctgc gcagcatcat 540

gagcggaagc gcctcctttg agggaggggt attcagccct tatctgacgg ggcgtctccc 600

ctcctgggcg ggagtgcgtc agaatgtgat gggatccacg gtggacggcc ggcccgtgca 660

gcccgcgaac tcttcaaccc tgacctacgc gaccctgagc tcctcgtccg tagacgcagc 720

tgccgccgca gctgctgctt ccgccgccag cgccgtgcgc ggaatggccc tgggcgccgg 780

ctactacagc tctctggtgg ccaactcgag ttccaccaat aatcccgcca gcctgaacga 840

ggagaagctg ctgctgctga tggcccagct cgaggccctg acccagcgcc tgggcgagct 900

gacccagcag gtggctcagc tgcaggcgga gacgcgggcc gcggttgcca cggtgaaaac 960

caaataaaaa atgaatcaat aaataaacgg agacggttgt tgattttaac acagagtctt 1020

gaatctttat ttgatttttc gcgcgcggta ggccctggac caccggtctc gatcattgag 1080

cacccggtgg atttttttcca ggacccggta gaggtgggct tggatgttga ggtacatggg 1140

catgagcccg tcccgggggt ggaggtagct ccattgcagg gcctcgtgct cgggggtggt 1200

gttgtaaatc acccagtcat agcaggggcg cagggcgtgg tgctgcacga tgtccttgag 1260

gaggagactg atggccacgg gcagcccctt ggtgtaggtg ttgacgaacc tgttgagctg 1320

ggagggatgc atgcgggggg agatgagatg catcttggcc tggatcttga gattggcgat 1380

gttcccgccc agatcccgcc gggggttcat gttgtgcagg accaccagca cggtgtatcc 1440

ggtgcacttg gggaatttgt catgcaactt ggaagggaag gcgtgaaaga atttggagac 1500

gcccttgtga ccgcccaggt tttccatgca ctcatccatg atgatggcga tgggcccgtg 1560

ggcggcggcc tgggcaaaga cgtttcgggg gtcggacaca tcgtagttgt ggtcctgggt 1620

gagctcgtca taggccattt taatgaattt ggggcggagg gtgcccgact gggggacaaa 1680

ggtgccctcg atcccggggg cgtagtttcc ctcgcagatc tgcatctccc aggccttgag 1740

ctcggagggg gggatcatgt ccacctgcgg ggcgatgaaa aaaacggttt ccggggcggg 1800

ggagatgagc tgggccgaaa gcaggttccg gagcagctgg gacttgccgc agccggtggg 1860

gccgtagatg accccgatga ccggctgcag gtggtagttg agggagagac agctgccgtc 1920

ctcgcggagg agggggggcca cctcgttcat catctcgcgc acatgcatgt tctcgcgcac 1980
gagttccgcc aggaggcgct cgccccccag cgagaggagc tcttgcagcg aggcgaagtt 2040
tttcagcggt ttgagcccgt cggccatggg cattttggag agggtctgtt gcaagagttc 2100
cagacggtcc cagagctcgg tgatgtgctc tagggcatct cgatccagca gacctcctcg 2160
tttcgcgggt tggggcgact gcgggagtag ggcaccaggc gatgggcgtc cagcgaggcc 2220
agggtccggt ccttccaggg gcgcagggtc cgcgtcagcg tggtctccgt cacggtgaag 2280
gggtgcgcgc cgggctgggc gcttgcgagg gtgcgcttca ggctcatccg gctggtcgag 2340
aaccgctccc ggtcggcgcc ctgcgcgtcg gccaggtagc aattgagcat gagttcgtag 2400
ttgagcgcct cggccgcgtg gcccttggcg cggagcttac ctttggaagt gtgtccgcag 2460
acgggacaga ggagggactt gagggcgtag agcttggggg cgaggaagac ggactcgggg 2520
gcgtaggcgt ccgcgccgca gctggcgcag acggtctcgc actccacgag ccaggtgagg 2580
tcggggcggt cggggtcaaa aacgaggttt cctccgtgct ttttgatgcg tttcttacct 2640
ctggtctcca tgagctcgtg tccccgctgg gtgacaaaga ggctgtccgt gtccccgtag 2700
accgacttta tgggccggtc ctcgagcggg gtgccgcggt cctcgtcgta gaggaacccc 2760
gcccactccg agacgaaggc ccgggtccag gccagcacga aggaggccac gtgggagggg 2820
tagcggtcgt tgtccaccag cgggtccacc ttctccaggg tatgcaagca catgtccccc 2880
tcgtccacat ccaggaaggt gattggcttg taagtgtagg ccacgtgacc gggggtcccg 2940
gccggggggg tataaaaggg ggcgggcccc tgctcgtcct cactgtcttc cggatcgctg 3000
tccaggagcg ccagctgttg gggtaggtat tccctctcga aggcgggcat gacctcggca 3060
ctcaggttgt cagtttctag aaacgaggag gatttgatat tgacggtgcc gttggagacg 3120
cctttcatga gcccctcgtc catctggtca gaaaagacga tctttttgtt gtcgagcttg 3180
gtggcgaagg agccgtagag ggcattggag aggagcttgg cgatggagcg catggtctgg 3240
ttcttttcct tgtcggcgcg ctccttggcg gcgatgttga gctgcacgta ctcgcgcgcc 3300
acgcacttcc attcggggaa gacggtggtg agctcgtcgg gcacgattct gacccgccag 3360
ccgcggttgt gcagggtgat gaggtccacg ctggtggcca cctcgccgcg caggggctcg 3420
ttggtccagc agaggcgccc gcccttgcgc gagcagaagg ggggcagcgg gtccagcatg 3480
agctcgtcgg gggggtcggc gtccacggtg aagatgccgg gcaggagctc ggggtcgaag 3540
tagctgatgc aggtgcccag atcgtccagc gccgcttgcc agtcgcgcac ggccagcgcg 3600
cgctcgtagg ggctgagggg cgtgccccag ggcatggggt gcgtgagcgc ggaggcgtac 3660
atgccgcaga tgtcgtagac gtagaggggc tcctcgagga cgccgatgta ggtggggtag 3720
cagcgccccc cgcggatgct ggcgcgcacg tagtcgtaca gctcgtgcga gggcgcgagg 3780
agccccgcgc cgaggttgga gcgctgcggc ttttcggcgc ggtagacgat ctggcggaag 3840
atggcgtggg agttggagga gatggtgggc ctctggaaga tgttgaagtg ggcgtggggc 3900
aggccgaccg agtccctgat gaagtgggcg taggagtcct gcagcttggc gacgagctcg 3960

gcggtgacga ggacgtccag ggcgcagtag tcgagggtct cttggatgat gtcgtacttg 4020

agctggccct tctgcttcca cagctcgcgg ttgagaagga actcttcgcg gtccttccag 4080

tactcttcga gggggaaccc gtcctgatcg gcacggtaag agcccaccat gtagaactgg 4140

ttgacggcct tgtaggcgca gcagcccttc tccacgggga gggcataagc ttgcgcggcc 4200

ttgcgcaggg aggtgtgggt gagggcgaag gtgtcgcgca ccatgacctt gaggaactgg 4260

tgcttgaagt cgaggtcgtc gcagccgccc tgctcccaga gttggaagtc cgtgcgcttc 4320

ttgtaggcgg ggttgggcaa agcgaaagta acatcgttga agaggatctt gcccgcgcgg 4380

ggcatgaagt tgcgagtgat gcggaaaggc tggggcacct cggcccggtt gttgatgacc 4440

tgggcggcga ggacgatctc gtcgaagccg ttgatgttgt gcccgacgat gtagagttcc 4500

acgaatcgcg ggcggccctt gacgtggggc agcttcttga gctcgtcgta ggtgagctcg 4560

gcggggtcgc tgagtccgtg ctgctcaagg gcccagtcgg cgacgtgggg gttggcgctg 4620

aggaaggaag tccagagatc cacggccagg gcggtttgca agcggtcccg gtactgacgg 4680

aactgctggc ccacggccat tttttcgggg gtgatgcagt agaaggtgcg ggggtcgccg 4740

tgccagcggt cccacttgag ctggagggcg aggtcgtggg cgagctcgac gagcggcggg 4800

tccccggaga gtttcatgac cagcatgaag gggacgagct gcttgccgaa ggaccccatc 4860

caggtgtagg tttccacatc gtaggtgagg aagagccttt cggtgcgagg atgcgagccg 4920

atggggaaga actggatctc ctgccaccag ttggaggaat ggctgttgat gtgatggaag 4980

tagaaatgcc gacggcgcgc cgagcactcg tgcttgtgtt tatacaagcg tccgcagtgc 5040

tcgcaacgct gcacgggatg cacgtgctgc acgagctgta cctgagttcc tttgacgagg 5100

aatttcagtg ggcagtggag cgctggcggc tgcatctggt gctgtactac gtcctggcca 5160

tcggcgtggc catcgtctgc ctcgatggtg gtcatgctga cgagcccgcg cgggaggcag 5220

gtccagacct cgactcggac gggtcggaga gcgaggacga gggcgcgcag gccggagctg 5280

tccagggtcc tgagacgctg cggagtcagg tcagtgggca gcggcggcgc gcggttgact 5340

tgcaggagct tttccagggc gcgcgggagg tccagatggt acttgatctc cacggcgccg 5400

ttggtggcga cgtccacggc ttgcagggtc ccgtgcccct ggggcgccac caccgtgccc 5460

cgtttcttct tgggcgctgg cgttggcgct gcttccatgt cggtcagaag cggcggcgag 5520

gacgcgcgcc gggcggcagg ggcggctcgg ggcccggagg caggggcggc aggggcacgt 5580

cggcgccgcg cgcgggcagg ttctggtact gcgcccggag aagactggcg tgagcgacga 5640

cgcgacggtt gacgtcctgg atctgacgcc tctgggtgaa ggccacggga cccgtgagtt 5700

tgaacctgaa agagagttcg acagaatcaa tctcggtatc gttgacggcg gcctgccgca 5760

ggatctcttg cacgtcgccc gagttgtcct ggtaggcgat ctcggtcatg aactgctcga 5820

tctcctcctc ctgaaggtct ccgcggccgg cgcgctccac ggtggccgcg aggtcgttgg 5880

agatgcggcc catgagctgc gagaaggcgt tcatgcccgc ctcgttccag acgcggctgt 5940

agaccacgac gccctcggga tcgcgggcgc gcatgaccac ctgggcgagg ttgagctcca 6000

cgtggcgcgt gaagaccgcg tagttgcaga ggcgctggta gaggtagttg agcgtggtgg 6060

cgatgtgctc ggtgacgaag aaatacatga tccagcggcg gagcggcatc tcgctgacgt 6120

cgcccagcgc ctccaagcgt tccatggcct cgtaaaagtc cacggcgaag ttgaaaaact 6180

gggagttgcg cgccgagacg gtcaactcct cctccagaag acggatgagc tcggcgatgg 6240

tggcgcgcac ctcgcgctcg aaggcccccg ggagttcctc cacttcctct tcttcttcct 6300

cctccactaa catctcttct acttcctcct caggcggtgg tggcgggggа gggggcctgc 6360

gtcgccggcg gcgcacgggc agacggtcga tgaagcgctc gatggtctcg ccgcgccggc 6420

gtcgcatggt ctcggtgacg gcgcgcccgt cctcgcgggg ccgcagcgtg aagacgccgc 6480

cgcgcatctc caggtggccg ggggggtccc cgttgggcag ggagagggcg ctgacgatgc 6540

atcttatcaa ttgccccgta gggactccgc gcaaggacct gagcgtctcg agatccacgg 6600

gatctgaaaa ccgttgaacg aaggcttcga gccagtcgca gtcgcaaggt aggctgagca 6660

cggtttcttc tggcgggtca tgttggttgg agggagcggg gcgggcgatg ctgctggtga 6720

tgaagttgaa ataggcggtt ctgagacggc ggatggtggc gaggagcacc aggtctttgg 6780

gcccggcttg ctggatgcgc agacggtcgg ccatgcccca ggcgtggtcc tgacacctgg 6840

ccaggtcctt gtagtagtcc tgcatgagcc gctccacggg cacctcctcc tcgcccgcgc 6900

ggccgtgcat gcgcgtgagc ccgaacccgc gctgcggctg gacgagcgcc aggtcggcga 6960

cgacgcgctc ggcgaggatg gcctgctgga tctgggtgag ggtggtctgg aagtcgtcaa 7020

agtcgacgaa gcggtggtag gctccggtgt tgatggtgta ggagcagttg gccatgacgg 7080

accagttgac ggtctggtgg cccggacgca cgagctcgtg gtacttgagg cgcgagtagg 7140

cgcgcgtgtc gaagatgtag tcgttgcagg tgcgcaccag gtattggtag ccgatgagga 7200

agtgcggcgg cggctggcgg tagagcggcc atcgctcggt ggcgggggcg ccgggcgcga 7260

ggtcctcgag catgaggcgg tggtagccgt agatgtacct ggacatccag gtgatgccgg 7320

cggcggtggt ggaggcgcgc gggaactcgc ggacgcggtt ccagatgttg cgcagcggca 7380

ggaagtagtt catggtggcc gcggtctggc ccgtgaggcg cgcgcagtcg tggatgctct 7440

agacatacgg gcaaaaacga aagcggtcag cggctcgact ccgtggcctg gaggctaagc 7500

gaacgggttg ggctgcgcgt gtaccccggt tcgaatctcg aatcaggctg gagccgcagc 7560

taacgtggta ctggcactcc cgtctcgacc caagcctgct aacgaaacct ccaggatacg 7620

gaggcgggtc gttttggcat ttttcgtcag gccggaaatg aaactagtaa gcgcggaaag 7680

cggccgaccg cgatggctcg ctgccgtagt ctggagaaga atcgccaggg ttgcgttgcg 7740

gtgtgccccg gttcgaggcc ggccggattc cgcggctaac gagggcgtgg ctgccccgtc 7800

gtttccaaga cccctagcca gccgacttct ccagttacgg agcgagcccc tcttttgttt 7860

tttgtttttg ccagatgcat cccgtactgc ggcagatgcg cccccaccac cctccaccgc 7920

aacaacagcc ccctccacag ccggcgcttc tgcccccgcc ccagcagcag cagcaacttc 7980

cagccacgac cgccgcggcc gccgtgagcg gggctggaca gagttatgac caccagctgg 8040

ccttggaaga gggcgagggg ctggcgcggc tgggggcgtc gtcgccggag cggcacccgc 8100

gcgtgcagat gaaaagggac gctcgcgagg cctacgtgcc caagcagaac ctgttcagag 8160

acaggagcgg cgaggagccc gaggagatgc gcgcctcccg cttccacgcg gggcgggagc 8220

tgcggcgcgg cctggaccga aagcgggtgc tgagggacga ggatttcgag gcggacgagc 8280

tgacggggat cagccccgcg cgcgcgcacg tggccgcggc caacctggtc acggcgtacg 8340

agcagaccgt gaaggaggag agcaacttcc aaaaatcctt caacaaccac gtgcgcacct 8400

tgatcgcgcg cgaggaggtg accctgggcc tgatgcacct gtgggacctg ctggaggcca 8460

tcgtgcagaa ccccacgagc aagccgctga cggcgcagct gtttctggtg gtgcagcaca 8520

gtcgggacaa cgagacgttc agggaggcgc tgctgaatat caccgagccc gagggccgtt 8580

ggctcctgga cctggtgaac attctgcaga gcatcgtggt gcaggagcgc gggctgccgc 8640

tgtccgagaa gctggcggcc atcaacttct cggtgctgag cctgggcaag tactacgcta 8700

ggaagatcta caagaccccg tacgtgccca tagacaagga ggtgaagatc gatgggtttt 8760

acatgcgcat gaccctgaaa gtgctgaccc tgagcgacga tctgggggtg taccgcaacg 8820

acaggatgca ccgcgcggtg agcgccagcc gccggcgcga gctgagcgac caggagctga 8880

tgcacagcct gcagcgggcc ctgaccgggg ccgggaccga gggggagagc tactttgaca 8940

tgggcgcgga cctgcgctgg cagcccagcc gccgggcctt ggaagctgcc ggcggcgtgc 9000

cctacgtgga ggaggtggac gatgaggagg aggagggcga gtacctggaa gactgatggc 9060

gcgaccgtat ttttgctaga tgcagcaaca gccaccgcct cctgatcccg cgatgcgggc 9120

ggcgctgcag agccagccgt ccggcattaa ctcctcggac gattggaccc aggccatgca 9180

acgcatcatg gcgctgacga cccgcaatcc cgaagccttt agacagcagc ctcaggccaa 9240

ccggctctcg gccatcctgg aggccgtggt gccctcgcgc tcgaacccca cgcacgagaa 9300

ggtgctggcc atcgtgaacg cgctggtgga gaacaaggcc atccgcggcg acgaggccgg 9360

gctggtgtac aacgcgctgc tggagcgcgt ggcccgctac aacagcacca acgtgcagac 9420

gaacctggac cgcatggtga ccgacgtgcg cgaggcggtg tcgcagcgcg agcggttcca 9480

ccgcgagtcg aacctgggct ccatggtggc gctgaacgcc ttcctgagca cgcagcccgc 9540

caacgtgccc cggggccagg aggactacac caacttcatc agcgcgctgc ggctgatggt 9600

ggccgaggtg ccccagagcg aggtgtacca gtcggggccg gactacttct tccagaccag 9660

tcgccagggc ttgcagaccg tgaacctgag ccaggctttc aagaacttgc agggactgtg 9720

gggcgtgcag gccccggtcg gggaccgcgc gacggtgtcg agcctgctga cgccgaactc 9780

gcgcctgctg ctgctgctgg tggcgccctt cacggacagc ggcagcgtga gccgcgactc 9840

gtacctgggc tacctgctta acctgtaccg cgaggccatc gggcaggcgc acgtggacga 9900

gcagacctac caggagatca cccacgtgag ccgcgcgctg gggcaggagg acccgggcaa 9960

cctggaggcc accctgaact tcctgctgac caaccggtcg cagaagatcc cgccccagta 10020

cgcgctgagc accgaggagg agcgcatcct gcgctacgtg cagcagagcg tggggctgtt 10080

cctgatgcag gaggggggca cgcccagcgc cgcgctcgac atgaccgcgc gcaacatgga 10140

gcccagcatg tacgcccgca accgcccgtt catcaataag ctgatggact acttgcatcg 10200

ggcggccgcc atgaactcgg actactttac caacgccatc ttgaacccgc actggctccc 10260
gccgcccggg ttctacacgg gcgagtacga catgcccgac cccaacgacg ggttcctgtg 10320
ggacgacgtg gacagcagcg tgttctcgcc gcgccccacc accaccgtgt ggaagaaaga 10380
gggcggggac cggcggccgt cctcggcgct gtccggtcgc gcgggtgctg ccgcggcggt 10440
gcccgaggcc gccagcccct tcccgagcct gccctttcg ctgaacagcg tgcgcagcag 10500
cgagctgggt cggctgacgc ggccgcgcct gctgggcgag gaggagtacc tgaacgactc 10560
cttgttgagg cccgagcgcg agaaaaactt ccccaataac gggatagaga gcctggtgga 10620
caagatgagc cgctggaaga cgtacgcgca cgagcacagg gacgagcccc gagctagcag 10680
cagcaccggc gcccgtagac gccagcggca cgacaggcag cggggactgg tgtgggacga 10740
tgaggattcc gccgacgaca gcagcgtgtt ggacttgggt gggagtggtg gtggtaaccc 10800
gttcgctcac ctgcgccccc gtatcgggcg cctgatgtaa gaatctgaaa aaataaaaaa 10860
acggtactca ccaaggccat ggcgaccagc gtgcgttctt ctctgttgtt tgtagtagta 10920
tgatgaggcg cgtgtacccg gagggtcctc ctccctcgta cgagagcgtg atgcagcagg 10980
cggtggcggc ggcgatgcag cccccgctgg aggcgcctta cgtgcccccg cggtacctgg 11040
cgcctacgga ggggcggaac agcattcgtt actcggagct ggcacccttg tacgatacca 11100
cccggttgta cctggtggac aacaagtcgg cggacatcgc ctcgctgaac taccagaacg 11160
accacagcaa cttcctgacc accgtggtgc agaacaacga tttcaccccc acggaggcca 11220
gcacccagac catcaacttt gacgagcgct cgcggtgggg cggccagctg aaaaccatca 11280
tgcacaccaa catgcccaac gtgaacgagt tcatgtacag caacaagttc aaggcgcggg 11340
tgatggtctc gcgcaagacc cccaacgggg tcacagtaac agatggtagt caggacgagc 11400
tgacctacga gtgggtggag tttgagctgc ccgagggcaa cttctcggtg accatgacca 11460
tcgatctgat gaacaacgcc atcatcgaca actacttggc ggtgggacgg cagaacgggg 11520
tgctggagag cgacatcggc gtgaagttcg acacgcgcaa cttccggctg ggctgggacc 11580
ccgtgaccga gctggtgatg ccgggcgtgt acaccaacga ggccttccac cccgacattg 11640
tcctgctgcc cggctgcggc gtggacttca ccgagagccg cctcagcaac ctgctgggca 11700
tccgcaagcg gcagcccttc caggagggct tccagatcct gtacgaggac ctggaggggg 11760
gcaacatccc cgcgctgctg gacgtggacg cctacgagaa aagcaaggag gagagcgccg 11820
ccgcggcgac cgcagccgtg gccaccgcct ctaccgaggt gcggggcgat aattttgcta 11880
gcgccgcggc agtggccgag gcggctgaaa ccgaaagtaa gatagtgatc cagccggtgg 11940
agaaggacag caaggacagg agctacaacg tgctcgcgga caagaaaaac accgcctacc 12000
gcagctggta cctggcctac aactacggcg accccgagaa gggcgtgcgc tcctggacgc 12060
tgctcaccac ctcggacgtc acctgcggcg tggagcaagt ctactggtcg ctgcccgaca 12120
tgatgcaaga cccggtcacc ttccgctcca cgcgacaagt tagcaactac ccggtggtgg 12180
gcgccgagct cctgcccgtc tactccaaga gcttcttcaa cgagcaggcc gtctactcgc 12240

agcagctgcg cgccttcacc tcgctcacgc acgtcttcaa ccgcttcccc gagaaccaga 12300

tcctcgtccg cccgcccgcg cccaccatta ccaccgtcag tgaaaacgtt cctgctctca 12360

cagatcacgg gaccctgccg ctgcgcagca gtatccgggg agtccagcgc gtgaccgtca 12420

ctgacgccag acgccgcacc tgcccctacg tctacaaggc cctgggcgta gtcgcgccgc 12480

gcgtcctctc gagccgcacc ttctaaaaaa tgtccattct catctcgccc agtaataaca 12540

ccggttgggg cctgcgcgcg cccagcaaga tgtacggagg cgctcgccaa cgctccacgc 12600

aacaccccgt gcgcgtgcgc gggcacttcc gcgctccctg gggcgccctc aagggtcgcg 12660

tgcgctcgcg caccaccgtc gacgacgtga tcgaccaggt ggtggccgac gcgcgcaact 12720

acacgcccgc cgccgcgccc gcctccaccg tggacgccgt catcgacagc gtggtggccg 12780

acgcgcgccg gtacgcccgc gccaagagcc ggcggcggcg catcgcccgg cggcaccgga 12840

gcacccccgc catgcgcgcg gcgcgagcct tgctgcgcag ggccaggcgc acgggacgca 12900

gggccatgct cagggcggcc agacgcgcgg cctccggcag cagcagcgcc ggcaggaccc 12960

gcagacgcgc ggccacggcg gcggcggcgg ccatcgccag catgtcccgc ccgcggcgcg 13020

gcaacgtgta ctgggtgcgc gacgccgcca ccggtgtgcg cgtgcccgtg cgcacccgcc 13080

cccctcgcac ttgaagatgc tgacttcgcg atgttgatgt gtcccagcgg cgaggaggat 13140

gtccaagcgc aaattcaagg aagagatgct ccaggtcatc gcgcctgaga tctacggccc 13200

cgcggcggcg gtgaaggagg aaagaaagcc ccgcaaactg aagcgggtca aaaaggacaa 13260

aaaggaagaa gatgtggacg atatggtgga gtttgtgcgc gagttcgccc cccggcggcg 13320

cgtgcagtgg cgcgggcgga aggtgcgccc ggtgctgaga cccggcacca cggtggtctt 13380

cacgcccgga gagcgctctg gcaccgcctc caagcgctcc tacgacgagg tgtacgggga 13440

tgatgatatt ctggagcagg cggccgagcg cctgggcgag tttgcttacg gcaagcgcag 13500

ccgccccgcg cccttgaaag aggaggcggt gtccatcccg ctggaccacg gcaaccccac 13560

gccgagcctg aagccggtga ccctgcagca ggtgctgcca gccgcggcgc cgcgccgggg 13620

gttcaagcgc gagggcgagg atctgtaccc caccatgcag ctgatggtgc ccaagcgcca 13680

gaagctggag gacgtgctgg agcacatgaa ggtggacccg gacgtgcagc ccgaggtcaa 13740

ggtgcggccc atcaagcagg tggccccggg cctgggcgtg cagaccgtgg acatcaagat 13800

ccccacggag cccatggaaa cgcagactga gcccgtgaag cccagcacca gcaccatgga 13860

ggtgcagacg gatccctgga tgccagcggc ttccaccacc actcgccgaa gacgcaagta 13920

cggcgcggcc agcctgctga tgcccaacta cgcgctgcat ccttccatca tccccacgcc 13980

gggctaccgc ggcacgcgct tctaccgcgg ctacaccagc agccgccgcc gcaagaccac 14040

cacccgccgc cgccgtcgtc gcagccgccg cagcagcacc gcgacttccg ccttggtgcg 14100

gagagtgtac cgcagcgggc gcgagcctct gaccctgccg cgcgcgcgct accacccgag 14160

catcgccatt taactaccgc ctcctacttg cagatatggc cctcacatgc cgcctccgcg 14220

tccccattac gggctaccga ggaagaaagc cgcgccgtag aaggctgacg gggaacgggc 14280

tgcgtcgcca tcaccaccgg cggcggcgcg ccatcagcaa gcggttgggg ggaggcttcc 14340

tgcccgcgct gatccccatc atcgccgcgg cgatcggggc gatccccggc atagcttccg 14400
tggcggtgca ggcctctcag cgccactgag acacagcttg gaaaatttgt aataaaaaat 14460
ggactgacgc tcctggtcct gtgatgtgtg tttttagatg gaagacatca atttttcgtc 14520
cctggcaccg cgacacggca cgcggccgtt tatgggcacc tggagcgaca tcggcaacag 14580
ccaactgaac gggggcgcct tcaattggag cagtctctgg agcgggctta agaatttcgg 14640
gtccacgctc aaaacctatg gcaacaaggc gtggaacagc agcacagggc aggcgctgag 14700
ggaaaagctg aaagagcaga acttccagca gaaggtggtc gatggcctgg cctcgggcat 14760
caacggggtg gtggacctgg ccaaccaggc cgtgcagaaa cagatcaaca gccgcctgga 14820
cgcggtcccg cccgcggggt ccgtggacat gccccaggtg gaggaggagc tgcctcccct 14880
ggacaagcgc ggcgacaagc gaccgcgtcc cgacgctgag gagacgctgc tgacgcacac 14940
ggacgagccg cccccgtacg aggaggcggt gaaactgggt ctgcccacca cgcggcccgt 15000
ggcgcctctg gccaccgggg tgctgaaacc cagcagcagc agcagccagc ccgcgaccct 15060
ggacttgcct ccacctcgcc cctccacagt ggctaagccc ctgccgccgg tggccgtcgc 15120
gtcgcgcgcc ccccgaggcc gcccccaggc gaactggcag agcactctga acagcatcgt 15180
gggtctggga gtgcagagtg tgaagcgccg ccgctgctat taaaagacac tgtagcgctt 15240
aacttgcttg tctgtgtgtg tatatgtatg tccgccgacc agaaggagga agaggcgcgt 15300
cgccgagttg caagatggcc accccatcga tgctgcccca gtgggcgtac atgcacatcg 15360
ccggacagga cgcttcggag tacctgagtc cgggtctggt gcagttcgcc cgcgccacag 15420
acacctactt cagtctgggg aacaagttta ggaaccccac ggtggcgccc acgcacgatg 15480
tgaccaccga ccgcagccag cggctgacgc tgcgcttcgt gcccgtggac cgcgaggaca 15540
acacctactc gtacaaagtg cgctacacgc tggccgtggg cgacaaccgc gtgctggaca 15600
tggccagcac ctactttgac atccgcggcg tgctggatcg gggccccagc ttcaaaccct 15660
actccggcac cgcctacaac agcctggctc ccaagggagc gcccaacacc tcacaatgga 15720
taaccaaaga caagacatac agttttggaa atgctccagt cagaggattg gacattacag 15780
aagagggtct ccaaatagta accgatgagt caggggggtga aagcaagaaa atttttgcag 15840
acaaaaccta tcagcctgaa cctcagcttg gagatgagga atggcatgat actattggag 15900
ctgaagacaa gtatggaggc agagcgctta aacctgccac caacatgaaa ccctgctatg 15960
ggtctttcgc caagccaact aatgctaagg gaggtcaggc taaaagcaga accaaggacg 16020
atggcactac tgagcctgat attgacatgg cctttttttga cgatcgcagt cagcaagcta 16080
gtttcagtcc agaacttgtt ttgtatactg agaatgtcga tctggacacc ccggataccc 16140
acattattta caaacctggc actgatgaaa caagttcttc tttcaacttg ggtcagcagt 16200
ccatgcccaa cagacccaat tacattggct tcagagacaa ctttatcgga ctcatgtact 16260
acaacagcac tggcaatatg ggtgtactgg ctggacaggc ctcccagctg aatgctgtgg 16320
tggacttgca ggacagaaac accgaactgt cctaccagct cttgcttgac tctctgggcg 16380

acagaaccag gtatttcagt atgtggaatc aggcggtgga cagctatgac cccgatgtgc 16440
gcattattga aaatcacggt gtggaggatg aacttcccaa ctattgcttc cctttgaatg 16500
gtgtgggctt tacagattca ttccagggaa ttaaggttaa aactaccaat aacggaacag 16560
caaacgctac agagtgggaa tctgatacct ctgtcaataa tgctaatgag attgccaagg 16620
gcaatccttt cgccatggag atcaacatcc aggccaacct gtggcggaac ttcctctacg 16680
cgaacgtggc gctgtacctg cccgactcct acaagtacac gccggccaac atcacgctgc 16740
ccaccaacac caacacctac gattacatga acggccgcgt ggtggcgccc tcgctggtgg 16800
acgcctacat caacatcggg gcgcgctggt cgctggaccc catggacaac gtcaacccct 16860
tcaaccacca ccgcaacgcg ggcctgcgat accgctccat gctcctgggc aacgggcgct 16920
acgtgccctt ccacatccag gtgccccaaa agtttttcgc catcaagagc ctcctgctcc 16980
tgcccgggtc ctacacctac gagtggaact tccgcaagga cgtcaacatg atcctgcaga 17040
gctccctcgg caacgacctg cgcacggacg gggcctccat ctccttcacc agcatcaacc 17100
tctacgccac cttcttcccc atggcgcaca acacggcctc cacgctcgag gccatgctgc 17160
gcaacgacac caacgaccag tccttcaacg actacctctc ggcggccaac atgctctacc 17220
ccatcccggc caacgccacc aacgtgccca tctccatccc ctcgcgcaac tgggccgcct 17280
tccgcggctg gtccttcacg cgtctcaaga ccaaggagac gccctcgctg ggctccgggt 17340
tcgaccccta cttcgtctac tcgggctcca tcccctacct cgacggcacc ttctacctca 17400
accacacctt caagaaggtc tccatcacct tcgactcctc cgtcagctgg cccggcaacg 17460
accgcctcct gacgcccaac gagttcgaaa tcaagcgcac cgtcgacgga gaggggtaca 17520
acgtggccca gtgcaacatg accaaggact ggttcctggt ccagatgctg gcccactaca 17580
acatcggcta ccagggcttc tacgtgcccg agggctacaa ggaccgcatg tactccttct 17640
tccgcaactt ccagcccatg agccgccagg tcgtggacga ggtcaactac aaggactacc 17700
aggccgtcac cctggcctac cagcacaaca actcgggctt cgtcggctac ctcgcgccca 17760
ccatgcgcca ggggcagccc taccccgcca actacccgta cccgctcatc ggcaagagcg 17820
ccgtcaccag cgtcacccag aaaaagttcc tctgcgaccg ggtcatgtgg cgcatcccct 17880
tctccagcaa cttcatgtcc atgggcgcgc tcaccgacct cggccagaac atgctctatg 17940
ccaactccgc ccacgcgcta gacatgaatt tcgaagtcga ccccatggat gagtccaccc 18000
ttctctatgt tgtcttcgaa gtcttcgacg tcgtccgagt gcaccagccc caccgcggcg 18060
tcatcgaggc cgtctacctg cgcaccccct tctcggccgg taacgccacc acctaagctc 18120
ttgcttcttg catgatggct gagcccacgg gctccggcga gcaggagctc agggccatca 18180
tccgcgacct gggctgcggg ccctacttcc tgggcacctt cgataagcgc ttcccgggat 18240
tcatggcccc gcacaagctg gcctgcgcca tcgtcaacac ggccggtcgc gagaccgggg 18300
gcgagcactg gctggccttc gcctggaacc cgcgctcgaa cacctgctac ctcttcgacc 18360
ccttcgggtt ctcggacgag cgcctcaagc agatctacca gttcgagtac gagggcctgc 18420
tgcgccgcag cgccctggcc accgaggacc gctgcgtcac cctggaaaag tccacccaga 18480

ccgtgcaggg tccgcgctcg gccgcctgcg ggctcttctg ctgcatgttc ctgcacgcct 18540
tcgtgcactg gcccgaccgc cccatggaca agaaccccac catgaacttg ctgacggggg 18600
tgcccaacgg catgctccag tcgccccagg tggaacccac cctgcgccgc aaccaggagg 18660
cgctctaccg cttcctcaac gcccactccg cctactttcg ctcccaccgc gcgcgcatcg 18720
agaaggccac cgccttcgac cgcatgaatc aagacatgta aaccgtgtgt gtatgtgaat 18780
gctttattca taataaacag cacatgttta tgccaccttc tctgaggctc tgactttatt 18840
tagaaatcga aggggttctg ccggctctcg gcgtgccccg cgggcaggga tacgttgcgg 18900
aactggtact tgggcagcca cttgaactcg gggatcagca gcttcggcac ggggaggtcg 18960
gggaacgagt cgctccacag cttgcgcgtg agttgcaggg cgcccagcag gtcgggcgcg 19020
gagatcttga aatcgcagtt gggacccgcg ttctgcgcgc gagagttgcg gtacacgggg 19080
ttgcagcact ggaacaccat cagggccggg tgcttcacgc tcgccagcac cgtcgcgtcg 19140
gtgatgccct ccacgtccag atcctcggcg ttggccatcc cgaagggggt catcttgcag 19200
gtctgccgcc ccatgctggg cacgcagccg ggcttgtggt tgcaatcgca gtgcaggggg 19260
atcagcatca tctgggcctg ctcggagctc atgcccgggt acatggcctt catgaaagcc 19320
tccagctggc ggaaggcctg ctgcgccttg ccgccctcgg tgaagaagac cccgcaggac 19380
ttgctagaga actggttggt agcgcagccc gcgtcgtgca cgcagcagcg cgcgtcgttg 19440
ttggccagct gcaccacgct gcgcccccag cggttctggg tgatcttggc ccggtcgggg 19500
ttctccttca gcgcgcgctg cccgttctcg ctcgccacat ccatctcgat cgtgtgctcc 19560
ttctggatca tcacggtccc gtgcaggcac cgcagcttgc cctcggcctc ggtgcagccg 19620
tgcagccaca gcgcgcagcc ggtgctctcc cagttcttgt gggcgatctg ggagtgcgag 19680
tgcacgaagc cctgcaggaa gcggcccatc atcgcggtca gggtcttgtt gctggtgaag 19740
gtcagcggga tgccgcggtg ctcctcgttc acatacaggt ggcagatgcg gcggtacacc 19800
tcgccctgct cgggcatcag ctggaaggcg gacttcaggt cgctctccac gcggtaccgc 19860
tccatcagca gcgtcatcac ttccatgccc ttctcccagg ccgaaacgat cggcaggctc 19920
agggggttct tcaccgtcat cttagtcgcc gccgccgagg tcagggggtc gttctcgtcc 19980
agggtctcaa acactcgctt gccgtccttc tcggtgatgc gcacgggggg gaaggcgaag 20040
cccacggccg ccagctcctc ctcggcctgc ctttcgtcct cgctgtcctg gctgatgtct 20100
tgcaaaggca catgcttggt cttgcggggt ttctttttgg gcggcagagg cggcggcgga 20160
gacgtgctgg gcgagcgcga gttctcgctc accacgacta tttcttcttc ttggccgtcg 20220
tccgagacca cgcggcggta ggcatgcctc ttctggggca gaggcggagg cgacgggctc 20280
tcgcggttcg acgggcggct ggcagagccc cttccgcgtt cgggggtgcg ctcctggcgg 20340
cgctgctctg actgacttcc tccgcggccg gccattgtgt tctcctaggg agcaacaagc 20400
atggagactc agccatcgtc gccaacatcg ccatctgccc ccgccgccgc cgacgagaac 20460
cagcagcagc agaatgaaag cttaaccgcc ccgccgccca gccccacctc cgacgccgcc 20520

gcagccccag acatgcaaga gatggaggaa tccatcgaga ttgacctggg ctacgtgacg 20580

cccgcggagc acgaggagga gctggcagcg cgcttttcag ccccggaaga gaaccaccaa 20640

gagcagccag agcaggaagc agagagcgag cagcagcagg ctgggctcga gcatggcgac 20700

tacctgagcg gggcagagga cgtgctcatc aagcatctgg cccgccaatg catcatcgtc 20760

aaggacgcgc tgctcgaccg cgccgaggtg cccctcagcg tggcggagct cagccgcgcc 20820

tacgagcgca acctcttctc gccgcgcgtg ccccccaagc gccagcccaa cggcacctgc 20880

gagcccaacc cgcgcctcaa cttctacccg gtcttcgcgg tgcccgaggc cctggccacc 20940

taccacctct ttttcaagaa ccaaaggatc cccgtctcct gccgcgccaa ccgcacccgc 21000

gccgacgccc tgctcaacct gggccccggc gcccgcctac ctgatatcgc ctccttggaa 21060

gaggttccca agatcttcga gggtctgggc agcgacgaga ctcgggccgc gaacgctctg 21120

caaggaagcg gagaggagca tgagcaccac agcgccctgg tggagttgga aggcgacaac 21180

gcgcgcctgg cggtcctcaa gcgcacggtc gagctgaccc acttcgccta cccagcgctc 21240

aacctgcccc ccaaggtcat gagcgccgtc atggaccagg tgctcatcaa gcgcgcctcg 21300

cccctctcgg aggaggagat gcaggacccc gagagctcgg acgagggcaa gcccgtggtc 21360

agcgacgagc agctggcgcg ctggctggga gcgagtagca ccccccagag cctggaagag 21420

cggcgcaagc tcatgatggc cgtggtcctg gtgaccgtgg agctggagtg tctgcgccgc 21480

ttctttgccg acgcggagac cctgcgcaag gtcgaggaga acctgcacta cctcttcagg 21540

cacgggttcg tgcgccaggc ctgcaagatc tccaacgtgg agctgaccaa cctggtctcc 21600

tacatgggca tcctgcacga gaaccgcctg gggcagaacg tgctgcacac caccctgcgc 21660

ggggaggccc gccgcgacta catccgcgac tgcgtctacc tgtacctctg ccacacctgg 21720

cagacgggca tgggcgtgtg gcagcagtgc ctggaggagc agaacctgaa agagctctgc 21780

aagctcctgc agaagaacct caaggccctg tggaccgggt tcgacgagcg caccaccgcc 21840

tcggacctgg ccgacctcat cttccccgag cgcctgcggc tgacgctgcg caacgggctg 21900

cccgacttta tgagccaaag catgttgcaa aactttcgct ctttcatcct cgaacgctcc 21960

gggatcctgc ccgccacctg ctccgcactg ccctcggact tcgtgccgct gaccttccgc 22020

gagtgccccc cgccgctctg gagccactgc tacctgctgc gcctggccaa ctacctggcc 22080

taccactcgg acgtgatcga ggacgtcagc ggcgagggtc tgctcgagtg ccactgccgc 22140

tgcaacctct gcacgccgca ccgctccctg gcctgcaacc cccagctgct gagcgagacc 22200

cagatcatcg gcaccttcga gttgcaaggg cccggtgacg gcaagggggg tctgaaactc 22260

accccggggc tgtggacctc ggcctacttg cgcaagttcg tgcccgagga ctaccatccc 22320

ttcgagatca ggttctacga ggaccaatcc cagccgccca aggccgagct gtcggcctgc 22380

gtcatcaccc agggggccat cctggcccaa ttgcaagcca tccagaaatc ccgccaagaa 22440

tttctgctga aaaagggcca cggggtctac ctggaccccc agaccggaga ggagctcaac 22500

cccagcttcc cccagg atg ccc cga gga agc agc aag aag ctg aaa gtg gag 22552
Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu
1 5 10

```
ctg ccg ccg gag gat ttg gag gaa gac tgg gag agc agt cag gca gag      22600
Leu Pro Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu
        15                  20                  25

gag atg gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa      22648
Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
    30                  35                  40

gac agt ctg gaa gac gag gtg gag gag gag gca gag gaa gaa gca gcc      22696
Asp Ser Leu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala
45                  50                  55                  60

gcc gcc aga ccg tcg tcc tcg gcg gag gag gag aaa gca agc agc acg      22744
Ala Ala Arg Pro Ser Ser Ser Ala Glu Glu Glu Lys Ala Ser Ser Thr
                65                  70                  75

gat acc atc tcc gct ccg ggt crg ggt cgc ggc ggc cgg gcc cac agt      22792
Asp Thr Ile Ser Ala Pro Gly Xaa Gly Arg Gly Gly Arg Ala His Ser
            80                  85                  90

agg tgg gac gag acc ggg cgc ttc ccg aac ccc acc acc cag acc ggt      22840
Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly
        95                  100                 105

aag aag gag cgg cag gga tac aag tcc tgg cgg ggg cac aaa aac gcc      22888
Lys Lys Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala
    110                 115                 120

atc gtc tcc tgc ttg caa gcc tgc ggg ggc aac atc tcc ttc acc cgg      22936
Ile Val Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg
125                 130                 135                 140

cgc tac ctg ctc ttc cac cgc ggg gtg aac ttc ccc cgc aac atc ttg      22984
Arg Tyr Leu Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu
                145                 150                 155

cat tac tac cgt cac ctc cac agc ccc tac tac tgt ttc caa gaa gag      23032
His Tyr Tyr Arg His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu
            160                 165                 170

gca gaa acc cag cag cag cag aaa acc agc ggc agc tagaaaatcc           23078
Ala Glu Thr Gln Gln Gln Gln Lys Thr Ser Gly Ser
        175                 180

acagcggcgg cggcaggtgg actgaggatc gcggcgaacg agccggcgca gacccgggag    23138

ctgaggaacc ggatctttcc caccctctat gccatcttcc agcagagtcg ggggcaggag    23198

caggaactga aagtcaagaa ccgttctctg cgctcgctca cccgcagttg tctgtatcac    23258

aagagcgaag accaacttca gcgcactctc gaggacgccg aggctctctt caacaagtac    23318

tgcgcgctca ctcttaaaga gtagcccgcg cccgcccaca cacggaaaaa ggcgggaatt    23378

acgtcaccac ctgcgccctt cgcccgacca tcatcatgag caaagagatt cccacgcctt    23438

acatgtggag ctaccagccc cagatgggcc tggccgccgg cgccgcccag gactactcca    23498

cccgcatgaa ctggctcagt gccgggcccg cgatgatctc acgggtgaat gacatccgcg    23558

cccaccgaaa ccagatactc ctagaacagt cagcgatcac cgccacgccc cgccatcacc    23618

ttaatccgcg taattggccc gccgccctgg tgtaccagga aattccccag cccacgaccg    23678

tactacttcc gcgagacgcc caggccgaag tccagctgac taactcaggt gtccagctgg    23738

ccggcggcgc caccctgtgt cgtcaccgcc ccgctcaggg tataaagcgg ctggtgatcc    23798
```

```
gaggcagagg cacacagctc aacgacgagg tggtgagctc ttcgctgggt ctgcgacctg    23858

acggagtctt ccaactcgcc ggatcgggga gatcttcctt cacgcctcgt caggccgtcc    23918

tgactttgga gagttcgtcc tcacagcccc gctcgggcgg catcggcact ctccagttcg    23978

tggaggagtt cactccctcg gtctacttca accccttctc cggctccccc ggccactacc    24038

cggacgagtt catcccgaac ttcgacgcca tcagcgagtc ggtggacggc tacgattgaa    24098

tgtcccatgg tggcgtggct gacctagctc ggcttcgaca cctggaccac tgccgccgct    24158

tccgctgctt cgctcgggat ctcgccgagt ttgcctactt tgagctgccc gaggagcacc    24218

ctcagggccc ggcccacgga gtgcggatca tcgtcgaagg gggtctcgac tcccacctgc    24278

ttcggatctt cagccagcga ccgatcctgg tcgagcgcga gcaaggacag acccgtctga    24338

ccctgtactg catctgcaac caccccggcc tgc atg aaa gtc ttt gtt gtc tgc      24392
                                      Met Lys Val Phe Val Val Cys
                                      185                 190

tgt gta ctg agt ata ata aaa gct gag atc agc gac tac tcc gga ctc      24440
Cys Val Leu Ser Ile Ile Lys Ala Glu Ile Ser Asp Tyr Ser Gly Leu
            195                 200                 205

gat tgt ggt gtt cct gct atc aac cag tcc ctg ttc ttc acc ggg aac      24488
Asp Cys Gly Val Pro Ala Ile Asn Gln Ser Leu Phe Phe Thr Gly Asn
        210                 215                 220

gag acc gag ctc cag ctc cag tgt aag ccc cac aag aag tat ctc acc      24536
Glu Thr Glu Leu Gln Leu Gln Cys Lys Pro His Lys Lys Tyr Leu Thr
    225                 230                 235

tgg ctg ttc cag ggc tcc ccg atc gcc gtt gtc aac cac tgc gac aac      24584
Trp Leu Phe Gln Gly Ser Pro Ile Ala Val Val Asn His Cys Asp Asn
240                 245                 250                 255

gac gga gtc ctg ctg agc ggc cct gcc aac ctt act ttt tcc acc cgc      24632
Asp Gly Val Leu Leu Ser Gly Pro Ala Asn Leu Thr Phe Ser Thr Arg
                260                 265                 270

aga agc aag ctc cag ctc ttc caa ccc ttc ctc ccc ggg acc tat cag      24680
Arg Ser Lys Leu Gln Leu Phe Gln Pro Phe Leu Pro Gly Thr Tyr Gln
            275                 280                 285

tgc gtc tcg gga ccc tgc cat cac acc ttc cac ctg atc ccg aat acc      24728
Cys Val Ser Gly Pro Cys His His Thr Phe His Leu Ile Pro Asn Thr
        290                 295                 300

aca gcg ccg ctc ccc gct act aac aac caa act acc cac caa cgc cac      24776
Thr Ala Pro Leu Pro Ala Thr Asn Asn Gln Thr Thr His Gln Arg His
    305                 310                 315

cgt cgc gac ctt tcc tct gaa tct aat acc act acc gga ggt gag ctc      24824
Arg Arg Asp Leu Ser Ser Glu Ser Asn Thr Thr Thr Gly Gly Glu Leu
320                 325                 330                 335

cga ggt cga cca acc tct ggg att tac tac ggc ccc tgg gag gtg gtg      24872
Arg Gly Arg Pro Thr Ser Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val
                340                 345                 350

ggg tta ata gcg cta ggc cta gtt gtg ggt ggg ctt ttg gct ctc tgc      24920
Gly Leu Ile Ala Leu Gly Leu Val Val Gly Gly Leu Leu Ala Leu Cys
            355                 360                 365

tac cta tac ctc cct tgc tgt tcg tac tta gtg gtg ctg tgt tgc tgg      24968
Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr Leu Val Val Leu Cys Cys Trp
        370                 375                 380
```

```
ttt aag aaa tgg ggc aga tca ccc tagtgagctg cggtgtgctg gtggcggtgc     25022
Phe Lys Lys Trp Gly Arg Ser Pro
    385                 390

tttcgattgt gggactgggc ggcgcggctg tagtgaagga ggagaaggcc gatccctgct    25082

tgcatttcaa tcccgacaaa tgccagctga gttttcagcc cgatggcaat cggtgcgcgg    25142

tgctgatcaa gtgcggatgg gaatgcgaga acgtgagaat cgagtacaat aacaagactc    25202

ggaacaatac tctcgcgtcc gtgtggcagc ccggggaccc cgagtggtac accgtctctg    25262

tccccggtgc tgacggctcc ccgcgcaccg tgaacaatac tttcattttt gcgcacatgt    25322

gcgacacggt catgtggatg agcaagcagt acgatatgtg gccccccacg aaggagaaca    25382

tcgtggtctt ctccatcgct tacagcctgt gcacggtgct aatcaccgct atcgtgtgcc    25442

tgagcattca catgctcatc gctattcgcc ccagaaataa tgccgaaaaa gaaaaacagc    25502

cataacacgt tttttcacac acctttttca gaccatggcc tctgttaaat ttttgctttt    25562

atttgccagt ctcattactg ttataagtaa tgagaaactc actatttaca ttggcactaa    25622

ccacactcta gaaggaattc caaaatcctc atggtattgc tattttgatc aagatccaga    25682

cttaactata gaactgtgtg gtaacaatgg acaaaataca agcattcatt taattaactt    25742

taaatgcgga gacgatttga aattaattaa tatcactaaa gagtatggag gtatgtatta    25802

ctatgttgca gaaaataaca acatgcagtt ttatgaagtt actgtaacta atcccaccac    25862

acctagaaca acaacaacca ccacaaaaac tacacctgtt accactatgc agctcgctac    25922

caataacatt tttgccatgc gtcaaatggt caacaatagc actcaaccca ccccacccag    25982

tgaggaaatt cccaaatcca tgattggcat tattgttgct gtagtggtgt gcatgttgat    26042

catcgccttg tgcatggtgt actatgcctt ctgctacaga aagcacagac tgaacgacaa    26102

gctggaacac ttactaagtg ttgaatttta atttttaga accatgaaga tcctaggcct    26162

tttagttttt tctatcatta cctctgctct ttgtgaatca gtggataaag atgttactat    26222

taccactggt tctaactata cactgaaagg gccaccctca ggtatgcttt cgtggtattg    26282

ctattttgga aatgacgcag agcaaactga gctttgcaat gcaatgaaag gccaaatgcc    26342

aaccacaaaa attaaacata aatgtgatgg tagtgatcta atactactca atgtcacgaa    26402

agcatatggt ggcagttatt catgccctgc tgccaacact gaggatatga ttttttacaa    26462

agtggaagtg gttgatccca ctactccacc acccaccacc acaactactc acaccacaca    26522

cacagaacaa accacagcag aggaggcagc aaagttagcc ttgcaggtcc aagacagttc    26582

atttgttggc attaccccta cacccgatca gcggtgtccg gggctgctcg tcagcggcat    26642

tgtcggtgtg ctttcgggat tagcagtcat aatcatctgc atgttcattt ttgcttgctg    26702

ctatagaagg ctttaccgac aaaaatcaga cccactgctg aacctctatg tttaattttt    26762

tccagagcca tgaaggcagt tagcactcta atttttgtt ctttgattgg cactgttttt    26822

agtgttagct ttttgaaaca aattaatgtt actgaggggg aaaatgtgac actggtaggc    26882

gtagaaggtg ctcaaaatac cacctggaca aaataccacc tcgatgggtg gaaagatatt    26942
```

```
tgcaattgga gtgtcattac ttacacatgt gagggagtta atttgaccat agtcaatgcc    27002

agccaaaatc agaagggttg gattaaaggg caatctgtta gtgttaccag ccaggggtac    27062

tatacccagc atactcttat ttatgacatt gtagttatac cgctgccaac gcctagccca    27122

cctagcacca ctacacaaac aacccacact acacagacaa ccacatacag tacatcaaat    27182

caacctacca ccactacagc agcagaggtt gccagctcgt ctggggtccg agtggcattt    27242

ttgttattgg ccccatctag cagtcccact gctagtacca atgagcagac tactgatttt    27302

ttgtccactg tcgagagcca caccacagct acctcgagtg ccttctctag caccgccaat    27362

ctctcctcgc tttcctctac accaatcagt cccgctacta ctcctagccc cgctcctctt    27422

cccactcccc tgaagcaaac agacggcggc atgcaatggc agatcaccct gctcattgtg    27482

atcgggttgg tcatcctggc cgtgttgctc tactacatct tctgccgccg cattcccaac    27542

gcgcaccgca agccggccta caagcccatc gttatcgggc agccggagcc gcttcaggtg    27602

gaaggggtc taaggaatct tctcttctct tttacagtat ggtgattgaa ctatgattcc    27662

tagacaattc ttgatcacta ttcttatctg cctcctccaa gtctgtgcca ccctcgctct    27722

ggtggccaac gccagtccag actgtattgg gcccttcgcc tcctacgtgc tctttgcctt    27782

cgtcacctgc atctgctgct gtagcatagt ctgcctgctt atcaccttct tccagttcat    27842

tgactggatc tttgtgcgca tcgcctacct gcgccaccac ccccagtacc gcgaccagcg    27902

agtggcgcgg ctgctcaggc tcctctgata agcatgcggg ctctgctact tctcgcgctt    27962

ctgctgttag tgctcccccg tcccgtcgac ccccggtccc ccactcagtc ccccgaggag    28022

gtccgcaaat gcaaattcca agaaccctgg aaattcctca aatgctaccg ccaaaaatca    28082

gacatgcatc ccagctggat catgatcatt gggatcgtga acattctggc ctgcaccctc    28142

atctcctttg tgatttaccc ctactttgac tttggttgga actcgccaga ggcgctctat    28202

ctcccgcctg aacctgacac accaccacag caacctcagg cacacgcact accaccacca    28262

cagcctaggc cacaatacat gcccatatta gactatgagg ccgagccaca gcgacccatg    28322

ctccccgcta ttagttactt caatctaacc ggcggag atg act gac cca ctg gcc    28377
                                        Met Thr Asp Pro Leu Ala
                                        395

aac aac aac gtc aac gac ctt ctc ctg gac atg gac ggc cgc gcc tcg      28425
Asn Asn Asn Val Asn Asp Leu Leu Leu Asp Met Asp Gly Arg Ala Ser
        400                 405                 410

gag cag cga ctc gcc caa ctt cgc att cgc cag cag cag gag aga gcc      28473
Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala
    415                 420                 425

gtc aag gag ctg cag gac ggc ata gcc atc cac cag tgc aag aaa ggc      28521
Val Lys Glu Leu Gln Asp Gly Ile Ala Ile His Gln Cys Lys Lys Gly
430                 435                 440                 445

atc ttc tgc ctg gtg aaa cag gcc aag atc tcc tac gag gtc acc cag      28569
Ile Phe Cys Leu Val Lys Gln Ala Lys Ile Ser Tyr Glu Val Thr Gln
                450                 455                 460

acc gac cat cgc ctc tcc tac gag ctc ctg cag cag cgc cag aag ttc      28617
Thr Asp His Arg Leu Ser Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe
            465                 470                 475
```

```
acc tgc ctg gtc gga gtc aac ccc atc gtc atc acc cag cag tcg gga      28665
Thr Cys Leu Val Gly Val Asn Pro Ile Val Ile Thr Gln Gln Ser Gly
        480                 485                 490

gat acc aag ggg tgc atc cac tgc tcc tgc gac tcc ccc gac tgc gtc      28713
Asp Thr Lys Gly Cys Ile His Cys Ser Cys Asp Ser Pro Asp Cys Val
    495                 500                 505

cac act ctg atc aag acc ctc tgc ggc ctc cgc gac ctc ctc ccc atg      28761
His Thr Leu Ile Lys Thr Leu Cys Gly Leu Arg Asp Leu Leu Pro Met
510                 515                 520                 525

aac taatcacccc cttatccagt gaaataaaga tcatat                          28800
Asn
```

<210> 124
<211> 184
<212> PRT
<213> Artificial Sequence

<220>
<221> misc_feature
<222> (84)..(84)
<223> The 'Xaa' at location 84 stands for Arg, or Gln.

<220>
<223> Synthetic Construct

<400> 124

```
Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Pro Glu
1               5                   10                  15

Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Met Glu Asp
            20                  25                  30

Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu Glu
        35                  40                  45

Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala Ala Ala Arg Pro
    50                  55                  60

Ser Ser Ser Ala Glu Glu Glu Lys Ala Ser Ser Thr Asp Thr Ile Ser
65                  70                  75                  80

Ala Pro Gly Xaa Gly Arg Gly Gly Arg Ala His Ser Arg Trp Asp Glu
                85                  90                  95

Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu Arg
            100                 105                 110

Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser Cys
        115                 120                 125

Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu Leu
    130                 135                 140
```

```
Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr Arg
145                 150                 155                 160


His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala Glu Thr Gln
                165                 170                 175


Gln Gln Gln Lys Thr Ser Gly Ser
            180


<210>  125
<211>  207
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  125

Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1               5                   10                  15


Ile Ser Asp Tyr Ser Gly Leu Asp Cys Gly Val Pro Ala Ile Asn Gln
            20                  25                  30


Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys
        35                  40                  45


Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala
    50                  55                  60


Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala
65                  70                  75                  80


Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro
                85                  90                  95


Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr
            100                 105                 110


Phe His Leu Ile Pro Asn Thr Thr Ala Pro Leu Pro Ala Thr Asn Asn
        115                 120                 125


Gln Thr Thr His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn
    130                 135                 140


Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr
145                 150                 155                 160


Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Val
                165                 170                 175


Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr
            180                 185                 190
```

Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
195 200 205

<210> 126
<211> 135
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 126

Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp Leu Leu Leu Asp
1 5 10 15

Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg
20 25 30

Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Gly Ile Ala Ile
35 40 45

His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile
50 55 60

Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser Tyr Glu Leu Leu
65 70 75 80

Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val
85 90 95

Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys
100 105 110

Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu
115 120 125

Arg Asp Leu Leu Pro Met Asn
130 135

<210> 127
<211> 38697
<212> DNA
<213> Artificial Sequence

<220>
<223> Simian adenovirus A1320 clone

<220>
<221> rep_origin
<222> (1025)..(1025)
<223> ORI

<220>
<221> misc_feature
<222> (1783)..(2646)
<223> AP(R) complement (1783..2646)

<220>
<221> repeat_region
<222> (2871)..(2993)
<223> ITR

<220>
<221> misc_feature
<222> (3348)..(3373)
<223> I-Ceu\recognition site

<220>
<221> enhancer
<222> (3715)..(3975)
<223> Enhancer

<220>
<221> TATA_signal
<222> (4177)..(4180)
<223> TATA

<220>
<221> CDS
<222> (4299)..(5390)
<223> Gag\short

<220>
<221> polyA_signal
<222> (5543)..(5745)
<223> BGH-PolyA

<220>
<221> misc_feature
<222> (5818)..(5856)
<223> PI-Scel recognition site

<220>
<221> misc_feature
<222> (6858)..(8479)
<223> IVa2   complement (6858..8188,8468..8479)

<220>
<221> misc_feature
<222> (8468)..(16733)
<223> pol   complement (8468..11530,16725..16733)

<220>
<221> misc_feature
<222> (9358)..(9358)
<223> is c or g

<220>
<221> misc_feature
<222> (11338)..(16733)
<223> pTP   complement (11338..13275,16725..16733)

<220>
<221> CDS
<222> (13731)..(14903)
<223> 52K

<220>
<221> CDS
<222> (14930)..(16690)
<223> pIIIa

<220>
<221> CDS
<222> (16773)..(18398)

<223> penton

<220>
<221> CDS
<222> (18405)..(18986)
<223> pVII

<220>
<221> CDS
<222> (19034)..(20077)
<223> V

<220>
<221> CDS
<222> (20105)..(20335)
<223> pX

<220>
<221> CDS
<222> (20408)..(21139)
<223> pVI

<220>
<221> CDS
<222> (21246)..(24074)
<223> hexon

<220>
<221> CDS
<222> (24096)..(24719)
<223> protease

<220>
<221> misc_feature
<222> (24804)..(36339)
<223> DBP complement (24804..26339)

<220>
<221> CDS
<222> (26368)..(28761)
<223> 100K

<220>
<221> CDS
<222> (29387)..(30067)
<223> pVIII

<220>
<221> CDS
<222> (30071)..(30388)
<223> E3\12.5K

<220>
<221> CDS
<222> (30950)..(31477)
<223> E3\gp19K

<220>
<221> CDS
<222> (31510)..(32109)
<223> E3\CR1-beta

<220>
<221> CDS
<222> (32126)..(32737)
<223> E3\CR1-gamma

<220>
<221> CDS

<222> (32755)..(33630)
<223> E3\CR1-delta

<220>
<221> CDS
<222> (33922)..(34350)
<223> E3\RID-beta

<220>
<221> CDS
<222> (35047)..(36381)
<223> fiber

<220>
<221> misc_feature
<222> (36474)..(37807)
<223> E4\orf\6/7 complement (36474..36724,37457..37807)

<220>
<221> misc_feature
<222> (36725)..(37627)
<223> E4\orf6 complement (36725..37627)

<220>
<221> misc_feature
<222> (37536)..(37898)
<223> E4\orf4 complement (37536..37898)

<220>
<221> misc_feature
<222> (37788)..(37807)
<223> end of E4\orf6/7

<400> 127
ctagcctggc gaacaggtgg gtaaatcgtt ctctccagca ccaggcaggc cacggggtct 60

ccggcgcgac cctcgtaaaa attgtcgcta tgattgaaaa ccatcacaga gagacgttcc 120

cggtggccgg cgtgaatgat tcgacaagat gaatacaccc ccggaacatt ggcgtccgcg 180

agtgaaaaaa agcggccgag gaagcaataa ggcactacaa tgctcagtct caagtccagc 240

aaagcgatgc catgcggatg aagcacaaaa ttctcaggtg cgtacaaaat gtaattactc 300

ccctcctgca caggcagcaa agccccagat ccctccagat acacatacaa agcctcagcg 360

tccatagctt accgagcagc agcacacaac aggcgcaaga gtcagagaaa ggctgagctc 420

taacctgtcc cccgctctct gctcaatata tagcccagat ctacactgac gtaaaggcca 480

aagtctaaaa atacccgcca aataatcaca cacgcccagc acacgcccag aaaccggtga 540

cacactcaaa aaaatacgcg cacttcctca aacgcccaaa ctgccgtcat ttccgggttc 600

ccacgctacg tcatcagaat tcgactttca aatccgtcga ccgttaaaca cgtcactcgc 660

cccgccccta acggtcgccc tcctctcggc caatcacagc cccgcatccc caaattcaaa 720

cgcctcattt gcatattaac gcgcacaaaa agtttgaggt atattattga tgatgatcgt 780

ttaaactatg cggtgtgaaa taccgcacag atgcgtaagg agaaaatacc gcatcaggcg 840

ctcttccgct tcctcgctca ctgactcgct gcgctcggtc gttcggctgc ggcgagcggt 900

atcagctcac tcaaaggcgg taatacggtt atccacagaa tcaggggata acgcaggaaa 960

gaacatgtga gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg cgttgctggc 1020

gtttttccat aggctccgcc cccctgacga gcatcacaaa aatcgacgct caagtcagag 1080

gtggcgaaac ccgacaggac tataaagata ccaggcgttt ccccctggaa gctccctcgt 1140
gcgctctcct gttccgaccc tgccgcttac cggatacctg tccgcctttc tcccttcggg 1200
aagcgtggcg ctttctcata gctcacgctg taggtatctc agttcggtgt aggtcgttcg 1260
ctccaagctg ggctgtgtgc acgaaccccc cgttcagccc gaccgctgcg ccttatccgg 1320
taactatcgt cttgagtcca acccggtaag acacgactta tcgccactgg cagcagccac 1380
tggtaacagg attagcagag cgaggtatgt aggcggtgct acagagttct tgaagtggtg 1440
gcctaactac ggctacacta gaaggacagt atttggtatc tgcgctctgc tgaagccagt 1500
taccttcgga aaaagagttg gtagctcttg atccggcaaa caaaccaccg ctggtagcgg 1560
tggtttttt gtttgcaagc agcagattac gcgcagaaaa aaaggatctc aagaagatcc 1620
tttgatcttt tctacggggt ctgacgctca gtggaacgaa aactcacgtt aagggatttt 1680
ggtcatgaga ttatcaaaaa ggatcttcac ctagatcctt ttaaattaaa aatgaagttt 1740
taaatcaatc taaagtatat atgagtaaac ttggtctgac agttaccaat gcttaatcag 1800
tgaggcacct atctcagcga tctgtctatt tcgttcatcc atagttgcct gactccccgt 1860
cgtgtagata actacgatac gggagggctt accatctggc cccagtgctg caatgatacc 1920
gcgagaccca cgctcaccgg ctccagattt atcagcaata aaccagccag ccggaagggc 1980
cgagcgcaga agtggtcctg caactttatc cgcctccatc cagtctatta attgttgccg 2040
ggaagctaga gtaagtagtt cgccagttaa tagtttgcgc aacgttgttg ccattgctgc 2100
aggcatcgtg gtgtcacgct cgtcgtttgg tatggcttca ttcagctccg gttcccaacg 2160
atcaaggcga gttacatgat cccccatgtt gtgcaaaaaa gcggttagct ccttcggtcc 2220
tccgatcgtt gtcagaagta agttggccgc agtgttatca ctcatggtta tggcagcact 2280
gcataattct cttactgtca tgccatccgt aagatgcttt tctgtgactg gtgagtactc 2340
aaccaagtca ttctgagaat agtgtatgcg gcgaccgagt tgctcttgcc cggcgtcaac 2400
acgggataat accgcgccac atagcagaac tttaaaagtg ctcatcattg gaaaacgttc 2460
ttcggggcga aaactctcaa ggatcttacc gctgttgaga tccagttcga tgtaacccac 2520
tcgtgcaccc aactgatctt cagcatcttt tactttcacc agcgtttctg ggtgagcaaa 2580
aacaggaagg caaaatgccg caaaaaaggg aataagggcg acacggaaat gttgaatact 2640
catactcttc ctttttcaat attattgaag catttatcag ggttattgtc tcatgagcgg 2700
atacatattt gaatgtattt agaaaaataa acaaataggg gttccgcgca catttccccg 2760
aaaagtgcca cctgacgtct aagaaaccat tattatcatg acattaacct ataaaaatag 2820
gcgtatcacg aggccctttc gtcttcaaga attgtttaaa ctaccatcat caataatata 2880
cctcaaactt tttgtgcgcg ttaatatgca aatgaggcgt ttgaatttgg ggatgcgggg 2940
cggtgattgg ctgtgggaaa ggcgaccgtt aggggcgggg cgggtgacgt tttgatgacg 3000
tgtttgtgag gcggagccgg tttgcaagtt ctcgtgggaa aagtgacgtc aaacgaggtg 3060
tggtttgaac acggaaatac tcaattttcc cgcgctctct gacaggaaat gaggtgtttc 3120

```
tgggcggatg caagtgaaaa cgggccattt tcgcgcgaaa actgaatgag gaagtgaaaa     3180

tctgagtaat ttcgcgttta tggcagggag gagtatttgc cgagggccga gtagactttg     3240

accgattacg tgggggtttc gattaccgtg tttttcacct aaatttccgc gtacggtgtc     3300

aaagtccggt gtttttacat catttccccg aaaagtgcca cctgacgtaa ctataacggt     3360

cctaaggtag cgaaagctca gatctggatc tcccgatccc ctatggcgac tctcagtaca     3420

atctgctctg atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc     3480

gctgagtagt gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc     3540

atgaagaatc tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat     3600

acgcgttgac attgattatt gactagttat taatagtaat caattacggg gtcattagtt     3660

catagcccat atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga     3720

ccgcccaacg acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca     3780

atagggactt tccattgacg tcaatgggtg gactatttac ggtaaactgc ccacttggca     3840

gtacatcaag tgtatcatat gccaagtacg ccccctattg acgtcaatga cggtaaatgg     3900

cccgcctggc attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc     3960

tacgtattag tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt     4020

ggatagcggt ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt     4080

ttgttttggc accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg     4140

acgcaaatgg gcggtaggcg tgtacggtgg gaggtctata taagcagagc tcgtttagtg     4200

aaccgtcaga tcgcctggag acgccatcca cgctgttttg acctccatag aagacaccgg     4260

gaccgatcca gcctccgcgg gcgcgcgtcg acagagag atg ggt gcg aga gcg tca     4316
                                            Met Gly Ala Arg Ala Ser
                                            1               5

gta tta agc ggg gga gaa tta gat cga tgg gaa aaa att cgg tta agg       4364
Val Leu Ser Gly Gly Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg
            10                  15                  20

cca ggg gga aag aag aag tac aag cta aag cac atc gta tgg gca agc       4412
Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser
        25                  30                  35

agg gag cta gaa cga ttc gca gtt aat cct ggc ctg tta gaa aca tca       4460
Arg Glu Leu Glu Arg Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser
    40                  45                  50

gaa ggc tgt aga caa ata ctg gga cag cta caa cca tcc ctt cag aca       4508
Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr
55                  60                  65                  70

gga tca gag gag ctt cga tca cta tac aac aca gta gca acc ctc tat       4556
Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr
                75                  80                  85

tgt gtg cac cag cgg atc gag atc aag gac acc aag gaa gct tta gac       4604
Cys Val His Gln Arg Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp
            90                  95                  100

aag ata gag gaa gag caa aac aag tcc aag aag aag gcc cag cag gca       4652
Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys Lys Lys Ala Gln Gln Ala
        105                 110                 115
```

```
gca gct gac aca gga cac agc aat cag gtc agc caa aat tac cct ata       4700
Ala Ala Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile
    120                 125                 130

gtg cag aac atc cag ggg caa atg gta cat cag gcc ata tca cct aga       4748
Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg
135                 140                 145                 150

act tta aat gca tgg gta aaa gta gta gaa gag aag gct ttc agc cca       4796
Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro
                155                 160                 165

gaa gtg ata ccc atg ttt tca gca tta tca gaa gga gcc acc cca cag       4844
Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln
            170                 175                 180

gac ctg aac acg atg ttg aac acc gtg ggg gga cat caa gca gcc atg       4892
Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met
        185                 190                 195

caa atg tta aaa gag acc atc aat gag gaa gct gca gat tgg gat aga       4940
Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Asp Trp Asp Arg
    200                 205                 210

gtg cat cca gtg cat gca ggg cct att gca cca ggc cag atg aga gaa       4988
Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu
215                 220                 225                 230

cca agg gga agt gac ata gca gga act act agt acc ctt cag gaa caa       5036
Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln
                235                 240                 245

ata gga tgg atg aca aat aat cca cct atc cca gta gga gag atc tac       5084
Ile Gly Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr
            250                 255                 260

aag agg tgg ata atc ctg gga ttg aac aag atc gtg agg atg tat agc       5132
Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr Ser
        265                 270                 275

cct acc agc att ctg gac ata aga caa gga cca aag gaa ccc ttt aga       5180
Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg
    280                 285                 290

gac tat gta gac cgg ttc tat aaa act cta aga gct gag caa gct tca       5228
Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala Ser
295                 300                 305                 310

cag gag gta aaa aat tgg atg aca gaa acc ttg ttg gtc caa aat gcg       5276
Gln Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn Ala
                315                 320                 325

aac cca gat tgt aag acc atc ctg aag gct ctc ggc cca gcg gct aca       5324
Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Ala Ala Thr
            330                 335                 340

cta gaa gaa atg atg aca gca tgt cag gga gta gga gga ccc ggc cat       5372
Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro Gly His
        345                 350                 355

aag gca aga gtt ttg tag ggatccacta gttctagact cgaggggggg              5420
Lys Ala Arg Val Leu
    360

cccggtacct ttaagaccaa tgacttacaa ggcagctgta gatcttagcc acttttaaa      5480

agaaaagggg ggactggaag ggctaattca ctcccaaaga agacaagata aaccgctgat     5540
```

cagcctcgac tgtgccttct agttgccagc catctgttgt ttgcccctcc cccgtgcctt 5600

ccttgaccct ggaaggtgcc actcccactg tcctttccta ataaaatgag gaaattgcat 5660

cgcattgtct gagtaggtgt cattctattc tgggggggtgg ggtggggcag gacagcaagg 5720

gggaggattg ggaagacaat agcaggcatg ctggggatgc ggtgggctct atggcttctg 5780

aggcggaaag aaccagcaga tctgcagatc tgaattcatc tatgtcgggt gcggagaaag 5840

aggtaatgaa atggcattat gggtattatg ggtctgcatt aatgaatcgg ccagattatg 5900

ctggccaccg tgcatgtggc ctcgcacccc cgcaagacat ggcccgagtt cgagcacaac 5960

gtcatgaccc gctgcaatgt gcacctgggc tcccgccgag gcatgttcat gccataccag 6020

tgcaacatgc aatttgtgaa ggtgctgctg gagcccgatg ccatgtccag agtgagcctg 6080

acgggggtgt ttgacatgaa tgtggagctg tggaaaattc tgagatatga tgaatccaag 6140

accaggtgcc gggcctgcga atgcggaggc aagcacgcca ggcttcagcc cgtgtgtgtg 6200

gaggtgacgg aggacctgcg acccgatcat ttggtgttgt cctgcaacgg gacggagttc 6260

ggctccagcg gggaagaatc tgactagagt gagtagtgtt tgggggtggg tgggagcctg 6320

catgatgggc agaatgacta aaatctgtgt ttttctgcgc agcagcatga gcggaagcgc 6380

ctcctttgag ggaggggtat tcagccctta tctgacgggg cgtctcccct cctgggctgg 6440

agtgcgtcag aatgtgatgg gatccacggt ggacggccgg cccgtgcagc ccgcgaactc 6500

ttcaaccctg acctacgcga ccctgagctc ctcgtccgtg gacgcagctg ccgccgcagc 6560

tgctgcttcc gccgccagcg ccgtgcgcgg aatggccctg ggtgccggct actacagctc 6620

tctggtggcc aactcgagtt ccgccaataa tcccgccagc ctgaacgagg agaagctgct 6680

gctgctgatg gcccagctcg aggccctgac ccagcgcctg ggcgagctga cccagcaggt 6740

ggctcagctg caggcggaga cgcgggccgc ggttgccacg gtgaaaacca aataaaaaat 6800

gaatcaataa ataaacggaa acggttgttg attttaacac agagtcttga atctttattt 6860

gatttttcgc gcgcggtagg ccctggacca ccggtctcga tcattgagca cccggtggat 6920

cttttccagg acccggtaga ggtgggcttg gatgttgagg tacatgggca tgagcccgtc 6980

ccgggggtgg aggtagctcc actgcagggc ctcgtgctcg ggggtggtgt tgtaaatcac 7040

ccagtcatag caggggcgca gggcgtggtg ctgcacgatg tccttgagga ggagactgat 7100

ggccacgggc agtcccttgg tgtaggtgtt gacgaacctg ttgagctggg agggatgcat 7160

gcgggggggag atgagatgca tcttggcctg gatcttgaga ttggcgatgt tcccacccag 7220

atcccgccgg gggttcatgt tgtgcaggac caccagcacg gtgtatccgg tgcacttggg 7280

gaatttgtca tgcaacttgg aagggaaggc gtgaaagaat ttggagacgc ccttgtgacc 7340

gcccaggttt tccatgcact catccatgat gatggcgatg ggcccgtggg cggcggcctg 7400

ggcaaagacg tttcgggggt cggacacatc gtagttgtgg tcctgggtga gctcgtcata 7460

ggccatttta atgaatttgg ggcggagggt gcccgactgg gggacaaagg tgccctcgat 7520

cccgggggcg tagttgccct cgcagatctg catctcccag gccttgagct cggaggggggg 7580

gatcatgtcc acctgcgggg cgatgaaaaa aacggtttcc ggggcggggg agatgagctg 7640

ggccgaaagc aggttccgga gcagctggga cttgccgcag ccggtggggc cgtagatgac 7700

cccgatgacc ggctgcaggt ggtagttgag ggagagacag ctgccgtcct cgcggaggag 7760

gggggccacc tcgttcatca tctcgcgcac atgcatgttc tcgcgcacga gttccgccag 7820

gaggcgctcg ccccccagcg agaggagctc ttgcagcgag gcgaagtttt tcagcggctt 7880

gagtccgtcg gccatgggca ttttggagag ggtctgttgc aagagttcca gacggtccca 7940

gagctcggtg atgtgctcta gggcatctcg atccagcaga cctcctcgtt tcgcgggttg 8000

gggcggctgc gggagtaggg caccaggcga tgggcgtcca gcgaggccag ggtccggtcc 8060

ttccagggtc gcagggtccg cgtcagcgtg gtctccgtca cggtgaaggg gtgcgcgccg 8120

ggctgggcgc ttgcgagggt gcgcttcagg ctcatccggc tggtcgagaa ccgctcccgg 8180

tcggtgccct gcgcgtcggc caggtagcaa ttgagcatga gttcgtagtt gagcgcctcg 8240

gccgcgtggc ccttggcgcg gagcttacct ttggaagtgt gtccgcagac gggacagagg 8300

agggacttga gggcgtagag cttgggggcg aggaagacgg actcgggggc gtaggcgtcc 8360

gcgccgcagc tggcgcagac ggtctcgcac tccacgagcc aggtgaggtc ggggcggtcg 8420

gggtcaaaaa cgaggtttcc tccgtgcttt ttgatgcgtt tcttacctct ggtctccatg 8480

agctcgtgtc cccgctgggt gacaaagagg ctgtccgtgt ccccgtagac cgactttatg 8540

ggccggtcct cgagcggggt gccgcggtcc tcgtcgtaga ggaaccccgc ccactccgag 8600

acgaaggccc gggtccaggc cagcacgaag gaggccacgt gggaggggta gcggtcgttg 8660

tccaccagcg ggtccacctt ctccagggta tgcaagcaca tgtccccctc gtccacatcc 8720

aggaaggtga ttggcttgta agtgtaggcc acgtgaccgg gggtcccggc cgggggggta 8780

taaaaggggg cgggcccctg ctcgtcctca ctgtcttccg gatcgctgtc caggagcgcc 8840

agctgttggg gtaggtattc cctctcgaag gcgggcatga cctcggcact caggttgtca 8900

gtttctagaa acgaggagga tttgatattg acggtgccgt tggagacgcc tttcatgagc 8960

ccctcgtcca tctggtcaga aaagacgatc tttttgttgt cgagcttggt ggcgaaggag 9020

ccgtagaggg cattggagag gagcttggcg atggagcgca tggtctggtt cttttccttg 9080

tcggcgcgct ccttggcggc gatgttgagc tgcacgtact cgcgcgccac gcacttccat 9140

tcggggaaga cggtggtgag ctcgtcgggc acgattctga cccgccagcc gcggttgtgc 9200

agggtgatga ggtccacgct ggtggccacc tcgccgcgca ggggctcgtt ggtccagcag 9260

aggcgcccgc ccttgcgcga gcagaagggg ggcagcgggt ccagcatgag ctcgtcgggg 9320

gggtcggcgt ccacggtgaa gatgccgggc aggagctcgg ggtcgaagta gctgatgcag 9380

gtgcccagat cgtccagcgc cgcttgccag tcgcgcacgg ccagcgcgcg ctcgtagggg 9440

ctgaggggcg tgccccaggg catggggtgc gtgagcgcgg aggcgtacat gccgcagatg 9500

tcgtagacgt agaggggctc ctcgaggacg ccgatgtagg tggggtagca gcgccccccg 9560

cggatgctgg cgcgcacgta gtcgtacagc tcgtgcgagg gcgcgaggag ccccgcgccg 9620

aggttggagc gctgcggctt ttcggcgcgg tagacgatct ggcggaagat ggcgtgggag 9680

ttggaggaga tggtgggcct ctggaagatg ttgaagtggg cgtggggcag gccgaccgag 9740
tccctgatga agtgggcgta ggagtcctgc agcttggcga cgagctcggc ggtgacgagg 9800
acgtccaggg cgcagtagtc gagggtctct tggatgatgt cgtacttgag ctggcccttc 9860
tgcttccaca gctcgcggtt gagaaggaac tcttcgcggt ccttccagta ctcttcgagg 9920
gggaacccgt cctgatcggc acggtaagag cccaccatgt agaactggtt gacggccttg 9980
taggcgcagc agcccttctc cacggggagg gcataagctt gcgcggcctt gcgcagggag 10040
gtgtgggtga gggcgaaggt gtcgcgcacc atgaccttga ggaactggtg cttgaagtcg 10100
aggtcgtcgc agccgccctg ctcccagagt tggaagtccg tgcgcttctt gtaggcgggg 10160
ttgggcaaag cgaaagtaac atcgttgaag aggatcttgc ccgcgcgggg catgaagttg 10220
cgagtgatgc ggaaaggctg gggcacctcg gcccggttgt tgatgacctg ggcggcgagg 10280
acgatctcgt cgaagccgtt gatgttgtgc ccgacgatgt agagttccac gaatcgcggg 10340
cggcccttga cgtggggcag cttcttgagc tcgtcgtagg tgagctcggc ggggtcgctg 10400
agtccgtgct gctcaagggc ccagtcggcg acgtgggggt tggcgctgag gaaggaagtc 10460
cagagatcca cggccagggc ggtttgcaag cggtcccggt actgacggaa ctgctggccc 10520
acggccattt tttcgggggt gatgcagtag aaggtgcggg ggtcgccgtg ccagcggtcc 10580
cacttgagct ggagggcgag gtcgtgggcg agctcgacaa gcggcgggtc cccggagagt 10640
ttcatgacca gcatgaaggg gacgagctgc ttgccgaagg accccatcca ggtgtaggtt 10700
tccacatcgt aggtgaggaa gagcctttcg gtgcgaggat gcgagccgat ggggaagaac 10760
tggatctcct gccaccagtt ggaggaatgg ctgttgatgt gatggaagta gaaatgccga 10820
cggcgcgccg agcactcgtg cttgtgttta tacaagcgtc cgcagtgctc gcaacgctgc 10880
acgggatgca cgtgctgcac gagctgtacc tgagttcctt tgacgaggaa tttcagtggg 10940
cagtggagcg ctggcggctg catctggtgc tgtactacgt cctggccatc ggcgtggcca 11000
tcgtctgcct cgatggtggt catgctgacg agcccgcgcg ggaggcaggt ccagacctcg 11060
gctcggacgg gtcggagagc gaggacgagg gcgcgcaggc cggagctgtc cagggtcctg 11120
agacgctgcg gagtcaggtc agtgggcagc ggcggcgcgc ggttgacttg caggagcttt 11180
tccagggcgc gcgggaggtc cagatggtac ttgatctcca cggcgccgtt ggtggcgacg 11240
tccacggctt gcagggtccc gtgcccctgg ggcgccacca ccgtgccccg tttcttcttg 11300
ggcgctggcg gcgttggcgc tggttccatg tcggtcagaa gcggcggcga ggacgcgcgc 11360
cgggcggcag gggcggctcg gggcccggag gcaggggcgg caggggcacg tcggcgccgc 11420
gcgcgggcag gttctggtac tgcgcccgga gaagactggc gtgagcgacg acgcgacggt 11480
tgacgtcctg gatctgacgc ctctgggtga aggccacggg acccgtgagt ttgaacctga 11540
aagagagttc gacagaatca atctcggtat cgttgacggc ggcctgccgc aggatctctt 11600
gcacgtcgcc cgagttgtcc tggtaggcga tctcggtcat gaactgctcg atctcctcct 11660
cctgaaggtc tccgcggccg gcgcgctcga cggtggccgc gaggtcgttg gagatgcggg 11720
ccatgagctg cgagaaggcg ttcatgccgg cctcgttcca gacgcggctg tagaccacgg 11780

ctccgtcggg gtcgcgcgcg cgcatgacca cctgggcaag gttgagctcg acgtggcgcg 11840

tgaagaccgc gtagttgcag aggcgctggt agaggtagtt gagcgtggtg gcgatgtgct 11900

cggtgacgaa gaagtacatg atccagcggc ggagcggcat ctcgctgacg tcgcccaggg 11960

cttccaagcg ctccatggcc tcgtagaagt ccacggcgaa gttgaaaaac tgggagttgc 12020

gcgccgagac ggtcaactcc tcctccagaa gacggatgag ctctgcgatg gtggcgcgca 12080

cctcgcgctc gaaggccccg gggggctcct cttcttccat ctcctcctcc tcttcctcct 12140

ccactaacat ctcttctact tcctcctcag gcggtggtgg cgggggaggg ggcctgcgtc 12200

gccggcggcg cacgggcaga cggtcgatga agcgctcgat ggtctcgccg cgccggcgtc 12260

gcatggtctc ggtgacggcg cgcccgtcct cgcggggccg cagcgtgaag acgccgccgc 12320

gcatctccag gtggccgggg gggtccccgt tgggcaggga gagggcgctg acgatgcatc 12380

ttatcaattg ccccgtaggg actccgcgca aggacctgag cgtctcgaga tccacgggat 12440

ctgaaaaccg ttgaacgaag gcttcgagcc agtcgcagtc gcaaggtagg ctgagcacgg 12500

tttcttctgg cgggtcatgt tggttggagg gagcggggcg ggcgatgctg ctggtgatga 12560

agttgaaata ggcggttctg agacggcgga tggtggcgag gagcaccagg tctttgggcc 12620

cggcttgctg gatgcgcaga cggtcggcca tgccccaggc gtggtcctga cacctggcca 12680

ggtccttgta gtagtcctgc atgagccgct ccacgggcac ctcctcctcg cccgcgcggc 12740

cgtgcatgcg cgtgagcccg aagccgcgct ggggctggac gagcgccagg tcggcgacga 12800

cgcgctcggc gaggatggcc tgctggacct gggtgagggt ggtctggaag tcgtcgaagt 12860

cgacgaagcg gtggtaggct ccggtgttga tggtgtagga gcagttggcc atgacggacc 12920

agttgacggt ctggtggccg gggcgcacga gctcgtggta cttgaggcgc gagtaggcgc 12980

gcgtgtcgaa gatgtagtcg ttgcaggtgc gcacgaggta ctggtatccg acgaggaagt 13040

gcggcggcgg ctggcggtag agcggccatc gctcggtggc gggggcgccg ggcgcgaggt 13100

cctcgagcat gaggcggtgg tagccgtaga tgtacctgga catccaggtg atgccggcgg 13160

cggtggtgga ggcgcgcggg aactcgcgga cgcggttcca gatgttgcgc agcggcagga 13220

agtagttcat ggtggccgcg gtctggcccg tgaggcgcgc gcagtcgtgg atgctctaga 13280

catacgggca aaaacgaaag cggtcagcgg ctcgactccg tggcctggag gctaagcgaa 13340

cgggttgggc tgcgcgtgta ccccggttcg agtctctgct cgaatcaggc tggagccgca 13400

gctaacgtgg tactggcact cccgtctcga cccaagcctg ctaacgaaac ctccaggata 13460

cggaggcggg tcgtttttg gccttggtca ctggtcatga aaaactagta agcgcggaaa 13520

gcggccgccc gcgatggctc gctgccgtag tctggagaaa gaatcgccag ggttgcgttg 13580

cggtgtgccc cggttcgaga ctcagcgctc ggcgccggcc ggattccgcg gctaacgtgg 13640

gcgtggctgc cccgtcgttt ccaagacccc ttagccagcc gacttctcca gttacggagc 13700

gagcccctct ttttcttgtg tttttgccag atg cat ccc gta ctg cgg cag atg 13754
Met His Pro Val Leu Arg Gln Met
365 370

```
cgc ccc cac cct cca cca caa ccg ccc cta ccg ccg cag cag cag caa      13802
Arg Pro His Pro Pro Pro Gln Pro Pro Leu Pro Pro Gln Gln Gln Gln
            375                 380                 385

cag ccg gcg ctt ctg ccc ccg ccc cag cag cag cca gcc act acc gcg      13850
Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln Pro Ala Thr Thr Ala
        390                 395                 400

gcg gcc gcc gtg agc gga gcc ggc gtt cag tat gac ctg gcc ttg gaa      13898
Ala Ala Ala Val Ser Gly Ala Gly Val Gln Tyr Asp Leu Ala Leu Glu
    405                 410                 415

gag ggc gag ggg ctg gcg cgg ctg ggg gcg tcg tcg ccg gag cgg cac      13946
Glu Gly Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser Pro Glu Arg His
420                 425                 430                 435

ccg cgc gtg cag atg aaa agg gac gct cgc gag gcc tac gtg ccc aag      13994
Pro Arg Val Gln Met Lys Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys
                440                 445                 450

cag aac ctg ttc aga gac agg agc ggc gag gag ccc gag gag atg cgc      14042
Gln Asn Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro Glu Glu Met Arg
            455                 460                 465

gcc tcc cgc ttc cac gcg ggg cgg gag ctg cgg cgc ggc ctg gac cga      14090
Ala Ser Arg Phe His Ala Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg
        470                 475                 480

aag cgg gtg ctg agg gac gag gat ttc gag gcg gac gag ctg acg ggg      14138
Lys Arg Val Leu Arg Asp Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly
    485                 490                 495

atc agc ccc gcg cgc gcg cac gtg gcc gcg gcc aac ctg gtc acg gcg      14186
Ile Ser Pro Ala Arg Ala His Val Ala Ala Ala Asn Leu Val Thr Ala
500                 505                 510                 515

tac gag cag acc gtg aag gag gag agc aac ttc caa aaa tcc ttc aac      14234
Tyr Glu Gln Thr Val Lys Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn
                520                 525                 530

aac cac gtg cgc acg ctg atc gcg cgc gag gag gtg acc ctg ggc ctg      14282
Asn His Val Arg Thr Leu Ile Ala Arg Glu Glu Val Thr Leu Gly Leu
            535                 540                 545

atg cat ctg tgg gac ctg ttg gag gcc atc gtg cag aac ccc acg agc      14330
Met His Leu Trp Asp Leu Leu Glu Ala Ile Val Gln Asn Pro Thr Ser
        550                 555                 560

aag ccg ctg acg gcg cag ctg ttt ctg gtg gtg cag cac agt cgg gac      14378
Lys Pro Leu Thr Ala Gln Leu Phe Leu Val Val Gln His Ser Arg Asp
    565                 570                 575

aac gag acg ttc agg gag gcg ctg ctg aat atc acc gag ccc gag ggc      14426
Asn Glu Thr Phe Arg Glu Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly
580                 585                 590                 595

cgc tgg ctc ctg gac ctg gtg aac att ctg cag agc atc gtg gtg cag      14474
Arg Trp Leu Leu Asp Leu Val Asn Ile Leu Gln Ser Ile Val Val Gln
                600                 605                 610

gag cgc ggg ctg ccg ctg tcc gag aag ctg gcg gcc atc aac ttc tcg      14522
Glu Arg Gly Leu Pro Leu Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser
            615                 620                 625

gtg ctg agc ctg ggc aag tac tac gct agg aag atc tac aag acc ccg      14570
Val Leu Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro
        630                 635                 640

tac gtg ccc ata gac aag gag gtg aag atc gac ggg ttt tac atg cgc      14618
```

```
Tyr Val Pro Ile Asp Lys Glu Val Lys Ile Asp Gly Phe Tyr Met Arg
    645                 650                 655

atg acc ctg aaa gtg ctg acc ctg agc gac gat ctg ggg gtg tac cgc      14666
Met Thr Leu Lys Val Leu Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg
660                 665                 670                 675

aac gac agg atg cac cgc gcg gtg agc gcc agc cgc cgg cgc gag ctg      14714
Asn Asp Arg Met His Arg Ala Val Ser Ala Ser Arg Arg Arg Glu Leu
                680                 685                 690

agc gac cag gag ctg atg cac agc ctg cag cgg gcc ctg acc ggg gcc      14762
Ser Asp Gln Glu Leu Met His Ser Leu Gln Arg Ala Leu Thr Gly Ala
            695                 700                 705

ggg acc gag ggg gag agc tac ttt gac atg ggc gcg gac ctg cgc tgg      14810
Gly Thr Glu Gly Glu Ser Tyr Phe Asp Met Gly Ala Asp Leu Arg Trp
        710                 715                 720

cag ccc agc cgc cgg gct tta gag gca gcc ggc ggc gtg ccc tac gtg      14858
Gln Pro Ser Arg Arg Ala Leu Glu Ala Ala Gly Gly Val Pro Tyr Val
    725                 730                 735

gag gag gtg gac gat gat gag gag gag ggc gag tac ctg gaa gac          14903
Glu Glu Val Asp Asp Asp Glu Glu Glu Gly Glu Tyr Leu Glu Asp
740                 745                 750

tgatggcgcg accgtatttt tgctag atg cag caa cag cca ccg cct cct gat     14956
                             Met Gln Gln Gln Pro Pro Pro Pro Asp
                             755                 760

ccc gcg atg cgg gcg gcg ctg cag agc cag ccg tcc ggc att aac tcc      15004
Pro Ala Met Arg Ala Ala Leu Gln Ser Gln Pro Ser Gly Ile Asn Ser
    765                 770                 775

tcg gac gat tgg acc cag gcc atg caa cgc atc atg gcg ctg acg acc      15052
Ser Asp Asp Trp Thr Gln Ala Met Gln Arg Ile Met Ala Leu Thr Thr
780                 785                 790                 795

cgc aat ccc gaa gcc ttt aga cag cag cct cag gcc aac cgg ctc tcg      15100
Arg Asn Pro Glu Ala Phe Arg Gln Gln Pro Gln Ala Asn Arg Leu Ser
                800                 805                 810

gcc atc ctg gag gcc gtg gtg ccc tcg cgc tcg aac ccc acg cac gag      15148
Ala Ile Leu Glu Ala Val Val Pro Ser Arg Ser Asn Pro Thr His Glu
            815                 820                 825

aag gtg ctg gcc atc gtg aac gcg ctg gtg gag aac aag gcc atc cgc      15196
Lys Val Leu Ala Ile Val Asn Ala Leu Val Glu Asn Lys Ala Ile Arg
        830                 835                 840

ggc gac gag gcc ggg ctg gtg tac aac gcg ctg ctg gag cgc gtg gcc      15244
Gly Asp Glu Ala Gly Leu Val Tyr Asn Ala Leu Leu Glu Arg Val Ala
    845                 850                 855

cgc tac aac agc acc aac gtg cag acg aac ctg gac cgc atg gtg acc      15292
Arg Tyr Asn Ser Thr Asn Val Gln Thr Asn Leu Asp Arg Met Val Thr
860                 865                 870                 875

gac gtg cgc gag gcg gtg tcg cag cgc gag cgg ttc cac cgc gag tcg      15340
Asp Val Arg Glu Ala Val Ser Gln Arg Glu Arg Phe His Arg Glu Ser
                880                 885                 890

aac ctg ggc tcc atg gtg gcg ctg aac gcc ttc ctg agc acg cag ccc      15388
Asn Leu Gly Ser Met Val Ala Leu Asn Ala Phe Leu Ser Thr Gln Pro
            895                 900                 905

gcc aac gtg ccc cgg ggc cag gag gac tac acc aac ttt atc agc gcg      15436
Ala Asn Val Pro Arg Gly Gln Glu Asp Tyr Thr Asn Phe Ile Ser Ala
```

```
        910                 915                 920

ctg cgg ctg atg gtg gcc gag gtg ccc cag agc gag gtg tac cag tcg      15484
Leu Arg Leu Met Val Ala Glu Val Pro Gln Ser Glu Val Tyr Gln Ser
    925                 930                 935

ggg ccg gac tac ttc ttc cag acc agt cgc cag ggc ttg cag acc gtg      15532
Gly Pro Asp Tyr Phe Phe Gln Thr Ser Arg Gln Gly Leu Gln Thr Val
940                 945                 950                 955

aac ctg agc cag gct ttc aag aac ttg cag gga ctg tgg ggc gtg cag      15580
Asn Leu Ser Gln Ala Phe Lys Asn Leu Gln Gly Leu Trp Gly Val Gln
                960                 965                 970

gcc ccg gtc ggg gac cgc gcg acg gtg tcg agc ctg ctg acg ccg aac      15628
Ala Pro Val Gly Asp Arg Ala Thr Val Ser Ser Leu Leu Thr Pro Asn
            975                 980                 985

tcg cgc ctg ctg ctg ctg ctg gtg gcg ccc ttc acg gac  agc ggc agc     15676
Ser Arg Leu Leu Leu Leu Leu Val Ala Pro Phe Thr Asp  Ser Gly Ser
        990                 995                 1000

gtg agc  cgc gac tcg tac ctg  ggc tac ctg ctt aac  ctg tac cgc       15721
Val Ser  Arg Asp Ser Tyr Leu  Gly Tyr Leu Leu Asn  Leu Tyr Arg
    1005                1010                1015

gag gcc  atc ggg cag gcg cac  gtg gac gag cag acc  tac cag gag       15766
Glu Ala  Ile Gly Gln Ala His  Val Asp Glu Gln Thr  Tyr Gln Glu
    1020                1025                1030

atc acc  cac gtg agc cgc gcg  ctg ggc cag gag gac  ccg ggc aac       15811
Ile Thr  His Val Ser Arg Ala  Leu Gly Gln Glu Asp  Pro Gly Asn
    1035                1040                1045

ctg gag  gcc acc ctg aac ttc  ctg ctg acc aac cgg  tcg cag aag       15856
Leu Glu  Ala Thr Leu Asn Phe  Leu Leu Thr Asn Arg  Ser Gln Lys
    1050                1055                1060

atc ccg  ccc cag tac gcg ctg  agc acc gag gag gag  cgc atc ctg       15901
Ile Pro  Pro Gln Tyr Ala Leu  Ser Thr Glu Glu Glu  Arg Ile Leu
    1065                1070                1075

cgc tac  gtg cag cag agc gtg  ggg ctg ttc ctg atg  cag gag ggg       15946
Arg Tyr  Val Gln Gln Ser Val  Gly Leu Phe Leu Met  Gln Glu Gly
    1080                1085                1090

gcc acg  ccc agc gcc gcg ctc  gac atg acc gcg cgc  aac atg gag       15991
Ala Thr  Pro Ser Ala Ala Leu  Asp Met Thr Ala Arg  Asn Met Glu
    1095                1100                1105

ccc agc  atg tac gcc cgc aac  cgc ccg ttc atc aat  aag ctg atg       16036
Pro Ser  Met Tyr Ala Arg Asn  Arg Pro Phe Ile Asn  Lys Leu Met
    1110                1115                1120

gac tac  ttg cat cgg gcg gcc  gcc atg aac tcg gac  tac ttt acc       16081
Asp Tyr  Leu His Arg Ala Ala  Ala Met Asn Ser Asp  Tyr Phe Thr
    1125                1130                1135

aac gcc  atc ttg aac ccg cac  tgg ctc ccg ccg ccc  ggg ttc tac       16126
Asn Ala  Ile Leu Asn Pro His  Trp Leu Pro Pro Pro  Gly Phe Tyr
    1140                1145                1150

acg ggc  gag tac gac atg ccc  gac ccc aac gac ggg  ttc ctg tgg       16171
Thr Gly  Glu Tyr Asp Met Pro  Asp Pro Asn Asp Gly  Phe Leu Trp
    1155                1160                1165

gac gac  gtg gac agc agc gtg  ttc tcg ccg cgc ccc  acc acc acc       16216
Asp Asp  Val Asp Ser Ser Val  Phe Ser Pro Arg Pro  Thr Thr Thr
    1170                1175                1180
```

```
gtg tgg  aag aaa gag ggc ggg  gac cgg cgg ccg tcc  tcg gcg ctg       16261
Val Trp  Lys Lys Glu Gly Gly  Asp Arg Arg Pro Ser  Ser Ala Leu
    1185                 1190                 1195

tcc ggt  cgc gcg ggt gct gcc  gcg gcg gtg ccc gag  gcc gcc agc       16306
Ser Gly  Arg Ala Gly Ala Ala  Ala Ala Val Pro Glu  Ala Ala Ser
    1200                 1205                 1210

ccc ttc  ccg agc ctg ccc ttt  tcg ctg aac agc gtg  cgc agc agc       16351
Pro Phe  Pro Ser Leu Pro Phe  Ser Leu Asn Ser Val  Arg Ser Ser
    1215                 1220                 1225

gag ctg  ggt cgg ctg acg cgg  ccg cgc ctg ctg ggc  gag gag gag       16396
Glu Leu  Gly Arg Leu Thr Arg  Pro Arg Leu Leu Gly  Glu Glu Glu
    1230                 1235                 1240

tac ctg  aac gac tcc ttg ttg  agg ccc gag cgc gag  aaa aac ttc       16441
Tyr Leu  Asn Asp Ser Leu Leu  Arg Pro Glu Arg Glu  Lys Asn Phe
    1245                 1250                 1255

ccc aat  aac ggg ata gag agc  ctg gtg gac aag atg  agc cgc tgg       16486
Pro Asn  Asn Gly Ile Glu Ser  Leu Val Asp Lys Met  Ser Arg Trp
    1260                 1265                 1270

aag acg  tac gcg cac gag cac  agg gac gag ccc cga  gct agc agc       16531
Lys Thr  Tyr Ala His Glu His  Arg Asp Glu Pro Arg  Ala Ser Ser
    1275                 1280                 1285

agc gcc  ggc gcc acc cgt aga  cgc cag cgg cac gac  agg cag cgg       16576
Ser Ala  Gly Ala Thr Arg Arg  Arg Gln Arg His Asp  Arg Gln Arg
    1290                 1295                 1300

gga ctg  gtg tgg gac gat gag  gat tcc gcc gac gac  agc agc gtg       16621
Gly Leu  Val Trp Asp Asp Glu  Asp Ser Ala Asp Asp  Ser Ser Val
    1305                 1310                 1315

ttg gac  ttg ggt ggg agt ggt  ggt ggt aac ccg ttc  gct cac ttg       16666
Leu Asp  Leu Gly Gly Ser Gly  Gly Gly Asn Pro Phe  Ala His Leu
    1320                 1325                 1330

cgc ccc  cgt atc ggg cgc ctg  atg taagaatctg aaaaaataaa             16710
Arg Pro  Arg Ile Gly Arg Leu  Met
    1335                 1340

aaaacggtac tcaccaaggc catggcgacc agcgtgcgtt cttctctgtt gtttgtagta   16770

gt atg atg agg cgc  gtg tac ccg gag ggt  cct cct ccc tcg tac  gag    16817
   Met Met Arg Arg  Val Tyr Pro Glu Gly  Pro Pro Pro Ser Tyr  Glu
              1345                 1350                 1355

agc gtg atg cag  cag gcg gtg gcg gcg  gcg atg cag ccc ccg  ctg       16862
Ser Val Met Gln  Gln Ala Val Ala Ala  Ala Met Gln Pro Pro  Leu
            1360                 1365                 1370

gag gcg cct tac  gtg ccc ccg cgg tac  ctg gcg cct acg gag  ggg       16907
Glu Ala Pro Tyr  Val Pro Pro Arg Tyr  Leu Ala Pro Thr Glu  Gly
            1375                 1380                 1385

cgg aac agc att  cgt tac tcg gag ctg  gca ccc ttg tac gat  acc       16952
Arg Asn Ser Ile  Arg Tyr Ser Glu Leu  Ala Pro Leu Tyr Asp  Thr
            1390                 1395                 1400

acc cgg ttg tac  ctg gtg gac aac aag  tcg gcg gac atc gcc  tcg       16997
Thr Arg Leu Tyr  Leu Val Asp Asn Lys  Ser Ala Asp Ile Ala  Ser
            1405                 1410                 1415

ctg aac tac cag  aac gac cac agc aac  ttc ctg acc acc gtg  gtg       17042
Leu Asn Tyr Gln  Asn Asp His Ser Asn  Phe Leu Thr Thr Val  Val
```

```
            1420                1425                1430

cag aac aac gat  ttc acc ccc acg gag  gcc agc acc cag acc  atc       17087
Gln Asn Asn Asp  Phe Thr Pro Thr Glu  Ala Ser Thr Gln Thr  Ile
            1435                1440                1445

aac ttt gac gag  cgc tcg cgg tgg ggc  ggc cag ctg aaa acc  atc       17132
Asn Phe Asp Glu  Arg Ser Arg Trp Gly  Gly Gln Leu Lys Thr  Ile
            1450                1455                1460

atg cac acc aac  atg ccc aac gtg aac  gag ttc atg tac agc  aac       17177
Met His Thr Asn  Met Pro Asn Val Asn  Glu Phe Met Tyr Ser  Asn
            1465                1470                1475

aag ttc aag gcg  cgg gtg atg gtc tcg  cgc aag acc ccc aac  ggg       17222
Lys Phe Lys Ala  Arg Val Met Val Ser  Arg Lys Thr Pro Asn  Gly
            1480                1485                1490

gtg acg gtg gat  gag aat tat gat ggt  agt cag gac gag ctg  acc       17267
Val Thr Val Asp  Glu Asn Tyr Asp Gly  Ser Gln Asp Glu Leu  Thr
            1495                1500                1505

tac gag tgg gtg  gag ttt gag ctg ccc  gag ggc aac ttc tcg  gtg       17312
Tyr Glu Trp Val  Glu Phe Glu Leu Pro  Glu Gly Asn Phe Ser  Val
            1510                1515                1520

acc atg acc atc  gat ctg atg aac aac  gcc atc atc gac aac  tac       17357
Thr Met Thr Ile  Asp Leu Met Asn Asn  Ala Ile Ile Asp Asn  Tyr
            1525                1530                1535

ttg gcg gtg gga  cgg cag aac ggg gtg  ctg gag agc gac atc  ggc       17402
Leu Ala Val Gly  Arg Gln Asn Gly Val  Leu Glu Ser Asp Ile  Gly
            1540                1545                1550

gtg aag ttc gac  acg cgc aac ttc cgg  ctg ggc tgg gac ccc  gtg       17447
Val Lys Phe Asp  Thr Arg Asn Phe Arg  Leu Gly Trp Asp Pro  Val
            1555                1560                1565

acc gag ctg gtg  atg ccg ggc gtg tac  acc aac gag gcc ttc  cac       17492
Thr Glu Leu Val  Met Pro Gly Val Tyr  Thr Asn Glu Ala Phe  His
            1570                1575                1580

ccc gac atc gtc  ctg ctg ccc ggc tgc  ggc gtg gac ttc acc  gag       17537
Pro Asp Ile Val  Leu Leu Pro Gly Cys  Gly Val Asp Phe Thr  Glu
            1585                1590                1595

agc cgc ctc agc  aac ctg ctg ggc atc  cgc aag cgg cag ccc  ttc       17582
Ser Arg Leu Ser  Asn Leu Leu Gly Ile  Arg Lys Arg Gln Pro  Phe
            1600                1605                1610

cag gag ggc ttc  cag atc ctg tac gag  gac ctg gag ggg ggc  aac       17627
Gln Glu Gly Phe  Gln Ile Leu Tyr Glu  Asp Leu Glu Gly Gly  Asn
            1615                1620                1625

atc ccc gcg ctg  ctg gac gtc gaa gcc  tac gag aaa agc aag  gag       17672
Ile Pro Ala Leu  Leu Asp Val Glu Ala  Tyr Glu Lys Ser Lys  Glu
            1630                1635                1640

gag gcc gcc gca  gcg gcg acc gcg gcc  gtg gct acc gct gcg  acc       17717
Glu Ala Ala Ala  Ala Ala Thr Ala Ala  Val Ala Thr Ala Ala  Thr
            1645                1650                1655

acc gat gca gat  gca gct act act acc  agg ggc gat aca ttc  gcc       17762
Thr Asp Ala Asp  Ala Ala Thr Thr Thr  Arg Gly Asp Thr Phe  Ala
            1660                1665                1670

acc cag gcg gag  gaa gca gcc gcc cta  gcg gcg acc gat gat  agt       17807
Thr Gln Ala Glu  Glu Ala Ala Ala Leu  Ala Ala Thr Asp Asp  Ser
            1675                1680                1685
```

```
gaa agt aag ata  gtc atc aag ccg gtg  gag aag gac agc aag  gac       17852
Glu Ser Lys Ile  Val Ile Lys Pro Val  Glu Lys Asp Ser Lys  Asp
            1690                 1695                 1700

agg agc tac aac  gtt cta tcg gat gga  aag aac acc gcc tac  cgc       17897
Arg Ser Tyr Asn  Val Leu Ser Asp Gly  Lys Asn Thr Ala Tyr  Arg
            1705                 1710                 1715

agc tgg tac ctg  gcc tac aac tac ggc  gac cct gag aag ggc  gtg       17942
Ser Trp Tyr Leu  Ala Tyr Asn Tyr Gly  Asp Pro Glu Lys Gly  Val
            1720                 1725                 1730

cgc tcc tgg acg  ctg ctc acc acc tcg  gac gtc acc tgc ggc  gtg       17987
Arg Ser Trp Thr  Leu Leu Thr Thr Ser  Asp Val Thr Cys Gly  Val
            1735                 1740                 1745

gag caa gtc tac  tgg tcg ctg ccc gac  atg atg caa gac ccg  gtc       18032
Glu Gln Val Tyr  Trp Ser Leu Pro Asp  Met Met Gln Asp Pro  Val
            1750                 1755                 1760

acc ttc cgc tcc  acg cgt caa gtt agc  aac tac ccg gtg gtg  ggc       18077
Thr Phe Arg Ser  Thr Arg Gln Val Ser  Asn Tyr Pro Val Val  Gly
            1765                 1770                 1775

gcc gag ctc ctg  ccc gtc tac tcc aag  agc ttc ttc aac gag  cag       18122
Ala Glu Leu Leu  Pro Val Tyr Ser Lys  Ser Phe Phe Asn Glu  Gln
            1780                 1785                 1790

gcc gtc tac tcg  cag cag ctg cgc gcc  ttc acc tcg ctc acg  cac       18167
Ala Val Tyr Ser  Gln Gln Leu Arg Ala  Phe Thr Ser Leu Thr  His
            1795                 1800                 1805

gtc ttc aac cgc  ttc ccc gag aac cag  atc ctc gtc cgc ccg  ccc       18212
Val Phe Asn Arg  Phe Pro Glu Asn Gln  Ile Leu Val Arg Pro  Pro
            1810                 1815                 1820

gcg ccc acc att  acc acc gtc agt gaa  aac gtt cct gct ctc  aca       18257
Ala Pro Thr Ile  Thr Thr Val Ser Glu  Asn Val Pro Ala Leu  Thr
            1825                 1830                 1835

gat cac ggg acc  ctg ccg ctg cgc agc  agt atc cgg gga gtc  cag       18302
Asp His Gly Thr  Leu Pro Leu Arg Ser  Ser Ile Arg Gly Val  Gln
            1840                 1845                 1850

cgc gtg acc gtc  act gac gcc aga cgc  cgc acc tgc ccc tac  gtc       18347
Arg Val Thr Val  Thr Asp Ala Arg Arg  Arg Thr Cys Pro Tyr  Val
            1855                 1860                 1865

tac aag gcc ctg  ggc gta gtc gcg ccg  cgc gtc ctc tcg agc  cgc       18392
Tyr Lys Ala Leu  Gly Val Val Ala Pro  Arg Val Leu Ser Ser  Arg
            1870                 1875                 1880

acc ttc taaaaa atg tcc  att ctc atc tcg ccc  agt aat aac acc ggt     18440
Thr Phe        Met Ser  Ile Leu Ile Ser Pro  Ser Asn Asn Thr Gly
                   1885                 1890                 1895

tgg ggc ctg cgc gcg  ccc agc aag atg tac  gga ggc gct cgc caa        18485
Trp Gly Leu Arg Ala  Pro Ser Lys Met Tyr  Gly Gly Ala Arg Gln
               1900                 1905                 1910

cgc tcc acg caa cac  ccc gtg cgc gtg cgc  ggg cac ttc cgc gct        18530
Arg Ser Thr Gln His  Pro Val Arg Val Arg  Gly His Phe Arg Ala
               1915                 1920                 1925

ccc tgg ggc gcc ctc  aag ggc cgc gtg cgc  tcg cgc acc acc gtc        18575
Pro Trp Gly Ala Leu  Lys Gly Arg Val Arg  Ser Arg Thr Thr Val
               1930                 1935                 1940
```

```
gac gac gtg atc gac  cag gtg gtg gcc gac  gcg cgc aac tac acg       18620
Asp Asp Val Ile Asp  Gln Val Val Ala Asp  Ala Arg Asn Tyr Thr
                1945                1950                1955

ccc gcc gcc gcg ccc  gcc tcc acc gtg gac  gcc gtc atc gac agc       18665
Pro Ala Ala Ala Pro  Ala Ser Thr Val Asp  Ala Val Ile Asp Ser
                1960                1965                1970

gtg gtg gcc gac gcg  cgc cgg tac gcc cgc  gcc aag agc cgg cgg       18710
Val Val Ala Asp Ala  Arg Arg Tyr Ala Arg  Ala Lys Ser Arg Arg
                1975                1980                1985

cgg cgc atc gcc cgg  cgg cac cgg agc acc  ccc gcc atg cgc gcg       18755
Arg Arg Ile Ala Arg  Arg His Arg Ser Thr  Pro Ala Met Arg Ala
                1990                1995                2000

gcg cga gcc ttg ctg  cgc agg gcc agg cgc  acg gga cgc agg gcc       18800
Ala Arg Ala Leu Leu  Arg Arg Ala Arg Arg  Thr Gly Arg Arg Ala
                2005                2010                2015

atg ctc agg gcg gcc  aga cgc gcg gcc tcc  ggc agc agc agc gcc       18845
Met Leu Arg Ala Ala  Arg Arg Ala Ala Ser  Gly Ser Ser Ser Ala
                2020                2025                2030

ggc agg acc cgc aga  cgc gcg gcc acg gcg  gcg gcg gcg gcc atc       18890
Gly Arg Thr Arg Arg  Arg Ala Ala Thr Ala  Ala Ala Ala Ala Ile
                2035                2040                2045

gcc agc atg tcc cgc  ccg cgg cgc ggc aac  gtg tac tgg gtg cgc       18935
Ala Ser Met Ser Arg  Pro Arg Arg Gly Asn  Val Tyr Trp Val Arg
                2050                2055                2060

gac gcc gcc acc ggt  gtg cgc gtg ccc gtg  cgc acc cgc ccc cct       18980
Asp Ala Ala Thr Gly  Val Arg Val Pro Val  Arg Thr Arg Pro Pro
                2065                2070                2075

cgc act tgaagatgct gacttcgcga tgttgatgtg tcccagcggc gaggagg atg     19036
Arg Thr                                                      Met


tcc aag  cgc aaa ttc aag gaa  gag atg ctc cag gtc  atc gcg cct       19081
Ser Lys  Arg Lys Phe Lys Glu  Glu Met Leu Gln Val  Ile Ala Pro
    2080                2085                2090

gag atc  tac ggc ccc gcg gcg  gcg gtg aag gag gaa  aga aag ccc       19126
Glu Ile  Tyr Gly Pro Ala Ala  Ala Val Lys Glu Glu  Arg Lys Pro
    2095                2100                2105

cgc aaa  ctg aag cgg gtc aaa  aag gac aaa aag gag  gag gaa gat       19171
Arg Lys  Leu Lys Arg Val Lys  Lys Asp Lys Lys Glu  Glu Glu Asp
    2110                2115                2120

gac gga  ctg gtg gag ttt gtg  cgc gag ttc gcc ccc  cgg cgg cgc       19216
Asp Gly  Leu Val Glu Phe Val  Arg Glu Phe Ala Pro  Arg Arg Arg
    2125                2130                2135

gtg cag  tgg cgc ggg cgg aaa  gtg aaa ccg gtg ctg  cgg ccc ggc       19261
Val Gln  Trp Arg Gly Arg Lys  Val Lys Pro Val Leu  Arg Pro Gly
    2140                2145                2150

acc acg  gtg gtc ttc acg ccc  ggc gag cgt tcc ggc  tcc gcc tcc       19306
Thr Thr  Val Val Phe Thr Pro  Gly Glu Arg Ser Gly  Ser Ala Ser
    2155                2160                2165

aag cgc  tcc tac gac gag gtg  tac ggg gac gag gac  atc ctc gag       19351
Lys Arg  Ser Tyr Asp Glu Val  Tyr Gly Asp Glu Asp  Ile Leu Glu
    2170                2175                2180

cag gcg  gcc gag cgt ctg ggc  gag ttt gct tac ggc  aag cgc agc       19396
```

```
Gln Ala  Ala Glu Arg Leu Gly  Glu Phe Ala Tyr Gly  Lys Arg Ser
    2185                 2190                 2195

cgc ccc  gcg ccc ttg aaa gag  gag gcg gtg tcc atc  ccg ctg gac       19441
Arg Pro  Ala Pro Leu Lys Glu  Glu Ala Val Ser Ile  Pro Leu Asp
    2200                 2205                 2210

cac ggc  aac ccc acg ccg agc  ctg aag ccg gtg acc  ctg cag cag       19486
His Gly  Asn Pro Thr Pro Ser  Leu Lys Pro Val Thr  Leu Gln Gln
    2215                 2220                 2225

gtg ctg  ccg agc gcg gcg ccg  cgc cgg ggc ttc aag  cgc gag ggc       19531
Val Leu  Pro Ser Ala Ala Pro  Arg Arg Gly Phe Lys  Arg Glu Gly
    2230                 2235                 2240

ggc gag  gat ctg tac ccg acc  atg cag ctg atg gtg  ccc aag cgc       19576
Gly Glu  Asp Leu Tyr Pro Thr  Met Gln Leu Met Val  Pro Lys Arg
    2245                 2250                 2255

cag aag  ctg gag gac gtg ctg  gag cac atg aag gtg  gac ccc gag       19621
Gln Lys  Leu Glu Asp Val Leu  Glu His Met Lys Val  Asp Pro Glu
    2260                 2265                 2270

gtg cag  ccc gag gtc aag gtg  cgg ccc atc aag cag  gtg gcc ccg       19666
Val Gln  Pro Glu Val Lys Val  Arg Pro Ile Lys Gln  Val Ala Pro
    2275                 2280                 2285

ggc ctg  ggc gtg cag acc gtg  gac atc aag atc ccc  acg gag ccc       19711
Gly Leu  Gly Val Gln Thr Val  Asp Ile Lys Ile Pro  Thr Glu Pro
    2290                 2295                 2300

atg gaa  acg cag acc gag ccc  gtg aag ccc agc acc  agc acc atg       19756
Met Glu  Thr Gln Thr Glu Pro  Val Lys Pro Ser Thr  Ser Thr Met
    2305                 2310                 2315

gag gtg  cag acg gat ccc tgg  atg ccg gcg ccg gct  tcc acc acc       19801
Glu Val  Gln Thr Asp Pro Trp  Met Pro Ala Pro Ala  Ser Thr Thr
    2320                 2325                 2330

acc acc  acc cgc cga aga cgc  aag tac ggc gcg gcc  agc ctg ctg       19846
Thr Thr  Thr Arg Arg Arg Arg  Lys Tyr Gly Ala Ala  Ser Leu Leu
    2335                 2340                 2345

atg ccc  aac tac gcg ctg cat  cct tcc atc atc ccc  acg ccg ggc       19891
Met Pro  Asn Tyr Ala Leu His  Pro Ser Ile Ile Pro  Thr Pro Gly
    2350                 2355                 2360

tac cgc  ggc acg cgc ttc tac  cgc ggc tac agc agc  cgc cgc aag       19936
Tyr Arg  Gly Thr Arg Phe Tyr  Arg Gly Tyr Ser Ser  Arg Arg Lys
    2365                 2370                 2375

acc acc  acc cgc cgc cgc cgt  cgc cgc acc cgc cgc  agc acc acc       19981
Thr Thr  Thr Arg Arg Arg Arg  Arg Arg Thr Arg Arg  Ser Thr Thr
    2380                 2385                 2390

gcg act  tcc gcc gcc gcc ttg  gtg cgg aga gtg tac  cgc agc ggg       20026
Ala Thr  Ser Ala Ala Ala Leu  Val Arg Arg Val Tyr  Arg Ser Gly
    2395                 2400                 2405

cgt gag  cct ctg acc ctg ccg  cgc gcg cgc tac cac  ccg agc atc       20071
Arg Glu  Pro Leu Thr Leu Pro  Arg Ala Arg Tyr His  Pro Ser Ile
    2410                 2415                 2420

gcc att  taactctgcc gtcgcctcct tgcagat atg gcc ctc aca tgc  cgc      20122
Ala Ile                                 Met Ala Leu Thr Cys  Arg
    2425                                                 2430

ctc cgc gtc ccc  att acg ggc tac cga  gga aga aag ccg cgc  cgt       20167
Leu Arg Val Pro  Ile Thr Gly Tyr Arg  Gly Arg Lys Pro Arg  Arg
```

```
            2435                2440                2445

aga agg ctg acg  ggg aac ggg ctg cgt  cgc cat cac cac cgg  cgg       20212
Arg Arg Leu Thr  Gly Asn Gly Leu Arg  Arg His His His Arg  Arg
            2450                2455                2460

cgg cgc gcc atc  agc aag cgg ttg ggg  gga ggc ttc ctg ccc  gcg       20257
Arg Arg Ala Ile  Ser Lys Arg Leu Gly  Gly Gly Phe Leu Pro  Ala
            2465                2470                2475

ctg atc ccc atc  atc gcc gcg gcg atc  ggg gcg atc ccc ggc  ata       20302
Leu Ile Pro Ile  Ile Ala Ala Ala Ile  Gly Ala Ile Pro Gly  Ile
            2480                2485                2490

gct tcc gtg gcg  gtg cag gcc tct cag  cgc cac tgagacacag             20345
Ala Ser Val Ala  Val Gln Ala Ser Gln  Arg His
            2495                2500

cttggaaaat ttgtaataaa aaaatggact gacgctcctg gtcctgtgat gtgtgttttt    20405

ag atg gaa gac  atc aat ttt tcg tcc  ctg gca ccg cga cac  ggc acg    20452
   Met Glu Asp  Ile Asn Phe Ser Ser  Leu Ala Pro Arg His  Gly Thr
            2505                2510                2515

cgg ccg ttt  atg ggc acc tgg agc  gac atc ggc aac agc  caa ctg       20497
Arg Pro Phe  Met Gly Thr Trp Ser  Asp Ile Gly Asn Ser  Gln Leu
        2520                2525                2530

aac ggg ggc  gcc ttc aat tgg agc  agt ctc tgg agc ggg  ctt aag       20542
Asn Gly Gly  Ala Phe Asn Trp Ser  Ser Leu Trp Ser Gly  Leu Lys
        2535                2540                2545

aat ttc ggg  tcc acg ctc aaa acc  tat ggc agc aag gcg  tgg aac       20587
Asn Phe Gly  Ser Thr Leu Lys Thr  Tyr Gly Ser Lys Ala  Trp Asn
        2550                2555                2560

agc acc aca  ggg cag gcg ctg agg  gat aag ctg aaa gag  cag aac       20632
Ser Thr Thr  Gly Gln Ala Leu Arg  Asp Lys Leu Lys Glu  Gln Asn
        2565                2570                2575

ttc cag cag  aag gtg gtc gat ggg  ctc gct tcg ggc atc  aac ggg       20677
Phe Gln Gln  Lys Val Val Asp Gly  Leu Ala Ser Gly Ile  Asn Gly
        2580                2585                2590

gtg gtg gac  ctg gcc aac cag gcc  gtg cag cgg cag atc  aac agc       20722
Val Val Asp  Leu Ala Asn Gln Ala  Val Gln Arg Gln Ile  Asn Ser
        2595                2600                2605

cgc ctg gac  ccg gtg ccg ccc gcc  ggc tcc gtg gag atg  ccg cag       20767
Arg Leu Asp  Pro Val Pro Pro Ala  Gly Ser Val Glu Met  Pro Gln
        2610                2615                2620

gtg gag gag  gag ctg cct ccc ctg  gac aag cgg ggc gag  aag cga       20812
Val Glu Glu  Glu Leu Pro Pro Leu  Asp Lys Arg Gly Glu  Lys Arg
        2625                2630                2635

ccc cgc ccc  gac gcg gag gag acg  ctg ctg acg cac acg  gac gag       20857
Pro Arg Pro  Asp Ala Glu Glu Thr  Leu Leu Thr His Thr  Asp Glu
        2640                2645                2650

ccg ccc ccg  tac gag gag gcg gtg  aaa ctg ggt ctg ccc  acc acg       20902
Pro Pro Pro  Tyr Glu Glu Ala Val  Lys Leu Gly Leu Pro  Thr Thr
        2655                2660                2665

cgg ccc att  gcg ccc cta gcc acc  ggg gtg ctg aaa ccc  gag agt       20947
Arg Pro Ile  Ala Pro Leu Ala Thr  Gly Val Leu Lys Pro  Glu Ser
        2670                2675                2680

aat aag ccc  gcg acc ctg gac ttg  cct cct ccc cag cct  tcc cgc       20992
```

```
Asn Lys Pro  Ala Thr Leu Asp Leu  Pro Pro Pro Gln Pro  Ser Arg
        2685                 2690                 2695

ccc tcc aca  gtg gct aag ccc ctg  ccg ccg gtg gcc gtg  gcc cgc       21037
Pro Ser Thr  Val Ala Lys Pro Leu  Pro Pro Val Ala Val  Ala Arg
        2700                 2705                 2710

gcg cga ccc  ggg ggc tcc gcc cgc  cct cat gcg aac tgg  cag agc       21082
Ala Arg Pro  Gly Gly Ser Ala Arg  Pro His Ala Asn Trp  Gln Ser
        2715                 2720                 2725

act ctg aac  agc atc gtg ggt ctg  gga gtg cag agt gtg  aag cgc       21127
Thr Leu Asn  Ser Ile Val Gly Leu  Gly Val Gln Ser Val  Lys Arg
        2730                 2735                 2740

cgc cgc tgc  tat taaacctacc gtagcgctta acttgcttgt ctgtgtgtgt        21179
Arg Arg Cys  Tyr
        2745

atgtattatg tcgccgccgc tgtccgccag aaggaggagt gaagaggcgc gtcgccgagt    21239

tgcaag atg gcc acc cca  tcg atg ctg ccc cag  tgg gcg tac atg cac     21287
       Met Ala Thr Pro  Ser Met Leu Pro Gln  Trp Ala Tyr Met His
                    2750                 2755                 2760

atc gcc gga cag gac  gct tcg gag tac ctg  agt ccg ggt ctg gtg       21332
Ile Ala Gly Gln Asp  Ala Ser Glu Tyr Leu  Ser Pro Gly Leu Val
                 2765                 2770                 2775

cag ttc gcc cgc gcc  aca gac acc tac ttc  agt ctg ggg aac aag       21377
Gln Phe Ala Arg Ala  Thr Asp Thr Tyr Phe  Ser Leu Gly Asn Lys
                 2780                 2785                 2790

ttt agg aac ccc acg  gtg gcg ccc acg cac  gat gtg acc acc gac       21422
Phe Arg Asn Pro Thr  Val Ala Pro Thr His  Asp Val Thr Thr Asp
                 2795                 2800                 2805

cgc agc cag cgg ctg  acg ctg cgc ttc gtg  ccc gtg gac cgc gag       21467
Arg Ser Gln Arg Leu  Thr Leu Arg Phe Val  Pro Val Asp Arg Glu
                 2810                 2815                 2820

gac aac acc tac tcg  tac aaa gtg cgc tac  acg ctg gcc gtg ggc       21512
Asp Asn Thr Tyr Ser  Tyr Lys Val Arg Tyr  Thr Leu Ala Val Gly
                 2825                 2830                 2835

gac aac cgc gtg ctg  gac atg gcc agc acc  tac ttt gac atc cgc       21557
Asp Asn Arg Val Leu  Asp Met Ala Ser Thr  Tyr Phe Asp Ile Arg
                 2840                 2845                 2850

ggc gtg ctg gac cgg  ggc cct agc ttc aaa  ccc tac tcc ggc acc       21602
Gly Val Leu Asp Arg  Gly Pro Ser Phe Lys  Pro Tyr Ser Gly Thr
                 2855                 2860                 2865

gcc tac aac agc ctg  gct ccc aag gga gcg  ccc aat tcc agc cag       21647
Ala Tyr Asn Ser Leu  Ala Pro Lys Gly Ala  Pro Asn Ser Ser Gln
                 2870                 2875                 2880

tgg gag cga gct aag  aca aac aat aac gga  gcc acg gaa tct gtt       21692
Trp Glu Arg Ala Lys  Thr Asn Asn Asn Gly  Ala Thr Glu Ser Val
                 2885                 2890                 2895

acc ttt ggt gtg gct  gcc atg ggg ggt ata  gat att aca aaa gag       21737
Thr Phe Gly Val Ala  Ala Met Gly Gly Ile  Asp Ile Thr Lys Glu
                 2900                 2905                 2910

ggt ctc cag att gga  act gat gaa act aaa  gct gat agt aaa gaa       21782
Gly Leu Gln Ile Gly  Thr Asp Glu Thr Lys  Ala Asp Ser Lys Glu
                 2915                 2920                 2925
```

```
att tat gca gac aaa  acc tac caa cct gaa  cct cag ata gga gag        21827
Ile Tyr Ala Asp Lys  Thr Tyr Gln Pro Glu  Pro Gln Ile Gly Glu
                2930                2935                2940

gag aac tgg caa gaa  aca ttc tcc tat tat  ggc ggc aga gct ctt        21872
Glu Asn Trp Gln Glu  Thr Phe Ser Tyr Tyr  Gly Gly Arg Ala Leu
                2945                2950                2955

aaa aaa gat acc aag  atg aag cca tgc tac  ggc tcc ttt gct aaa        21917
Lys Lys Asp Thr Lys  Met Lys Pro Cys Tyr  Gly Ser Phe Ala Lys
                2960                2965                2970

cca acg aat gtc aaa  gga ggt cag gcc aaa  ttt aaa gtt cag gac        21962
Pro Thr Asn Val Lys  Gly Gly Gln Ala Lys  Phe Lys Val Gln Asp
                2975                2980                2985

ggt caa caa act aca  gaa tat gat atc gac  tta gct ttc ttt gat        22007
Gly Gln Gln Thr Thr  Glu Tyr Asp Ile Asp  Leu Ala Phe Phe Asp
                2990                2995                3000

att cca aac tct gga  aca gga ggg aat ggc  acg aat gtt aat tat        22052
Ile Pro Asn Ser Gly  Thr Gly Gly Asn Gly  Thr Asn Val Asn Tyr
                3005                3010                3015

gat cca gat atg gtc  atg tac act gaa aat  gtg gat ttg gag acc        22097
Asp Pro Asp Met Val  Met Tyr Thr Glu Asn  Val Asp Leu Glu Thr
                3020                3025                3030

cct gat acc cac att  gtt tac aaa cca ggg  act tcc gat gac agt        22142
Pro Asp Thr His Ile  Val Tyr Lys Pro Gly  Thr Ser Asp Asp Ser
                3035                3040                3045

tct gaa gca aac ttg  ctt cag cag tcc atg  cct aac aga ccc aac        22187
Ser Glu Ala Asn Leu  Leu Gln Gln Ser Met  Pro Asn Arg Pro Asn
                3050                3055                3060

tat att ggg ttt aga  gac aac ttt atc ggt  ctc atg tac tac aac        22232
Tyr Ile Gly Phe Arg  Asp Asn Phe Ile Gly  Leu Met Tyr Tyr Asn
                3065                3070                3075

agt act ggc aat atg  ggt gtg ctg gct ggt  cag gcc tcc cag ctg        22277
Ser Thr Gly Asn Met  Gly Val Leu Ala Gly  Gln Ala Ser Gln Leu
                3080                3085                3090

aat gct gtg gtc gac  ttg caa gac aga aac  acc gag cta tcc tac        22322
Asn Ala Val Val Asp  Leu Gln Asp Arg Asn  Thr Glu Leu Ser Tyr
                3095                3100                3105

cag ctc ttg ctt gac  tct ctg ggc gat aga  acc cgg tat ttc agt        22367
Gln Leu Leu Leu Asp  Ser Leu Gly Asp Arg  Thr Arg Tyr Phe Ser
                3110                3115                3120

atg tgg aac cag gcg  gtg gac agt tat gac  cct gat gtg cgc att        22412
Met Trp Asn Gln Ala  Val Asp Ser Tyr Asp  Pro Asp Val Arg Ile
                3125                3130                3135

att gaa aac cat ggt  gtg gaa gat gaa ctt  ccc aac tat tgc ttc        22457
Ile Glu Asn His Gly  Val Glu Asp Glu Leu  Pro Asn Tyr Cys Phe
                3140                3145                3150

cca ttg gat gga gct  ggt act aat gct gtc  tat cag ggt gtt aaa        22502
Pro Leu Asp Gly Ala  Gly Thr Asn Ala Val  Tyr Gln Gly Val Lys
                3155                3160                3165

gca aaa act aat gga  ggc gca gcc aat gga  gat tgg gag caa gat        22547
Ala Lys Thr Asn Gly  Gly Ala Ala Asn Gly  Asp Trp Glu Gln Asp
                3170                3175                3180

aca gac gtg tca aac  att aac cag ata tgc  aag ggg aac atc tat        22592
```

```
Thr Asp Val Ser Asn  Ile Asn Gln Ile Cys  Lys Gly Asn Ile Tyr
                3185                3190                3195

gcc atg gaa atc aac  ctc caa gcc aac ctg  tgg aga agt ttc ctc        22637
Ala Met Glu Ile Asn  Leu Gln Ala Asn Leu  Trp Arg Ser Phe Leu
                3200                3205                3210

tac tcg aac gtg gcc  ctg tac ctg ccc gat  tct tac aag tac acg        22682
Tyr Ser Asn Val Ala  Leu Tyr Leu Pro Asp  Ser Tyr Lys Tyr Thr
                3215                3220                3225

ccg gcc aac atc acc  ttg ccc acg aat acc  aac acc tat gat tac        22727
Pro Ala Asn Ile Thr  Leu Pro Thr Asn Thr  Asn Thr Tyr Asp Tyr
                3230                3235                3240

atg aat ggg aga gtg  gcg cct ccc tcg ttg  gtg gat gcc tac atc        22772
Met Asn Gly Arg Val  Ala Pro Pro Ser Leu  Val Asp Ala Tyr Ile
                3245                3250                3255

aac atc ggg gcg cgc  tgg tcg ctg gac ccc  atg gac aac gtc aat        22817
Asn Ile Gly Ala Arg  Trp Ser Leu Asp Pro  Met Asp Asn Val Asn
                3260                3265                3270

ccc ttc aac cac cac  cgc aac gcg ggg ctg  cgc tac cgc tcc atg        22862
Pro Phe Asn His His  Arg Asn Ala Gly Leu  Arg Tyr Arg Ser Met
                3275                3280                3285

ctt ctg ggc aac ggg  cgc ttc gtg ccc ttc  cac atc cag gtg ccc        22907
Leu Leu Gly Asn Gly  Arg Phe Val Pro Phe  His Ile Gln Val Pro
                3290                3295                3300

cag aaa ttt ttc gcc  atc aag agc ctc ctg  ctc ctg ccc ggg tcc        22952
Gln Lys Phe Phe Ala  Ile Lys Ser Leu Leu  Leu Leu Pro Gly Ser
                3305                3310                3315

tac acc tac gag tgg  aac ttc cgc aag gac  gtc aac atg atc ctg        22997
Tyr Thr Tyr Glu Trp  Asn Phe Arg Lys Asp  Val Asn Met Ile Leu
                3320                3325                3330

cag agc tcc ctc ggc  aac gac ctg cgc acg  gac ggg gcc tcc atc        23042
Gln Ser Ser Leu Gly  Asn Asp Leu Arg Thr  Asp Gly Ala Ser Ile
                3335                3340                3345

tcc ttc acc agc atc  aac ctc tac gcc acc  ttc ttc ccc atg gcg        23087
Ser Phe Thr Ser Ile  Asn Leu Tyr Ala Thr  Phe Phe Pro Met Ala
                3350                3355                3360

cac aac acg gcc tcc  acg ctc gag gcc atg  ctg cgc aac gac acc        23132
His Asn Thr Ala Ser  Thr Leu Glu Ala Met  Leu Arg Asn Asp Thr
                3365                3370                3375

aac gac cag tcc ttc  aac gac tac ctc tcg  gcg gcc aac atg ctc        23177
Asn Asp Gln Ser Phe  Asn Asp Tyr Leu Ser  Ala Ala Asn Met Leu
                3380                3385                3390

tac ccc atc cca gcc  aac gcc acc aac gtg  ccc atc tcc atc ccc        23222
Tyr Pro Ile Pro Ala  Asn Ala Thr Asn Val  Pro Ile Ser Ile Pro
                3395                3400                3405

tcg cgc aac tgg gcc  gcc ttc cgc ggc tgg  tcc ttc acg cgt ctc        23267
Ser Arg Asn Trp Ala  Ala Phe Arg Gly Trp  Ser Phe Thr Arg Leu
                3410                3415                3420

aag acc aag gag acg  ccc tcg ctg ggc tcc  ggg ttc gac ccc tac        23312
Lys Thr Lys Glu Thr  Pro Ser Leu Gly Ser  Gly Phe Asp Pro Tyr
                3425                3430                3435

ttc gtc tac tcg ggc  tcc atc ccc tac ctc  gac ggc acc ttc tac        23357
Phe Val Tyr Ser Gly  Ser Ile Pro Tyr Leu  Asp Gly Thr Phe Tyr
```

```
                3440                3445                3450

ctc aac cac acc ttc  aag aag gtc tcc atc  acc ttc gac tcc tcc        23402
Leu Asn His Thr Phe  Lys Lys Val Ser Ile  Thr Phe Asp Ser Ser
                3455                3460                3465

gtc agc tgg ccc ggc  aac gac cgg ctc ctg  acg ccc aac gag ttc        23447
Val Ser Trp Pro Gly  Asn Asp Arg Leu Leu  Thr Pro Asn Glu Phe
                3470                3475                3480

gaa atc aag cgc acc  gtc gac ggc gag ggc  tac aac gtg gcc cag        23492
Glu Ile Lys Arg Thr  Val Asp Gly Glu Gly  Tyr Asn Val Ala Gln
                3485                3490                3495

tgc aac atg acc aag  gac tgg ttc ctg gtc  cag atg ctg gcc cac        23537
Cys Asn Met Thr Lys  Asp Trp Phe Leu Val  Gln Met Leu Ala His
                3500                3505                3510

tac aac atc ggc tac  cag ggc ttc tac gtg  ccc gag ggc tac aag        23582
Tyr Asn Ile Gly Tyr  Gln Gly Phe Tyr Val  Pro Glu Gly Tyr Lys
                3515                3520                3525

gac cgc atg tac tcc  ttc ttc cgc aac ttc  cag ccc atg agc cgc        23627
Asp Arg Met Tyr Ser  Phe Phe Arg Asn Phe  Gln Pro Met Ser Arg
                3530                3535                3540

cag gtg gtg gac gag  gtc aac tac aag gac  tac cag gcc gtc acc        23672
Gln Val Val Asp Glu  Val Asn Tyr Lys Asp  Tyr Gln Ala Val Thr
                3545                3550                3555

ctg gcc tac cag cac  aac aac tcg ggc ttc  gtc ggc tac ctc gcg        23717
Leu Ala Tyr Gln His  Asn Asn Ser Gly Phe  Val Gly Tyr Leu Ala
                3560                3565                3570

ccc acc atg cgc cag  ggc cag ccc tac ccc  gcc aac tac ccg tac        23762
Pro Thr Met Arg Gln  Gly Gln Pro Tyr Pro  Ala Asn Tyr Pro Tyr
                3575                3580                3585

ccg ctc atc ggc aag  agc gcc gtc acc agc  gtc acc cag aaa aag        23807
Pro Leu Ile Gly Lys  Ser Ala Val Thr Ser  Val Thr Gln Lys Lys
                3590                3595                3600

ttc ctc tgc gac agg  gtc atg tgg cgc atc  ccc ttc tcc agc aac        23852
Phe Leu Cys Asp Arg  Val Met Trp Arg Ile  Pro Phe Ser Ser Asn
                3605                3610                3615

ttc atg tcc atg ggc  gcg ctc acc gac ctc  ggc cag aac atg ctc        23897
Phe Met Ser Met Gly  Ala Leu Thr Asp Leu  Gly Gln Asn Met Leu
                3620                3625                3630

tat gcc aac tcc gcc  cac gcg cta gac atg  aat ttc gaa gtc gac        23942
Tyr Ala Asn Ser Ala  His Ala Leu Asp Met  Asn Phe Glu Val Asp
                3635                3640                3645

ccc atg gat gag tcc  acc ctt ctc tat gtt  gtc ttc gaa gtc ttc        23987
Pro Met Asp Glu Ser  Thr Leu Leu Tyr Val  Val Phe Glu Val Phe
                3650                3655                3660

gac gtc gtc cga gtg  cac cag ccc cac cgc  ggc gtc atc gag gcc        24032
Asp Val Val Arg Val  His Gln Pro His Arg  Gly Val Ile Glu Ala
                3665                3670                3675

gtc tac ctg cgc acc  ccc ttc tcg gcc ggt  aac gcc acc acc            24074
Val Tyr Leu Arg Thr  Pro Phe Ser Ala Gly  Asn Ala Thr Thr
                3680                3685

taagctcttg cttcttgcaa g atg  gct gag ccc acg ggc  tcc ggc gag cag    24125
                        Met  Ala Glu Pro Thr Gly  Ser Gly Glu Gln
                        3690                3695
```

```
gag  ctc agg gcc atc atc  cgc gac ctg ggc tgc  ggg ccc tac ttc       24170
Glu  Leu Arg Ala Ile Ile  Arg Asp Leu Gly Cys  Gly Pro Tyr Phe
3700                 3705                 3710

ctg  ggc acc ttc gat aag  cgc ttc ccg gga ttc  atg gcc ccg cac       24215
Leu  Gly Thr Phe Asp Lys  Arg Phe Pro Gly Phe  Met Ala Pro His
3715                 3720                 3725

aag  ctg gcc tgc gcc atc  gtc aac acg gcc ggc  cgc gag acc ggg       24260
Lys  Leu Ala Cys Ala Ile  Val Asn Thr Ala Gly  Arg Glu Thr Gly
3730                 3735                 3740

ggc  gag cac tgg ctg gcc  ttc gcc tgg aac ccg  cgc tcg aac acc       24305
Gly  Glu His Trp Leu Ala  Phe Ala Trp Asn Pro  Arg Ser Asn Thr
3745                 3750                 3755

tgc  tac ctc ttc gac ccc  ttc ggg ttc tcg gac  gag cgc ctc aag       24350
Cys  Tyr Leu Phe Asp Pro  Phe Gly Phe Ser Asp  Glu Arg Leu Lys
3760                 3765                 3770

cag  atc tac cag ttc gag  tac gag ggc ctg ctg  cgc cgc agc gcc       24395
Gln  Ile Tyr Gln Phe Glu  Tyr Glu Gly Leu Leu  Arg Arg Ser Ala
3775                 3780                 3785

ctg  gcc acc gag gac cgc  tgc gtc acc ctg gaa  aag tcc acc cag       24440
Leu  Ala Thr Glu Asp Arg  Cys Val Thr Leu Glu  Lys Ser Thr Gln
3790                 3795                 3800

acc  gtg cag ggt ccg cgc  tcg gcc gcc tgc ggg  ctc ttt tgc tgc       24485
Thr  Val Gln Gly Pro Arg  Ser Ala Ala Cys Gly  Leu Phe Cys Cys
3805                 3810                 3815

atg  ttc ctg cac gcc ttc  gtg cac tgg ccc gac  cgc ccc atg gac       24530
Met  Phe Leu His Ala Phe  Val His Trp Pro Asp  Arg Pro Met Asp
3820                 3825                 3830

aag  aac ccc acc atg aac  ttg ctg acg ggg gtg  ccc aac ggc atg       24575
Lys  Asn Pro Thr Met Asn  Leu Leu Thr Gly Val  Pro Asn Gly Met
3835                 3840                 3845

ctc  cag tcg ccc cag gtg  gaa ccc acc ctg cgc  cgc aac cag gag       24620
Leu  Gln Ser Pro Gln Val  Glu Pro Thr Leu Arg  Arg Asn Gln Glu
3850                 3855                 3860

gcg  ctc tac cgc ttc ctc  aac gcc cac tcc gcc  tac ttt cgc tcc       24665
Ala  Leu Tyr Arg Phe Leu  Asn Ala His Ser Ala  Tyr Phe Arg Ser
3865                 3870                 3875

cac  cgc gcg cgc atc gag  aag gcc acc gcc ttc  gac cgc atg aat       24710
His  Arg Ala Arg Ile Glu  Lys Ala Thr Ala Phe  Asp Arg Met Asn
3880                 3885                 3890

caa  gac atg taaaccgtgt gtgtatgtga atgctttatt cataataaac            24759
Gln  Asp Met
3895

agcacatgtt tatgccacct tctctgaggc tctgacttta tttagaaatc gaaggggttc    24819

tgccggctct cggcgtgccc cgcgggcagg gatacgttgc ggaactggta cttgggcagc    24879

cacttgaact cggggatcag cagcttcggc acggggaggt cggggaacga gtcgctccac    24939

agcttgcgcg tgagttgcag ggcgcccagc aggtcgggcg cggagatctt gaaatcgcag    24999

ttgggacccg cgttctgcgc gcgagagttg cggtacacgg ggttgcagca ctggaacacc    25059

atcagggccg ggtgcttcac gctcgccagc accgtcgcgt cggtgatgcc ctccacgtcc    25119
```

```
agatcctcgg cgttggccat cccgaagggg gtcatcttgc aggtctgccg ccccatgctg    25179

ggcacgcagc cgggcttgtg gttgcaatcg cagtgcaggg ggatcagcat catctgggcc    25239

tgctcggagc tcatgcccgg gtacatggcc ttcatgaaag cctccagctg gcggaaggcc    25299

tgctgcgcct tgccgccctc ggtgaagaag accccgcagg acttgctaga gaactggttg    25359

gtagcgcagc ccgcgtcgtg cacgcagcag cgcgcgtcgt tgttggccag ctgcaccacg    25419

ctgcgccccc agcggttctg ggtgatcttg gcccggtcgg ggttctcctt cagcgcgcgc    25479

tgcccgttct cgctcgccac atccatctcg atcgtgtgct ccttctggat catcacggtc    25539

ccgtgcaggc accgcagctt gccctcggcc tcggtgcagc cgtgcagcca cagcgcgcag    25599

ccggtgctct cccagttctt gtgggcgatc tgggagtgcg agtgcacgaa gccctgcagg    25659

aagcggccca tcatcgcggt cagggtcttg ttgctggtga aggtcagcgg gatgccgcgg    25719

tgctcctcgt tcacatacag gtggcagatg cggcggtaca cctcgccctg ctcgggcatc    25779

agctggaagg cggacttcag gtcgctctcc acgcggtacc ggtccatcag cagcgtcatc    25839

acttccatgc ccttctccca ggccgaaacg atcggcaggc tcaggggttt cttcaccgtc    25899

atcttagtcg ccgccgccga agtcaggggg tcgttctcgt ccagggtctc aaacactcgc    25959

ttgccgtcct tctcggtgat gcgcacgggg gggaaggcga agcccacggc cgccagctcc    26019

tcctcggcct gcctttcgtc ctcgctgtcc tggctgatgt cttgcaaagg cacatgcttg    26079

gtcttgcggg gtttcttttt gggcggcaga ggcggcggcg gcggagacgt gctgggcgag    26139

cgcgagttct cgctcaccac gactatttct tcttcttggc cgtcgtccga gaccacgcgg    26199

cggtaggcat gcctcttctg gggcagaggc ggaggcgacg ggctctcgcg gttcggcggg    26259

cggctggcag agccccttcc gcgttcgggg gtgcgctcct ggcggcgctg ctctgactga    26319

cttcctccgc ggccggccat tgtgttctcc tagggagcaa caacaagc atg gag act     26376
                                                      Met Glu Thr
                                                         3900

cag cca tcg tcg cca  aca tcg cca tct gcc  ccc gcc gcc gcc gac        26421
Gln Pro Ser Ser Pro  Thr Ser Pro Ser Ala  Pro Ala Ala Ala Asp
                3905                3910                3915

gag aac cag cag cag  cag aat gaa agc tta  acc gcc ccg ccg ccc        26466
Glu Asn Gln Gln Gln  Gln Asn Glu Ser Leu  Thr Ala Pro Pro Pro
                3920                3925                3930

agc ccc acc tcc gac  gcc gcg gcc cca gac  atg caa gag atg gag        26511
Ser Pro Thr Ser Asp  Ala Ala Ala Pro Asp  Met Gln Glu Met Glu
                3935                3940                3945

gaa tcc atc gag att  gac ctg ggc tac gtg  acg ccc gcg gag cac        26556
Glu Ser Ile Glu Ile  Asp Leu Gly Tyr Val  Thr Pro Ala Glu His
                3950                3955                3960

gag gag gag ctg gca  gcg cgc ttt tca gcc  ccg gaa gag aac cac        26601
Glu Glu Glu Leu Ala  Ala Arg Phe Ser Ala  Pro Glu Glu Asn His
                3965                3970                3975

caa gag cag cca gag  cag gaa gca gag agc  gag cag agc cag gct        26646
Gln Glu Gln Pro Glu  Gln Glu Ala Glu Ser  Glu Gln Ser Gln Ala
                3980                3985                3990

ggg ctc gag cat ggc  gac tac ctg agc ggg  gca gag gac gtg ctc        26691
```

```
Gly Leu Glu His Gly  Asp Tyr Leu Ser Gly  Ala Glu Asp Val Leu
                3995                4000                4005

atc aag cat ctg gcc  cgc caa tgc atc atc  gtc aag gac gcg ctg        26736
Ile Lys His Leu Ala  Arg Gln Cys Ile Ile  Val Lys Asp Ala Leu
                4010                4015                4020

ctc gac cgc gcc gag  gtg ccc ctc agc gtg  gcg gag ctc agc cgc        26781
Leu Asp Arg Ala Glu  Val Pro Leu Ser Val  Ala Glu Leu Ser Arg
                4025                4030                4035

gcc tac gag cgc aac  ctc ttc tcg ccg cgc  gtg ccc ccc aag cgc        26826
Ala Tyr Glu Arg Asn  Leu Phe Ser Pro Arg  Val Pro Pro Lys Arg
                4040                4045                4050

cag ccc aac ggc acc  tgc gag ccc aac ccg  cgc ctc aac ttc tac        26871
Gln Pro Asn Gly Thr  Cys Glu Pro Asn Pro  Arg Leu Asn Phe Tyr
                4055                4060                4065

ccg gtc ttc gcg gtg  ccc gag gcc ctg gcc  acc tac cac ctc ttt        26916
Pro Val Phe Ala Val  Pro Glu Ala Leu Ala  Thr Tyr His Leu Phe
                4070                4075                4080

ttc aag aac caa agg  atc ccc gtc tcc tgc  cgc gcc aac cgc acc        26961
Phe Lys Asn Gln Arg  Ile Pro Val Ser Cys  Arg Ala Asn Arg Thr
                4085                4090                4095

cgc gcc gac gcc ctg  ctc aac ctg ggc ccc  ggc gcc cgc cta cct        27006
Arg Ala Asp Ala Leu  Leu Asn Leu Gly Pro  Gly Ala Arg Leu Pro
                4100                4105                4110

gat atc gcc tcc ttg  gaa gag gtt ccc aag  atc ttc gag ggt ctg        27051
Asp Ile Ala Ser Leu  Glu Glu Val Pro Lys  Ile Phe Glu Gly Leu
                4115                4120                4125

ggc agc gac gag act  cgg gcc gcg aac gct  ctg caa gga agc gga        27096
Gly Ser Asp Glu Thr  Arg Ala Ala Asn Ala  Leu Gln Gly Ser Gly
                4130                4135                4140

gag gag cat gag cac  cac agc gcc ctg gtg  gag ttg gaa ggc gac        27141
Glu Glu His Glu His  His Ser Ala Leu Val  Glu Leu Glu Gly Asp
                4145                4150                4155

aac gcg cgc ctg gcg  gtc ctc aag cgc acg  gtc gag ctg acc cac        27186
Asn Ala Arg Leu Ala  Val Leu Lys Arg Thr  Val Glu Leu Thr His
                4160                4165                4170

ttc gcc tac ccg gcg  ctc aac ctg ccc ccc  aag gtc atg agc gcc        27231
Phe Ala Tyr Pro Ala  Leu Asn Leu Pro Pro  Lys Val Met Ser Ala
                4175                4180                4185

gtc atg gac cag gtg  ctc atc aag cgc gcc  tcg ccc ctc tcg gag        27276
Val Met Asp Gln Val  Leu Ile Lys Arg Ala  Ser Pro Leu Ser Glu
                4190                4195                4200

gag gag atg cag gac  ccc gag agc tcg gac  gag ggc aag ccc gtg        27321
Glu Glu Met Gln Asp  Pro Glu Ser Ser Asp  Glu Gly Lys Pro Val
                4205                4210                4215

gtc agc gac gag cag  ctg gcg cgc tgg ctg  gga acg agt agc acc        27366
Val Ser Asp Glu Gln  Leu Ala Arg Trp Leu  Gly Thr Ser Ser Thr
                4220                4225                4230

ccc cag agt ctg gaa  gag cgg cgc aag ctc  atg atg gcc gtg gtc        27411
Pro Gln Ser Leu Glu  Glu Arg Arg Lys Leu  Met Met Ala Val Val
                4235                4240                4245

ctg gtg acc gtg gag  ctt gag tgt ctg cgc  cgc ttc ttc gcc gac        27456
Leu Val Thr Val Glu  Leu Glu Cys Leu Arg  Arg Phe Phe Ala Asp
```

```
                4250                4255                4260

gcg gag acc ctg cgc  aag gtc gag gag aac  ctg cac tac ctc ttc        27501
Ala Glu Thr Leu Arg  Lys Val Glu Glu Asn  Leu His Tyr Leu Phe
                4265                4270                4275

agg cac ggg ttc gtg  cgc cag gcc tgc aag  atc tcc aac gtg gag        27546
Arg His Gly Phe Val  Arg Gln Ala Cys Lys  Ile Ser Asn Val Glu
                4280                4285                4290

ctg acc aac ctg gtc  tcc tac atg ggc atc  ctg cac gag aac cgc        27591
Leu Thr Asn Leu Val  Ser Tyr Met Gly Ile  Leu His Glu Asn Arg
                4295                4300                4305

ctg ggg cag aac gtg  ctg cac acc acc ctg  cgc ggg gag gcc cgc        27636
Leu Gly Gln Asn Val  Leu His Thr Thr Leu  Arg Gly Glu Ala Arg
                4310                4315                4320

cgc gac tac atc cgc  gac tgc gtc tac ctg  tac ctc tgc cac acc        27681
Arg Asp Tyr Ile Arg  Asp Cys Val Tyr Leu  Tyr Leu Cys His Thr
                4325                4330                4335

tgg cag acg ggc atg  ggc gtg tgg cag cag  tgc ctg gag gag cag        27726
Trp Gln Thr Gly Met  Gly Val Trp Gln Gln  Cys Leu Glu Glu Gln
                4340                4345                4350

aac ctg aaa gag ctc  tgc aag ctc ctg cag  aag aac ctg aag gcc        27771
Asn Leu Lys Glu Leu  Cys Lys Leu Leu Gln  Lys Asn Leu Lys Ala
                4355                4360                4365

ctg tgg acc ggg ttc  gac gag cgt acc acc  gcc tcg gac ctg gcc        27816
Leu Trp Thr Gly Phe  Asp Glu Arg Thr Thr  Ala Ser Asp Leu Ala
                4370                4375                4380

gac ctc atc ttc ccc  gag cgc ctg cgg ctg  acg ctg cgc aac ggg        27861
Asp Leu Ile Phe Pro  Glu Arg Leu Arg Leu  Thr Leu Arg Asn Gly
                4385                4390                4395

ctg ccc gac ttt atg  agc caa agc atg ttg  caa aac ttt cgc tct        27906
Leu Pro Asp Phe Met  Ser Gln Ser Met Leu  Gln Asn Phe Arg Ser
                4400                4405                4410

ttc atc ctc gaa cgc  tcc ggg atc ctg ccc  gcc acc tgc tcc gcg        27951
Phe Ile Leu Glu Arg  Ser Gly Ile Leu Pro  Ala Thr Cys Ser Ala
                4415                4420                4425

ctg ccc tcg gac ttc  gtg ccg ctg acc ttc  cgc gag tgc ccc ccg        27996
Leu Pro Ser Asp Phe  Val Pro Leu Thr Phe  Arg Glu Cys Pro Pro
                4430                4435                4440

ccg ctc tgg agc cac  tgc tac ttg ctg cgc  ctg gcc aac tac ctg        28041
Pro Leu Trp Ser His  Cys Tyr Leu Leu Arg  Leu Ala Asn Tyr Leu
                4445                4450                4455

gcc tac cac tcg gac  gtg atc gag gac gtc  agc ggc gag ggt ctg        28086
Ala Tyr His Ser Asp  Val Ile Glu Asp Val  Ser Gly Glu Gly Leu
                4460                4465                4470

ctc gag tgc cac tgc  cgc tgc aac ctc tgc  acg ccg cac cgc tcc        28131
Leu Glu Cys His Cys  Arg Cys Asn Leu Cys  Thr Pro His Arg Ser
                4475                4480                4485

ctg gcc tgc aac ccc  cag ctg ctg agc gag  acc cag atc atc ggc        28176
Leu Ala Cys Asn Pro  Gln Leu Leu Ser Glu  Thr Gln Ile Ile Gly
                4490                4495                4500

acc ttc gag ttg caa  ggc ccc ggc gag gag  ggc aag ggg ggt ctg        28221
Thr Phe Glu Leu Gln  Gly Pro Gly Glu Glu  Gly Lys Gly Gly Leu
                4505                4510                4515
```

```
aaa ctc acc ccg ggg  ctg tgg acc tcg gcc  tac ttg cgc aag ttc        28266
Lys Leu Thr Pro Gly  Leu Trp Thr Ser Ala  Tyr Leu Arg Lys Phe
                4520                4525                4530

gtg ccc gag gac tac  cat ccc ttc gag atc  agg ttc tac gag gac        28311
Val Pro Glu Asp Tyr  His Pro Phe Glu Ile  Arg Phe Tyr Glu Asp
                4535                4540                4545

caa tcc cag ccg ccc  aag gcc gag ctg tcg  gcc tgc gtc atc acc        28356
Gln Ser Gln Pro Pro  Lys Ala Glu Leu Ser  Ala Cys Val Ile Thr
                4550                4555                4560

cag ggg gcc atc ctg  gcc caa ttg caa gcc  atc cag aaa tcc cgc        28401
Gln Gly Ala Ile Leu  Ala Gln Leu Gln Ala  Ile Gln Lys Ser Arg
                4565                4570                4575

caa gaa ttt ctg ctg  aaa aag ggc cac ggg  gtc tac ttg gac ccc        28446
Gln Glu Phe Leu Leu  Lys Lys Gly His Gly  Val Tyr Leu Asp Pro
                4580                4585                4590

cag acc gga gag gag  ctc aac ccc agc ttc  ccc cag gat gcc cag        28491
Gln Thr Gly Glu Glu  Leu Asn Pro Ser Phe  Pro Gln Asp Ala Gln
                4595                4600                4605

agg aag cag caa gaa  gct gaa agt gga gct  gcc gct gcc gcc gga        28536
Arg Lys Gln Gln Glu  Ala Glu Ser Gly Ala  Ala Ala Ala Ala Gly
                4610                4615                4620

gga ttt gga gga aga  ctg gga gag cag tca  ggc aga gga gga gga        28581
Gly Phe Gly Gly Arg  Leu Gly Glu Gln Ser  Gly Arg Gly Gly Gly
                4625                4630                4635

gat gga aga ctg gga  cag cac tca ggc aga  gga gga cag cct gca        28626
Asp Gly Arg Leu Gly  Gln His Ser Gly Arg  Gly Gly Gln Pro Ala
                4640                4645                4650

aga cag tct gga aga  cga ggt gga gga ggc  aga gga aga agc agc        28671
Arg Gln Ser Gly Arg  Arg Gly Gly Gly Gly  Arg Gly Arg Ser Ser
                4655                4660                4665

cgc cgc cag acc gtc  gtc ctc ggc gga gaa  agc aag cag cac gga        28716
Arg Arg Gln Thr Val  Val Leu Gly Gly Glu  Ser Lys Gln His Gly
                4670                4675                4680

tac cat ctc cgc tcc  ggg tcg ggg tct cgg  cgg ccg ggc cca cag        28761
Tyr His Leu Arg Ser  Gly Ser Gly Ser Arg  Arg Pro Gly Pro Gln
                4685                4690                4695

tagatgggac gagaccgggc gcttcccgaa ccccaccacc cagaccggta agaaggagcg    28821

gcagggatac aagtcctggc gggggcacaa aaacgccatc gtctcctgct tgcaagcctg    28881

cgggggcaac atctccttca cccggcgcta cctgctcttc caccgcgggg tgaacttccc    28941

ccgcaacatc ttgcattact accgtcacct ccacagcccc tactactgtt tccaagaaga    29001

ggcagaaacc cagcagcagc agaaaaccag cagcagctag aaaatccaca gcggcggcgg    29061

cggcaggtgg actgaggatc gcggcgaacg agccggcgca gacccgggag ctgaggaacc    29121

ggatctttcc cacctctat gccatcttcc agcagagtcg ggggcaggag caggaactga    29181

aagtcaagaa ccgttctctg cgctcgctca cccgcagttg tctgtatcac aagagcgaag    29241

accaacttca gcgcactctc gaggacgccg aggctctctt caacaagtac tgcgcgctca    29301

ctcttaaaga gtagcccgcg cccgcccaca cacggaaaaa ggcgggaatt acgtcaccac    29361
```

```
ctgcgccctt cgcccgacca tcatc atg agc aaa gag att  ccc acg cct tac     29413
                           Met Ser Lys Glu Ile  Pro Thr Pro Tyr
                                               4700

atg  tgg agc tac cag ccc  cag atg ggc ctg gcc  gcc ggc gcc gcc       29458
Met  Trp Ser Tyr Gln Pro  Gln Met Gly Leu Ala  Ala Gly Ala Ala
4705                 4710                 4715

cag  gac tac tcc acc cgc  atg aac tgg ctc agt  gcc ggg ccc gcg       29503
Gln  Asp Tyr Ser Thr Arg  Met Asn Trp Leu Ser  Ala Gly Pro Ala
4720                 4725                 4730

atg  atc tca cgg gtg aat  gac atc cgc gcc cac  cga aac cag ata       29548
Met  Ile Ser Arg Val Asn  Asp Ile Arg Ala His  Arg Asn Gln Ile
4735                 4740                 4745

ctc  cta gaa cag tca gcg  atc acc gcc acg ccc  cgc cat cac ctt       29593
Leu  Leu Glu Gln Ser Ala  Ile Thr Ala Thr Pro  Arg His His Leu
4750                 4755                 4760

aat  ccg cgt aat tgg ccc  gcc gcc ctg gtg tac  cag gaa att ccc       29638
Asn  Pro Arg Asn Trp Pro  Ala Ala Leu Val Tyr  Gln Glu Ile Pro
4765                 4770                 4775

cag  ccc acg acc gta cta  ctt ccg cga gac gcc  cag gcc gaa gtc       29683
Gln  Pro Thr Thr Val Leu  Leu Pro Arg Asp Ala  Gln Ala Glu Val
4780                 4785                 4790

cag  ctg act aac tca ggt  gtc cag ctg gcc ggc  ggc gcc gcc ctg       29728
Gln  Leu Thr Asn Ser Gly  Val Gln Leu Ala Gly  Gly Ala Ala Leu
4795                 4800                 4805

tgt  cgt cac cgc ccc gct  cag ggt ata aag cgg  ctg gtg atc cga       29773
Cys  Arg His Arg Pro Ala  Gln Gly Ile Lys Arg  Leu Val Ile Arg
4810                 4815                 4820

ggc  aga ggc aca cag ctc  aac gac gag gtg gtg  agc tct tcg ctg       29818
Gly  Arg Gly Thr Gln Leu  Asn Asp Glu Val Val  Ser Ser Ser Leu
4825                 4830                 4835

ggt  ctg cga cct gac gga  gtc ttc caa ctc gcc  gga tcg ggg aga       29863
Gly  Leu Arg Pro Asp Gly  Val Phe Gln Leu Ala  Gly Ser Gly Arg
4840                 4845                 4850

tct  tcc ttc acg cct cgt  cag gcc gtc ctg act  ttg gag agt tcg       29908
Ser  Ser Phe Thr Pro Arg  Gln Ala Val Leu Thr  Leu Glu Ser Ser
4855                 4860                 4865

tcc  tcg cag ccc cgc tcg  ggt ggc atc ggc act  ctc cag ttc gtg       29953
Ser  Ser Gln Pro Arg Ser  Gly Gly Ile Gly Thr  Leu Gln Phe Val
4870                 4875                 4880

gag  gag ttc act ccc tcg  gtc tac ttc aac ccc  ttc tcc ggc tcc       29998
Glu  Glu Phe Thr Pro Ser  Val Tyr Phe Asn Pro  Phe Ser Gly Ser
4885                 4890                 4895

ccc  ggc cac tac ccg gac  gag ttc atc ccg aac  ttc gac gcc atc       30043
Pro  Gly His Tyr Pro Asp  Glu Phe Ile Pro Asn  Phe Asp Ala Ile
4900                 4905                 4910

agc  gag tcg gtg gac ggc  tac gat tga atg tcc cat  ggt ggc gcg       30088
Ser  Glu Ser Val Asp Gly  Tyr Asp     Met Ser His  Gly Gly Ala
4915                 4920                      4925

gct gac  cta gct cgg ctt cga  cac ctg gac cac tgc  cgc cgc ttc       30133
Ala Asp  Leu Ala Arg Leu Arg  His Leu Asp His Cys  Arg Arg Phe
    4930                 4935                 4940

cgc tgc  ttc gct cgg gat ctc  gcc gag ttt gcc tac  ttt gag ctg       30178
```

```
Arg Cys  Phe Ala Arg Asp Leu  Ala Glu Phe Ala Tyr  Phe Glu Leu
    4945                 4950                 4955

ccc gag  gag cac cct cag ggc  ccg gcc cac gga gtg  cgg atc atc       30223
Pro Glu  Glu His Pro Gln Gly  Pro Ala His Gly Val  Arg Ile Ile
    4960                 4965                 4970

gtc gaa  ggg ggc ctc gac tcc  cac ctg ctt cgg atc  ttc agc cag       30268
Val Glu  Gly Gly Leu Asp Ser  His Leu Leu Arg Ile  Phe Ser Gln
    4975                 4980                 4985

cgt ccg  atc ctg gtc gag cgc  gag caa gga cag acc  cgt ctg acc       30313
Arg Pro  Ile Leu Val Glu Arg  Glu Gln Gly Gln Thr  Arg Leu Thr
    4990                 4995                 5000

ctg tac  tgc atc tgc aac cac  ccc ggc ctg cat gaa  agt ctt tgt       30358
Leu Tyr  Cys Ile Cys Asn His  Pro Gly Leu His Glu  Ser Leu Cys
    5005                 5010                 5015

tgt ctg  ctg tgt act gag tat  aat aaa agc tgagatcagc gactactccg      30408
Cys Leu  Leu Cys Thr Glu Tyr  Asn Lys Ser
    5020                 5025

gacttccgtg tgttcctgaa tccatcaacc agtccctgtt cttcaccggg aacgagaccg    30468

agctccagct ccagtgtaag ccccacaaga agtacctcac ctggctgttc cagggctccc    30528

cgatcgccgt tgtcaaccac tgcgacaacg acggagtcct gctgagcggc cctgccaacc    30588

ttacttttc cacccgcaga agcaagctcc agctcttcca acccttcctc cccgggacct     30648

atcagtgcgt ctcgggaccc tgccatcaca ccttccacct gatcccgaat accacagcgt    30708

cgctccccgc tactaacaac caaactaccc accaacgcca ccgtcgcgac ctttcctctg    30768

aatctaatac cactaccgga ggtgagctcc gaggtcgacc aacctctggg atttactacg    30828

gcccctggga ggtggtgggg ttaatagcgc taggcctagt tgtgggtggg cttttggctc    30888

tctgctacct atacctccct tgctgttcgt acttagtggt gctgtgttgc tggtttaaga    30948

a atg ggg  cag atc acc cta gtg  agc tgc ggt gtg ctg  gtg gcg gtg      30994
  Met Gly  Gln Ile Thr Leu Val  Ser Cys Gly Val Leu  Val Ala Val
      5030                 5035                 5040

gtg ctt  tcg att gtg gga ctg  ggc ggc gcg gct gta  gtg aag gag       31039
Val Leu  Ser Ile Val Gly Leu  Gly Gly Ala Ala Val  Val Lys Glu
    5045                 5050                 5055

aag gcc  gat ccc tgc ttg cat  ttc aat ccc gat aaa  tgc cag ctg       31084
Lys Ala  Asp Pro Cys Leu His  Phe Asn Pro Asp Lys  Cys Gln Leu
    5060                 5065                 5070

agt ttt  cag ccc gat ggc aat  cgg tgc gcg gtg ctg  atc aag tgc       31129
Ser Phe  Gln Pro Asp Gly Asn  Arg Cys Ala Val Leu  Ile Lys Cys
    5075                 5080                 5085

gga tgg  gaa tgc gag aac gtg  aga atc gag tac aat  aac aag act       31174
Gly Trp  Glu Cys Glu Asn Val  Arg Ile Glu Tyr Asn  Asn Lys Thr
    5090                 5095                 5100

cgg aac  aat act ctc gcg tcc  acg tgg cag ccc ggg  gac ccc gag       31219
Arg Asn  Asn Thr Leu Ala Ser  Thr Trp Gln Pro Gly  Asp Pro Glu
    5105                 5110                 5115

tgg tac  acc gtc tct gtc ccc  ggt gct gac ggc tcc  ccg cgc acc       31264
Trp Tyr  Thr Val Ser Val Pro  Gly Ala Asp Gly Ser  Pro Arg Thr
    5120                 5125                 5130
```

```
gtg aat  aat act ttc att ttt  gcg cac atg tgc gac  acg gtc atg       31309
Val Asn  Asn Thr Phe Ile Phe  Ala His Met Cys Asp  Thr Val Met
    5135                 5140                 5145

tgg atg  agc aag cag tac gat  atg tgg ccc ccc acg  aag gag aac       31354
Trp Met  Ser Lys Gln Tyr Asp  Met Trp Pro Pro Thr  Lys Glu Asn
    5150                 5155                 5160

atc gtg  gtc ttc tcc atc gct  tac agc ctg tgc acg  gtg cta atc       31399
Ile Val  Val Phe Ser Ile Ala  Tyr Ser Leu Cys Thr  Val Leu Ile
    5165                 5170                 5175

acc gct  atc gtg tgc ctg agc  att cac atg ctc atc  gct att cgc       31444
Thr Ala  Ile Val Cys Leu Ser  Ile His Met Leu Ile  Ala Ile Arg
    5180                 5185                 5190

ccc aga  aat aat gcc gaa aaa  gaa aaa cag cca taacacgttt            31487
Pro Arg  Asn Asn Ala Glu Lys  Glu Lys Gln Pro
    5195                 5200

tttcacacac ctttttcaga cc atg  gcc tct gtt aaa ttt  ttg ctt tta       31536
                          Met  Ala Ser Val Lys Phe  Leu Leu Leu
                          5205                 5210

ttt gcc  agt ctc att act gtt  ata agt aat gag aaa  ctc act att       31581
Phe Ala  Ser Leu Ile Thr Val  Ile Ser Asn Glu Lys  Leu Thr Ile
    5215                 5220                 5225

tac att  ggc act aac cac act  cta gaa gga att cca  aaa tcc tca       31626
Tyr Ile  Gly Thr Asn His Thr  Leu Glu Gly Ile Pro  Lys Ser Ser
    5230                 5235                 5240

tgg tat  tgc tat ttt gat caa  gat cca gac tta act  ata gaa ctg       31671
Trp Tyr  Cys Tyr Phe Asp Gln  Asp Pro Asp Leu Thr  Ile Glu Leu
    5245                 5250                 5255

tgt ggt  aac aag gga caa aat  aca agc att cat tta  att aac ttt       31716
Cys Gly  Asn Lys Gly Gln Asn  Thr Ser Ile His Leu  Ile Asn Phe
    5260                 5265                 5270

aaa tgc  gga gac gat ttg aaa  tta att aat atc act  aaa gag tat       31761
Lys Cys  Gly Asp Asp Leu Lys  Leu Ile Asn Ile Thr  Lys Glu Tyr
    5275                 5280                 5285

gga ggt  atg tat tac tat gtt  aca gaa aat aac aac  atg cag ttt       31806
Gly Gly  Met Tyr Tyr Tyr Val  Thr Glu Asn Asn Asn  Met Gln Phe
    5290                 5295                 5300

tat gaa  gtt act gta act aat  ccc acc acg cct aga  aca aca aca       31851
Tyr Glu  Val Thr Val Thr Asn  Pro Thr Thr Pro Arg  Thr Thr Thr
    5305                 5310                 5315

acc acc  aca aag act aca cct  gtt acc act atg cag  ctc act acc       31896
Thr Thr  Thr Lys Thr Thr Pro  Val Thr Thr Met Gln  Leu Thr Thr
    5320                 5325                 5330

aat aac  att ttt gcc atg cgt  cag aag gcc aac aat  agc acc agc       31941
Asn Asn  Ile Phe Ala Met Arg  Gln Lys Ala Asn Asn  Ser Thr Ser
    5335                 5340                 5345

att caa  ccc ccc cca ccc agt  gag gaa att ccc aaa  tcc atg att       31986
Ile Gln  Pro Pro Pro Pro Ser  Glu Glu Ile Pro Lys  Ser Met Ile
    5350                 5355                 5360

ggc att  att gtt gct gta gtg  gtg tgc atg ttg atc  atc gcc ttg       32031
Gly Ile  Ile Val Ala Val Val  Val Cys Met Leu Ile  Ile Ala Leu
    5365                 5370                 5375

tgc atg  gtg tac tat gcc ttc  tgc tac aga aag cac  aga ctg aac       32076
```

```
Cys Met  Val Tyr Tyr Ala Phe  Cys Tyr Arg Lys His  Arg Leu Asn
    5380                5385                5390

gac aag  cta gaa cac tta cta  agt gtt gaa ttt taatttttt agaacc      32125
Asp Lys  Leu Glu His Leu Leu  Ser Val Glu Phe
    5395                5400

atg  aag atc cta ggc ctt  tta att ttt tct atc  att acc tct gct       32170
Met  Lys Ile Leu Gly Leu  Leu Ile Phe Ser Ile  Ile Thr Ser Ala
5405                5410                5415

cta  tgc aat tct gac aat  gag gac gtt act gtc  gtt gtc gga tca       32215
Leu  Cys Asn Ser Asp Asn  Glu Asp Val Thr Val  Val Val Gly Ser
5420                5425                5430

aat  tat aca ctg aaa ggt  cca gcg aag ggt atg  ctt tcg tgg tat       32260
Asn  Tyr Thr Leu Lys Gly  Pro Ala Lys Gly Met  Leu Ser Trp Tyr
5435                5440                5445

tgc  tgg ttt gga act gac  act gaa caa acc gaa  tta tgc aat ctt       32305
Cys  Trp Phe Gly Thr Asp  Thr Glu Gln Thr Glu  Leu Cys Asn Leu
5450                5455                5460

caa  aat ggc aaa gtt cat  aat tct aaa att tac  aat tat ata tgc       32350
Gln  Asn Gly Lys Val His  Asn Ser Lys Ile Tyr  Asn Tyr Ile Cys
5465                5470                5475

aat  ggc act gat ttg ata  ctc ctc aat atc acg  aaa tca tat gct       32395
Asn  Gly Thr Asp Leu Ile  Leu Leu Asn Ile Thr  Lys Ser Tyr Ala
5480                5485                5490

ggc  agt tat tca tgc cct  gga gat gat gct gac  aat atg att ttt       32440
Gly  Ser Tyr Ser Cys Pro  Gly Asp Asp Ala Asp  Asn Met Ile Phe
5495                5500                5505

tat  aaa ttg caa gtg gtt  gat ccc act act cca  cct cca ccc acc       32485
Tyr  Lys Leu Gln Val Val  Asp Pro Thr Thr Pro  Pro Pro Pro Thr
5510                5515                5520

aca  act act cac acc aca  cac aca gaa caa acc  aca gca gag gag       32530
Thr  Thr Thr His Thr Thr  His Thr Glu Gln Thr  Thr Ala Glu Glu
5525                5530                5535

gcg  gca aag tta gct ttg  cag gtc caa gac agt  tca ttt gtt ggc       32575
Ala  Ala Lys Leu Ala Leu  Gln Val Gln Asp Ser  Ser Phe Val Gly
5540                5545                5550

att  acc cct aca ccc gat  cag cgg tgt ccg ggg  ctg ctc gtc agc       32620
Ile  Thr Pro Thr Pro Asp  Gln Arg Cys Pro Gly  Leu Leu Val Ser
5555                5560                5565

ggc  att gtc ggt gtg ctt  tcg gga tta gca gtt  ata atc atc tgc       32665
Gly  Ile Val Gly Val Leu  Ser Gly Leu Ala Val  Ile Ile Ile Cys
5570                5575                5580

atg  ttc att ttt gct tgc  tgc tat aga agg ctt  tac cga caa aaa       32710
Met  Phe Ile Phe Ala Cys  Cys Tyr Arg Arg Leu  Tyr Arg Gln Lys
5585                5590                5595

tca  gac cca ctg ctg aac  ctc tat gtt taatttttc cagagcc atg aag     32760
Ser  Asp Pro Leu Leu Asn  Leu Tyr Val                   Met Lys
5600                5605                                    5610

gca gtt agc gct cta  gtt ttt tgt tct ttg  att ggc act gtt ttt       32805
Ala Val Ser Ala Leu  Val Phe Cys Ser Leu  Ile Gly Thr Val Phe
                5615                5620                5625

agt gtt agc ttt tta  aaa caa att aat gtt  act gag ggg gaa aat       32850
Ser Val Ser Phe Leu  Lys Gln Ile Asn Val  Thr Glu Gly Glu Asn
```

```
                5630                5635                5640

gtg aca ctg gta ggc  gta gaa ggt gct caa  aat acc acc tgg aca        32895
Val Thr Leu Val Gly  Val Glu Gly Ala Gln  Asn Thr Thr Trp Thr
                5645                5650                5655

aaa tac cac ctc gat  ggg tgg aaa gat att  tgc aat tgg agt gtc        32940
Lys Tyr His Leu Asp  Gly Trp Lys Asp Ile  Cys Asn Trp Ser Val
                5660                5665                5670

att act tac aca tgt  gag gga gtt aat ttg  acc ata gtc aat gcc        32985
Ile Thr Tyr Thr Cys  Glu Gly Val Asn Leu  Thr Ile Val Asn Ala
                5675                5680                5685

agc caa aat cag aag  ggt tgg att aaa ggg  caa tct gtt agt gtt        33030
Ser Gln Asn Gln Lys  Gly Trp Ile Lys Gly  Gln Ser Val Ser Val
                5690                5695                5700

acc agt gag ggg tac  tat acc cag cat act  ctt atc tat gac att        33075
Thr Ser Glu Gly Tyr  Tyr Thr Gln His Thr  Leu Ile Tyr Asp Ile
                5705                5710                5715

ata gtc ata ccg ctg  cct acg cct agc cca  cct agc act acc aca        33120
Ile Val Ile Pro Leu  Pro Thr Pro Ser Pro  Pro Ser Thr Thr Thr
                5720                5725                5730

cag aca acc cac act  aca caa aca acc aca  tac agt aca tca aat        33165
Gln Thr Thr His Thr  Thr Gln Thr Thr Thr  Tyr Ser Thr Ser Asn
                5735                5740                5745

cag cct acc acc act  aca aca gca gag gtt  gcc agc tcg tct ggg        33210
Gln Pro Thr Thr Thr  Thr Thr Ala Glu Val  Ala Ser Ser Ser Gly
                5750                5755                5760

gtc cga gcg gca ttt  ttg atg ttg gcc cca  tct agc agt ccc act        33255
Val Arg Ala Ala Phe  Leu Met Leu Ala Pro  Ser Ser Ser Pro Thr
                5765                5770                5775

gct agt acc aat gag  cag act act gaa ttt  ttg tcc act gtc gag        33300
Ala Ser Thr Asn Glu  Gln Thr Thr Glu Phe  Leu Ser Thr Val Glu
                5780                5785                5790

agc cac acc aca gct  acc tcg agt gcc ttc  tct agc acc gcc aat        33345
Ser His Thr Thr Ala  Thr Ser Ser Ala Phe  Ser Ser Thr Ala Asn
                5795                5800                5805

ctc tcc tcg ctt tcc  tct aca cca atc agt  ccc gct act act act        33390
Leu Ser Ser Leu Ser  Ser Thr Pro Ile Ser  Pro Ala Thr Thr Thr
                5810                5815                5820

acc ccc gct att ctt  ccc act ccc ctg aag  caa act gag gac agc        33435
Thr Pro Ala Ile Leu  Pro Thr Pro Leu Lys  Gln Thr Glu Asp Ser
                5825                5830                5835

ggc atg caa tgg cag  atc acc ctg ctc att  gtg atc ggg ttg gtc        33480
Gly Met Gln Trp Gln  Ile Thr Leu Leu Ile  Val Ile Gly Leu Val
                5840                5845                5850

atc cta gcc gtg ttg  ctc tac tac atc ttc  cgc cgc cgc att ccc        33525
Ile Leu Ala Val Leu  Leu Tyr Tyr Ile Phe  Arg Arg Arg Ile Pro
                5855                5860                5865

aac gcg cac cgc aag  ccg gtc tac aag ccc  atc att gtc ggg cag        33570
Asn Ala His Arg Lys  Pro Val Tyr Lys Pro  Ile Ile Val Gly Gln
                5870                5875                5880

ccg gag ccg ctt cag  gtg gaa ggg ggt cta  agg aat ctt ctc ttc        33615
Pro Glu Pro Leu Gln  Val Glu Gly Gly Leu  Arg Asn Leu Leu Phe
                5885                5890                5895
```

```
tct ttt aca gta tgg  tgattgaact atgattccta gacaattctt gatcactatt     33670
Ser Phe Thr Val Trp
               5900

cttatctgcc tcctccaagt ctgtgccacc ctcgctctgg tggccaacgc cagtccagac    33730

tgtattgggc ccttcgcctc ctacgtgctc tttgccttca tcacctgcat ctgctgctgt    33790

agcatagtct gcctgcttat caccttcttc cagttcattg actggatctt tgtgcgcatc    33850

gcctacctgc gccaccaccc ccagtaccgc gaccagcgag tggcgcagct gctcaggctc    33910

ctctgataag c atg cgg gct ctg cta  ctt ctc gcg ctt ctg  ctg tta       33957
            Met Arg Ala Leu Leu  Leu Leu Ala Leu Leu  Leu Leu
                           5905                 5910

gtg ctc ccc  cgt ccc gtt gac ccc  cgg ccc ccc act cag  tcc ccc       34002
Val Leu Pro  Arg Pro Val Asp Pro  Arg Pro Pro Thr Gln  Ser Pro
        5915                 5920                 5925

gag gag gtc  cgc aaa tgc aaa ttc  caa gaa ccc tgg aaa  ttc ctc       34047
Glu Glu Val  Arg Lys Cys Lys Phe  Gln Glu Pro Trp Lys  Phe Leu
        5930                 5935                 5940

aaa tgc tac  cgc caa aaa tca gac  atg cat ccc agc tgg  atc atg       34092
Lys Cys Tyr  Arg Gln Lys Ser Asp  Met His Pro Ser Trp  Ile Met
        5945                 5950                 5955

atc att ggg  atc gtg aac att ctg  gcc tgc acc ctc atc  tcc ttt       34137
Ile Ile Gly  Ile Val Asn Ile Leu  Ala Cys Thr Leu Ile  Ser Phe
        5960                 5965                 5970

gtg att tac  ccc tgc ttt gac ttt  ggt tgg aac tcg cca  gag gcg       34182
Val Ile Tyr  Pro Cys Phe Asp Phe  Gly Trp Asn Ser Pro  Glu Ala
        5975                 5980                 5985

ctc tat ctc  ccg cct gaa cct gac  aca cca cca cag caa  cct cag       34227
Leu Tyr Leu  Pro Pro Glu Pro Asp  Thr Pro Pro Gln Gln  Pro Gln
        5990                 5995                 6000

gca cac gca  cta cca cca cca cag  cct agg cca caa tac  atg ccc       34272
Ala His Ala  Leu Pro Pro Pro Gln  Pro Arg Pro Gln Tyr  Met Pro
        6005                 6010                 6015

ata tta gac  tat gag gcc gag cca  cag cga ccc atg ctc  ccc gct       34317
Ile Leu Asp  Tyr Glu Ala Glu Pro  Gln Arg Pro Met Leu  Pro Ala
        6020                 6025                 6030

att agt tac  ttc aat cta acc ggc  gga gat gac tgacccactg             34360
Ile Ser Tyr  Phe Asn Leu Thr Gly  Gly Asp Asp
        6035                 6040

gccaacaaca acgtcaacga ccttctcctg gacatggacg gccgcgcctc ggagcagcga    34420

ctcgcccaac ttcgcattcg ccagcagcag gagagagccg tcaaggagct gcaggacggc    34480

atagccatcc accagtgcaa gaaaggcatc ttctgcctgg tgaaacaggc caagatctcc    34540

tacgaggtca cccagaccga ccatcgcctc tcctacgagc tcctgcagca gcgccagaag    34600

ttcacctgcc tggtcggagt caaccccatc gtcatcaccc agcagtcggg cgataccaag    34660

gggtgcatcc actgctcctg cgactccccc gactgcgtcc acactctgat caagaccctc    34720

tgcggcctcc gcgacctcct ccccatgaac taatcacccc cttatccagt gaaataaaga    34780

tcatattgat gattaaataa aaaaaataat catttgattt gaaataaaga tacaatcata    34840
```

```
ttgatgattt gagtttaata aaaataaaga atcacttact tgaaatctga taccaggtct    34900

ctgtccatgt tttctgccaa caccacttca ctcccctctt cccagctctg gtactgcagg    34960

ccccggcggg ctgcaaactt cctccacacc ctgaagggga tgtcaaattc ctcctgtccc    35020

tcaatcttca ttttatcttc tatcag atg tcc  aaa aag cgc gtc cgg  gtg       35070
                              Met Ser  Lys Lys Arg Val Arg  Val
                                  6045                 6050

gat gat gac ttc  gac ccc gtc tac ccc  tac gat gca gac aac  gca       35115
Asp Asp Asp Phe  Asp Pro Val Tyr Pro  Tyr Asp Ala Asp Asn  Ala
            6055                 6060                 6065

ccg acc gtg ccc  ttc atc aac ccc ccc  ttc gtc tct tca gat  gga       35160
Pro Thr Val Pro  Phe Ile Asn Pro Pro  Phe Val Ser Ser Asp  Gly
            6070                 6075                 6080

ttc caa gag aag  ccc ctg ggg gtg ctg  tcc ctg cgt ctg gcc  gat       35205
Phe Gln Glu Lys  Pro Leu Gly Val Leu  Ser Leu Arg Leu Ala  Asp
            6085                 6090                 6095

ccc gtc acc acc  aag aac ggg gaa atc  acc ctc aag ctg gga  gat       35250
Pro Val Thr Thr  Lys Asn Gly Glu Ile  Thr Leu Lys Leu Gly  Asp
            6100                 6105                 6110

ggg gtg gac ctc  gac tcc tcg gga aaa  ctc atc tcc aac acg  gcc       35295
Gly Val Asp Leu  Asp Ser Ser Gly Lys  Leu Ile Ser Asn Thr  Ala
            6115                 6120                 6125

acc aag gcc gcc  gcc cct ctc agt ttt  tcc aac aac acc att  tcc       35340
Thr Lys Ala Ala  Ala Pro Leu Ser Phe  Ser Asn Asn Thr Ile  Ser
            6130                 6135                 6140

ctt aac atg gat  acc cct ttt tac aac  aac aat gga aag tta  ggc       35385
Leu Asn Met Asp  Thr Pro Phe Tyr Asn  Asn Asn Gly Lys Leu  Gly
            6145                 6150                 6155

atg aaa gtc act  gct cca ctg aag ata  cta gac aca gac ttg  cta       35430
Met Lys Val Thr  Ala Pro Leu Lys Ile  Leu Asp Thr Asp Leu  Leu
            6160                 6165                 6170

aaa aca ctt gtt  gta gct tat gga caa  ggt tta gga aca aac  acc       35475
Lys Thr Leu Val  Val Ala Tyr Gly Gln  Gly Leu Gly Thr Asn  Thr
            6175                 6180                 6185

act ggt gcc ctt  gtt gcc caa cta gca  tcc cca ctt gct ttt  gat       35520
Thr Gly Ala Leu  Val Ala Gln Leu Ala  Ser Pro Leu Ala Phe  Asp
            6190                 6195                 6200

agc aat agc aaa  att gcc ctt aat tta  ggc aat gga cca ttg  aaa       35565
Ser Asn Ser Lys  Ile Ala Leu Asn Leu  Gly Asn Gly Pro Leu  Lys
            6205                 6210                 6215

gtg gat gca aat  aga ctg aac atc aat  tgc aat aga gga ctc  tat       35610
Val Asp Ala Asn  Arg Leu Asn Ile Asn  Cys Asn Arg Gly Leu  Tyr
            6220                 6225                 6230

gtt act acc aca  aaa gat gca ctg gaa  gcc aat ata agt tgg  gct       35655
Val Thr Thr Thr  Lys Asp Ala Leu Glu  Ala Asn Ile Ser Trp  Ala
            6235                 6240                 6245

aat gct atg aca  ttt ata gga aat gcc  atg ggt gtc aat att  gat       35700
Asn Ala Met Thr  Phe Ile Gly Asn Ala  Met Gly Val Asn Ile  Asp
            6250                 6255                 6260

aca caa aaa ggc  ttg caa ttt ggc acc  act agt acc gtc gca  gat       35745
Thr Gln Lys Gly  Leu Gln Phe Gly Thr  Thr Ser Thr Val Ala  Asp
            6265                 6270                 6275
```

```
gtt aaa aac gct  tac ccc ata caa atc  aaa ctt gga gct ggt  ctc       35790
Val Lys Asn Ala  Tyr Pro Ile Gln Ile  Lys Leu Gly Ala Gly  Leu
            6280                 6285                 6290

aca ttt gac agc  aca ggt gca att gtt  gca tgg aac aaa gat  gat       35835
Thr Phe Asp Ser  Thr Gly Ala Ile Val  Ala Trp Asn Lys Asp  Asp
            6295                 6300                 6305

gac aag ctt aca  cta tgg acc aca gcc  gac ccc tct cca aat  tgt       35880
Asp Lys Leu Thr  Leu Trp Thr Thr Ala  Asp Pro Ser Pro Asn  Cys
            6310                 6315                 6320

cac ata tat tct  gaa aag gat gct aag  ctt aca ctt tgc ttg  aca       35925
His Ile Tyr Ser  Glu Lys Asp Ala Lys  Leu Thr Leu Cys Leu  Thr
            6325                 6330                 6335

aag tgt ggc agt  cag att ctg ggc act  gtt tcc ctc ata gct  gtt       35970
Lys Cys Gly Ser  Gln Ile Leu Gly Thr  Val Ser Leu Ile Ala  Val
            6340                 6345                 6350

gat act ggc agt  tta aat ccc ata aca  gga aca gta acc act  gct       36015
Asp Thr Gly Ser  Leu Asn Pro Ile Thr  Gly Thr Val Thr Thr  Ala
            6355                 6360                 6365

ctt gtc tca ctt  aaa ttc gat gca aat  gga gtt ttg caa agc  agc       36060
Leu Val Ser Leu  Lys Phe Asp Ala Asn  Gly Val Leu Gln Ser  Ser
            6370                 6375                 6380

tca aca cta gac  tca gac tat tgg aat  ttc aga cag gga gat  gtt       36105
Ser Thr Leu Asp  Ser Asp Tyr Trp Asn  Phe Arg Gln Gly Asp  Val
            6385                 6390                 6395

aca cct gct gaa  gcc tat act aat gct  ata ggt ttc atg ccc  aat       36150
Thr Pro Ala Glu  Ala Tyr Thr Asn Ala  Ile Gly Phe Met Pro  Asn
            6400                 6405                 6410

cta aaa gca tac  cct aaa aac aca agt  gga gct gca aaa agt  cac       36195
Leu Lys Ala Tyr  Pro Lys Asn Thr Ser  Gly Ala Ala Lys Ser  His
            6415                 6420                 6425

att gtt ggg aaa  gtg tac cta cat ggg  gat aca gac aaa cca  ctg       36240
Ile Val Gly Lys  Val Tyr Leu His Gly  Asp Thr Asp Lys Pro  Leu
            6430                 6435                 6440

gac ctc att att  act ttc aat gaa aca  agt gat gaa tct tgc  act       36285
Asp Leu Ile Ile  Thr Phe Asn Glu Thr  Ser Asp Glu Ser Cys  Thr
            6445                 6450                 6455

tac tgt att aac  ttt caa tgg cag tgg  ggg gct gat caa tat  aaa       36330
Tyr Cys Ile Asn  Phe Gln Trp Gln Trp  Gly Ala Asp Gln Tyr  Lys
            6460                 6465                 6470

aat gaa aca ctt  gcc gtc agt tca ttc  acc ttt tcc tat att  gct       36375
Asn Glu Thr Leu  Ala Val Ser Ser Phe  Thr Phe Ser Tyr Ile  Ala
            6475                 6480                 6485

aaa gaa taaaccccac tctgtacccc atctctgtct atggaaaaaa ctctgaaaca       36431
Lys Glu

caaaataaaa taaagttcaa gtgttttatt gattcaacag ttttacagga ttcgagcagt    36491

tatttttcct ccaccctccc aggacatgga atacaccacc ctctcccccc gcacagcctt    36551

gaacatctga atgccattgg tgatggacat gcttttggtc tccacgttcc acacagtttc    36611

agagcgagcc agtctcgggt cggtcaggga gatgaaaccc tccgggcact cccgcatctg    36671
```

cacctcacag ctcaacagct gaggattgtc ctcggtggtc gggatcacgg ttatctggaa 36731
gaagcagaag agcggcggtg ggaatcatag tccgcgaacg ggatcggccg gtggtgtcgc 36791
atcaggcccc gcagcagtcg ctgtcgccgc cgctccgtca agctgctgct caggggtcc 36851
gggtccaggg actccctcag catgatgccc acggccctca gcatcagtcg tctggtgcgg 36911
cgggcgcagc agcgcatgcg gatctcgctc aggtcgctgc agtacgtgca acacaggacc 36971
accaggttgt tcaacagtcc atagttcaac acgctccagc cgaaactcat cgcgggaagg 37031
atgctaccca cgtggccgtc gtaccagatc ctcaggtaaa tcaagtggcg ccccctccag 37091
aacacgctgc ccatgtacat gatctccttg ggcatgtggc ggttcaccac ctcccggtac 37151
cacatcaccc tctggttgaa catgcagccc cggatgatcc tgcggaacca cagggccagc 37211
accgccccgc ccgccatgca gcgaagagac cccgggtccc gacaatggca atggaggacc 37271
caccgctcgt acccgtggat catctgggag ctgaacaagt ctatgttggc acagcacagg 37331
catatgctca tgcatctctt cagcactctc agctcctcgg gggtcaaaac catatcccag 37391
ggcacgggga actcttgcag gacagcgaac cccgcagaac agggcaatcc tcgcacataa 37451
cttacattgt gcatggacag ggtatcgcaa tcaggcagca ccgggtgatc ctccaccaga 37511
gaagcgcggg tctcggtctc ctcacagcgt ggtaaggggg ccggccgata cgggtgatgg 37571
cgggacgcgg ctgatcgtgt tcgcgaccgt gtcatgatgc agttgctttc ggacattttc 37631
gtacttgctg tagcagaacc tggtccgggc gctgcacacc gatcgccggc ggcggtcccg 37691
gcgcttggaa cgctcggtgt tgaagttgta aaacagccac tctctcagac cgtgcagcag 37751
atctagggcc tcaggagtga tgaagatccc atcatgcctg atggctctaa tcacatcgac 37811
caccgtggaa tgggccagac ccagccagat gatgcaattt tgttgggttt cggtgacggc 37871
gggggaggga agaacaggaa gaaccatgat taacttttaa tccaaacggt ctcggagcac 37931
ttcaaaatga agatcgcgga gatggcacct ctcgcccccg ctgtgttggt ggaaaataac 37991
agccaggtca aaggtgatac ggttctcgag atgttccacg gtggcttcca gcaaagcctc 38051
cacgcgcaca tccagaaaca agacaatagc gaaagcggga gggttctcta attcctcaat 38111
catcatgtta cactcctgca ccatccccag ataattttca tttttccagc cttgaatgat 38171
tcgaactagt tcctgaggta aatccaagcc agccatgata aagagctcgc gcagagcgcc 38231
ctccaccggc attcttaagc acaccctcat aattccaaga tattctgctc ctggttcacc 38291
tgcagcagat tgacaagcgg aatatcaaaa tctctgccgc gatccctaag ctcctccctc 38351
agcaataact gtaagtactc tttcatatcc tctccgaaat ttttagccat aggaccgcca 38411
ggaatgagat taggacaagc cacattacag ataaaccgaa gtccccccca gtgagcattg 38471
ccaaatgtaa gattgaaata agcatgctgg ctagacccgg tgatatcttc cagataactg 38531
gacagaaaat cgcccaggca atttttaaga aaatcaacaa aagaaaaatc ttccaggtgc 38591
acgtttaggg cctcgggaac aacgatggag taagtgcaag gggtgcgttc cagcatggtt 38651
agttagctga tctgtaaaaa aacaaaaaat aaaacattaa accatg 38697

<210> 128
<211> 363
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 128

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

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
20 25 30

His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
35 40 45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
50 55 60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65 70 75 80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
100 105 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val
115 120 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His
130 135 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
145 150 155 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
165 170 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
180 185 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
195 200 205

Ala Ala Asp Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala
210 215 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225 230 235 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
245 250 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
260 265 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
275 280 285

Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
290 295 300

Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr
305 310 315 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
325 330 335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
340 345 350

Val Gly Gly Pro Gly His Lys Ala Arg Val Leu
355 360

<210> 129
<211> 391
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 129

Met His Pro Val Leu Arg Gln Met Arg Pro His Pro Pro Pro Gln Pro
1 5 10 15

Pro Leu Pro Pro Gln Gln Gln Gln Gln Pro Ala Leu Leu Pro Pro Pro
20 25 30

Gln Gln Gln Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly
35 40 45

Val Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg Leu
50 55 60

Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys Arg Asp
65 70 75 80

Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp Arg Ser
85 90 95

Gly Glu Glu Pro Glu Glu Met Arg Ala Ser Arg Phe His Ala Gly Arg
100 105 110

```
Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp Glu Asp
        115                 120                 125

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

Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys Glu Glu
145                 150                 155                 160

Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu Ile Ala
                165                 170                 175

Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu Leu Glu
            180                 185                 190

Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu Phe
        195                 200                 205

Leu Val Val Gln His Ser Arg Asp Asn Glu Thr Phe Arg Glu Ala Leu
    210                 215                 220

Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu Val Asn
225                 230                 235                 240

Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu Ser Glu
                245                 250                 255

Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys Tyr Tyr
            260                 265                 270

Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu Val
        275                 280                 285

Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu Thr Leu
    290                 295                 300

Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg Ala Val
305                 310                 315                 320

Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met His Ser
                325                 330                 335

Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser Tyr Phe
            340                 345                 350

Asp Met Gly Ala Asp Leu Arg Trp Gln Pro Ser Arg Arg Ala Leu Glu
        355                 360                 365

Ala Ala Gly Gly Val Pro Tyr Val Glu Glu Val Asp Asp Asp Glu Glu
    370                 375                 380
```

Glu Gly Glu Tyr Leu Glu Asp
385 390

<210> 130
<211> 587
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 130

Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu
1 5 10 15

Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala
20 25 30

Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg
35 40 45

Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val
50 55 60

Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn
65 70 75 80

Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val
85 90 95

Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val
100 105 110

Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser
115 120 125

Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala
130 135 140

Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln
145 150 155 160

Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu
165 170 175

Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln
180 185 190

Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys
195 200 205

Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala
210 215 220

```
Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu
225                 230                 235                 240

Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu
                245                 250                 255

Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val
            260                 265                 270

Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly
        275                 280                 285

Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr
    290                 295                 300

Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu
305                 310                 315                 320

Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met
                325                 330                 335

Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn
            340                 345                 350

Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu
        355                 360                 365

Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr
    370                 375                 380

Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr
385                 390                 395                 400

Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp
                405                 410                 415

Val Asp Ser Ser Val Phe Ser Pro Arg Pro Thr Thr Thr Val Trp Lys
            420                 425                 430

Lys Glu Gly Gly Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly Arg Ala
        435                 440                 445

Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro Ser Leu
    450                 455                 460

Pro Phe Ser Leu Asn Ser Val Arg Ser Ser Glu Leu Gly Arg Leu Thr
465                 470                 475                 480

Arg Pro Arg Leu Leu Gly Glu Glu Glu Tyr Leu Asn Asp Ser Leu Leu
                485                 490                 495
```

```
Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu Ser Leu
            500                 505                 510

Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala His Glu His Arg Asp
        515                 520                 525

Glu Pro Arg Ala Ser Ser Ser Ala Gly Ala Thr Arg Arg Arg Gln Arg
    530                 535                 540

His Asp Arg Gln Arg Gly Leu Val Trp Asp Asp Glu Asp Ser Ala Asp
545                 550                 555                 560

Asp Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe
                565                 570                 575

Ala His Leu Arg Pro Arg Ile Gly Arg Leu Met
            580                 585
```

<210> 131
<211> 542
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 131

```
Met Met Arg Arg Val Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1               5                   10                  15

Val Met Gln Gln Ala Val Ala Ala Ala Met Gln Pro Pro Leu Glu Ala
            20                  25                  30

Pro Tyr Val Pro Pro Arg Tyr Leu Ala Pro Thr Glu Gly Arg Asn Ser
        35                  40                  45

Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg Leu Tyr
    50                  55                  60

Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr Gln Asn
65                  70                  75                  80

Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp Phe Thr
                85                  90                  95

Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg Ser Arg
            100                 105                 110

Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro Asn Val
        115                 120                 125

Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met Val Ser
    130                 135                 140
```

```
Arg Lys Thr Pro Asn Gly Val Thr Val Asp Glu Asn Tyr Asp Gly Ser
145                 150                 155                 160

Gln Asp Glu Leu Thr Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly
                165                 170                 175

Asn Phe Ser Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile
            180                 185                 190

Asp Asn Tyr Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp
        195                 200                 205

Ile Gly Val Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro
    210                 215                 220

Val Thr Glu Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His
225                 230                 235                 240

Pro Asp Ile Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser
                245                 250                 255

Arg Leu Ser Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu
            260                 265                 270

Gly Phe Gln Ile Leu Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala
        275                 280                 285

Leu Leu Asp Val Glu Ala Tyr Glu Lys Ser Lys Glu Glu Ala Ala Ala
    290                 295                 300

Ala Ala Thr Ala Ala Val Ala Thr Ala Ala Thr Thr Asp Ala Asp Ala
305                 310                 315                 320

Ala Thr Thr Thr Arg Gly Asp Thr Phe Ala Thr Gln Ala Glu Glu Ala
                325                 330                 335

Ala Ala Leu Ala Ala Thr Asp Asp Ser Glu Ser Lys Ile Val Ile Lys
            340                 345                 350

Pro Val Glu Lys Asp Ser Lys Asp Arg Ser Tyr Asn Val Leu Ser Asp
        355                 360                 365

Gly Lys Asn Thr Ala Tyr Arg Ser Trp Tyr Leu Ala Tyr Asn Tyr Gly
    370                 375                 380

Asp Pro Glu Lys Gly Val Arg Ser Trp Thr Leu Leu Thr Thr Ser Asp
385                 390                 395                 400

Val Thr Cys Gly Val Glu Gln Val Tyr Trp Ser Leu Pro Asp Met Met
                405                 410                 415
```

Gln Asp Pro Val Thr Phe Arg Ser Thr Arg Gln Val Ser Asn Tyr Pro
420 425 430

Val Val Gly Ala Glu Leu Leu Pro Val Tyr Ser Lys Ser Phe Phe Asn
435 440 445

Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg Ala Phe Thr Ser Leu Thr
450 455 460

His Val Phe Asn Arg Phe Pro Glu Asn Gln Ile Leu Val Arg Pro Pro
465 470 475 480

Ala Pro Thr Ile Thr Thr Val Ser Glu Asn Val Pro Ala Leu Thr Asp
485 490 495

His Gly Thr Leu Pro Leu Arg Ser Ser Ile Arg Gly Val Gln Arg Val
500 505 510

Thr Val Thr Asp Ala Arg Arg Arg Thr Cys Pro Tyr Val Tyr Lys Ala
515 520 525

Leu Gly Val Val Ala Pro Arg Val Leu Ser Ser Arg Thr Phe
530 535 540

<210> 132
<211> 194
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 132

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1 5 10 15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
20 25 30

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
35 40 45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
50 55 60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Ala Ser Thr
65 70 75 80

Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
85 90 95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
100 105 110

```
Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
        115                 120                 125

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ser
    130                 135                 140

Ser Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala
145                 150                 155                 160

Ala Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val
                165                 170                 175

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

Arg Thr
```

<210> 133
<211> 348
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 133

```
Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1               5                   10                  15

Glu Ile Tyr Gly Pro Ala Ala Ala Val Lys Glu Glu Arg Lys Pro Arg
            20                  25                  30

Lys Leu Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Glu Asp Asp Gly
        35                  40                  45

Leu Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln Trp
    50                  55                  60

Arg Gly Arg Lys Val Lys Pro Val Leu Arg Pro Gly Thr Thr Val Val
65                  70                  75                  80

Phe Thr Pro Gly Glu Arg Ser Gly Ser Ala Ser Lys Arg Ser Tyr Asp
                85                  90                  95

Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu Gln Ala Ala Glu Arg Leu
            100                 105                 110

Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Pro Ala Pro Leu Lys Glu
        115                 120                 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
```

```
    130                 135                 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Ser Ala Ala Pro Arg Arg
145                 150                 155                 160

Gly Phe Lys Arg Glu Gly Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu
                165                 170                 175

Met Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu His Met Lys
            180                 185                 190

Val Asp Pro Glu Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln
        195                 200                 205

Val Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr
    210                 215                 220

Glu Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr
225                 230                 235                 240

Met Glu Val Gln Thr Asp Pro Trp Met Pro Ala Pro Ala Ser Thr Thr
                245                 250                 255

Thr Thr Thr Arg Arg Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met
            260                 265                 270

Pro Asn Tyr Ala Leu His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg
        275                 280                 285

Gly Thr Arg Phe Tyr Arg Gly Tyr Ser Ser Arg Arg Lys Thr Thr Thr
    290                 295                 300

Arg Arg Arg Arg Arg Arg Thr Arg Arg Ser Thr Thr Ala Thr Ser Ala
305                 310                 315                 320

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

Leu Pro Arg Ala Arg Tyr His Pro Ser Ile Ala Ile
            340                 345


<210>  134
<211>  77
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  134

Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1               5                   10                  15
```

```
Arg Lys Pro Arg Arg Arg Arg Leu Thr Gly Asn Gly Leu Arg Arg His
            20                  25                  30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
        35                  40                  45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
    50                  55                  60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65                  70                  75
```

<210> 135
<211> 244
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 135

```
Met Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg
1               5                   10                  15

Pro Phe Met Gly Thr Trp Ser Asp Ile Gly Asn Ser Gln Leu Asn Gly
            20                  25                  30

Gly Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly
        35                  40                  45

Ser Thr Leu Lys Thr Tyr Gly Ser Lys Ala Trp Asn Ser Thr Thr Gly
    50                  55                  60

Gln Ala Leu Arg Asp Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val
65                  70                  75                  80

Val Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn
                85                  90                  95

Gln Ala Val Gln Arg Gln Ile Asn Ser Arg Leu Asp Pro Val Pro Pro
            100                 105                 110

Ala Gly Ser Val Glu Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu
        115                 120                 125

Asp Lys Arg Gly Glu Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu
    130                 135                 140

Leu Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu
145                 150                 155                 160

Gly Leu Pro Thr Thr Arg Pro Ile Ala Pro Leu Ala Thr Gly Val Leu
                165                 170                 175
```

```
Lys Pro Glu Ser Asn Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Gln
            180                 185                 190

Pro Ser Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val
        195                 200                 205

Ala Arg Ala Arg Pro Gly Gly Ser Ala Arg Pro His Ala Asn Trp Gln
    210                 215                 220

Ser Thr Leu Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg
225                 230                 235                 240

Arg Arg Cys Tyr
```

<210> 136
<211> 943
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 136

```
Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1               5                   10                  15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
            20                  25                  30

Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
        35                  40                  45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
    50                  55                  60

Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65                  70                  75                  80

Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
                85                  90                  95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
        115                 120                 125

Ala Pro Asn Ser Ser Gln Trp Glu Arg Ala Lys Thr Asn Asn Asn Gly
    130                 135                 140

Ala Thr Glu Ser Val Thr Phe Gly Val Ala Ala Met Gly Gly Ile Asp
145                 150                 155                 160
```

```
Ile Thr Lys Glu Gly Leu Gln Ile Gly Thr Asp Glu Thr Lys Ala Asp
                165                 170                 175

Ser Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro Gln Ile
            180                 185                 190

Gly Glu Glu Asn Trp Gln Glu Thr Phe Ser Tyr Tyr Gly Gly Arg Ala
        195                 200                 205

Leu Lys Lys Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys
    210                 215                 220

Pro Thr Asn Val Lys Gly Gly Gln Ala Lys Phe Lys Val Gln Asp Gly
225                 230                 235                 240

Gln Gln Thr Thr Glu Tyr Asp Ile Asp Leu Ala Phe Phe Asp Ile Pro
                245                 250                 255

Asn Ser Gly Thr Gly Gly Asn Gly Thr Asn Val Asn Tyr Asp Pro Asp
            260                 265                 270

Met Val Met Tyr Thr Glu Asn Val Asp Leu Glu Thr Pro Asp Thr His
        275                 280                 285

Ile Val Tyr Lys Pro Gly Thr Ser Asp Asp Ser Ser Glu Ala Asn Leu
    290                 295                 300

Leu Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Gly Phe Arg Asp
305                 310                 315                 320

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
                325                 330                 335

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
            340                 345                 350

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Leu Gly Asp
        355                 360                 365

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp
    370                 375                 380

Pro Asp Val Arg Ile Ile Glu Asn His Gly Val Glu Asp Glu Leu Pro
385                 390                 395                 400

Asn Tyr Cys Phe Pro Leu Asp Gly Ala Gly Thr Asn Ala Val Tyr Gln
                405                 410                 415

Gly Val Lys Ala Lys Thr Asn Gly Gly Ala Ala Asn Gly Asp Trp Glu
            420                 425                 430
```

```
Gln Asp Thr Asp Val Ser Asn Ile Asn Gln Ile Cys Lys Gly Asn Ile
        435                 440                 445

Tyr Ala Met Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe Leu
    450                 455                 460

Tyr Ser Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Pro
465                 470                 475                 480

Ala Asn Ile Thr Leu Pro Thr Asn Thr Asn Thr Tyr Asp Tyr Met Asn
                485                 490                 495

Gly Arg Val Ala Pro Pro Ser Leu Val Asp Ala Tyr Ile Asn Ile Gly
            500                 505                 510

Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn Pro Phe Asn His
        515                 520                 525

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
    530                 535                 540

Arg Phe Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
545                 550                 555                 560

Lys Ser Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
                565                 570                 575

Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu
            580                 585                 590

Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala
        595                 600                 605

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
    610                 615                 620

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
625                 630                 635                 640

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
                645                 650                 655

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr
            660                 665                 670

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro
        675                 680                 685

Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
    690                 695                 700
```

```
Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser Val
705                 710                 715                 720

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
                725                 730                 735

Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
            740                 745                 750

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly
        755                 760                 765

Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser
    770                 775                 780

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val
785                 790                 795                 800

Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn
                805                 810                 815

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln Pro
            820                 825                 830

Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr
        835                 840                 845

Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile
    850                 855                 860

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
865                 870                 875                 880

Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe
                885                 890                 895

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

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
        915                 920                 925

Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
    930                 935                 940
```

<210> 137
<211> 208
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 137

```
Met Ala Glu Pro Thr Gly Ser Gly Glu Gln Glu Leu Arg Ala Ile Ile
1               5                  10                  15

Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys Arg
            20                  25                  30

Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val Asn
        35                  40                  45

Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala Trp
    50                  55                  60

Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe Ser
65                  70                  75                  80

Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu Leu
                85                  90                  95

Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu Lys
            100                 105                 110

Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu Phe
        115                 120                 125

Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro Met
    130                 135                 140

Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly Met
145                 150                 155                 160

Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu Ala
                165                 170                 175

Leu Tyr Arg Phe Leu Asn Ala His Ser Ala Tyr Phe Arg Ser His Arg
            180                 185                 190

Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Gln Asp Met
        195                 200                 205


<210>  138
<211>  798
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  138

Met Glu Thr Gln Pro Ser Ser Pro Thr Ser Pro Ser Ala Pro Ala Ala
1               5                  10                  15

Ala Asp Glu Asn Gln Gln Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro
            20                  25                  30
```

```
Pro Ser Pro Thr Ser Asp Ala Ala Ala Pro Asp Met Gln Glu Met Glu
        35                  40                  45

Glu Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His Glu
    50                  55                  60

Glu Glu Leu Ala Ala Arg Phe Ser Ala Pro Glu Glu Asn His Gln Glu
65                  70                  75                  80

Gln Pro Glu Gln Glu Ala Glu Ser Glu Gln Ser Gln Ala Gly Leu Glu
                85                  90                  95

His Gly Asp Tyr Leu Ser Gly Ala Glu Asp Val Leu Ile Lys His Leu
            100                 105                 110

Ala Arg Gln Cys Ile Ile Val Lys Asp Ala Leu Leu Asp Arg Ala Glu
        115                 120                 125

Val Pro Leu Ser Val Ala Glu Leu Ser Arg Ala Tyr Glu Arg Asn Leu
    130                 135                 140

Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr Cys Glu
145                 150                 155                 160

Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro Glu Ala
                165                 170                 175

Leu Ala Thr Tyr His Leu Phe Phe Lys Asn Gln Arg Ile Pro Val Ser
            180                 185                 190

Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Leu Asn Leu Gly Pro
        195                 200                 205

Gly Ala Arg Leu Pro Asp Ile Ala Ser Leu Glu Glu Val Pro Lys Ile
    210                 215                 220

Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala Leu Gln
225                 230                 235                 240

Gly Ser Gly Glu Glu His Glu His His Ser Ala Leu Val Glu Leu Glu
                245                 250                 255

Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu Leu Thr
            260                 265                 270

His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met Ser Ala
        275                 280                 285

Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Leu Ser Glu Glu
    290                 295                 300
```

```
Glu Met Gln Asp Pro Glu Ser Ser Asp Glu Gly Lys Pro Val Val Ser
305                 310                 315                 320

Asp Glu Gln Leu Ala Arg Trp Leu Gly Thr Ser Ser Thr Pro Gln Ser
                325                 330                 335

Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr Val
            340                 345                 350

Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu Arg
        355                 360                 365

Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val Arg
    370                 375                 380

Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr
385                 390                 395                 400

Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His Thr
                405                 410                 415

Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val Tyr
            420                 425                 430

Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln Gln
        435                 440                 445

Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln Lys
    450                 455                 460

Asn Leu Lys Ala Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala Ser
465                 470                 475                 480

Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu Arg
                485                 490                 495

Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe Arg
            500                 505                 510

Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser Ala
        515                 520                 525

Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro Pro
    530                 535                 540

Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala Tyr
545                 550                 555                 560

His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu Cys
                565                 570                 575
```

```
His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys Asn
            580                 585                 590

Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu Gln
        595                 600                 605

Gly Pro Gly Glu Glu Gly Lys Gly Gly Leu Lys Leu Thr Pro Gly Leu
    610                 615                 620

Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp Tyr His Pro
625                 630                 635                 640

Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro Pro Lys Ala Glu
                645                 650                 655

Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu Ala Gln Leu Gln
            660                 665                 670

Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys Gly His Gly
        675                 680                 685

Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn Pro Ser Phe Pro
    690                 695                 700

Gln Asp Ala Gln Arg Lys Gln Gln Glu Ala Glu Ser Gly Ala Ala Ala
705                 710                 715                 720

Ala Ala Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Ser Gly Arg Gly
                725                 730                 735

Gly Gly Asp Gly Arg Leu Gly Gln His Ser Gly Arg Gly Gly Gln Pro
            740                 745                 750

Ala Arg Gln Ser Gly Arg Arg Gly Gly Gly Gly Arg Gly Arg Ser Ser
        755                 760                 765

Arg Arg Gln Thr Val Val Leu Gly Gly Glu Ser Lys Gln His Gly Tyr
    770                 775                 780

His Leu Arg Ser Gly Ser Gly Ser Arg Arg Pro Gly Pro Gln
785                 790                 795


<210>  139
<211>  227
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  139

Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1               5                   10                  15
```

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
20 25 30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala His Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Ile Thr Ala Thr
50 55 60

Pro Arg His His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
100 105 110

Ala Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
115 120 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
130 135 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Leu Ala Gly Ser Gly Arg Ser
145 150 155 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
165 170 175

Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
180 185 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
195 200 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
210 215 220

Gly Tyr Asp
225

<210> 140
<211> 106
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 140

Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1 5 10 15

```
His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Ala
            20                  25                  30

Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
        35                  40                  45

Arg Ile Ile Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
    50                  55                  60

Ser Gln Arg Pro Ile Leu Val Glu Arg Glu Gln Gly Gln Thr Arg Leu
65                  70                  75                  80

Thr Leu Tyr Cys Ile Cys Asn His Pro Gly Leu His Glu Ser Leu Cys
                85                  90                  95

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
            100                 105
```

<210> 141
<211> 176
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 141

```
Met Gly Gln Ile Thr Leu Val Ser Cys Gly Val Leu Val Ala Val Val
1               5                   10                  15

Leu Ser Ile Val Gly Leu Gly Gly Ala Ala Val Val Lys Glu Lys Ala
            20                  25                  30

Asp Pro Cys Leu His Phe Asn Pro Asp Lys Cys Gln Leu Ser Phe Gln
        35                  40                  45

Pro Asp Gly Asn Arg Cys Ala Val Leu Ile Lys Cys Gly Trp Glu Cys
    50                  55                  60

Glu Asn Val Arg Ile Glu Tyr Asn Asn Lys Thr Arg Asn Asn Thr Leu
65                  70                  75                  80

Ala Ser Thr Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
                85                  90                  95

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

Ala His Met Cys Asp Thr Val Met Trp Met Ser Lys Gln Tyr Asp Met
        115                 120                 125

Trp Pro Pro Thr Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
```

130 135 140

Leu Cys Thr Val Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145 150 155 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
165 170 175

<210> 142
<211> 200
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 142

Met Ala Ser Val Lys Phe Leu Leu Leu Phe Ala Ser Leu Ile Thr Val
1 5 10 15

Ile Ser Asn Glu Lys Leu Thr Ile Tyr Ile Gly Thr Asn His Thr Leu
20 25 30

Glu Gly Ile Pro Lys Ser Ser Trp Tyr Cys Tyr Phe Asp Gln Asp Pro
35 40 45

Asp Leu Thr Ile Glu Leu Cys Gly Asn Lys Gly Gln Asn Thr Ser Ile
50 55 60

His Leu Ile Asn Phe Lys Cys Gly Asp Asp Leu Lys Leu Ile Asn Ile
65 70 75 80

Thr Lys Glu Tyr Gly Gly Met Tyr Tyr Tyr Val Thr Glu Asn Asn Asn
85 90 95

Met Gln Phe Tyr Glu Val Thr Val Thr Asn Pro Thr Thr Pro Arg Thr
100 105 110

Thr Thr Thr Thr Thr Lys Thr Thr Pro Val Thr Thr Met Gln Leu Thr
115 120 125

Thr Asn Asn Ile Phe Ala Met Arg Gln Lys Ala Asn Asn Ser Thr Ser
130 135 140

Ile Gln Pro Pro Pro Pro Ser Glu Glu Ile Pro Lys Ser Met Ile Gly
145 150 155 160

Ile Ile Val Ala Val Val Val Cys Met Leu Ile Ile Ala Leu Cys Met
165 170 175

Val Tyr Tyr Ala Phe Cys Tyr Arg Lys His Arg Leu Asn Asp Lys Leu
180 185 190

Glu His Leu Leu Ser Val Glu Phe
195 200

<210> 143
<211> 204
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 143

Met Lys Ile Leu Gly Leu Leu Ile Phe Ser Ile Ile Thr Ser Ala Leu
1 5 10 15

Cys Asn Ser Asp Asn Glu Asp Val Thr Val Val Val Gly Ser Asn Tyr
20 25 30

Thr Leu Lys Gly Pro Ala Lys Gly Met Leu Ser Trp Tyr Cys Trp Phe
35 40 45

Gly Thr Asp Thr Glu Gln Thr Glu Leu Cys Asn Leu Gln Asn Gly Lys
50 55 60

Val His Asn Ser Lys Ile Tyr Asn Tyr Ile Cys Asn Gly Thr Asp Leu
65 70 75 80

Ile Leu Leu Asn Ile Thr Lys Ser Tyr Ala Gly Ser Tyr Ser Cys Pro
85 90 95

Gly Asp Asp Ala Asp Asn Met Ile Phe Tyr Lys Leu Gln Val Val Asp
100 105 110

Pro Thr Thr Pro Pro Pro Pro Thr Thr Thr Thr His Thr Thr His Thr
115 120 125

Glu Gln Thr Thr Ala Glu Glu Ala Ala Lys Leu Ala Leu Gln Val Gln
130 135 140

Asp Ser Ser Phe Val Gly Ile Thr Pro Thr Pro Asp Gln Arg Cys Pro
145 150 155 160

Gly Leu Leu Val Ser Gly Ile Val Gly Val Leu Ser Gly Leu Ala Val
165 170 175

Ile Ile Ile Cys Met Phe Ile Phe Ala Cys Cys Tyr Arg Arg Leu Tyr
180 185 190

Arg Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
195 200

<210> 144
<211> 292
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 144

Met Lys Ala Val Ser Ala Leu Val Phe Cys Ser Leu Ile Gly Thr Val
1 5 10 15

Phe Ser Val Ser Phe Leu Lys Gln Ile Asn Val Thr Glu Gly Glu Asn
20 25 30

Val Thr Leu Val Gly Val Glu Gly Ala Gln Asn Thr Thr Trp Thr Lys
35 40 45

Tyr His Leu Asp Gly Trp Lys Asp Ile Cys Asn Trp Ser Val Ile Thr
50 55 60

Tyr Thr Cys Glu Gly Val Asn Leu Thr Ile Val Asn Ala Ser Gln Asn
65 70 75 80

Gln Lys Gly Trp Ile Lys Gly Gln Ser Val Ser Val Thr Ser Glu Gly
85 90 95

Tyr Tyr Thr Gln His Thr Leu Ile Tyr Asp Ile Ile Val Ile Pro Leu
100 105 110

Pro Thr Pro Ser Pro Pro Ser Thr Thr Thr Gln Thr Thr His Thr Thr
115 120 125

Gln Thr Thr Thr Tyr Ser Thr Ser Asn Gln Pro Thr Thr Thr Thr Thr
130 135 140

Ala Glu Val Ala Ser Ser Ser Gly Val Arg Ala Ala Phe Leu Met Leu
145 150 155 160

Ala Pro Ser Ser Ser Pro Thr Ala Ser Thr Asn Glu Gln Thr Thr Glu
165 170 175

Phe Leu Ser Thr Val Glu Ser His Thr Thr Ala Thr Ser Ser Ala Phe
180 185 190

Ser Ser Thr Ala Asn Leu Ser Ser Leu Ser Ser Thr Pro Ile Ser Pro
195 200 205

Ala Thr Thr Thr Thr Pro Ala Ile Leu Pro Thr Pro Leu Lys Gln Thr
210 215 220

Glu Asp Ser Gly Met Gln Trp Gln Ile Thr Leu Leu Ile Val Ile Gly
225 230 235 240

Leu Val Ile Leu Ala Val Leu Leu Tyr Tyr Ile Phe Arg Arg Arg Ile
245 250 255

```
Pro Asn Ala His Arg Lys Pro Val Tyr Lys Pro Ile Ile Val Gly Gln
            260                 265                 270

Pro Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser
        275                 280                 285

Phe Thr Val Trp
    290
```

<210> 145
<211> 143
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 145

```
Met Arg Ala Leu Leu Leu Leu Ala Leu Leu Leu Leu Val Leu Pro Arg
1               5                   10                  15

Pro Val Asp Pro Arg Pro Pro Thr Gln Ser Pro Glu Glu Val Arg Lys
            20                  25                  30

Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Lys Cys Tyr Arg Gln Lys
        35                  40                  45

Ser Asp Met His Pro Ser Trp Ile Met Ile Ile Gly Ile Val Asn Ile
    50                  55                  60

Leu Ala Cys Thr Leu Ile Ser Phe Val Ile Tyr Pro Cys Phe Asp Phe
65                  70                  75                  80

Gly Trp Asn Ser Pro Glu Ala Leu Tyr Leu Pro Pro Glu Pro Asp Thr
                85                  90                  95

Pro Pro Gln Gln Pro Gln Ala His Ala Leu Pro Pro Pro Gln Pro Arg
            100                 105                 110

Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala Glu Pro Gln Arg Pro
        115                 120                 125

Met Leu Pro Ala Ile Ser Tyr Phe Asn Leu Thr Gly Gly Asp Asp
    130                 135                 140
```

<210> 146
<211> 445
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 146

```
Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
1               5                  10                  15

Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
            20                  25                  30

Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
        35                  40                  45

Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
    50                  55                  60

Lys Leu Gly Asp Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
65                  70                  75                  80

Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
                85                  90                  95

Ile Ser Leu Asn Met Asp Thr Pro Phe Tyr Asn Asn Asn Gly Lys Leu
            100                 105                 110

Gly Met Lys Val Thr Ala Pro Leu Lys Ile Leu Asp Thr Asp Leu Leu
        115                 120                 125

Lys Thr Leu Val Val Ala Tyr Gly Gln Gly Leu Gly Thr Asn Thr Thr
    130                 135                 140

Gly Ala Leu Val Ala Gln Leu Ala Ser Pro Leu Ala Phe Asp Ser Asn
145                 150                 155                 160

Ser Lys Ile Ala Leu Asn Leu Gly Asn Gly Pro Leu Lys Val Asp Ala
                165                 170                 175

Asn Arg Leu Asn Ile Asn Cys Asn Arg Gly Leu Tyr Val Thr Thr Thr
            180                 185                 190

Lys Asp Ala Leu Glu Ala Asn Ile Ser Trp Ala Asn Ala Met Thr Phe
        195                 200                 205

Ile Gly Asn Ala Met Gly Val Asn Ile Asp Thr Gln Lys Gly Leu Gln
    210                 215                 220

Phe Gly Thr Thr Ser Thr Val Ala Asp Val Lys Asn Ala Tyr Pro Ile
225                 230                 235                 240

Gln Ile Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile
                245                 250                 255

Val Ala Trp Asn Lys Asp Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala
            260                 265                 270
```

```
Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Glu Lys Asp Ala Lys Leu
        275                 280                 285

Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser
    290                 295                 300

Leu Ile Ala Val Asp Thr Gly Ser Leu Asn Pro Ile Thr Gly Thr Val
305                 310                 315                 320

Thr Thr Ala Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Val Leu Gln
                325                 330                 335

Ser Ser Ser Thr Leu Asp Ser Asp Tyr Trp Asn Phe Arg Gln Gly Asp
            340                 345                 350

Val Thr Pro Ala Glu Ala Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn
        355                 360                 365

Leu Lys Ala Tyr Pro Lys Asn Thr Ser Gly Ala Ala Lys Ser His Ile
    370                 375                 380

Val Gly Lys Val Tyr Leu His Gly Asp Thr Asp Lys Pro Leu Asp Leu
385                 390                 395                 400

Ile Ile Thr Phe Asn Glu Thr Ser Asp Glu Ser Cys Thr Tyr Cys Ile
                405                 410                 415

Asn Phe Gln Trp Gln Trp Gly Ala Asp Gln Tyr Lys Asn Glu Thr Leu
            420                 425                 430

Ala Val Ser Ser Phe Thr Phe Ser Tyr Ile Ala Lys Glu
        435                 440                 445


<210>  147
<211>  34800
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Simian adenovirus A1320 clone


<220>
<221>  CDS
<222>  (28484)..(29038)
<223>  22K

<220>
<221>  CDS
<222>  (30345)..(30965)
<223>  E3\CR1-alpha

<220>
<221>  CDS
<222>  (34346)..(34750)
<223>  E3\14.7K

<400>  147
```

ctagcctggc gaacaggtgg gtaaatcgtt ctctccagca ccaggcaggc cacggggtct 60
ccggcgcgac cctcgtaaaa attgtcgcta tgattgaaaa ccatcacaga gagacgttcc 120
cggtggccgg cgtgaatgat tcgacaagat gaatacaccc ccggaacatt ggcgtccgcg 180
agtgaaaaaa agcggccgag gaagcaataa ggcactacaa tgctcagtct caagtccagc 240
aaagcgatgc catgcggatg aagcacaaaa ttctcaggtg cgtacaaaat gtaattactc 300
ccctcctgca caggcagcaa agccccagat ccctccagat acacatacaa agcctcagcg 360
tccatagctt accgagcagc agcacacaac aggcgcaaga gtcagagaaa ggctgagctc 420
taacctgtcc cccgctctct gctcaatata tagcccagat ctacactgac gtaaaggcca 480
aagtctaaaa atacccgcca aataatcaca cacgcccagc acacgcccag aaaccggtga 540
cacactcaaa aaaatacgcg cacttcctca aacgcccaaa ctgccgtcat ttccgggttc 600
ccacgctacg tcatcagaat tcgactttca aatccgtcga ccgttaaaca cgtcactcgc 660
cccgccccta acggtcgccc tcctctcggc caatcacagc cccgcatccc caaattcaaa 720
cgcctcattt gcatattaac gcgcacaaaa agtttgaggt atattattga tgatgatcgt 780
ttaaactatg cggtgtgaaa taccgcacag atgcgtaagg agaaaatacc gcatcaggcg 840
ctcttccgct tcctcgctca ctgactcgct gcgctcggtc gttcggctgc ggcgagcggt 900
atcagctcac tcaaaggcgg taatacggtt atccacagaa tcaggggata acgcaggaaa 960
gaacatgtga gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg cgttgctggc 1020
gtttttccat aggctccgcc cccctgacga gcatcacaaa aatcgacgct caagtcagag 1080
gtggcgaaac ccgacaggac tataaagata ccaggcgttt ccccctggaa gctccctcgt 1140
gcgctctcct gttccgaccc tgccgcttac cggatacctg tccgcctttc tcccttcggg 1200
aagcgtggcg ctttctcata gctcacgctg taggtatctc agttcggtgt aggtcgttcg 1260
ctccaagctg ggctgtgtgc acgaaccccc cgttcagccc gaccgctgcg ccttatccgg 1320
taactatcgt cttgagtcca acccggtaag acacgactta tcgccactgg cagcagccac 1380
tggtaacagg attagcagag cgaggtatgt aggcggtgct acagagttct tgaagtggtg 1440
gcctaactac ggctacacta gaaggacagt atttggtatc tgcgctctgc tgaagccagt 1500
taccttcgga aaaagagttg gtagctcttg atccggcaaa caaaccaccg ctggtagcgg 1560
tggtttttt gtttgcaagc agcagattac gcgcagaaaa aaaggatctc aagaagatcc 1620
tttgatcttt tctacggggt ctgacgctca gtggaacgaa aactcacgtt aagggatttt 1680
ggtcatgaga ttatcaaaaa ggatcttcac ctagatcctt ttaaattaaa aatgaagttt 1740
taaatcaatc taaagtatat atgagtaaac ttggtctgac agttaccaat gcttaatcag 1800
tgaggcacct atctcagcga tctgtctatt tcgttcatcc atagttgcct gactccccgt 1860
cgtgtagata actacgatac gggagggctt accatctggc cccagtgctg caatgatacc 1920
gcgagaccca cgctcaccgg ctccagattt atcagcaata aaccagccag ccggaagggc 1980
cgagcgcaga agtggtcctg caactttatc cgcctccatc cagtctatta attgttgccg 2040
ggaagctaga gtaagtagtt cgccagttaa tagtttgcgc aacgttgttg ccattgctgc 2100

aggcatcgtg gtgtcacgct cgtcgtttgg tatggcttca ttcagctccg gttcccaacg 2160
atcaaggcga gttacatgat cccccatgtt gtgcaaaaaa gcggttagct ccttcggtcc 2220
tccgatcgtt gtcagaagta agttggccgc agtgttatca ctcatggtta tggcagcact 2280
gcataattct cttactgtca tgccatccgt aagatgcttt tctgtgactg gtgagtactc 2340
aaccaagtca ttctgagaat agtgtatgcg gcgaccgagt tgctcttgcc cggcgtcaac 2400
acgggataat accgcgccac atagcagaac tttaaaagtg ctcatcattg gaaaacgttc 2460
ttcggggcga aaactctcaa ggatcttacc gctgttgaga tccagttcga tgtaacccac 2520
tcgtgcaccc aactgatctt cagcatcttt tactttcacc agcgtttctg ggtgagcaaa 2580
aacaggaagg caaaatgccg caaaaaaggg aataagggcg acacggaaat gttgaatact 2640
catactcttc ctttttcaat attattgaag catttatcag ggttattgtc tcatgagcgg 2700
atacatattt gaatgtattt agaaaaataa acaaataggg gttccgcgca catttccccg 2760
aaaagtgcca cctgacgtct aagaaaccat tattatcatg acattaacct ataaaaatag 2820
gcgtatcacg aggccctttc gtcttcaaga attgtttaaa ctaccatcat caataatata 2880
cctcaaactt tttgtgcgcg ttaatatgca aatgaggcgt ttgaatttgg ggatgcgggg 2940
cggtgattgg ctgtgggaaa ggcgaccgtt aggggcgggg cgggtgacgt tttgatgacg 3000
tgtttgtgag gcggagccgg tttgcaagtt ctcgtgggaa aagtgacgtc aaacgaggtg 3060
tggtttgaac acggaaatac tcaattttcc cgcgctctct gacaggaaat gaggtgtttc 3120
tgggcggatg caagtgaaaa cgggccattt tcgcgcgaaa actgaatgag gaagtgaaaa 3180
tctgagtaat ttcgcgttta tggcagggag gagtatttgc cgagggccga gtagactttg 3240
accgattacg tgggggtttc gattaccgtg tttttcacct aaatttccgc gtacggtgtc 3300
aaagtccggt gtttttacat catttccccg aaaagtgcca cctgacgtaa ctataacggt 3360
cctaaggtag cgaaagctca gatctggatc tcccgatccc ctatggcgac tctcagtaca 3420
atctgctctg atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc 3480
gctgagtagt gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc 3540
atgaagaatc tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat 3600
acgcgttgac attgattatt gactagttat taatagtaat caattacggg gtcattagtt 3660
catagcccat atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga 3720
ccgcccaacg acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca 3780
atagggactt tccattgacg tcaatgggtg gactatttac ggtaaactgc ccacttggca 3840
gtacatcaag tgtatcatat gccaagtacg ccccctattg acgtcaatga cggtaaatgg 3900
cccgcctggc attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc 3960
tacgtattag tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt 4020
ggatagcggt ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt 4080
ttgttttggc accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg 4140

acgcaaatgg gcggtaggcg tgtacggtgg gaggtctata taagcagagc tcgtttagtg 4200

aaccgtcaga tcgcctggag acgccatcca cgctgttttg acctccatag aagacaccgg 4260

gaccgatcca gcctccgcgg gcgcgcgtcg acagagagat gggtgcgaga gcgtcagtat 4320

taagcggggg agaattagat cgatgggaaa aaattcggtt aaggccaggg ggaaagaaga 4380

agtacaagct aaagcacatc gtatgggcaa gcagggagct agaacgattc gcagttaatc 4440

ctggcctgtt agaaacatca gaaggctgta gacaaatact gggacagcta caaccatccc 4500

ttcagacagg atcagaggag cttcgatcac tatacaacac agtagcaacc ctctattgtg 4560

tgcaccagcg gatcgagatc aaggacacca aggaagcttt agacaagata gaggaagagc 4620

aaaacaagtc caagaagaag gcccagcagg cagcagctga cacaggacac agcaatcagg 4680

tcagccaaaa ttaccctata gtgcagaaca tccaggggca aatggtacat caggccatat 4740

cacctagaac tttaaatgca tgggtaaaag tagtagaaga gaaggctttc agcccagaag 4800

tgatacccat gttttcagca ttatcagaag gagccacccc acaggacctg aacacgatgt 4860

tgaacaccgt ggggggacat caagcagcca tgcaaatgtt aaaagagacc atcaatgagg 4920

aagctgcaga ttgggataga gtgcatccag tgcatgcagg gcctattgca ccaggccaga 4980

tgagagaacc aaggggaagt gacatagcag gaactactag tacccttcag gaacaaatag 5040

gatggatgac aaataatcca cctatcccag taggagagat ctacaagagg tggataatcc 5100

tgggattgaa caagatcgtg aggatgtata gccctaccag cattctggac ataagacaag 5160

gaccaaagga acccttaga gactatgtag accggttcta taaaactcta agagctgagc 5220

aagcttcaca ggaggtaaaa aattggatga cagaaacctt gttggtccaa aatgcgaacc 5280

cagattgtaa gaccatcctg aaggctctcg gcccagcggc tacactagaa gaaatgatga 5340

cagcatgtca gggagtagga ggacccggcc ataaggcaag agttttgtag ggatccacta 5400

gttctagact cgaggggggg cccggtacct ttaagaccaa tgacttacaa ggcagctgta 5460

gatcttagcc actttttaaa agaaaagggg ggactggaag ggctaattca ctcccaaaga 5520

agacaagata aaccgctgat cagcctcgac tgtgccttct agttgccagc catctgttgt 5580

ttgcccctcc cccgtgcctt ccttgaccct ggaaggtgcc actcccactg tcctttccta 5640

ataaaatgag gaaattgcat cgcattgtct gagtaggtgt cattctattc tgggggggtgg 5700

ggtggggcag gacagcaagg gggaggattg ggaagacaat agcaggcatg ctggggatgc 5760

ggtgggctct atggcttctg aggcggaaag aaccagcaga tctgcagatc tgaattcatc 5820

tatgtcgggt gcggagaaag aggtaatgaa atggcattat gggtattatg ggtctgcatt 5880

aatgaatcgg ccagattatg ctggccaccg tgcatgtggc ctcgcacccc cgcaagacat 5940

ggcccgagtt cgagcacaac gtcatgaccc gctgcaatgt gcacctgggc tcccgccgag 6000

gcatgttcat gccataccag tgcaacatgc aatttgtgaa ggtgctgctg gagcccgatg 6060

ccatgtccag agtgagcctg acgggggtgt ttgacatgaa tgtggagctg tggaaaattc 6120

tgagatatga tgaatccaag accaggtgcc gggcctgcga atgcggaggc aagcacgcca 6180

ggcttcagcc cgtgtgtgtg gaggtgacgg aggacctgcg acccgatcat ttggtgttgt 6240

cctgcaacgg gacggagttc ggctccagcg gggaagaatc tgactagagt gagtagtgtt 6300
tgggggtggg tgggagcctg catgatgggc agaatgacta aaatctgtgt ttttctgcgc 6360
agcagcatga gcggaagcgc ctcctttgag ggaggggtat tcagccctta tctgacgggg 6420
cgtctcccct cctgggctgg agtgcgtcag aatgtgatgg gatccacggt ggacggccgg 6480
cccgtgcagc ccgcgaactc ttcaaccctg acctacgcga ccctgagctc ctcgtccgtg 6540
gacgcagctg ccgccgcagc tgctgcttcc gccgccagcg ccgtgcgcgg aatggccctg 6600
ggtgccggct actacagctc tctggtggcc aactcgagtt ccgccaataa tcccgccagc 6660
ctgaacgagg agaagctgct gctgctgatg gcccagctcg aggccctgac ccagcgcctg 6720
ggcgagctga cccagcaggt ggctcagctg caggcggaga cgcgggccgc ggttgccacg 6780
gtgaaaacca aataaaaaat gaatcaataa ataaacggaa acggttgttg attttaacac 6840
agagtcttga atctttattt gatttttcgc gcgcggtagg ccctggacca ccggtctcga 6900
tcattgagca cccggtggat cttttccagg acccggtaga ggtgggcttg gatgttgagg 6960
tacatgggca tgagcccgtc ccgggggtgg aggtagctcc actgcagggc ctcgtgctcg 7020
ggggtggtgt tgtaaatcac ccagtcatag caggggcgca gggcgtggtg ctgcacgatg 7080
tccttgagga ggagactgat ggccacgggc agtcccttgg tgtaggtgtt gacgaacctg 7140
ttgagctggg agggatgcat gcgggggggag atgagatgca tcttggcctg gatcttgaga 7200
ttggcgatgt tcccacccag atcccgccgg gggttcatgt tgtgcaggac caccagcacg 7260
gtgtatccgg tgcacttggg gaatttgtca tgcaacttgg aagggaaggc gtgaaagaat 7320
ttggagacgc ccttgtgacc gcccaggttt tccatgcact catccatgat gatggcgatg 7380
ggcccgtggg cggcggcctg ggcaaagacg tttcgggggt cggacacatc gtagttgtgg 7440
tcctgggtga gctcgtcata ggccatttta atgaatttgg ggcggagggt gcccgactgg 7500
gggacaaagg tgccctcgat cccgggggcg tagttgccct cgcagatctg catctcccag 7560
gccttgagct cggaggggggg gatcatgtcc acctgcgggg cgatgaaaaa aacggtttcc 7620
ggggcggggg agatgagctg ggccgaaagc aggttccgga gcagctggga cttgccgcag 7680
ccggtggggc cgtagatgac cccgatgacc ggctgcaggt ggtagttgag ggagagacag 7740
ctgccgtcct cgcggaggag gggggccacc tcgttcatca tctcgcgcac atgcatgttc 7800
tcgcgcacga gttccgccag gaggcgctcg ccccccagcg agaggagctc ttgcagcgag 7860
gcgaagtttt tcagcggctt gagtccgtcg gccatgggca ttttggagag ggtctgttgc 7920
aagagttcca gacggtccca gagctcggtg atgtgctcta gggcatctcg atccagcaga 7980
cctcctcgtt tcgcgggttg gggcggctgc gggagtaggg caccaggcga tgggcgtcca 8040
gcgaggccag ggtccggtcc ttccagggtc gcagggtccg cgtcagcgtg gtctccgtca 8100
cggtgaaggg gtgcgcgccg ggctgggcgc ttgcgagggt gcgcttcagg ctcatccggc 8160
tggtcgagaa ccgctcccgg tcggtgccct gcgcgtcggc caggtagcaa ttgagcatga 8220
gttcgtagtt gagcgcctcg gccgcgtggc ccttggcgcg gagcttacct ttggaagtgt 8280

gtccgcagac gggacagagg agggacttga gggcgtagag cttgggggcg aggaagacgg 8340

actcgggggc gtaggcgtcc gcgccgcagc tggcgcagac ggtctcgcac tccacgagcc 8400

aggtgaggtc ggggcggtcg gggtcaaaaa cgaggtttcc tccgtgcttt ttgatgcgtt 8460

tcttacctct ggtctccatg agctcgtgtc cccgctgggt gacaaagagg ctgtccgtgt 8520

ccccgtagac cgactttatg ggccggtcct cgagcggggt gccgcggtcc tcgtcgtaga 8580

ggaaccccgc ccactccgag acgaaggccc gggtccaggc cagcacgaag gaggccacgt 8640

gggaggggta gcggtcgttg tccaccagcg ggtccacctt ctccagggta tgcaagcaca 8700

tgtccccctc gtccacatcc aggaaggtga ttggcttgta agtgtaggcc acgtgaccgg 8760

gggtcccggc cgggggggta taaaaggggg cgggcccctg ctcgtcctca ctgtcttccg 8820

gatcgctgtc caggagcgcc agctgttggg gtaggtattc cctctcgaag gcgggcatga 8880

cctcggcact caggttgtca gtttctagaa acgaggagga tttgatattg acggtgccgt 8940

tggagacgcc tttcatgagc ccctcgtcca tctggtcaga aaagacgatc tttttgttgt 9000

cgagcttggt ggcgaaggag ccgtagaggg cattggagag gagcttggcg atggagcgca 9060

tggtctggtt cttttccttg tcggcgcgct ccttggcggc gatgttgagc tgcacgtact 9120

cgcgcgccac gcacttccat tcggggaaga cggtggtgag ctcgtcgggc acgattctga 9180

cccgccagcc gcggttgtgc agggtgatga ggtccacgct ggtggccacc tcgccgcgca 9240

ggggctcgtt ggtccagcag aggcgcccgc ccttgcgcga gcagaagggg ggcagcgggt 9300

ccagcatgag ctcgtcgggg gggtcggcgt ccacggtgaa gatgccgggc aggagctcgg 9360

ggtcgaagta gctgatgcag gtgcccagat cgtccagcgc cgcttgccag tcgcgcacgg 9420

ccagcgcgcg ctcgtagggg ctgaggggcg tgccccaggg catggggtgc gtgagcgcgg 9480

aggcgtacat gccgcagatg tcgtagacgt agaggggctc ctcgaggacg ccgatgtagg 9540

tggggtagca gcgccccccg cggatgctgg cgcgcacgta gtcgtacagc tcgtgcgagg 9600

gcgcgaggag ccccgcgccg aggttggagc gctgcggctt ttcggcgcgg tagacgatct 9660

ggcggaagat ggcgtgggag ttggaggaga tggtgggcct ctggaagatg ttgaagtggg 9720

cgtggggcag gccgaccgag tccctgatga agtgggcgta ggagtcctgc agcttggcga 9780

cgagctcggc ggtgacgagg acgtccaggg cgcagtagtc gagggtctct tggatgatgt 9840

cgtacttgag ctggcccttc tgcttccaca gctcgcggtt gagaaggaac tcttcgcggt 9900

ccttccagta ctcttcgagg gggaacccgt cctgatcggc acggtaagag cccaccatgt 9960

agaactggtt gacggccttg taggcgcagc agcccttctc cacggggagg gcataagctt 10020

gcgcggcctt gcgcagggag gtgtgggtga gggcgaaggt gtcgcgcacc atgaccttga 10080

ggaactggtg cttgaagtcg aggtcgtcgc agccgccctg ctcccagagt tggaagtccg 10140

tgcgcttctt gtaggcgggg ttgggcaaag cgaaagtaac atcgttgaag aggatcttgc 10200

ccgcgcgggg catgaagttg cgagtgatgc ggaaaggctg gggcacctcg gcccggttgt 10260

tgatgacctg ggcggcgagg acgatctcgt cgaagccgtt gatgttgtgc ccgacgatgt 10320

agagttccac gaatcgcggg cggcccttga cgtggggcag cttcttgagc tcgtcgtagg 10380

tgagctcggc ggggtcgctg agtccgtgct gctcaagggc ccagtcggcg acgtgggggt 10440
tggcgctgag gaaggaagtc cagagatcca cggccagggc ggtttgcaag cggtcccggt 10500
actgacggaa ctgctggccc acggccattt tttcgggggt gatgcagtag aaggtgcggg 10560
ggtcgccgtg ccagcggtcc cacttgagct ggagggcgag gtcgtgggcg agctcgacaa 10620
gcggcgggtc cccggagagt ttcatgacca gcatgaaggg gacgagctgc ttgccgaagg 10680
accccatcca ggtgtaggtt tccacatcgt aggtgaggaa gagcctttcg gtgcgaggat 10740
gcgagccgat ggggaagaac tggatctcct gccaccagtt ggaggaatgg ctgttgatgt 10800
gatggaagta gaaatgccga cggcgcgccg agcactcgtg cttgtgttta tacaagcgtc 10860
cgcagtgctc gcaacgctgc acgggatgca cgtgctgcac gagctgtacc tgagttcctt 10920
tgacgaggaa tttcagtggg cagtggagcg ctggcggctg catctggtgc tgtactacgt 10980
cctggccatc ggcgtggcca tcgtctgcct cgatggtggt catgctgacg agcccgcgcg 11040
ggaggcaggt ccagacctcg gctcggacgg gtcggagagc gaggacgagg gcgcgcaggc 11100
cggagctgtc cagggtcctg agacgctgcg gagtcaggtc agtgggcagc ggcggcgcgc 11160
ggttgacttg caggagcttt tccagggcgc gcgggaggtc cagatggtac ttgatctcca 11220
cggcgccgtt ggtggcgacg tccacggctt gcagggtccc gtgcccctgg ggcgccacca 11280
ccgtgccccg tttcttcttg ggcgctggcg gcgttggcgc tggttccatg tcggtcagaa 11340
gcggcggcga ggacgcgcgc cgggcggcag gggcggctcg gggcccggag gcaggggcgg 11400
caggggcacg tcggcgccgc gcgcgggcag gttctggtac tgcgcccgga gaagactggc 11460
gtgagcgacg acgcgacggt tgacgtcctg gatctgacgc ctctgggtga aggccacggg 11520
acccgtgagt ttgaacctga aagagagttc gacagaatca atctcggtat cgttgacggc 11580
ggcctgccgc aggatctctt gcacgtcgcc cgagttgtcc tggtaggcga tctcggtcat 11640
gaactgctcg atctcctcct cctgaaggtc tccgcggccg gcgcgctcga cggtggccgc 11700
gaggtcgttg gagatgcggg ccatgagctg cgagaaggcg ttcatgccgg cctcgttcca 11760
gacgcggctg tagaccacgg ctccgtcggg gtcgcgcgcg cgcatgacca cctgggcaag 11820
gttgagctcg acgtggcgcg tgaagaccgc gtagttgcag aggcgctggt agaggtagtt 11880
gagcgtggtg gcgatgtgct cggtgacgaa gaagtacatg atccagcggc ggagcggcat 11940
ctcgctgacg tcgcccaggg cttccaagcg ctccatggcc tcgtagaagt ccacggcgaa 12000
gttgaaaaac tgggagttgc gcgccgagac ggtcaactcc tcctccagaa gacggatgag 12060
ctctgcgatg gtggcgcgca cctcgcgctc gaaggccccg gggggctcct cttcttccat 12120
ctcctcctcc tcttcctcct ccactaacat ctcttctact tcctcctcag gcggtggtgg 12180
cgggggaggg ggcctgcgtc gccggcggcg cacgggcaga cggtcgatga agcgctcgat 12240
ggtctcgccg cgccggcgtc gcatggtctc ggtgacggcg cgcccgtcct cgcggggccg 12300
cagcgtgaag acgccgccgc gcatctccag gtggccgggg gggtccccgt tgggcaggga 12360
gagggcgctg acgatgcatc ttatcaattg ccccgtaggg actccgcgca aggacctgag 12420

cgtctcgaga tccacgggat ctgaaaaccg ttgaacgaag gcttcgagcc agtcgcagtc 12480

gcaaggtagg ctgagcacgg tttcttctgg cgggtcatgt tggttggagg gagcggggcg 12540

ggcgatgctg ctggtgatga agttgaaata ggcggttctg agacggcgga tggtggcgag 12600

gagcaccagg tctttgggcc cggcttgctg gatgcgcaga cggtcggcca tgccccaggc 12660

gtggtcctga cacctggcca ggtccttgta gtagtcctgc atgagccgct ccacgggcac 12720

ctcctcctcg cccgcgcggc cgtgcatgcg cgtgagcccg aagccgcgct ggggctggac 12780

gagcgccagg tcggcgacga cgcgctcggc gaggatggcc tgctggacct gggtgagggt 12840

ggtctggaag tcgtcgaagt cgacgaagcg gtggtaggct ccggtgttga tggtgtagga 12900

gcagttggcc atgacggacc agttgacggt ctggtggccg gggcgcacga gctcgtggta 12960

cttgaggcgc gagtaggcgc gcgtgtcgaa gatgtagtcg ttgcaggtgc gcacgaggta 13020

ctggtatccg acgaggaagt gcggcggcgg ctggcggtag agcggccatc gctcggtggc 13080

gggggcgccg ggcgcgaggt cctcgagcat gaggcggtgg tagccgtaga tgtacctgga 13140

catccaggtg atgccggcgg cggtggtgga ggcgcgcggg aactcgcgga cgcggttcca 13200

gatgttgcgc agcggcagga agtagttcat ggtggccgcg gtctggcccg tgaggcgcgc 13260

gcagtcgtgg atgctctaga catacgggca aaaacgaaag cggtcagcgg ctcgactccg 13320

tggcctggag gctaagcgaa cgggttgggc tgcgcgtgta ccccggttcg agtctctgct 13380

cgaatcaggc tggagccgca gctaacgtgg tactggcact cccgtctcga cccaagcctg 13440

ctaacgaaac ctccaggata cggaggcggg tcgtttttg gccttggtca ctggtcatga 13500

aaaactagta agcgcggaaa gcggccgccc gcgatggctc gctgccgtag tctggagaaa 13560

gaatcgccag ggttgcgttg cggtgtgccc cggttcgaga ctcagcgctc ggcgccggcc 13620

ggattccgcg gctaacgtgg gcgtggctgc cccgtcgttt ccaagacccc ttagccagcc 13680

gacttctcca gttacggagc gagcccctct ttttcttgtg tttttgccag atgcatcccg 13740

tactgcggca gatgcgcccc caccctccac cacaaccgcc cctaccgccg cagcagcagc 13800

aacagccggc gcttctgccc ccgccccagc agcagccagc cactaccgcg gcggccgccg 13860

tgagcggagc cggcgttcag tatgacctgg ccttggaaga gggcgagggg ctggcgcggc 13920

tgggggcgtc gtcgccggag cggcacccgc gcgtgcagat gaaaagggac gctcgcgagg 13980

cctacgtgcc caagcagaac ctgttcagag acaggagcgg cgaggagccc gaggagatgc 14040

gcgcctcccg cttccacgcg gggcgggagc tgcggcgcgg cctggaccga aagcgggtgc 14100

tgagggacga ggatttcgag gcggacgagc tgacggggat cagccccgcg cgcgcgcacg 14160

tggccgcggc caacctggtc acggcgtacg agcagaccgt gaaggaggag agcaacttcc 14220

aaaaatcctt caacaaccac gtgcgcacgc tgatcgcgcg cgaggaggtg accctgggcc 14280

tgatgcatct gtgggacctg ttggaggcca tcgtgcagaa ccccacgagc aagccgctga 14340

cggcgcagct gtttctggtg gtgcagcaca gtcgggacaa cgagacgttc agggaggcgc 14400

tgctgaatat caccgagccc gagggccgct ggctcctgga cctggtgaac attctgcaga 14460

gcatcgtggt gcaggagcgc gggctgccgc tgtccgagaa gctggcggcc atcaacttct 14520

cggtgctgag cctgggcaag tactacgcta ggaagatcta caagaccccg tacgtgccca 14580
tagacaagga ggtgaagatc gacgggtttt acatgcgcat gaccctgaaa gtgctgaccc 14640
tgagcgacga tctgggggtg taccgcaacg acaggatgca ccgcgcggtg agcgccagcc 14700
gccggcgcga gctgagcgac caggagctga tgcacagcct gcagcgggcc ctgaccgggg 14760
ccgggaccga gggggagagc tactttgaca tgggcgcgga cctgcgctgg cagcccagcc 14820
gccgggcttt agaggcagcc ggcggcgtgc cctacgtgga ggaggtggac gatgatgagg 14880
aggagggcga gtacctggaa gactgatggc gcgaccgtat ttttgctaga tgcagcaaca 14940
gccaccgcct cctgatcccg cgatgcgggc ggcgctgcag agccagccgt ccggcattaa 15000
ctcctcggac gattggaccc aggccatgca acgcatcatg gcgctgacga cccgcaatcc 15060
cgaagccttt agacagcagc ctcaggccaa ccggctctcg gccatcctgg aggccgtggt 15120
gccctcgcgc tcgaacccca cgcacgagaa ggtgctggcc atcgtgaacg cgctggtgga 15180
gaacaaggcc atccgcggcg acgaggccgg gctggtgtac aacgcgctgc tggagcgcgt 15240
ggcccgctac aacagcacca acgtgcagac gaacctggac cgcatggtga ccgacgtgcg 15300
cgaggcggtg tcgcagcgcg agcggttcca ccgcgagtcg aacctgggct ccatggtggc 15360
gctgaacgcc ttcctgagca cgcagcccgc caacgtgccc cggggccagg aggactacac 15420
caactttatc agcgcgctgc ggctgatggt ggccgaggtg ccccagagcg aggtgtacca 15480
gtcggggccg gactacttct tccagaccag tcgccagggc ttgcagaccg tgaacctgag 15540
ccaggctttc aagaacttgc agggactgtg gggcgtgcag gccccggtcg gggaccgcgc 15600
gacggtgtcg agcctgctga cgccgaactc gcgcctgctg ctgctgctgg tggcgccctt 15660
cacggacagc ggcagcgtga gccgcgactc gtacctgggc tacctgctta acctgtaccg 15720
cgaggccatc gggcaggcgc acgtggacga gcagacctac caggagatca cccacgtgag 15780
ccgcgcgctg ggccaggagg acccgggcaa cctggaggcc accctgaact tcctgctgac 15840
caaccggtcg cagaagatcc cgccccagta cgcgctgagc accgaggagg agcgcatcct 15900
gcgctacgtg cagcagagcg tggggctgtt cctgatgcag gaggggggca cgcccagcgc 15960
cgcgctcgac atgaccgcgc gcaacatgga gcccagcatg tacgcccgca accgcccgtt 16020
catcaataag ctgatggact acttgcatcg ggcggccgcc atgaactcgg actactttac 16080
caacgccatc ttgaacccgc actggctccc gccgcccggg ttctacacgg gcgagtacga 16140
catgcccgac cccaacgacg ggttcctgtg ggacgacgtg gacagcagcg tgttctcgcc 16200
gcgccccacc accaccgtgt ggaagaaaga gggcggggac cggcggccgt cctcggcgct 16260
gtccggtcgc gcgggtgctg ccgcggcggt gcccgaggcc gccagcccct tcccgagcct 16320
gccctttcg ctgaacagcg tgcgcagcag cgagctgggt cggctgacgc ggccgcgcct 16380
gctgggcgag gaggagtacc tgaacgactc cttgttgagg cccgagcgcg agaaaaactt 16440
ccccaataac gggatagaga gcctggtgga caagatgagc cgctggaaga cgtacgcgca 16500
cgagcacagg gacgagcccc gagctagcag cagcgccggc gccacccgta gacgccagcg 16560

gcacgacagg cagcggggac tggtgtggga cgatgaggat tccgccgacg acagcagcgt 16620
gttggacttg ggtgggagtg gtggtggtaa cccgttcgct cacttgcgcc cccgtatcgg 16680
gcgcctgatg taagaatctg aaaaaataaa aaaacggtac tcaccaaggc catggcgacc 16740
agcgtgcgtt cttctctgtt gtttgtagta gtatgatgag gcgcgtgtac ccggagggtc 16800
ctcctccctc gtacgagagc gtgatgcagc aggcggtggc ggcggcgatg cagcccccgc 16860
tggaggcgcc ttacgtgccc ccgcggtacc tggcgcctac ggaggggcgg aacagcattc 16920
gttactcgga gctggcaccc ttgtacgata ccacccggtt gtacctggtg gacaacaagt 16980
cggcggacat cgcctcgctg aactaccaga acgaccacag caacttcctg accaccgtgg 17040
tgcagaacaa cgatttcacc cccacggagg ccagcaccca gaccatcaac tttgacgagc 17100
gctcgcggtg gggcggccag ctgaaaacca tcatgcacac caacatgccc aacgtgaacg 17160
agttcatgta cagcaacaag ttcaaggcgc gggtgatggt ctcgcgcaag acccccaacg 17220
gggtgacggt ggatgagaat tatgatggta gtcaggacga gctgacctac gagtgggtgg 17280
agtttgagct gcccgagggc aacttctcgg tgaccatgac catcgatctg atgaacaacg 17340
ccatcatcga caactacttg gcggtgggac ggcagaacgg ggtgctggag agcgacatcg 17400
gcgtgaagtt cgacacgcgc aacttccggc tgggctggga ccccgtgacc gagctggtga 17460
tgccgggcgt gtacaccaac gaggccttcc accccgacat cgtcctgctg cccggctgcg 17520
gcgtggactt caccgagagc cgcctcagca acctgctggg catccgcaag cggcagccct 17580
tccaggaggg cttccagatc ctgtacgagg acctggaggg gggcaacatc cccgcgctgc 17640
tggacgtcga agcctacgag aaaagcaagg aggaggccgc cgcagcggcg accgcggccg 17700
tggctaccgc tgcgaccacc gatgcagatg cagctactac taccaggggc gatacattcg 17760
ccacccaggc ggaggaagca gccgccctag cggcgaccga tgatagtgaa agtaagatag 17820
tcatcaagcc ggtggagaag gacagcaagg acaggagcta caacgttcta tcggatggaa 17880
agaacaccgc ctaccgcagc tggtacctgg cctacaacta cggcgaccct gagaagggcg 17940
tgcgctcctg gacgctgctc accacctcgg acgtcacctg cggcgtggag caagtctact 18000
ggtcgctgcc cgacatgatg caagacccgg tcaccttccg ctccacgcgt caagttagca 18060
actacccggt ggtgggcgcc gagctcctgc ccgtctactc caagagcttc ttcaacgagc 18120
aggccgtcta ctcgcagcag ctgcgcgcct tcacctcgct cacgcacgtc ttcaaccgct 18180
tccccgagaa ccagatcctc gtccgcccgc ccgcgcccac cattaccacc gtcagtgaaa 18240
acgttcctgc tctcacagat cacgggaccc tgccgctgcg cagcagtatc cggggagtcc 18300
agcgcgtgac cgtcactgac gccagacgcc gcacctgccc ctacgtctac aaggccctgg 18360
gcgtagtcgc gccgcgcgtc ctctcgagcc gcaccttcta aaaaatgtcc attctcatct 18420
cgcccagtaa taacaccggt tggggcctgc gcgcgcccag caagatgtac ggaggcgctc 18480
gccaacgctc cacgcaacac cccgtgcgcg tgcgcgggca cttccgcgct ccctggggcg 18540
ccctcaaggg ccgcgtgcgc tcgcgcacca ccgtcgacga cgtgatcgac caggtggtgg 18600
ccgacgcgcg caactacacg cccgccgccg cgcccgcctc caccgtggac gccgtcatcg 18660

acagcgtggt ggccgacgcg cgccggtacg cccgcgccaa gagccggcgg cggcgcatcg 18720
cccggcggca ccggagcacc cccgccatgc gcgcggcgcg agccttgctg cgcagggcca 18780
ggcgcacggg acgcagggcc atgctcaggg cggccagacg cgcggcctcc ggcagcagca 18840
gcgccggcag gacccgcaga cgcgcggcca cggcggcggc ggcggccatc gccagcatgt 18900
cccgcccgcg gcgcggcaac gtgtactggg tgcgcgacgc cgccaccggt gtgcgcgtgc 18960
ccgtgcgcac ccgccccccc cgcacttgaa gatgctgact tcgcgatgtt gatgtgtccc 19020
agcggcgagg aggatgtcca agcgcaaatt caaggaagag atgctccagg tcatcgcgcc 19080
tgagatctac ggccccgcgg cggcggtgaa ggaggaaaga aagccccgca aactgaagcg 19140
ggtcaaaaag gacaaaaagg aggaggaaga tgacggactg gtggagtttg tgcgcgagtt 19200
cgcccccccgg cggcgcgtgc agtggcgcgg gcggaaagtg aaaccggtgc tgcggcccgg 19260
caccacggtg gtcttcacgc ccggcgagcg ttccggctcc gcctccaagc gctcctacga 19320
cgaggtgtac ggggacgagg acatcctcga gcaggcggcc gagcgtctgg gcgagtttgc 19380
ttacggcaag cgcagccgcc ccgcgccctt gaaagaggag gcggtgtcca tcccgctgga 19440
ccacggcaac cccacgccga gcctgaagcc ggtgaccctg cagcaggtgc tgccgagcgc 19500
ggcgccgcgc cggggcttca agcgcgaggg cggcgaggat ctgtacccga ccatgcagct 19560
gatggtgccc aagcgccaga agctggagga cgtgctggag cacatgaagg tggaccccga 19620
ggtgcagccc gaggtcaagg tgcggcccat caagcaggtg gccccgggcc tgggcgtgca 19680
gaccgtggac atcaagatcc ccacggagcc catggaaacg cagaccgagc ccgtgaagcc 19740
cagcaccagc accatggagg tgcagacgga tccctggatg ccggcgccgg cttccaccac 19800
caccaccacc cgccgaagac gcaagtacgg cgcggccagc ctgctgatgc ccaactacgc 19860
gctgcatcct tccatcatcc ccacgccggg ctaccgcggc acgcgcttct accgcggcta 19920
cagcagccgc cgcaagacca ccacccgccg ccgccgtcgc cgcacccgcc gcagcaccac 19980
cgcgacttcc gccgccgcct tggtgcggag agtgtaccgc agcgggcgtg agcctctgac 20040
cctgccgcgc gcgcgctacc acccgagcat cgccatttaa ctctgccgtc gcctccttgc 20100
agatatggcc ctcacatgcc gcctccgcgt ccccattacg ggctaccgag gaagaaagcc 20160
gcgccgtaga aggctgacgg ggaacgggct gcgtcgccat caccaccggc ggcggcgcgc 20220
catcagcaag cggttggggg gaggcttcct gcccgcgctg atccccatca tcgccgcggc 20280
gatcggggcg atccccggca tagcttccgt ggcggtgcag gcctctcagc gccactgaga 20340
cacagcttgg aaaatttgta ataaaaaaat ggactgacgc tcctggtcct gtgatgtgtg 20400
tttttagatg gaagacatca atttttcgtc cctggcaccg cgacacggca cgcggccgtt 20460
tatgggcacc tggagcgaca tcggcaacag ccaactgaac gggggcgcct tcaattggag 20520
cagtctctgg agcgggctta agaatttcgg gtccacgctc aaaacctatg gcagcaaggc 20580
gtggaacagc accacagggc aggcgctgag ggataagctg aaagagcaga acttccagca 20640
gaaggtggtc gatgggctcg cttcgggcat caacggggtg gtggacctgg ccaaccaggc 20700

cgtgcagcgg cagatcaaca gccgcctgga cccggtgccg cccgccggct ccgtggagat 20760
gccgcaggtg gaggaggagc tgcctcccct ggacaagcgg ggcgagaagc gaccccgccc 20820
cgacgcggag gagacgctgc tgacgcacac ggacgagccg cccccgtacg aggaggcggt 20880
gaaactgggt ctgcccacca cgcggcccat tgcgccccta gccaccgggg tgctgaaacc 20940
cgagagtaat aagcccgcga ccctggactt gcctcctccc cagccttccc gcccctccac 21000
agtggctaag cccctgccgc cggtggccgt ggcccgcgcg cgacccgggg gctccgcccg 21060
ccctcatgcg aactggcaga gcactctgaa cagcatcgtg ggtctgggag tgcagagtgt 21120
gaagcgccgc cgctgctatt aaacctaccg tagcgcttaa cttgcttgtc tgtgtgtgta 21180
tgtattatgt cgccgccgct gtccgccaga aggaggagtg aagaggcgcg tcgccgagtt 21240
gcaagatggc caccccatcg atgctgcccc agtgggcgta catgcacatc gccggacagg 21300
acgcttcgga gtacctgagt ccgggtctgg tgcagttcgc ccgcgccaca gacacctact 21360
tcagtctggg gaacaagttt aggaacccca cggtggcgcc cacgcacgat gtgaccaccg 21420
accgcagcca gcggctgacg ctgcgcttcg tgcccgtgga ccgcgaggac aacacctact 21480
cgtacaaagt gcgctacacg ctggccgtgg gcgacaaccg cgtgctggac atggccagca 21540
cctactttga catccgcggc gtgctggacc ggggccctag cttcaaaccc tactccggca 21600
ccgcctacaa cagcctggct cccaagggag cgcccaattc cagccagtgg gagcgagcta 21660
agacaaacaa taacggagcc acggaatctg ttacctttgg tgtggctgcc atgggggtta 21720
tagatattac aaaagagggt ctccagattg gaactgatga aactaaagct gatagtaaag 21780
aaatttatgc agacaaaacc taccaacctg aacctcagat aggagaggag aactggcaag 21840
aaacattctc ctattatggc ggcagagctc ttaaaaaaga taccaagatg aagccatgct 21900
acggctcctt tgctaaacca acgaatgtca aaggaggtca ggccaaattt aaagttcagg 21960
acggtcaaca aactacagaa tatgatatcg acttagcttt ctttgatatt ccaaactctg 22020
gaacaggagg gaatggcacg aatgttaatt atgatccaga tatggtcatg tacactgaaa 22080
atgtggattt ggagacccct gatacccaca ttgtttacaa accagggact tccgatgaca 22140
gttctgaagc aaacttgctt cagcagtcca tgcctaacag acccaactat attgggttta 22200
gagacaactt tatcggtctc atgtactaca acagtactgg caatatgggt gtgctggctg 22260
gtcaggcctc ccagctgaat gctgtggtcg acttgcaaga cagaaacacc gagctatcct 22320
accagctctt gcttgactct ctgggcgata gaacccggta tttcagtatg tggaaccagg 22380
cggtggacag ttatgaccct gatgtgcgca ttattgaaaa ccatggtgtg gaagatgaac 22440
ttcccaacta ttgcttccca ttggatggag ctggtactaa tgctgtctat cagggtgtta 22500
aagcaaaaac taatggaggc gcagccaatg gagattggga gcaagataca gacgtgtcaa 22560
acattaacca gatatgcaag gggaacatct atgccatgga aatcaacctc caagccaacc 22620
tgtggagaag tttcctctac tcgaacgtgg ccctgtacct gcccgattct tacaagtaca 22680
cgccggccaa catcaccttg cccacgaata ccaacaccta tgattacatg aatgggagag 22740
tggcgcctcc ctcgttggtg gatgcctaca tcaacatcgg ggcgcgctgg tcgctggacc 22800

ccatggacaa cgtcaatccc ttcaaccacc accgcaacgc ggggctgcgc taccgctcca 22860
tgcttctggg caacgggcgc ttcgtgccct tccacatcca ggtgccccag aaatttttcg 22920
ccatcaagag cctcctgctc ctgcccgggt cctacaccta cgagtggaac ttccgcaagg 22980
acgtcaacat gatcctgcag agctccctcg gcaacgacct gcgcacggac ggggcctcca 23040
tctccttcac cagcatcaac ctctacgcca ccttcttccc catggcgcac aacacggcct 23100
ccacgctcga ggccatgctg cgcaacgaca ccaacgacca gtccttcaac gactacctct 23160
cggcggccaa catgctctac cccatcccag ccaacgccac caacgtgccc atctccatcc 23220
cctcgcgcaa ctgggccgcc ttccgcggct ggtccttcac gcgtctcaag accaaggaga 23280
cgccctcgct gggctccggg ttcgacccct acttcgtcta ctcgggctcc atcccctacc 23340
tcgacggcac cttctacctc aaccacacct tcaagaaggt ctccatcacc ttcgactcct 23400
ccgtcagctg gcccggcaac gaccggctcc tgacgcccaa cgagttcgaa atcaagcgca 23460
ccgtcgacgg cgagggctac aacgtggccc agtgcaacat gaccaaggac tggttcctgg 23520
tccagatgct ggcccactac aacatcggct accagggctt ctacgtgccc gagggctaca 23580
aggaccgcat gtactccttc ttccgcaact tccagcccat gagccgccag gtggtggacg 23640
aggtcaacta caaggactac caggccgtca ccctggccta ccagcacaac aactcgggct 23700
tcgtcggcta cctcgcgccc accatgcgcc agggccagcc ctaccccgcc aactacccgt 23760
acccgctcat cggcaagagc gccgtcacca gcgtcaccca gaaaaagttc ctctgcgaca 23820
gggtcatgtg gcgcatcccc ttctccagca acttcatgtc catgggcgcg ctcaccgacc 23880
tcggccagaa catgctctat gccaactccg cccacgcgct agacatgaat ttcgaagtcg 23940
accccatgga tgagtccacc cttctctatg ttgtcttcga agtcttcgac gtcgtccgag 24000
tgcaccagcc ccaccgcggc gtcatcgagg ccgtctacct gcgcaccccc ttctcggccg 24060
gtaacgccac cacctaagct cttgcttctt gcaagatggc tgagcccacg ggctccggcg 24120
agcaggagct cagggccatc atccgcgacc tgggctgcgg gccctacttc ctgggcacct 24180
tcgataagcg cttcccggga ttcatggccc cgcacaagct ggcctgcgcc atcgtcaaca 24240
cggccggccg cgagaccggg ggcgagcact ggctggcctt cgcctggaac ccgcgctcga 24300
acacctgcta cctcttcgac cccttcgggt tctcggacga gcgcctcaag cagatctacc 24360
agttcgagta cgagggcctg ctgcgccgca gcgccctggc caccgaggac cgctgcgtca 24420
ccctggaaaa gtccacccag accgtgcagg gtccgcgctc ggccgcctgc gggctctttt 24480
gctgcatgtt cctgcacgcc ttcgtgcact ggcccgaccg ccccatggac aagaacccca 24540
ccatgaactt gctgacgggg gtgcccaacg gcatgctcca gtcgccccag gtggaaccca 24600
ccctgcgccg caaccaggag gcgctctacc gcttcctcaa cgcccactcc gcctactttc 24660
gctcccaccg cgcgcgcatc gagaaggcca ccgccttcga ccgcatgaat caagacatgt 24720
aaaccgtgtg tgtatgtgaa tgctttattc ataataaaca gcacatgttt atgccacctt 24780
ctctgaggct ctgactttat ttagaaatcg aaggggttct gccggctctc ggcgtgcccc 24840

gcgggcaggg atacgttgcg gaactggtac ttgggcagcc acttgaactc ggggatcagc 24900

agcttcggca cggggaggtc ggggaacgag tcgctccaca gcttgcgcgt gagttgcagg 24960

gcgcccagca ggtcgggcgc ggagatcttg aaatcgcagt tgggacccgc gttctgcgcg 25020

cgagagttgc ggtacacggg gttgcagcac tggaacacca tcagggccgg gtgcttcacg 25080

ctcgccagca ccgtcgcgtc ggtgatgccc tccacgtcca gatcctcggc gttggccatc 25140

ccgaaggggg tcatcttgca ggtctgccgc cccatgctgg gcacgcagcc gggcttgtgg 25200

ttgcaatcgc agtgcagggg gatcagcatc atctgggcct gctcggagct catgcccggg 25260

tacatggcct tcatgaaagc ctccagctgg cggaaggcct gctgcgcctt gccgccctcg 25320

gtgaagaaga ccccgcagga cttgctagag aactggttgg tagcgcagcc cgcgtcgtgc 25380

acgcagcagc gcgcgtcgtt gttggccagc tgcaccacgc tgcgccccca gcggttctgg 25440

gtgatcttgg cccggtcggg gttctccttc agcgcgcgct gcccgttctc gctcgccaca 25500

tccatctcga tcgtgtgctc cttctggatc atcacggtcc cgtgcaggca ccgcagcttg 25560

ccctcggcct cggtgcagcc gtgcagccac agcgcgcagc cggtgctctc ccagttcttg 25620

tgggcgatct gggagtgcga gtgcacgaag ccctgcagga agcggcccat catcgcggtc 25680

agggtcttgt tgctggtgaa ggtcagcggg atgccgcggt gctcctcgtt cacatacagg 25740

tggcagatgc ggcggtacac ctcgccctgc tcgggcatca gctggaaggc ggacttcagg 25800

tcgctctcca cgcggtaccg gtccatcagc agcgtcatca cttccatgcc cttctcccag 25860

gccgaaacga tcggcaggct caggggttc ttcaccgtca tcttagtcgc cgccgccgaa 25920

gtcaggggt cgttctcgtc cagggtctca aacactcgct tgccgtcctt ctcggtgatg 25980

cgcacggggg ggaaggcgaa gcccacggcc gccagctcct cctcggcctg cctttcgtcc 26040

tcgctgtcct ggctgatgtc ttgcaaaggc acatgcttgg tcttgcgggg tttcttttg 26100

ggcggcagag gcggcggcgg cggagacgtg ctgggcgagc gcgagttctc gctcaccacg 26160

actatttctt cttcttggcc gtcgtccgag accacgcggc ggtaggcatg cctcttctgg 26220

ggcagaggcg gaggcgacgg gctctcgcgg ttcggcgggc ggctggcaga gccccttccg 26280

cgttcggggg tgcgctcctg gcggcgctgc tctgactgac ttcctccgcg gccggccatt 26340

gtgttctcct agggagcaac aacaagcatg gagactcagc catcgtcgcc aacatcgcca 26400

tctgcccccg ccgccgccga cgagaaccag cagcagcaga atgaaagctt aaccgccccg 26460

ccgcccagcc ccacctccga cgccgcggcc ccagacatgc aagagatgga ggaatccatc 26520

gagattgacc tgggctacgt gacgcccgcg gagcacgagg aggagctggc agcgcgcttt 26580

tcagccccgg aagagaacca ccaagagcag ccagagcagg aagcagagag cgagcagagc 26640

caggctgggc tcgagcatgg cgactacctg agcggggcag aggacgtgct catcaagcat 26700

ctggcccgcc aatgcatcat cgtcaaggac gcgctgctcg accgcgccga ggtgcccctc 26760

agcgtggcgg agctcagccg cgcctacgag cgcaacctct tctcgccgcg cgtgcccccc 26820

aagcgccagc ccaacggcac ctgcgagccc aacccgcgcc tcaacttcta cccggtcttc 26880

gcggtgcccg aggccctggc cacctaccac ctcttttca agaaccaaag gatccccgtc 26940

```
tcctgccgcg ccaaccgcac ccgcgccgac gccctgctca acctgggccc cggcgcccgc    27000

ctacctgata tcgcctcctt ggaagaggtt cccaagatct tcgagggtct gggcagcgac    27060

gagactcggg ccgcgaacgc tctgcaagga agcggagagg agcatgagca ccacagcgcc    27120

ctggtggagt tggaaggcga caacgcgcgc ctggcggtcc tcaagcgcac ggtcgagctg    27180

acccacttcg cctacccggc gctcaacctg ccccccaagg tcatgagcgc cgtcatggac    27240

caggtgctca tcaagcgcgc ctcgcccctc tcggaggagg agatgcagga ccccgagagc    27300

tcggacgagg gcaagcccgt ggtcagcgac gagcagctgg cgcgctggct gggaacgagt    27360

agcacccccc agagtctgga agagcggcgc aagctcatga tggccgtggt cctggtgacc    27420

gtggagcttg agtgtctgcg ccgcttcttc gccgacgcgg agaccctgcg caaggtcgag    27480

gagaacctgc actacctctt caggcacggg ttcgtgcgcc aggcctgcaa gatctccaac    27540

gtggagctga ccaacctggt ctcctacatg ggcatcctgc acgagaaccg cctggggcag    27600

aacgtgctgc acaccaccct gcgcggggag gcccgccgcg actacatccg cgactgcgtc    27660

tacctgtacc tctgccacac ctggcagacg ggcatgggcg tgtggcagca gtgcctggag    27720

gagcagaacc tgaaagagct ctgcaagctc ctgcagaaga acctgaaggc cctgtggacc    27780

gggttcgacg agcgtaccac cgcctcggac ctggccgacc tcatcttccc cgagcgcctg    27840

cggctgacgc tgcgcaacgg gctgcccgac tttatgagcc aaagcatgtt gcaaaacttt    27900

cgctctttca tcctcgaacg ctccgggatc ctgcccgcca cctgctccgc gctgccctcg    27960

gacttcgtgc cgctgacctt ccgcgagtgc cccccgccgc tctggagcca ctgctacttg    28020

ctgcgcctgg ccaactacct ggcctaccac tcggacgtga tcgaggacgt cagcggcgag    28080

ggtctgctcg agtgccactg ccgctgcaac ctctgcacgc cgcaccgctc cctggcctgc    28140

aacccccagc tgctgagcga gacccagatc atcggcacct tcgagttgca aggccccggc    28200

gaggagggca agggggtct gaaactcacc ccggggctgt ggacctcggc ctacttgcgc    28260

aagttcgtgc ccgaggacta ccatcccttc gagatcaggt tctacgagga ccaatcccag    28320

ccgcccaagg ccgagctgtc ggcctgcgtc atcacccagg gggccatcct ggcccaattg    28380

caagccatcc agaaatcccg ccaagaattt ctgctgaaaa agggccacgg ggtctacttg    28440

gacccccaga ccggagagga gctcaacccc agcttccccc agg atg ccc aga gga      28495
                                                Met Pro Arg Gly
                                                1

agc agc aag aag ctg aaa gtg gag ctg ccg ctg ccg ccg gag gat ttg      28543
Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Leu Pro Pro Glu Asp Leu
5                   10                  15                  20

gag gaa gac tgg gag agc agt cag gca gag gag gag gag atg gaa gac      28591
Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu Glu Met Glu Asp
                25                  30                  35

tgg gac agc act cag gca gag gag gac agc ctg caa gac agt ctg gaa      28639
Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu Glu
            40                  45                  50

gac gag gtg gag gag gca gag gaa gaa gca gcc gcc gcc aga ccg tcg      28687
Asp Glu Val Glu Glu Ala Glu Glu Glu Ala Ala Ala Ala Arg Pro Ser
```

```
        55                  60                  65

tcc tcg gcg gag aaa gca agc agc acg gat acc atc tcc gct ccg ggt      28735
Ser Ser Ala Glu Lys Ala Ser Ser Thr Asp Thr Ile Ser Ala Pro Gly
    70                  75                  80

cgg ggt ctc ggc ggc cgg gcc cac agt aga tgg gac gag acc ggg cgc      28783
Arg Gly Leu Gly Gly Arg Ala His Ser Arg Trp Asp Glu Thr Gly Arg
85                  90                  95                  100

ttc ccg aac ccc acc acc cag acc ggt aag aag gag cgg cag gga tac      28831
Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu Arg Gln Gly Tyr
                105                 110                 115

aag tcc tgg cgg ggg cac aaa aac gcc atc gtc tcc tgc ttg caa gcc      28879
Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser Cys Leu Gln Ala
            120                 125                 130

tgc ggg ggc aac atc tcc ttc acc cgg cgc tac ctg ctc ttc cac cgc      28927
Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu Leu Phe His Arg
        135                 140                 145

ggg gtg aac ttc ccc cgc aac atc ttg cat tac tac cgt cac ctc cac      28975
Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr Arg His Leu His
    150                 155                 160

agc ccc tac tac tgt ttc caa gaa gag gca gaa acc cag cag cag cag      29023
Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala Glu Thr Gln Gln Gln Gln
165                 170                 175                 180

aaa acc agc agc agc tagaaaatcc acagcggcgg cggcggcagg tggactgagg      29078
Lys Thr Ser Ser Ser
                185

atcgcggcga acgagccggc gcagacccgg gagctgagga accggatctt tcccaccctc    29138

tatgccatct tccagcagag tcgggggcag gagcaggaac tgaaagtcaa gaaccgttct    29198

ctgcgctcgc tcacccgcag ttgtctgtat cacaagagcg aagaccaact tcagcgcact    29258

ctcgaggacg ccgaggctct cttcaacaag tactgcgcgc tcactcttaa agagtagccc    29318

gcgcccgccc acacacggaa aaaggcggga attacgtcac cacctgcgcc cttcgcccga    29378

ccatcatcat gagcaaagag attcccacgc cttacatgtg gagctaccag ccccagatgg    29438

gcctggccgc cggcgccgcc caggactact ccacccgcat gaactggctc agtgccgggc    29498

ccgcgatgat ctcacgggtg aatgacatcc gcgcccaccg aaaccagata ctcctagaac    29558

agtcagcgat caccgccacg ccccgccatc accttaatcc gcgtaattgg cccgccgccc    29618

tggtgtacca ggaaattccc cagcccacga ccgtactact tccgcgagac gcccaggccg    29678

aagtccagct gactaactca ggtgtccagc tggccggcgg cgccgccctg tgtcgtcacc    29738

gccccgctca gggtataaag cggctggtga tccgaggcag aggcacacag ctcaacgacg    29798

aggtggtgag ctcttcgctg ggtctgcgac ctgacggagt cttccaactc gccggatcgg    29858

ggagatcttc cttcacgcct cgtcaggccg tcctgacttt ggagagttcg tcctcgcagc    29918

cccgctcggg tggcatcggc actctccagt tcgtggagga gttcactccc tcggtctact    29978

tcaacccctt ctccggctcc cccggccact acccggacga gttcatcccg aacttcgacg    30038

ccatcagcga gtcggtggac ggctacgatt gaatgtccca tggtggcgcg gctgacctag    30098

ctcggcttcg acacctggac cactgccgcc gcttccgctg cttcgctcgg gatctcgccg    30158
```

```
agtttgccta ctttgagctg cccgaggagc accctcaggg cccggcccac ggagtgcgga    30218

tcatcgtcga agggggcctc gactcccacc tgcttcggat cttcagccag cgtccgatcc    30278

tggtcgagcg cgagcaagga cagacccgtc tgaccctgta ctgcatctgc aaccaccccg    30338

gcctgc atg aaa gtc ttt gtt gtc tgc tgt gta ctg agt ata ata aaa        30386
       Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys
                     190                 195

gct gag atc agc gac tac tcc gga ctt ccg tgt gtt cct gaa tcc atc      30434
Ala Glu Ile Ser Asp Tyr Ser Gly Leu Pro Cys Val Pro Glu Ser Ile
200                 205                 210                 215

aac cag tcc ctg ttc ttc acc ggg aac gag acc gag ctc cag ctc cag      30482
Asn Gln Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln
                220                 225                 230

tgt aag ccc cac aag aag tac ctc acc tgg ctg ttc cag ggc tcc ccg      30530
Cys Lys Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro
            235                 240                 245

atc gcc gtt gtc aac cac tgc gac aac gac gga gtc ctg ctg agc ggc      30578
Ile Ala Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly
        250                 255                 260

cct gcc aac ctt act ttt tcc acc cgc aga agc aag ctc cag ctc ttc      30626
Pro Ala Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe
    265                 270                 275

caa ccc ttc ctc ccc ggg acc tat cag tgc gtc tcg gga ccc tgc cat      30674
Gln Pro Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His
280                 285                 290                 295

cac acc ttc cac ctg atc ccg aat acc aca gcg tcg ctc ccc gct act      30722
His Thr Phe His Leu Ile Pro Asn Thr Thr Ala Ser Leu Pro Ala Thr
                300                 305                 310

aac aac caa act acc cac caa cgc cac cgt cgc gac ctt tcc tct gaa      30770
Asn Asn Gln Thr Thr His Gln Arg His Arg Arg Asp Leu Ser Ser Glu
            315                 320                 325

tct aat acc act acc gga ggt gag ctc cga ggt cga cca acc tct ggg      30818
Ser Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly
        330                 335                 340

att tac tac ggc ccc tgg gag gtg gtg ggg tta ata gcg cta ggc cta      30866
Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu
    345                 350                 355

gtt gtg ggt ggg ctt ttg gct ctc tgc tac cta tac ctc cct tgc tgt      30914
Val Val Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys
360                 365                 370                 375

tcg tac tta gtg gtg ctg tgt tgc tgg ttt aag aaa tgg ggc aga tca      30962
Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser
                380                 385                 390

ccc tagtgagctg cggtgtgctg gtggcggtgg tgctttcgat tgtgggactg           31015
Pro


ggcggcgcgg ctgtagtgaa ggagaaggcc gatccctgct tgcatttcaa tcccgataaa    31075

tgccagctga gttttcagcc cgatggcaat cggtgcgcgg tgctgatcaa gtgcggatgg    31135

gaatgcgaga acgtgagaat cgagtacaat aacaagactc ggaacaatac tctcgcgtcc    31195
```

acgtggcagc ccggggaccc cgagtggtac accgtctctg tccccggtgc tgacggctcc 31255

ccgcgcaccg tgaataatac tttcattttt gcgcacatgt gcgacacggt catgtggatg 31315

agcaagcagt acgatatgtg gccccccacg aaggagaaca tcgtggtctt ctccatcgct 31375

tacagcctgt gcacggtgct aatcaccgct atcgtgtgcc tgagcattca catgctcatc 31435

gctattcgcc ccagaaataa tgccgaaaaa gaaaaacagc cataacacgt tttttcacac 31495

acctttttca gaccatggcc tctgttaaat ttttgctttt atttgccagt ctcattactg 31555

ttataagtaa tgagaaactc actatttaca ttggcactaa ccacactcta gaaggaattc 31615

caaaatcctc atggtattgc tattttgatc aagatccaga cttaactata gaactgtgtg 31675

gtaacaaggg acaaaataca agcattcatt taattaactt taaatgcgga gacgatttga 31735

aattaattaa tatcactaaa gagtatggag gtatgtatta ctatgttaca gaaaataaca 31795

acatgcagtt ttatgaagtt actgtaacta atcccaccac gcctagaaca acaacaacca 31855

ccacaaagac tacacctgtt accactatgc agctcactac caataacatt tttgccatgc 31915

gtcagaaggc caacaatagc accagcattc aacccccccc acccagtgag gaaattccca 31975

aatccatgat tggcattatt gttgctgtag tggtgtgcat gttgatcatc gccttgtgca 32035

tggtgtacta tgccttctgc tacagaaagc acagactgaa cgacaagcta gaacacttac 32095

taagtgttga attttaattt ttttagaacc atgaagatcc taggcctttt aatttttttct 32155

atcattacct ctgctctatg caattctgac aatgaggacg ttactgtcgt tgtcggatca 32215

aattatacac tgaaaggtcc agcgaagggt atgctttcgt ggtattgctg gtttggaact 32275

gacactgaac aaaccgaatt atgcaatctt caaaatggca aagttcataa ttctaaaatt 32335

tacaattata tatgcaatgg cactgatttg atactcctca atatcacgaa atcatatgct 32395

ggcagttatt catgccctgg agatgatgct gacaatatga ttttttataa attgcaagtg 32455

gttgatccca ctactccacc tccacccacc acaactactc acaccacaca cacagaacaa 32515

accacagcag aggaggcggc aaagttagct ttgcaggtcc aagacagttc atttgttggc 32575

attaccccta cacccgatca gcggtgtccg gggctgctcg tcagcggcat tgtcggtgtg 32635

ctttcgggat tagcagttat aatcatctgc atgttcattt ttgcttgctg ctatagaagg 32695

ctttaccgac aaaaatcaga cccactgctg aacctctatg tttaattttt tccagagcca 32755

tgaaggcagt tagcgctcta gttttttgtt ctttgattgg cactgttttt agtgttagct 32815

ttttaaaaca aattaatgtt actgaggggg aaaatgtgac actggtaggc gtagaaggtg 32875

ctcaaaatac cacctggaca aaataccacc tcgatgggtg gaaagatatt tgcaattgga 32935

gtgtcattac ttacacatgt gagggagtta atttgaccat agtcaatgcc agccaaaatc 32995

agaagggttg gattaaaggg caatctgtta gtgttaccag tgaggggtac tatacccagc 33055

atactcttat ctatgacatt atagtcatac cgctgcctac gcctagccca cctagcacta 33115

ccacacagac aacccacact acacaaacaa ccacatacag tacatcaaat cagcctacca 33175

ccactacaac agcagaggtt gccagctcgt ctggggtccg agcggcattt ttgatgttgg 33235

ccccatctag cagtcccact gctagtacca atgagcagac tactgaattt ttgtccactg 33295

```
tcgagagcca caccacagct acctcgagtg ccttctctag caccgccaat ctctcctcgc    33355

tttcctctac accaatcagt cccgctacta ctactacccc cgctattctt cccactcccc    33415

tgaagcaaac tgaggacagc ggcatgcaat ggcagatcac cctgctcatt gtgatcgggt    33475

tggtcatcct agccgtgttg ctctactaca tcttccgccg ccgcattccc aacgcgcacc    33535

gcaagccggt ctacaagccc atcattgtcg ggcagccgga gccgcttcag gtggaagggg    33595

gtctaaggaa tcttctcttc tcttttacag tatggtgatt gaactatgat tcctagacaa    33655

ttcttgatca ctattcttat ctgcctcctc caagtctgtg ccaccctcgc tctggtggcc    33715

aacgccagtc cagactgtat tgggcccttc gcctcctacg tgctctttgc cttcatcacc    33775

tgcatctgct gctgtagcat agtctgcctg cttatcacct tcttccagtt cattgactgg    33835

atctttgtgc gcatcgccta cctgcgccac cacccccagt accgcgacca gcgagtggcg    33895

cagctgctca ggctcctctg ataagcatgc gggctctgct acttctcgcg cttctgctgt    33955

tagtgctccc ccgtcccgtt gacccccggc cccccactca gtcccccgag gaggtccgca    34015

aatgcaaatt ccaagaaccc tggaaattcc tcaaatgcta ccgccaaaaa tcagacatgc    34075

atcccagctg gatcatgatc attgggatcg tgaacattct ggcctgcacc ctcatctcct    34135

ttgtgattta cccctgcttt gactttggtt ggaactcgcc agaggcgctc tatctcccgc    34195

ctgaacctga cacaccacca cagcaacctc aggcacacgc actaccacca ccacagccta    34255

ggccacaata catgcccata ttagactatg aggccgagcc acagcgaccc atgctccccg    34315

ctattagtta cttcaatcta accggcggag atg act gac cca ctg gcc aac aac      34369
                                Met Thr Asp Pro Leu Ala Asn Asn
                                395                 400

aac gtc aac gac ctt ctc ctg gac atg gac ggc cgc gcc tcg gag cag      34417
Asn Val Asn Asp Leu Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln
                405                 410                 415

cga ctc gcc caa ctt cgc att cgc cag cag cag gag aga gcc gtc aag      34465
Arg Leu Ala Gln Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys
            420                 425                 430

gag ctg cag gac ggc ata gcc atc cac cag tgc aag aaa ggc atc ttc      34513
Glu Leu Gln Asp Gly Ile Ala Ile His Gln Cys Lys Lys Gly Ile Phe
        435                 440                 445

tgc ctg gtg aaa cag gcc aag atc tcc tac gag gtc acc cag acc gac      34561
Cys Leu Val Lys Gln Ala Lys Ile Ser Tyr Glu Val Thr Gln Thr Asp
    450                 455                 460

cat cgc ctc tcc tac gag ctc ctg cag cag cgc cag aag ttc acc tgc      34609
His Arg Leu Ser Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe Thr Cys
465                 470                 475                 480

ctg gtc gga gtc aac ccc atc gtc atc acc cag cag tcg ggc gat acc      34657
Leu Val Gly Val Asn Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr
                485                 490                 495

aag ggg tgc atc cac tgc tcc tgc gac tcc ccc gac tgc gtc cac act      34705
Lys Gly Cys Ile His Cys Ser Cys Asp Ser Pro Asp Cys Val His Thr
            500                 505                 510

ctg atc aag acc ctc tgc ggc ctc cgc gac ctc ctc ccc atg aac          34750
Leu Ile Lys Thr Leu Cys Gly Leu Arg Asp Leu Leu Pro Met Asn
```

515 520 525

taatcacccc cttatccagt gaaataaaga tcatattgat gattaaataa 34800

<210> 148
<211> 185
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 148

Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Leu Pro
1 5 10 15

Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu
20 25 30

Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
35 40 45

Asp Ser Leu Glu Asp Glu Val Glu Glu Ala Glu Glu Glu Ala Ala Ala
50 55 60

Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr Asp Thr Ile
65 70 75 80

Ser Ala Pro Gly Arg Gly Leu Gly Gly Arg Ala His Ser Arg Trp Asp
85 90 95

Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu
100 105 110

Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser
115 120 125

Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu
130 135 140

Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr
145 150 155 160

Arg His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala Glu Thr
165 170 175

Gln Gln Gln Gln Lys Thr Ser Ser Ser
180 185

<210> 149
<211> 207
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 149

Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1 5 10 15

Ile Ser Asp Tyr Ser Gly Leu Pro Cys Val Pro Glu Ser Ile Asn Gln
20 25 30

Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys
35 40 45

Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala
50 55 60

Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala
65 70 75 80

Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro
85 90 95

Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr
100 105 110

Phe His Leu Ile Pro Asn Thr Thr Ala Ser Leu Pro Ala Thr Asn Asn
115 120 125

Gln Thr Thr His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn
130 135 140

Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr
145 150 155 160

Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Val
165 170 175

Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr
180 185 190

Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
195 200 205

<210> 150
<211> 135
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 150

Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp Leu Leu Leu Asp
1 5 10 15

```
Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg
            20                  25                  30

Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Gly Ile Ala Ile
        35                  40                  45

His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile
    50                  55                  60

Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser Tyr Glu Leu Leu
65                  70                  75                  80

Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val
                85                  90                  95

Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys
            100                 105                 110

Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu
        115                 120                 125

Arg Asp Leu Leu Pro Met Asn
    130                 135
```

<210> 151
<211> 38673
<212> DNA
<213> Artificial Sequence

<220>
<223> Simian adenovirus A1331clone

<220>
<221> misc_feature
<222> (5)..(12)
<223> Swa\I

<220>
<221> repeat_region
<222> (14)..(142)
<223> ITR

<220>
<221> misc_feature
<222> (469)..(494)
<223> I-Ceu recognition site

<220>
<221> misc_feature
<222> (482)..(483)
<223> cleavage point for bottom strand

<220>
<221> misc_feature
<222> (486)..(487)
<223> cleavage point for top strand

<220>
<221> misc_feature

<222> (836)..(1096)
<223> Enhancer

<220>
<221> misc_feature
<222> (1097)..(1324)
<223> CMV\promoter

<220>
<221> misc_feature
<222> (1298)..(1301)
<223> TATA

<220>
<221> CDS
<222> (1420)..(2511)
<223> Gag\short

<220>
<221> misc_feature
<222> (2664)..(2866)
<223> BGH-PolyA

<220>
<221> misc_feature
<222> (2939)..(2977)
<223> PI-Scel recognition sequence

<220>
<221> misc_feature
<222> (2949)..(2950)
<223> cleavage point on bottom strand

<220>
<221> misc_feature
<222> (2953)..(2954)
<223> cleavage point on top strand

<220>
<221> misc_feature
<222> (3941)..(5562)
<223> IVa2 complement (3941..5271,5551..5562)

<220>
<221> CDS
<222> (10808)..(11983)
<223> 52K

<220>
<221> CDS
<222> (12010)..(13767)
<223> pIIIa

<220>
<221> CDS
<222> (13850)..(15466)
<223> penton

<220>
<221> CDS
<222> (15473)..(16054)
<223> pVII

<220>
<221> CDS
<222> (16102)..(17139)
<223> V

<220>

<221> CDS
<222> (17167)..(17397)
<223> pX

<220>
<221> CDS
<222> (17470)..(18186)
<223> pVI

<220>
<221> CDS
<222> (18290)..(21121)
<223> hexon

<220>
<221> CDS
<222> (21143)..(21766)
<223> protease

<220>
<221> misc_feature
<222> (21847)..(23382)
<223> DBP complement (21847..23382

<220>
<221> CDS
<222> (23411)..(25819)
<223> 100K

<220>
<221> CDS
<222> (26427)..(27107)
<223> pVIII

<220>
<221> CDS
<222> (27111)..(27428)
<223> E3\12.5K

<220>
<221> CDS
<222> (27993)..(28520)
<223> E3\gp19K

<220>
<221> CDS
<222> (28557)..(29240)
<223> E3\CR1-beta

<220>
<221> CDS
<222> (29256)..(29864)
<223> E3\CR1-gamma

<220>
<221> CDS
<222> (29882)..(30745)
<223> E3\CR1-delta

<220>
<221> CDS
<222> (31037)..(31468)
<223> E3\RID-beta

<220>
<221> CDS
<222> (32165)..(33499)
<223> fiber

<220>
<221> misc_feature
<222> (33597)..(34750)
<223> E4\orf6/7 complement (33597..33847,34580..34750)

<220>
<221> misc_feature
<222> (33848)..(34750)
<223> E4\orf6 complement (33848..34750)

<220>
<221> misc_feature
<222> (34659)..(35021)
<223> E4\orf4 complement (34659..35021)

<220>
<221> misc_feature
<222> (35384)..(35770)
<223> E4\orf2 complement (35384..35770)

<220>
<221> misc_feature
<222> (35823)..(36194)
<223> E4\orf1 complement (35823..36194)

<220>
<221> repeat_region
<222> (36472)..(36600)
<223> ITR

<220>
<221> misc_feature
<222> (36604)..(36611)
<223> Swa\I

<220>
<221> misc_feature
<222> (36849)..(36849)
<223> ORI

<220>
<221> misc_feature
<222> (37607)..(38470)
<223> AP(R) complement (27607..38470)

<400> 151
aattatttaa atccwwymtm wataatatac ctcaaacttt tggtgcgcgt taatatgcaa 60

atgagccgtt tgaatttggg gatggaggaa ggtgattggc tgtgggagcg gcgaccgtta 120

ggggcggggc gggtgacgtt ttgatgacgt ggccatgagg cggagccggt ttgcaagttc 180

tcgtgggaaa agtgacgtca aacgaggtgt ggtttgaaca cggaaatact caattttccc 240

gcgctctctg acaggaaatg aggtgtttct gggcggatgc aagtgaaaac gggccatttt 300

cgcgcgaaaa ctgaatgagg aagtgaaaat ctgagtaatt ccgcgtttat ggcagggagg 360

agtatttgcc gagggccgag tagactttga ccgattacgt gggggtttcg attaccgtat 420

ttttcaccta aatttccgcg tacggtgtca aagtccggtg tttttacgta actataacgg 480

tcctaaggta gcgaaagctc agatctggat ctcccgatcc cctatggcga ctctcagtac 540

aatctgctct gatgccgcat agttaagcca gtatctgctc cctgcttgtg tgttggaggt 600

cgctgagtag tgcgcgagca aaatttaagc tacaacaagg caaggcttga ccgacaattg 660

catgaagaat ctgcttaggg ttaggcgttt tgcgctgctt cgcgatgtac gggccagata 720

```
tacgcgttga cattgattat tgactagtta ttaatagtaa tcaattacgg ggtcattagt      780

tcatagccca tatatggagt tccgcgttac ataacttacg gtaaatggcc cgcctggctg      840

accgcccaac gacccccgcc cattgacgtc aataatgacg tatgttccca tagtaacgcc      900

aatagggact ttccattgac gtcaatgggt ggactattta cggtaaactg cccacttggc      960

agtacatcaa gtgtatcata tgccaagtac gccccctatt gacgtcaatg acggtaaatg     1020

gcccgcctgg cattatgccc agtacatgac cttatgggac tttcctactt ggcagtacat     1080

ctacgtatta gtcatcgcta ttaccatggt gatgcggttt tggcagtaca tcaatgggcg     1140

tggatagcgg tttgactcac ggggatttcc aagtctccac cccattgacg tcaatgggag     1200

tttgttttgg caccaaaatc aacgggactt tccaaaatgt cgtaacaact ccgccccatt     1260

gacgcaaatg ggcggtaggc gtgtacggtg ggaggtctat ataagcagag ctcgtttagt     1320

gaaccgtcag atcgcctgga gacgccatcc acgctgtttt gacctccata gaagacaccg     1380

ggaccgatcc agcctccgcg ggcgcgcgtc gacagagag atg ggt gcg aga gcg         1434
                                              Met Gly Ala Arg Ala
                                              1               5

tca gta tta agc ggg gga gaa tta gat cga tgg gaa aaa att cgg tta       1482
Ser Val Leu Ser Gly Gly Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu
                10                  15                  20

agg cca ggg gga aag aag aag tac aag cta aag cac atc gta tgg gca       1530
Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys His Ile Val Trp Ala
            25                  30                  35

agc agg gag cta gaa cga ttc gca gtt aat cct ggc ctg tta gaa aca       1578
Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro Gly Leu Leu Glu Thr
        40                  45                  50

tca gaa ggc tgt aga caa ata ctg gga cag cta caa cca tcc ctt cag       1626
Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln
    55                  60                  65

aca gga tca gag gag ctt cga tca cta tac aac aca gta gca acc ctc       1674
Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu
70                  75                  80                  85

tat tgt gtg cac cag cgg atc gag atc aag gac acc aag gaa gct tta       1722
Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu
                90                  95                  100

gac aag ata gag gaa gag caa aac aag tcc aag aag aag gcc cag cag       1770
Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys Lys Lys Ala Gln Gln
            105                 110                 115

gca gca gct gac aca gga cac agc aat cag gtc agc caa aat tac cct       1818
Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro
        120                 125                 130

ata gtg cag aac atc cag ggg caa atg gta cat cag gcc ata tca cct       1866
Ile Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro
    135                 140                 145

aga act tta aat gca tgg gta aaa gta gta gaa gag aag gct ttc agc       1914
Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser
150                 155                 160                 165

cca gaa gtg ata ccc atg ttt tca gca tta tca gaa gga gcc acc cca       1962
Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro
```

```
                170                 175                 180

cag gac ctg aac acg atg ttg aac acc gtg ggg gga cat caa gca gcc       2010
Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala
            185                 190                 195

atg caa atg tta aaa gag acc atc aat gag gaa gct gca gat tgg gat       2058
Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Asp Trp Asp
        200                 205                 210

aga gtg cat cca gtg cat gca ggg cct att gca cca ggc cag atg aga       2106
Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg
    215                 220                 225

gaa cca agg gga agt gac ata gca gga act act agt acc ctt cag gaa       2154
Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu
230                 235                 240                 245

caa ata gga tgg atg aca aat aat cca cct atc cca gta gga gag atc       2202
Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly Glu Ile
                250                 255                 260

tac aag agg tgg ata atc ctg gga ttg aac aag atc gtg agg atg tat       2250
Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
            265                 270                 275

agc cct acc agc att ctg gac ata aga caa gga cca aag gaa ccc ttt       2298
Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe
        280                 285                 290

aga gac tat gta gac cgg ttc tat aaa act cta aga gct gag caa gct       2346
Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala
    295                 300                 305

tca cag gag gta aaa aat tgg atg aca gaa acc ttg ttg gtc caa aat       2394
Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn
310                 315                 320                 325

gcg aac cca gat tgt aag acc atc ctg aag gct ctc ggc cca gcg gct       2442
Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Ala Ala
                330                 335                 340

aca cta gaa gaa atg atg aca gca tgt cag gga gta gga gga ccc ggc       2490
Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro Gly
            345                 350                 355

cat aag gca aga gtt ttg tag ggatccacta gttctagact cgaggggggg          2541
His Lys Ala Arg Val Leu
        360

cccggtacct ttaagaccaa tgacttacaa ggcagctgta gatcttagcc acttttttaaa     2601

agaaaagggg ggactggaag ggctaattca ctcccaaaga agacaagata aaccgctgat     2661

cagcctcgac tgtgccttct agttgccagc catctgttgt ttgcccctcc cccgtgcctt     2721

ccttgaccct ggaaggtgcc actcccactg tcctttccta ataaaatgag gaaattgcat     2781

cgcattgtct gagtaggtgt cattctattc tgggggggtgg ggtggggcag gacagcaagg     2841

gggaggattg ggaagacaat agcaggcatg ctggggatgc ggtgggctct atggcttctg     2901

aggcggaaag aaccagcaga tctgcagatc tgaattcatc tatgtcgggt gcggagaaag     2961

aggtaatgaa atggcacata tgctggccac cgtgcatgtg gcctcgcacc cccgcaagac     3021

atggcccgag ttcgagcaca acgtcatgac ccgctgcaat gtgcacctgg gctcccgccg     3081

aggcatgttc atgccatacc agtgcaacat gcaatttgtg aaggtgctgc tggagcccga     3141
```

tgccatgtcc agagtgagcc tggcgggggt gtttgacatg aatgtggagc tgtggaaaat 3201
tctgagatat gatgaatcca agaccaggtg ccgggcctgc gaatgcggag gcaagcacgc 3261
caggcttcag cccgtgtgtg tggaggtgac ggaggacctg cgacccgatc atttggtgtt 3321
gtcctgcaac gggacggagt tcggctccag cggggaagaa tctgactaga gtgagtagtg 3381
tttgggggcg ggtgggagcc tgcatgaggg gcagaatgac taaaatctgt gtttttctgt 3441
gcagcagcat gagcggaagc gcctcctttg agggaggggt attcagccct tatctgacgg 3501
ggcgtctccc ctcctgggcg ggagtgcgtc agaatgtgat gggatctacg gtggacggcc 3561
ggcccgtgca gcccgcgaac tcttcaaccc tgacctacgc gaccctgagc tcctcgtccg 3621
tggacgcagc tgccgccgca gctgctgctt ccgccgccag cgccgtgcgc ggaatggccc 3681
tgggcgccgg ctactacagc tctctggtgg ccaactcgag ttccaccaat aatcccgcca 3741
gcctgaacga ggagaagctg ctgctgctga tggcccagct cgaggccctg acccagcgcc 3801
tgggcgagct gacccagcag gtggctcagc tgcaggcgga gacgcgggcc gcggttgcca 3861
cggtgaaaac caaataaaaa atgaatcaat aaataaacgg agacggttgt tgattttaac 3921
acagagtctt gaatctttat ttgatttttc gcgcgcggta ggccctggac caccggtctc 3981
gatcattgag cacccggtgg atcttttcca ggacccggta gaggtgggct tggatgttga 4041
ggtacatggg catgagcccg tcccgggggt ggaggtagct ccattgcagg gcctcgtgct 4101
cgggggtggt gttgtaaatc acccagtcat agcaggggcg cagtgcgtgg tgctgcacga 4161
tgtccttgag gaggagactg atggccacgg gcagcccctt ggtgtaggtg ttgacgaacc 4221
tgttgagctg ggagggatgc atgcgggggg agatgagatg catcttggcc tggatcttga 4281
gattggcgat gttcccgccc agatcccgcc gggggttcat gttgtgcagg accaccagca 4341
cggtgtatcc ggtgcacttg gggaatttgt catgcaactt ggaagggaag gcgtgaaaga 4401
atttggagac gcccttgtga ccgcccaggt tttccatgca ctcatccatg atgatggcga 4461
tgggcccgtg ggcggcggcc tgggcaaaga cgtttcgggg gtcggacaca tcgtagttgt 4521
ggtcctgggt gagctcgtca taggccattt taatgaattt ggggcggagg gtgcccgact 4581
gggggacgaa ggtgccttcg atcccggggg cgtagttgcc ctcgcagatc tgcatctccc 4641
aggccttgag ctcggagggg gggatcatgt ccacctgcgg ggcgatgaaa aaaacggttt 4701
ccggggcggg ggagatgagc tgcgccgaaa gcaggttccg gagcagctgg gacttgccgc 4761
agccggtggg gccgtagatg accccgatga ccggctgcag gtggtagttg agggagagac 4821
agctgccgtc ctcgcgtagg agggggggca cctcgttcat catctcgcgc acatgcatgt 4881
tctcgcgcac gagttccgcc aggaggcgct cgccccccag cgagaggagc tcttgcagcg 4941
aggcgaagtt tttcagcggc ttgagcccgt cggccatggg cattttggag agggtctgtt 5001
gcaagagttc cagacggtcc cagagctcgg tgatgtgctc tacggcatct cgatccagca 5061
gacctcctcg tttcgcgggt tgggacgact gcgggagtag ggcaccagac gatgggcgtc 5121
cagcgcagcc agggtccggt ccttccaggg tcgcagcgtc cgcgtcagcg tggtctccgt 5181

cacggtgaag gggtgcgcgc cgggctgggc gcttgcgagg gtgcgcttca ggctcatccg 5241

gctggtcgag aaccgctccc gatcggcgcc ctgcgcgtcg gccaggtagc aattgaccat 5301

gagttcgtag ttgagcgcct cggccgcgtg gcctttggcg cggagcttac ctttggaagt 5361

ctgcccgcag gcgggacaga ggagggactt gagggcgtag agcttggggg cgaggaagac 5421

ggactcgggg gcgtaggcgt ccgcgccgca gtgggcgcag acggtctcgc actccacaag 5481

ccaggtgagg tcgggctggt cggggtcaaa aaccagtttt ccgccgttct ttttgatgcg 5541

tttcttacct ttggtctcca tgagctcgtg tccccgctgg gtgacaaaga ggctgtccgt 5601

gtccccgtag accgacttta tgggccggtc ctcgagcggt gtgccacggt cctcctcgta 5661

gaggaacccc gcccactccg agacgaaagc ccgggtccag gccagcacga aggaggccac 5721

gtgggacggg tagcggtcgt tgtccaccag cgggtccact ttctccaggg tatgcaaaca 5781

catgtccccc tcgtccacat ccaggaaggt gattggcttg taagtgtagg ccacgtgacc 5841

gggggtcccg gccgggggg tataaaaggg ggcgggcccc tgctcgtcct cactgtcttc 5901

cggatcgctg tccaggagcg ccagctgttg gggtaggtat tccctctcga aggcgggcat 5961

gacctcggca ctcaggttgt cagtttctag aaacgaggag gatttgatat tgacggtgcc 6021

gttggagacg cctttcatga gcccctcgtc catctggtca gaaaagacga tctttttgtt 6081

gtcgagcttg gtggcgaagg agccgtagag ggcgttggag agcagcttgg cgatggagcg 6141

catggtctgg ttcttttcct tgtcggcgcg ctccttggcg gcgatgttga gctgcacgta 6201

ctcgcgcgcc acgcacttcc attcggggaa gacggtggtg agctcgtcgg gcacgattct 6261

gacccgccag ccgcggttgt gcagggtgat gaggtccacg ctggtggcca cctcgccgcg 6321

caggggctcg ttggtccagc agaggcgccc gcccttgcgc gagcagaagg ggggcagcgg 6381

gtccagcatg agctcgtcgg gggggtcggc gtccacggtg aagatgccgg gcaggagctc 6441

ggggtcgaag tagctgatgc aggtgcccag atcgtccagc gccgcttgcc agtcgcgcac 6501

ggccagcgcg cgctcgtagg ggctgagggg cgtgccccag ggcatggggt gcgtgagcgc 6561

ggaggcgtac atgccgcaga tgtcgtagac gtagaggggc tcctcgagga cgccgatgta 6621

ggtggggtag cagcgccccc cgcggatgct ggcgcgcacg tagtcgtaca gctcgtgcga 6681

gggcgcgagg agccccgcgc cgaggttgga gcgctgcggc ttttcggcgc ggtagacgat 6741

ctggcggaag atggcgtggg agttggagga gatggtgggc ctctggaaga tgttgaagtg 6801

ggcgtggggc aggccgaccg agtccctgat gaagtgggcg taggagtcct gcagcttggc 6861

gacgagctcg gcggtgacga ggacgtccag ggcgcagtag tcgagggtct cttggatgat 6921

gtcgtacttg agctggccct tctgcttcca cagctcgcgg ttgagaagga actcttcgcg 6981

gtccttccag tactcttcga gggggaaccc gtcctgatcg gcacggtaag agcccaccat 7041

gtagaactgg ttgacggcct tgtaggcgca gcagcccttc tccacgggga gggcgtaagc 7101

ttgcgcggcc ttgcgcaggg aggtgtgggt gagggcgaag gtgtcgcgca ccatgacctt 7161

gaggaactgg tgcttgaagt cgaggtcgtc gcagccgccc tgctcccaga gttggaagtc 7221

cgtgcgcttc ttgtaggcgg ggttgggcaa agcgaaagta acatcgttga agaggatctt 7281

gcccgcgcgg ggcatgaagt tgcgagtgat gcggaaaggc tggggcacct cggcccggtt 7341
gttgatgacc tgggcggcga ggacgatctc gtcgaagccg ttgatgttgt gcccgacgat 7401
gtagagttcc acgaatcgcg ggcggccctt gacgtggggc agcttcttga gctcgtcgta 7461
ggtgagctcg gcggggtcgc tgagcccgtg ctgctcaagg gcccagtcgg cgacgtgggg 7521
gttggcgctg aggaaggaag tccagagatc cacggccagg gcggtttgca agcggtcccg 7581
gtactgacgg aactgctggc ccacggccat tttttcgggg gtgatgcagt agaaggtgcg 7641
ggggtcgccg tgccagcggt cccacttgag ctggagggcg aggtcgtggg cgagctcgac 7701
gagcggcggg tccccggaga gtttcatgac cagcatgaag gggacgagct gcttgccgaa 7761
ggaccccatc caggtgtagg tttccacatc gtaggtgagg aagagccttt cggtgcgagg 7821
atgcgagccg atggggaaga actggatctc ctgccaccag ttggaggaat ggctgttgat 7881
gtgatggaag tagaaatgcc gacggcgcgc cgagcactcg tgcttgtgtt tatacaagcg 7941
tccgcagtgc tcgcaacgct gcacgggatg cacgtgctgc acgagctgta cctgggttcc 8001
tttgacgagg aatttcagtg ggcagtggag cgctggcggc tgcatctggt gctgtactac 8061
gtcctggcca tcggcgtggc catcgtctgc ctcgatggtg gtcatgctga cgagcccgcg 8121
cgggaggcag gtccagacct cggctcggac gggtcggaga gcgaggacga gggcgcgcag 8181
gccggagctg tccagggtcc tgagacgctg cggagtcagg tcagtgggca gcggcggcgc 8241
gcggttgact tgcaggagct tttccagggc gcgcgggagg tccagatggt acttgatctc 8301
cacggcgccg ttggtggcga cgtccacggc ttgcagggtc ccgtgcccct ggggcgccac 8361
caccgtgccc cgtttcttct tgggcgctgg cgttggcgct gcttccatgt cggtcagaag 8421
cggcggcgag gacgcgcgcc gggcggcagg ggcggctcgg ggcccggagg caggggcggc 8481
aggggcacgt cggcgccgcg cgcgggcagg ttctggtact gcgcccggag aagactggcg 8541
tgagcgacga cgcgacggtt gacgtcctgg atctgacgcc tctgggtgaa ggccacggga 8601
cccgtgagtt tgaacctgaa agagagttcg acagaatcaa tctcggtatc gttgacggcg 8661
gcctgccgca ggatctcttg cacgtcgccc gagttgtcct ggtaggcgat ctcggtcatg 8721
aactgctcga tctcctcctc ctgaaggtct ccgcggccgg cgcgctcgac ggtggccgcg 8781
aggtcgttgg agatgcggcc catgagctgc gagaaggcgt tcatgccggc ctcgttccag 8841
acgcggctgt agaccacgga tccgtcgggg tcgcgcgcgc gcatgaccac ctgggcgagg 8901
ttgagctcca cgtggcgcgt gaagaccgcg tagttgcaga ggcgctggta gaggtagttg 8961
agcgtggtgg cgatgtgctc ggtgacgaag aagtacatga tccagcggcg gagcggcatc 9021
tcgctgacgt cgcccagggc ttccaagcgc tccatggcct cgtagaagtc cacggcgaag 9081
ttgaaaaact gggagttgcg cgccgagacg gtcaactcct cctccagaag acggatgagc 9141
tcggcgatgg tggcgcgcac ctcgcgctcg aaggccccgg ggggctcctc ttccatctcc 9201
tcctcttctt cctcctccac taacatctct tctacttcct cctcaggagg cggcggcggg 9261
ggaggggggcc tgcgtcgccg gcggcgcacg ggcagacggt cgatgaagcg ctcgatggtc 9321

```
tccccgcgcc ggcgacgcat ggtctcggtg acggcgcgcc cgtcctcgcg gggccgcagc     9381

gtgaagacgc cgccgcgcat ctccaggtgg ccgccggggg ggtctccgtt gggcagggag     9441

agggcgctga cgatgcatct tatcaattga cccgtaggga ctccgcgcaa ggacctgagc     9501

gtctcgagat ccacgggatc cgaaaaccgc tgaacgaagg cttcgagcca gtcgcagtcg     9561

caaggtaggc tgagcccggt ttcttcttcg gggatttgct ggtcgggagg cgggcgggcg     9621

atgctgctgg tgatgaagtt gaagtaggcg gtcctgagac ggcggatggt ggcgaggagc     9681

accaggtcct tgggcccggc ttgctggatg cgcagacggt cggccatgcc ccaggcgtgg     9741

tcctgacacc tggcgaggtc cttgtagtag tcctgcatga gccgctccac gggcacctcc     9801

tcctcgcccg cgcggccgtg catgcgcgtg agcccgaacc cgcgctgggg ctggacgagc     9861

gccaggtcgg cgacgacgcg ctcggcgagg atggcctgct ggatctgggt gagggtggtc     9921

tggaagtcgt cgaagtcgac gaagcggtgg taggctccgg tgttgatggt gtaggagcag     9981

ttggccatga cggaccagtt gacggtctgg tggccggggc gcacgagctc gtggtacttg    10041

aggcgcgagt aggcgcgcgt gtcgaagatg tagtcgttgc aggtgcgcac gaggtactgg    10101

tatccgacga ggaagtgagg cggcggctgg cggtagagcg gccatcgctc ggtggcgggg    10161

gcgccgggcg cgaggtcttc gagcatgagg cggtggtagc cgtagatgta cctggacatc    10221

caggtgatgc cagcggcggt ggtggaggcg cgcgggaact cgcggacgcg gttccagatg    10281

ttgcgcagcg gcaggaagta gttcatggtg gccgcggtct ggcccgtgag gcgcgcgcag    10341

tcgtggatgc tctagacata cgggcaaaaa cgaaagcggt cagcggctcg actccgtggc    10401

ctggaggcta agcgaacggg ttgggctgcg cgtgtacccc ggttcgagtc cctgctcgaa    10461

tcaggctgga gccgcagcta acgtggtact ggcactcccg tctcgaccca agcctgctaa    10521

cgaaacctcc aggatacgga ggcgggtcgt tttttggcct tggtcactgg tcatgaaaaa    10581

ctagtaagcg cggaaagcgg ccgcccgcga tggctcgctg ccgtagtctg gagaaagaat    10641

cgccagggtt gcgttgcggt gtgccccggt tcgagcctca gcgctcggcg ccggccggat    10701

tccgcggcta acgtgggcgt ggctgccccg tcgtttccaa gacccttag ccagccgact    10761

tctccagtta cggagcgagc ccctcttttt cttgtgtttt tgccag atg cat ccc       10816
                                                    Met His Pro
                                                        365

gta ctg cgg cag atg cgc ccc cac cct cca cct caa ccg ccc cta ccg       10864
Val Leu Arg Gln Met Arg Pro His Pro Pro Pro Gln Pro Pro Leu Pro
            370                 375                 380

cag cag cag caa cag ccg gcg ctt ttg ccc ccg ccc cag cag cag cag       10912
Gln Gln Gln Gln Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln Gln
        385                 390                 395

cag cca gcc act acc gcg gcg gcc gcc gtg agc gga gcc ggc gtt caa       10960
Gln Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly Val Gln
    400                 405                 410

tat gac ctg gcc ttg gaa gag ggc gag ggg ctg gcg cgg ctg ggg gcg       11008
Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg Leu Gly Ala
415                 420                 425                 430

tcg tcg ccg gag cgg cac ccg cgc gtg cag atg aaa agg gac gct cgc       11056
```

```
Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys Arg Asp Ala Arg
                435                 440                 445

gag gcc tac gtg ccc aag cag aac ctg ttc aga gac agg agc ggc gag      11104
Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp Arg Ser Gly Glu
            450                 455                 460

gag ccc gag gag atg cgc gcc tcc cgc ttc cac gcg ggg cgg gag ctg      11152
Glu Pro Glu Glu Met Arg Ala Ser Arg Phe His Ala Gly Arg Glu Leu
        465                 470                 475

cgg cgc ggc ctg gac cga aag cgg gtg ctg agg gac gag gat ttc gag      11200
Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp Glu Asp Phe Glu
    480                 485                 490

gcg gac gag ctg acg ggg atc agc ccc gcg cgc gcg cac gtg gcc gcg      11248
Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala His Val Ala Ala
495                 500                 505                 510

gcc aac ctg gtc acg gcg tac gag cag acc gtg aag gag gag agc aac      11296
Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys Glu Glu Ser Asn
                515                 520                 525

ttc caa aaa tcc ttc aac aac cac gtg cgc acg ctg atc gcg cgc gag      11344
Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu Ile Ala Arg Glu
            530                 535                 540

gag gtg acc ctg ggc ctg atg cac ctg tgg gac ctg ctg gag gcc atc      11392
Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu Leu Glu Ala Ile
        545                 550                 555

gtg cag aac ccc acg agc aag ccg ctg acg gcg cag ctg ttc ctg gtg      11440
Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu Phe Leu Val
    560                 565                 570

gtg cag cac agt cgg gac aac gag acg ttc agg gag gcg ctg ctg aat      11488
Val Gln His Ser Arg Asp Asn Glu Thr Phe Arg Glu Ala Leu Leu Asn
575                 580                 585                 590

atc acc gag ccc gag ggc cgc tgg ctc ctg gac ctg gtg aac att ctg      11536
Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu Val Asn Ile Leu
                595                 600                 605

cag agc atc gtg gtg cag gag cgc ggg ctg ccg ctg tcc gag aag ctg      11584
Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu Ser Glu Lys Leu
            610                 615                 620

gcg gcc atc aac ttc tcg gtg ctg agc ctg ggc aag tac tac gct agg      11632
Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys Tyr Tyr Ala Arg
        625                 630                 635

aag atc tac aag acc ccg tac gtg ccc ata gac aag gag gtg aag atc      11680
Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu Val Lys Ile
    640                 645                 650

gat ggg ttt tac atg cgc atg acc ctg aaa gtg ctg acc ctg agc gac      11728
Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu Thr Leu Ser Asp
655                 660                 665                 670

gat ctg ggg gtg tac cgc aac gac agg atg cac cgc gcg gtg agc gcc      11776
Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg Ala Val Ser Ala
                675                 680                 685

agc cgc cgg cgc gag ctg agc gac cag gag ctg atg cac agc ctg cag      11824
Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met His Ser Leu Gln
            690                 695                 700

cgg gcc ctg acc ggg gcc ggg acc gag ggg gag agc tac ttt gac atg      11872
Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser Tyr Phe Asp Met
```

```
        705                 710                 715

ggc gcg gac ctg cgc tgg cag ccc agc cgc cgg gcc ttg gaa gct gcc      11920
Gly Ala Asp Leu Arg Trp Gln Pro Ser Arg Arg Ala Leu Glu Ala Ala
    720                 725                 730

ggc ggc gtg ccc tac gtg gag gag gtg gac gat gag gag gag gag ggc      11968
Gly Gly Val Pro Tyr Val Glu Glu Val Asp Asp Glu Glu Glu Glu Gly
735                 740                 745                 750

gag tac ctg gaa gac tgatggcgcg accgtatttt tgctag atg cag caa cag     12021
Glu Tyr Leu Glu Asp                                 Met Gln Gln Gln
                755

cca ccg cct cct gat ccc gcg atg cgg gcg gcg ctg cag agc cag ccg      12069
Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu Gln Ser Gln Pro
760                 765                 770                 775

tcc ggc att aac tcc tcg gac gat tgg acc cag gcc atg caa cgc atc      12117
Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala Met Gln Arg Ile
                780                 785                 790

atg gcg ctg acg acc cgc aat ccc gaa gcc ttt aga cag cag cct cag      12165
Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg Gln Gln Pro Gln
            795                 800                 805

gcc aac cgg ctc tcg gcc atc ctg gag gcc gtg gtg ccc tcg cgc tcg      12213
Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val Pro Ser Arg Ser
        810                 815                 820

aac ccc acg cac gag aag gtg ctg gcc atc gtg aac gcg ctg gtg gag      12261
Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn Ala Leu Val Glu
    825                 830                 835

aac aag gcc atc cgc ggc gac gag gcc ggg ctg gtg tac aac gcg ctg      12309
Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val Tyr Asn Ala Leu
840                 845                 850                 855

ctg gag cgc gtg gcc cgc tac aac agc acc aac gtg cag acg aac ctg      12357
Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val Gln Thr Asn Leu
                860                 865                 870

gac cgc atg gtg acc gac gtg cgc gag gcg gtg tcg cag cgc gag cgg      12405
Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser Gln Arg Glu Arg
            875                 880                 885

ttc cac cgc gag tcg aac ctg ggc tcc atg gtg gcg ctg aac gcc ttc      12453
Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala Leu Asn Ala Phe
        890                 895                 900

ctg agc acg cag ccc gcc aac gtg ccc cgg ggc cag gag gac tac acc      12501
Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln Glu Asp Tyr Thr
    905                 910                 915

aac ttc atc agc gcg ctg cgg ctg atg gtg gcc gag gtg ccc cag agc      12549
Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu Val Pro Gln Ser
920                 925                 930                 935

gag gtg tac cag tcg ggg ccg gac tac ttc ttc cag acc agt cgc cag      12597
Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln Thr Ser Arg Gln
                940                 945                 950

ggc ttg cag acc gtg aac ctg agc cag gct ttc aag aac ttg cag gga      12645
Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys Asn Leu Gln Gly
            955                 960                 965

ctg tgg ggc gtg cag gcc ccg gtc ggg gac cgc gcg acg gtg tcg agc      12693
Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala Thr Val Ser Ser
        970                 975                 980
```

```
ctg ctg acg ccg aac tcg cgc ctg ctg ctg ctg ctg gtg gcg ccc ttc      12741
Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Val Ala Pro Phe
    985                 990                 995

acg  gac agc ggc agc gtg  agc cgc gac tcg tac  ctg ggc tac ctg      12786
Thr  Asp Ser Gly Ser Val  Ser Arg Asp Ser Tyr  Leu Gly Tyr Leu
1000                1005                1010

ctt  aac ctg tac cgc gag  gcc atc ggg cag gcg  cac gtg gac gag      12831
Leu  Asn Leu Tyr Arg Glu  Ala Ile Gly Gln Ala  His Val Asp Glu
1015                1020                1025

cag  acc tac cag gag atc  acc cac gtg agc cgc  gcg ctg ggc cag      12876
Gln  Thr Tyr Gln Glu Ile  Thr His Val Ser Arg  Ala Leu Gly Gln
1030                1035                1040

gag  gac ccg ggc aac ctg  gag gcc acc ctg aac  ttc ctg ctg acc      12921
Glu  Asp Pro Gly Asn Leu  Glu Ala Thr Leu Asn  Phe Leu Leu Thr
1045                1050                1055

aac  cgg tcg cag aag atc  ccg ccc cag tac gcg  ctg agc acc gag      12966
Asn  Arg Ser Gln Lys Ile  Pro Pro Gln Tyr Ala  Leu Ser Thr Glu
1060                1065                1070

gag  gag cgc atc ctg cgc  tac gtg cag cag agc  gtg ggg ctg ttc      13011
Glu  Glu Arg Ile Leu Arg  Tyr Val Gln Gln Ser  Val Gly Leu Phe
1075                1080                1085

ctg  atg cag gag ggg gcc  acg ccc agc gcc gcg  ctc gac atg acc      13056
Leu  Met Gln Glu Gly Ala  Thr Pro Ser Ala Ala  Leu Asp Met Thr
1090                1095                1100

gcg  cgc aac atg gag ccc  agc atg tac gcc cgc  aac cgc ccg ttc      13101
Ala  Arg Asn Met Glu Pro  Ser Met Tyr Ala Arg  Asn Arg Pro Phe
1105                1110                1115

atc  aat aag ctg atg gac  tac ttg cat cgg gcg  gcc gcc atg aac      13146
Ile  Asn Lys Leu Met Asp  Tyr Leu His Arg Ala  Ala Ala Met Asn
1120                1125                1130

tcg  gac tac ttt acc aac  gcc atc ttg aac ccg  cac tgg ctc ccg      13191
Ser  Asp Tyr Phe Thr Asn  Ala Ile Leu Asn Pro  His Trp Leu Pro
1135                1140                1145

ccg  ccc ggg ttc tac acg  ggc gag tac gac atg  ccc gac ccc aac      13236
Pro  Pro Gly Phe Tyr Thr  Gly Glu Tyr Asp Met  Pro Asp Pro Asn
1150                1155                1160

gac  ggg ttc ctg tgg gac  gac gtg gac agc agc  gtg ttc tcg ccg      13281
Asp  Gly Phe Leu Trp Asp  Asp Val Asp Ser Ser  Val Phe Ser Pro
1165                1170                1175

cgc  ccc acc acc acc gtg  tgg aag aaa gag ggc  ggg gac cgg cgg      13326
Arg  Pro Thr Thr Thr Val  Trp Lys Lys Glu Gly  Gly Asp Arg Arg
1180                1185                1190

ccg  tcc tcg gcg ctg tcc  ggt cgc gcg ggt gct  gcc gcg gcg gtg      13371
Pro  Ser Ser Ala Leu Ser  Gly Arg Ala Gly Ala  Ala Ala Ala Val
1195                1200                1205

ccc  gag gcc gcc agc ccc  ttc ccg agc ctg ccc  ttt tcg ctg aac      13416
Pro  Glu Ala Ala Ser Pro  Phe Pro Ser Leu Pro  Phe Ser Leu Asn
1210                1215                1220

agc  gtg cgc agc agc gat  ctg ggt cgg ctg acg  cgg ccg cgc ctg      13461
Ser  Val Arg Ser Ser Asp  Leu Gly Arg Leu Thr  Arg Pro Arg Leu
1225                1230                1235
```

```
ctg  ggc gag gag gag tac  ctg aac gac tcc ttg  ttg agg ccc gag       13506
Leu  Gly Glu Glu Glu Tyr  Leu Asn Asp Ser Leu  Leu Arg Pro Glu
1240                 1245                 1250

cgc  gag aaa aac ttc ccc  aat aac ggg ata gag  agc ctg gtg gac       13551
Arg  Glu Lys Asn Phe Pro  Asn Asn Gly Ile Glu  Ser Leu Val Asp
1255                 1260                 1265

aag  atg agc cgc tgg aag  acg tac gcg cac gag  cac agg gac gag       13596
Lys  Met Ser Arg Trp Lys  Thr Tyr Ala His Glu  His Arg Asp Glu
1270                 1275                 1280

ccc  cga gct agc agc agc  acc ggc gcc cgt aga  cgc cag cgg cac       13641
Pro  Arg Ala Ser Ser Ser  Thr Gly Ala Arg Arg  Arg Gln Arg His
1285                 1290                 1295

gac  agg cag cgg gga ctg  gtg tgg gac gat gag  gat tcc gcc gac       13686
Asp  Arg Gln Arg Gly Leu  Val Trp Asp Asp Glu  Asp Ser Ala Asp
1300                 1305                 1310

gac  agc agc gtg ttg gac  ttg ggt ggg agt ggt  ggt ggt aac ccg       13731
Asp  Ser Ser Val Leu Asp  Leu Gly Gly Ser Gly  Gly Gly Asn Pro
1315                 1320                 1325

ttc  gct cac ctg cgc ccc  cgt atc ggg cgc ctg  atg taagaatctg       13777
Phe  Ala His Leu Arg Pro  Arg Ile Gly Arg Leu  Met
1330                 1335                 1340

aaaaaataaa aaaacggtac tcaccaaggc catggcgacc agcgtgcgtt cttctctgtt    13837

gtttgtagta gt atg atg agg cgc  gtg tac ccg gag ggt  cct cct ccc      13885
              Met Met Arg Arg  Val Tyr Pro Glu Gly  Pro Pro Pro
                           1345                 1350

tcg tac  gag agc gtg atg cag  cag gcg gtg gcg gcg  gcg atg cag       13930
Ser Tyr  Glu Ser Val Met Gln  Gln Ala Val Ala Ala  Ala Met Gln
    1355                 1360                 1365

ccc ccg  ctg gag gcg cct tac  gtg ccc ccg cgg tac  ctg gcg cct       13975
Pro Pro  Leu Glu Ala Pro Tyr  Val Pro Pro Arg Tyr  Leu Ala Pro
    1370                 1375                 1380

acg gag  ggg cgg aac agc att  cgt tac tcg gag ctg  gca ccc ttg       14020
Thr Glu  Gly Arg Asn Ser Ile  Arg Tyr Ser Glu Leu  Ala Pro Leu
    1385                 1390                 1395

tac gat  acc acc cgg ttg tac  ctg gtg gac aac aag  tcg gcg gac       14065
Tyr Asp  Thr Thr Arg Leu Tyr  Leu Val Asp Asn Lys  Ser Ala Asp
    1400                 1405                 1410

atc gcc  tcg ctg aac tac cag  aac gac cac agc aac  ttc ctg acc       14110
Ile Ala  Ser Leu Asn Tyr Gln  Asn Asp His Ser Asn  Phe Leu Thr
    1415                 1420                 1425

acc gtg  gtg cag aac aac gat  ttc acc ccc acg gag  gcc agc acc       14155
Thr Val  Val Gln Asn Asn Asp  Phe Thr Pro Thr Glu  Ala Ser Thr
    1430                 1435                 1440

cag acc  atc aac ttt gac gag  cgc tcg cgg tgg ggc  ggc cag ctg       14200
Gln Thr  Ile Asn Phe Asp Glu  Arg Ser Arg Trp Gly  Gly Gln Leu
    1445                 1450                 1455

aaa acc  atc atg cac acc aac  atg ccc aac gtg aac  gag ttc atg       14245
Lys Thr  Ile Met His Thr Asn  Met Pro Asn Val Asn  Glu Phe Met
    1460                 1465                 1470

tac agc  aac aag ttc aag gcg  cgg gtg atg gtc tcg  cgc aag acc       14290
Tyr Ser  Asn Lys Phe Lys Ala  Arg Val Met Val Ser  Arg Lys Thr
    1475                 1480                 1485
```

```
ccc aac  ggg gtc aca gta aca  gat ggt agt cag gac  gag ctg acc       14335
Pro Asn  Gly Val Thr Val Thr  Asp Gly Ser Gln Asp  Glu Leu Thr
    1490                 1495                 1500

tac gag  tgg gtg gag ttt gag  ctg ccc gag ggc aac  ttc tcg gtg       14380
Tyr Glu  Trp Val Glu Phe Glu  Leu Pro Glu Gly Asn  Phe Ser Val
    1505                 1510                 1515

acc atg  acc atc gat ctg atg  aac aac gcc atc atc  gac aac tac       14425
Thr Met  Thr Ile Asp Leu Met  Asn Asn Ala Ile Ile  Asp Asn Tyr
    1520                 1525                 1530

ttg gcg  gtg gga cgg cag aac  ggg gtg ctg gag agc  gac atc ggc       14470
Leu Ala  Val Gly Arg Gln Asn  Gly Val Leu Glu Ser  Asp Ile Gly
    1535                 1540                 1545

gtg aag  ttc gac acg cgc aac  ttc cgg ctg ggc tgg  gac ccc gtg       14515
Val Lys  Phe Asp Thr Arg Asn  Phe Arg Leu Gly Trp  Asp Pro Val
    1550                 1555                 1560

acc gag  ctg gtg atg ccg ggc  gtg tac acc aac gag  gcc ttc cac       14560
Thr Glu  Leu Val Met Pro Gly  Val Tyr Thr Asn Glu  Ala Phe His
    1565                 1570                 1575

ccc gac  atc gtc ctg ctg ccc  ggc tgc ggc gtg gac  ttc acc gag       14605
Pro Asp  Ile Val Leu Leu Pro  Gly Cys Gly Val Asp  Phe Thr Glu
    1580                 1585                 1590

agc cgc  ctc agc aac ctg ctg  ggc atc cgc aag cgg  cag ccc ttc       14650
Ser Arg  Leu Ser Asn Leu Leu  Gly Ile Arg Lys Arg  Gln Pro Phe
    1595                 1600                 1605

cag gag  ggc ttc cag atc ctg  tac gag gac ctg gag  ggg ggc aac       14695
Gln Glu  Gly Phe Gln Ile Leu  Tyr Glu Asp Leu Glu  Gly Gly Asn
    1610                 1615                 1620

atc ccc  gcg ctg ctg gac gtc  gaa gcc tac gag aaa  agc aag gag       14740
Ile Pro  Ala Leu Leu Asp Val  Glu Ala Tyr Glu Lys  Ser Lys Glu
    1625                 1630                 1635

gag gcc  gcc gca gcg gcg acc  gcg gcc gtg gct acc  gct gcg acc       14785
Glu Ala  Ala Ala Ala Ala Thr  Ala Ala Val Ala Thr  Ala Ala Thr
    1640                 1645                 1650

acc gat  gca gat gca gct act  act acc agg ggc gat  aca ttc gcc       14830
Thr Asp  Ala Asp Ala Ala Thr  Thr Thr Arg Gly Asp  Thr Phe Ala
    1655                 1660                 1665

acc cag  gcg gag gaa gca gcc  gcc cta gcg gcg acc  gat gat agt       14875
Thr Gln  Ala Glu Glu Ala Ala  Ala Leu Ala Ala Thr  Asp Asp Ser
    1670                 1675                 1680

gaa agt  aag ata gtc atc aag  ccg gtg gag aag gac  agc aag gac       14920
Glu Ser  Lys Ile Val Ile Lys  Pro Val Glu Lys Asp  Ser Lys Asp
    1685                 1690                 1695

agg agc  tac aac gtt cta tcg  gat gga aag aac acc  gcc tac cgc       14965
Arg Ser  Tyr Asn Val Leu Ser  Asp Gly Lys Asn Thr  Ala Tyr Arg
    1700                 1705                 1710

agc tgg  tac ctg gcc tac aac  tac ggc gac cct gag  aag ggc gtg       15010
Ser Trp  Tyr Leu Ala Tyr Asn  Tyr Gly Asp Pro Glu  Lys Gly Val
    1715                 1720                 1725

cgc tcc  tgg acg ctg ctc acc  acc tcg gac gtc acc  tgc ggc gtg       15055
Arg Ser  Trp Thr Leu Leu Thr  Thr Ser Asp Val Thr  Cys Gly Val
    1730                 1735                 1740
```

```
gag caa  gtc tac tgg tcg ctg  ccc gac atg atg caa  gac ccg gtc       15100
Glu Gln  Val Tyr Trp Ser Leu  Pro Asp Met Met Gln  Asp Pro Val
    1745                 1750                 1755

acc ttc  cgc tcc acg cgt caa  gtt agc aac tac ccg  gtg gtg ggc       15145
Thr Phe  Arg Ser Thr Arg Gln  Val Ser Asn Tyr Pro  Val Val Gly
    1760                 1765                 1770

gcc gag  ctc ctg ccc gtc tac  tcc aag agc ttc ttc  aac gag cag       15190
Ala Glu  Leu Leu Pro Val Tyr  Ser Lys Ser Phe Phe  Asn Glu Gln
    1775                 1780                 1785

gcc gtc  tac tcg cag cag ctg  cgc gcc ttc acc tcg  ctc acg cac       15235
Ala Val  Tyr Ser Gln Gln Leu  Arg Ala Phe Thr Ser  Leu Thr His
    1790                 1795                 1800

gtc ttc  aac cgc ttc ccc gag  aac cag atc ctc gtc  cgc ccg ccc       15280
Val Phe  Asn Arg Phe Pro Glu  Asn Gln Ile Leu Val  Arg Pro Pro
    1805                 1810                 1815

gcg ccc  acc att acc acc gtc  agt gaa aac gtt cct  gct ctc aca       15325
Ala Pro  Thr Ile Thr Thr Val  Ser Glu Asn Val Pro  Ala Leu Thr
    1820                 1825                 1830

gat cac  ggg acc ctg ccg ctg  cgc agc agt atc cgg  gga gtc cag       15370
Asp His  Gly Thr Leu Pro Leu  Arg Ser Ser Ile Arg  Gly Val Gln
    1835                 1840                 1845

cgc gtg  acc gtc act gac gcc  aga cgc cgc acc tgc  ccc tac gtc       15415
Arg Val  Thr Val Thr Asp Ala  Arg Arg Arg Thr Cys  Pro Tyr Val
    1850                 1855                 1860

tac aag  gcc ctg ggc gta gtc  gcg ccg cgc gtc ctc  tcg agc cgc       15460
Tyr Lys  Ala Leu Gly Val Val  Ala Pro Arg Val Leu  Ser Ser Arg
    1865                 1870                 1875

acc ttc  taaaaa atg tcc att ctc atc  tcg ccc agt aat aac  acc ggt    15508
Thr Phe         Met Ser Ile Leu Ile  Ser Pro Ser Asn Asn  Thr Gly
    1880                      1885                 1890

tgg ggc ctg  cgc gcg ccc agc aag  atg tac gga ggc gct  cgc caa       15553
Trp Gly Leu  Arg Ala Pro Ser Lys  Met Tyr Gly Gly Ala  Arg Gln
        1895                 1900                 1905

cgc tcc acg  caa cac ccc gtg cgc  gtg cgc ggg cac ttc  cgc gct       15598
Arg Ser Thr  Gln His Pro Val Arg  Val Arg Gly His Phe  Arg Ala
        1910                 1915                 1920

ccc tgg ggc  gcc ctc aag ggc cgc  gtg cgc tcg cgc acc  acc gtc       15643
Pro Trp Gly  Ala Leu Lys Gly Arg  Val Arg Ser Arg Thr  Thr Val
        1925                 1930                 1935

gac gac gtg  atc gac cag gtg gtg  gcc gac gcg cgc aac  tac acg       15688
Asp Asp Val  Ile Asp Gln Val Val  Ala Asp Ala Arg Asn  Tyr Thr
        1940                 1945                 1950

ccc gcc gcc  gcg ccc gcc tcc acc  gtg gac gcc gtc atc  gac agc       15733
Pro Ala Ala  Ala Pro Ala Ser Thr  Val Asp Ala Val Ile  Asp Ser
        1955                 1960                 1965

gtg gtg gcc  gac gcg cgc cgg tac  gcc cgc gcc aag agc  cgg cgg       15778
Val Val Ala  Asp Ala Arg Arg Tyr  Ala Arg Ala Lys Ser  Arg Arg
        1970                 1975                 1980

cgg cgc atc  gcc cgg cgg cac cgg  agc acc ccc gcc atg  cgc gcg       15823
Arg Arg Ile  Ala Arg Arg His Arg  Ser Thr Pro Ala Met  Arg Ala
        1985                 1990                 1995

gcg cga gcc  ttg ctg cgc agg gcc  agg cgc acg gga cgc  agg gcc       15868
```

```
Ala Arg Ala  Leu Leu Arg Arg Ala  Arg Arg Thr Gly Arg  Arg Ala
        2000                 2005                 2010

atg ctc agg  gcg gcc aga cgc gcg  gcc tcc ggc agc agc  agc gcc       15913
Met Leu Arg  Ala Ala Arg Arg Ala  Ala Ser Gly Ser Ser  Ser Ala
        2015                 2020                 2025

ggc agg acc  cgc aga cgc gcg gcc  acg gcg gcg gcg gcg  gcc atc       15958
Gly Arg Thr  Arg Arg Arg Ala Ala  Thr Ala Ala Ala Ala  Ala Ile
        2030                 2035                 2040

gcc agc atg  tcc cgc ccg cgg cgc  ggc aac gtg tac tgg  gtg cgc       16003
Ala Ser Met  Ser Arg Pro Arg Arg  Gly Asn Val Tyr Trp  Val Arg
        2045                 2050                 2055

gac gcc gcc  acc ggt gtg cgc gtg  ccc gtg cgc acc cgc  ccc cct       16048
Asp Ala Ala  Thr Gly Val Arg Val  Pro Val Arg Thr Arg  Pro Pro
        2060                 2065                 2070

cgc act tgaagatgct gacttcgcga tgttgatgtg tcccagcggc gaggagg atg      16104
Arg Thr                                                      Met
                                                             2075

tcc aag cgc aaa ttc  aag gaa gag atg ctc  cag gtc atc gcg cct       16149
Ser Lys Arg Lys Phe  Lys Glu Glu Met Leu  Gln Val Ile Ala Pro
                2080                 2085                 2090

gag atc tac ggc ccc  gcg gcg gcg gtg aag  gag gaa aga aag ccc       16194
Glu Ile Tyr Gly Pro  Ala Ala Ala Val Lys  Glu Glu Arg Lys Pro
                2095                 2100                 2105

cgc aaa ctg aag cgg  gtc aaa aag gac aaa  aag gag gag gaa gat       16239
Arg Lys Leu Lys Arg  Val Lys Lys Asp Lys  Lys Glu Glu Glu Asp
                2110                 2115                 2120

gac gga ctg gtg gag  ttt gtg cgc gag ttc  gcc ccc cgg cgg cgc       16284
Asp Gly Leu Val Glu  Phe Val Arg Glu Phe  Ala Pro Arg Arg Arg
                2125                 2130                 2135

gtg cag tgg cgc ggg  cgg aaa gtg aaa ccg  gtg ctg cgg ccc ggc       16329
Val Gln Trp Arg Gly  Arg Lys Val Lys Pro  Val Leu Arg Pro Gly
                2140                 2145                 2150

acc acg gtg gtc ttc  acg ccc ggc gag cgt  tcc ggc tcc gcc tcc       16374
Thr Thr Val Val Phe  Thr Pro Gly Glu Arg  Ser Gly Ser Ala Ser
                2155                 2160                 2165

aag cgc tcc tac gac  gag gtg tac ggg gac  gag gac atc ctc gag       16419
Lys Arg Ser Tyr Asp  Glu Val Tyr Gly Asp  Glu Asp Ile Leu Glu
                2170                 2175                 2180

cag gcg gca gag cgt  ctg ggc gag ttt gct  tac ggc aag cgc agc       16464
Gln Ala Ala Glu Arg  Leu Gly Glu Phe Ala  Tyr Gly Lys Arg Ser
                2185                 2190                 2195

cgc ccc gcg ccc ttg  aaa gag gag gcg gtg  tcc atc ccg ctg gac       16509
Arg Pro Ala Pro Leu  Lys Glu Glu Ala Val  Ser Ile Pro Leu Asp
                2200                 2205                 2210

cac ggc aac ccc acg  ccg agc ctg aag ccg  gtg acc ctg cag cag       16554
His Gly Asn Pro Thr  Pro Ser Leu Lys Pro  Val Thr Leu Gln Gln
                2215                 2220                 2225

gtg ctg ccg agc gcg  gcg ccg cgc cgg ggc  ttc aag cgc gag ggc       16599
Val Leu Pro Ser Ala  Ala Pro Arg Arg Gly  Phe Lys Arg Glu Gly
                2230                 2235                 2240

ggc gag gat ctg tac  ccg acc atg cag ctg  atg gtg ccc aag cgc       16644
Gly Glu Asp Leu Tyr  Pro Thr Met Gln Leu  Met Val Pro Lys Arg
```

```
                2245                2250                2255

cag aag ctg gag gac  gtg ctg gag cac atg  aag gtg gac ccc gag       16689
Gln Lys Leu Glu Asp  Val Leu Glu His Met  Lys Val Asp Pro Glu
                2260                2265                2270

gtg cag ccc gag gtc  aag gtg cgg ccc atc  aag cag gtg gcc ccg       16734
Val Gln Pro Glu Val  Lys Val Arg Pro Ile  Lys Gln Val Ala Pro
                2275                2280                2285

ggc ctg ggc gtg cag  acc gtg gac atc aag  atc ccc acg gag ccc       16779
Gly Leu Gly Val Gln  Thr Val Asp Ile Lys  Ile Pro Thr Glu Pro
                2290                2295                2300

atg gaa acg cag acc  gag ccc gtg aag ccc  agc acc agc acc atg       16824
Met Glu Thr Gln Thr  Glu Pro Val Lys Pro  Ser Thr Ser Thr Met
                2305                2310                2315

gag gtg cag acg gat  ccc tgg atg ccg gcg  ccg gct tcc acc acc       16869
Glu Val Gln Thr Asp  Pro Trp Met Pro Ala  Pro Ala Ser Thr Thr
                2320                2325                2330

act cgc cga aga cgc  aag tac ggc gcg gcc  agc ctg ctg atg ccc       16914
Thr Arg Arg Arg Arg  Lys Tyr Gly Ala Ala  Ser Leu Leu Met Pro
                2335                2340                2345

aac tac gcg ctg cat  cct tcc atc atc ccc  acg ccg ggc tac cgc       16959
Asn Tyr Ala Leu His  Pro Ser Ile Ile Pro  Thr Pro Gly Tyr Arg
                2350                2355                2360

ggc acg cgc ttc tac  cgc ggc tac agc agc  cgc cgc aag acc acc       17004
Gly Thr Arg Phe Tyr  Arg Gly Tyr Ser Ser  Arg Arg Lys Thr Thr
                2365                2370                2375

acc cgc cgc cgc cgt  cgc cgc acc cgc cgc  agc acc acc gcg act       17049
Thr Arg Arg Arg Arg  Arg Arg Thr Arg Arg  Ser Thr Thr Ala Thr
                2380                2385                2390

tcc gcc gcc gcc ttg  gtg cgg aga gtg tac  cgc agc ggg cgt gag       17094
Ser Ala Ala Ala Leu  Val Arg Arg Val Tyr  Arg Ser Gly Arg Glu
                2395                2400                2405

cct ctg acc ctg ccg  cgc gcg cgc tac cac  ccg agc atc gcc att       17139
Pro Leu Thr Leu Pro  Arg Ala Arg Tyr His  Pro Ser Ile Ala Ile
                2410                2415                2420

taactctgcc gtcgcctcct tgcagat atg gcc ctc aca tgc  cgc ctc cgc       17190
                              Met Ala Leu Thr Cys  Arg Leu Arg
                                                  2425

gtc ccc  att acg ggc tac cga  gga aga aag ccg cgc  cgt aga agg       17235
Val Pro  Ile Thr Gly Tyr Arg  Gly Arg Lys Pro Arg  Arg Arg Arg
    2430                2435                2440

ctg acg  ggg aac ggg ctg cgt  cgc cat cac cac cgg  cgg cgg cgc       17280
Leu Thr  Gly Asn Gly Leu Arg  Arg His His His Arg  Arg Arg Arg
    2445                2450                2455

gcc atc  agc aag cgg ttg ggg  gga ggc ttc ctg ccc  gcg ctg atc       17325
Ala Ile  Ser Lys Arg Leu Gly  Gly Gly Phe Leu Pro  Ala Leu Ile
    2460                2465                2470

ccc atc  atc gcc gcg gcg atc  ggg gcg atc ccc ggc  ata gct tcc       17370
Pro Ile  Ile Ala Ala Ala Ile  Gly Ala Ile Pro Gly  Ile Ala Ser
    2475                2480                2485

gtg gcg  gtg cag gcc tct cag  cgc cac tgagacacag cttggaaaat         17417
Val Ala  Val Gln Ala Ser Gln  Arg His
    2490                2495
```

```
ttgtaataaa aaaatggact gacgctcctg gtcctgtgat gtgtgttttt ag atg gaa    17475
                                                           Met Glu

gac  atc aat ttt tcg tcc  ctg gca ccg cga cac  ggc acg cgg ccg       17520
Asp  Ile Asn Phe Ser Ser  Leu Ala Pro Arg His  Gly Thr Arg Pro
2500                 2505                 2510

ttt  atg ggc acc tgg agc  gac atc ggc aac agc  caa ctg aac ggg       17565
Phe  Met Gly Thr Trp Ser  Asp Ile Gly Asn Ser  Gln Leu Asn Gly
2515                 2520                 2525

ggc  gcc ttc aat tgg agc  agt ctc tgg agc ggg  ctt aag aat ttc       17610
Gly  Ala Phe Asn Trp Ser  Ser Leu Trp Ser Gly  Leu Lys Asn Phe
2530                 2535                 2540

ggg  tcc acg ctc aaa acc  tat ggc aac aag gcg  tgg aac agc agc       17655
Gly  Ser Thr Leu Lys Thr  Tyr Gly Asn Lys Ala  Trp Asn Ser Ser
2545                 2550                 2555

aca  ggg cag gcg ctg agg  gaa aag ctg aaa gag  cag aac ttc cag       17700
Thr  Gly Gln Ala Leu Arg  Glu Lys Leu Lys Glu  Gln Asn Phe Gln
2560                 2565                 2570

cag  aag gtg gtc gat ggc  ctg gcc tcg ggc atc  aac ggg gtg gtg       17745
Gln  Lys Val Val Asp Gly  Leu Ala Ser Gly Ile  Asn Gly Val Val
2575                 2580                 2585

gac  ctg gcc aac cag gcc  gtg cag aaa cag atc  aac agc cgc ctg       17790
Asp  Leu Ala Asn Gln Ala  Val Gln Lys Gln Ile  Asn Ser Arg Leu
2590                 2595                 2600

gac  gcg gtc ccg ccc gcg  ggg tcc gtg gag atg  ccc cag gtg gag       17835
Asp  Ala Val Pro Pro Ala  Gly Ser Val Glu Met  Pro Gln Val Glu
2605                 2610                 2615

gag  gag ctg cct ccc ctg  gac aag cgc ggc gac  aag cga ccg cgt       17880
Glu  Glu Leu Pro Pro Leu  Asp Lys Arg Gly Asp  Lys Arg Pro Arg
2620                 2625                 2630

ccc  gac gcg gag gag acg  ctg ctg acg cac acg  gac gag ccg ccc       17925
Pro  Asp Ala Glu Glu Thr  Leu Leu Thr His Thr  Asp Glu Pro Pro
2635                 2640                 2645

ccg  tac gag gag gcg gtg  aaa ctg ggt ctg ccc  acc acg cgg ccc       17970
Pro  Tyr Glu Glu Ala Val  Lys Leu Gly Leu Pro  Thr Thr Arg Pro
2650                 2655                 2660

atc  gcg ccc ctg gcc acc  ggg gtg ctg aaa ccc  gag tct aag ccc       18015
Ile  Ala Pro Leu Ala Thr  Gly Val Leu Lys Pro  Glu Ser Lys Pro
2665                 2670                 2675

gcg  acc ctg gac ttg cct  cct ccc ccg acc tcc  cgc ccc tcc aca       18060
Ala  Thr Leu Asp Leu Pro  Pro Pro Pro Thr Ser  Arg Pro Ser Thr
2680                 2685                 2690

gtg  gct aag ccc ctg ccg  ccg gtg gcc cgc gcg  cga ccc ggg agc       18105
Val  Ala Lys Pro Leu Pro  Pro Val Ala Arg Ala  Arg Pro Gly Ser
2695                 2700                 2705

cgc  ccg cag gcg aac tgg  cag agc act ctg aac  agc atc gtg ggt       18150
Arg  Pro Gln Ala Asn Trp  Gln Ser Thr Leu Asn  Ser Ile Val Gly
2710                 2715                 2720

ctg  gga gtg cag agt gtg  aag cgc cgc cgc tgc  tat taaacatacc       18196
Leu  Gly Val Gln Ser Val  Lys Arg Arg Arg Cys  Tyr
2725                 2730                 2735
```

```
gtagcgctta acttgcttgt ctgtgtgtgt atgtattatg tcgccgccgc tgtccagaag    18256

gaggagtgaa gaggcgcgtc gccgagttgc aag atg gcc acc cca  tcg atg ctg    18310
                                      Met Ala Thr Pro  Ser Met Leu
                                                2740

ccc cag  tgg gcg tac atg cac  atc gcc gga cag gac  gct tcg gag       18355
Pro Gln  Trp Ala Tyr Met His  Ile Ala Gly Gln Asp  Ala Ser Glu
    2745                 2750                 2755

tac ctg  agt ccg ggt ctg gtg  cag ttc gcc cgc gcc  aca gac acc       18400
Tyr Leu  Ser Pro Gly Leu Val  Gln Phe Ala Arg Ala  Thr Asp Thr
    2760                 2765                 2770

tac ttc  agt ctg ggg aac aag  ttt agg aac ccc acg  gtg gcg ccc       18445
Tyr Phe  Ser Leu Gly Asn Lys  Phe Arg Asn Pro Thr  Val Ala Pro
    2775                 2780                 2785

acg cac  gat gtg acc acc gac  cgc agc cag cgg ctg  acg ctg cgc       18490
Thr His  Asp Val Thr Thr Asp  Arg Ser Gln Arg Leu  Thr Leu Arg
    2790                 2795                 2800

ttc gtg  ccc gtg gac cgc gag  gac aac acc tac tcg  tac aaa gtg       18535
Phe Val  Pro Val Asp Arg Glu  Asp Asn Thr Tyr Ser  Tyr Lys Val
    2805                 2810                 2815

cgc tac  acg ctg gcc gtg ggc  gac aac cgc gtg ctg  gac atg gcc       18580
Arg Tyr  Thr Leu Ala Val Gly  Asp Asn Arg Val Leu  Asp Met Ala
    2820                 2825                 2830

agc acc  tac ttt gac atc cgc  ggc gtg ctg gac cgg  ggc cct agc       18625
Ser Thr  Tyr Phe Asp Ile Arg  Gly Val Leu Asp Arg  Gly Pro Ser
    2835                 2840                 2845

ttc aaa  ccc tac tcc ggc acc  gcc tac aac agc ctg  gcc ccc aag       18670
Phe Lys  Pro Tyr Ser Gly Thr  Ala Tyr Asn Ser Leu  Ala Pro Lys
    2850                 2855                 2860

gga gct  ccc aat tcc agt cag  tgg gag cag acg gag  aac ggg ggc       18715
Gly Ala  Pro Asn Ser Ser Gln  Trp Glu Gln Thr Glu  Asn Gly Gly
    2865                 2870                 2875

gga cag  gct acg act aaa aca  cac acc tat gga gtt  gcc cca atg       18760
Gly Gln  Ala Thr Thr Lys Thr  His Thr Tyr Gly Val  Ala Pro Met
    2880                 2885                 2890

ggt gga  act aat att aca gtc  gac gga cta caa att  gga act gac       18805
Gly Gly  Thr Asn Ile Thr Val  Asp Gly Leu Gln Ile  Gly Thr Asp
    2895                 2900                 2905

gct aca  gct gat acg gaa aaa  cca att tat gct gat  aaa aca ttc       18850
Ala Thr  Ala Asp Thr Glu Lys  Pro Ile Tyr Ala Asp  Lys Thr Phe
    2910                 2915                 2920

caa cct  gag cct cag ata gga  gag gaa aac tgg caa  gaa act gaa       18895
Gln Pro  Glu Pro Gln Ile Gly  Glu Glu Asn Trp Gln  Glu Thr Glu
    2925                 2930                 2935

agc ttt  tat ggc ggt agg gct  ctt aag aaa gac aca  aac atg aag       18940
Ser Phe  Tyr Gly Gly Arg Ala  Leu Lys Lys Asp Thr  Asn Met Lys
    2940                 2945                 2950

cct tgt  tat ggc tca ttt gcc  aga cct acc aat gaa  aag gga ggt       18985
Pro Cys  Tyr Gly Ser Phe Ala  Arg Pro Thr Asn Glu  Lys Gly Gly
    2955                 2960                 2965

caa gct  aaa ctt aaa gtt gga  gct gat ggg ctg ccg  acc aaa gaa       19030
Gln Ala  Lys Leu Lys Val Gly  Ala Asp Gly Leu Pro  Thr Lys Glu
    2970                 2975                 2980
```

```
ttt gac  ata gac cta gca ttc  ttt gat act cct ggt  ggc act gtg       19075
Phe Asp  Ile Asp Leu Ala Phe  Phe Asp Thr Pro Gly  Gly Thr Val
    2985                 2990                 2995

acc gga  ggt aca gag gag tat  aaa gca gat att gtt  atg tat acc       19120
Thr Gly  Gly Thr Glu Glu Tyr  Lys Ala Asp Ile Val  Met Tyr Thr
    3000                 3005                 3010

gaa aac  acg tat ctg gaa act  cca gac aca cat gtg  gtg tat aaa       19165
Glu Asn  Thr Tyr Leu Glu Thr  Pro Asp Thr His Val  Val Tyr Lys
    3015                 3020                 3025

cca ggc  aag gat aac aca agt  tct aaa att aac ctg  gtc cag cag       19210
Pro Gly  Lys Asp Asn Thr Ser  Ser Lys Ile Asn Leu  Val Gln Gln
    3030                 3035                 3040

tct atg  ccc aac agg ccc aac  tac att ggg ttt agg  gac aac ttt       19255
Ser Met  Pro Asn Arg Pro Asn  Tyr Ile Gly Phe Arg  Asp Asn Phe
    3045                 3050                 3055

att ggg  ctc atg tat tac aac  agc act ggc aat atg  ggt gtg ctg       19300
Ile Gly  Leu Met Tyr Tyr Asn  Ser Thr Gly Asn Met  Gly Val Leu
    3060                 3065                 3070

gcc ggt  cag gct tct cag ttg  aat gct gtg gtt gac  ttg caa gac       19345
Ala Gly  Gln Ala Ser Gln Leu  Asn Ala Val Val Asp  Leu Gln Asp
    3075                 3080                 3085

aga aac  act gaa ctg tct tac  cag ctc ttg ctt gac  tct ttg ggt       19390
Arg Asn  Thr Glu Leu Ser Tyr  Gln Leu Leu Leu Asp  Ser Leu Gly
    3090                 3095                 3100

gac aga  acc agg tat ttc agt  atg tgg aat cag gcg  gtg gac agt       19435
Asp Arg  Thr Arg Tyr Phe Ser  Met Trp Asn Gln Ala  Val Asp Ser
    3105                 3110                 3115

tat gat  cct gat gtg cgc att  att gaa aac cat ggt  gtg gaa gat       19480
Tyr Asp  Pro Asp Val Arg Ile  Ile Glu Asn His Gly  Val Glu Asp
    3120                 3125                 3130

gaa ctt  ccc aac tat tgc ttc  ccc ctg gat ggg tct  ggc act aac       19525
Glu Leu  Pro Asn Tyr Cys Phe  Pro Leu Asp Gly Ser  Gly Thr Asn
    3135                 3140                 3145

gcc gct  tac caa ggt gtg aaa  gta aaa aat ggt caa  gat ggt gat       19570
Ala Ala  Tyr Gln Gly Val Lys  Val Lys Asn Gly Gln  Asp Gly Asp
    3150                 3155                 3160

gtt gag  agc gaa tgg gaa aaa  gat gat act gtc gca  gct cga aat       19615
Val Glu  Ser Glu Trp Glu Lys  Asp Asp Thr Val Ala  Ala Arg Asn
    3165                 3170                 3175

caa tta  tgc aag ggc aac att  ttt gcc atg gag atc  aat ctc cag       19660
Gln Leu  Cys Lys Gly Asn Ile  Phe Ala Met Glu Ile  Asn Leu Gln
    3180                 3185                 3190

gcc aac  ctg tgg aga agt ttt  ctc tac tcg aac gtg  gcc ctg tac       19705
Ala Asn  Leu Trp Arg Ser Phe  Leu Tyr Ser Asn Val  Ala Leu Tyr
    3195                 3200                 3205

ctg ccc  gat tct tac aag tac  acg ccg gcc aac atc  acc ctg ccc       19750
Leu Pro  Asp Ser Tyr Lys Tyr  Thr Pro Ala Asn Ile  Thr Leu Pro
    3210                 3215                 3220

acc aac  acc aac acc tac gat  tac atg aac ggg aga  gtg gtg cct       19795
Thr Asn  Thr Asn Thr Tyr Asp  Tyr Met Asn Gly Arg  Val Val Pro
    3225                 3230                 3235
```

```
ccc tcg  ctg gtg gac gcc tac  atc aac atc ggg gcg  cgc tgg tcg       19840
Pro Ser  Leu Val Asp Ala Tyr  Ile Asn Ile Gly Ala  Arg Trp Ser
    3240                 3245                 3250

ctg gac  ccc atg gac aac gtc  aat ccc ttc aac cac  cat cgc aac       19885
Leu Asp  Pro Met Asp Asn Val  Asn Pro Phe Asn His  His Arg Asn
    3255                 3260                 3265

gcg ggg  ctg cgc tac cgc tcc  atg ctc ctg ggc aac  ggg cgc tac       19930
Ala Gly  Leu Arg Tyr Arg Ser  Met Leu Leu Gly Asn  Gly Arg Tyr
    3270                 3275                 3280

gtg ccc  ttc cac atc cag gtg  ccc cag aaa ttt ttc  gcc att aag       19975
Val Pro  Phe His Ile Gln Val  Pro Gln Lys Phe Phe  Ala Ile Lys
    3285                 3290                 3295

agc ctc  ctg ctc ctg ccc ggg  tcc tac acc tac gag  tgg aac ttc       20020
Ser Leu  Leu Leu Leu Pro Gly  Ser Tyr Thr Tyr Glu  Trp Asn Phe
    3300                 3305                 3310

cgc aag  gac gtc aac atg atc  ctg cag agc tcc ctc  ggc aac gac       20065
Arg Lys  Asp Val Asn Met Ile  Leu Gln Ser Ser Leu  Gly Asn Asp
    3315                 3320                 3325

ctg cgc  acg gac ggg gcc tcc  atc tcc ttc acc agc  atc aac ctc       20110
Leu Arg  Thr Asp Gly Ala Ser  Ile Ser Phe Thr Ser  Ile Asn Leu
    3330                 3335                 3340

tac gcc  acc ttc ttc ccc atg  gcg cac aac acc gcc  tcc acg ctc       20155
Tyr Ala  Thr Phe Phe Pro Met  Ala His Asn Thr Ala  Ser Thr Leu
    3345                 3350                 3355

gag gcc  atg ctg cgc aac gac  acc aac gac cag tcc  ttc aac gac       20200
Glu Ala  Met Leu Arg Asn Asp  Thr Asn Asp Gln Ser  Phe Asn Asp
    3360                 3365                 3370

tac ctc  tcg gcg gcc aac atg  ctc tac ccc atc ccg  gcc aac gcc       20245
Tyr Leu  Ser Ala Ala Asn Met  Leu Tyr Pro Ile Pro  Ala Asn Ala
    3375                 3380                 3385

acc aac  gtg ccc atc tcc atc  ccc tcg cgc aac tgg  gcc gcc ttc       20290
Thr Asn  Val Pro Ile Ser Ile  Pro Ser Arg Asn Trp  Ala Ala Phe
    3390                 3395                 3400

cgc ggc  tgg tcc ttc acg cgc  ctc aag acc aag gag  acg ccc tcg       20335
Arg Gly  Trp Ser Phe Thr Arg  Leu Lys Thr Lys Glu  Thr Pro Ser
    3405                 3410                 3415

ctg ggc  tcc ggg ttc gac ccc  tac ttc gtc tac tcg  ggc tcc atc       20380
Leu Gly  Ser Gly Phe Asp Pro  Tyr Phe Val Tyr Ser  Gly Ser Ile
    3420                 3425                 3430

ccc tac  ctc gac ggc acc ttc  tac ctc aac cac acc  ttc aag aag       20425
Pro Tyr  Leu Asp Gly Thr Phe  Tyr Leu Asn His Thr  Phe Lys Lys
    3435                 3440                 3445

gtc tcc  atc acc ttc gac tcc  tcc gtc agc tgg ccc  ggc aac gac       20470
Val Ser  Ile Thr Phe Asp Ser  Ser Val Ser Trp Pro  Gly Asn Asp
    3450                 3455                 3460

cgg ctc  ctg acg ccc aac gag  ttc gaa atc aag cgc  acc gtc gac       20515
Arg Leu  Leu Thr Pro Asn Glu  Phe Glu Ile Lys Arg  Thr Val Asp
    3465                 3470                 3475

ggc gag  ggc tac aac gtg gcc  cag tgc aac atg acc  aag gac tgg       20560
Gly Glu  Gly Tyr Asn Val Ala  Gln Cys Asn Met Thr  Lys Asp Trp
    3480                 3485                 3490

ttc ctg  gtc cag atg ctg gcc  cac tac aac atc ggc  tac cag ggc       20605
```

```
Phe Leu  Val Gln Met Leu Ala  His Tyr Asn Ile Gly  Tyr Gln Gly
    3495                 3500                 3505

ttc tac  gtg ccc gag ggc tac  aag gac cgc atg tac  tcc ttc ttc       20650
Phe Tyr  Val Pro Glu Gly Tyr  Lys Asp Arg Met Tyr  Ser Phe Phe
    3510                 3515                 3520

cgc aac  ttc cag ccc atg agc  cgc cag gtg gtg gac  gag gtc aac       20695
Arg Asn  Phe Gln Pro Met Ser  Arg Gln Val Val Asp  Glu Val Asn
    3525                 3530                 3535

tac aag  gac tac cag gcc gtc  acc ctg gcc tac cag  cac aac aac       20740
Tyr Lys  Asp Tyr Gln Ala Val  Thr Leu Ala Tyr Gln  His Asn Asn
    3540                 3545                 3550

tcg ggc  ttc gtc ggc tac ctc  gcg ccc acc atg cgc  cag ggc cag       20785
Ser Gly  Phe Val Gly Tyr Leu  Ala Pro Thr Met Arg  Gln Gly Gln
    3555                 3560                 3565

ccc tac  ccc gcc aac tac ccg  tac ccg ctc atc ggc  aag agc gcc       20830
Pro Tyr  Pro Ala Asn Tyr Pro  Tyr Pro Leu Ile Gly  Lys Ser Ala
    3570                 3575                 3580

gtc acc  agc gtc acc cag aaa  aag ttc ctc tgc gac  agg gtc atg       20875
Val Thr  Ser Val Thr Gln Lys  Lys Phe Leu Cys Asp  Arg Val Met
    3585                 3590                 3595

tgg cgc  atc ccc ttc tcc agc  aac ttc atg tcc atg  ggc gcg ctc       20920
Trp Arg  Ile Pro Phe Ser Ser  Asn Phe Met Ser Met  Gly Ala Leu
    3600                 3605                 3610

acc gac  ctc ggc cag aac atg  ctc tat gcc aac tcc  gcc cac gcg       20965
Thr Asp  Leu Gly Gln Asn Met  Leu Tyr Ala Asn Ser  Ala His Ala
    3615                 3620                 3625

cta gac  atg aat ttc gaa gtc  gac ccc atg gat gag  tcc acc ctt       21010
Leu Asp  Met Asn Phe Glu Val  Asp Pro Met Asp Glu  Ser Thr Leu
    3630                 3635                 3640

ctc tat  gtt gtc ttc gaa gtc  ttc gac gtc gtc cga  gtg cac cag       21055
Leu Tyr  Val Val Phe Glu Val  Phe Asp Val Val Arg  Val His Gln
    3645                 3650                 3655

ccc cac  cgc ggc gtc atc gag  gcc gtc tac ctg cgc  acc ccc ttc       21100
Pro His  Arg Gly Val Ile Glu  Ala Val Tyr Leu Arg  Thr Pro Phe
    3660                 3665                 3670

tcg gcc  ggt aac gcc acc acc  taagctcttg cttcttgcaa g atg gct gag    21151
Ser Ala  Gly Asn Ala Thr Thr                        Met Ala Glu
    3675                 3680

ccc acg  ggc tcc ggc gag cag  gag ctc agg gcc atc  atc cgc gac       21196
Pro Thr  Gly Ser Gly Glu Gln  Glu Leu Arg Ala Ile  Ile Arg Asp
    3685                 3690                 3695

ctg ggc  tgc ggg ccc tac ttc  ctg ggc acc ttc gat  aag cgc ttc       21241
Leu Gly  Cys Gly Pro Tyr Phe  Leu Gly Thr Phe Asp  Lys Arg Phe
    3700                 3705                 3710

ccg gga  ttc atg gcc ccg cac  aag ctg gcc tgc gcc  atc gtc aac       21286
Pro Gly  Phe Met Ala Pro His  Lys Leu Ala Cys Ala  Ile Val Asn
    3715                 3720                 3725

acg gcc  ggc cgc gag acc ggg  ggc gag cac tgg ctg  gcc ttc gcc       21331
Thr Ala  Gly Arg Glu Thr Gly  Gly Glu His Trp Leu  Ala Phe Ala
    3730                 3735                 3740

tgg aac  ccg cgc tcg aac acc  tgc tac ctc ttc gac  ccc ttc ggg       21376
Trp Asn  Pro Arg Ser Asn Thr  Cys Tyr Leu Phe Asp  Pro Phe Gly
```

```
    3745                3750                3755

ttc tcg  gac gag cgc ctc aag  cag atc tac cag ttc  gag tac gag       21421
Phe Ser  Asp Glu Arg Leu Lys  Gln Ile Tyr Gln Phe  Glu Tyr Glu
    3760                3765                3770

ggc ctg  ctg cgc cgc agc gcc  ctg gcc acc gag gac  cgc tgc gtc       21466
Gly Leu  Leu Arg Arg Ser Ala  Leu Ala Thr Glu Asp  Arg Cys Val
    3775                3780                3785

acc ctg  gaa aag tcc acc cag  acc gtg cag ggt ccg  cgc tcg gcc       21511
Thr Leu  Glu Lys Ser Thr Gln  Thr Val Gln Gly Pro  Arg Ser Ala
    3790                3795                3800

gcc tgc  ggg ctc ttt tgc tgc  atg ttc ctg cac gcc  ttc gtg cac       21556
Ala Cys  Gly Leu Phe Cys Cys  Met Phe Leu His Ala  Phe Val His
    3805                3810                3815

tgg ccc  gac cgc ccc atg gac  aag aac ccc acc atg  aac ttg ctg       21601
Trp Pro  Asp Arg Pro Met Asp  Lys Asn Pro Thr Met  Asn Leu Leu
    3820                3825                3830

acg ggg  gtg ccc aac ggc atg  ctc cag tcg ccc cag  gtg gaa ccc       21646
Thr Gly  Val Pro Asn Gly Met  Leu Gln Ser Pro Gln  Val Glu Pro
    3835                3840                3845

acc ctg  cgc cgc aac cag gag  gcg ctc tac cgc ttc  ctc aac gcc       21691
Thr Leu  Arg Arg Asn Gln Glu  Ala Leu Tyr Arg Phe  Leu Asn Ala
    3850                3855                3860

cac tcc  gcc tac ttt cgc tcc  cac cgc gcg cgc atc  gag aag gcc       21736
His Ser  Ala Tyr Phe Arg Ser  His Arg Ala Arg Ile  Glu Lys Ala
    3865                3870                3875

acc gcc  ttc gac cgc atg aat  caa gac atg taaaccgtgt gtgtgtatgt      21786
Thr Ala  Phe Asp Arg Met Asn  Gln Asp Met
    3880                3885

taaaatgtct ttaataaaca gcactttcat gttacacatg catctgagat gatttattta    21846

gaaatcgaaa gggttctgcc gggtctcggc atggcccgcg ggcagggaca cgttgcggaa    21906

ctggtacttg gccagccact tgaactcggg gatcagcagt ttcggcagcg gggtgtcggg    21966

gaaggagtcg gtccacagct tccgcgtcag ttgcagggcg cccagcaggt cgggcgcgga    22026

gatcttgaaa tcgcagttgg gacccgcgtt ctgcgcgcga gagttgcggt acacggggtt    22086

gcagcactgg aacaccatca gggccgggtg cttcacgctc gccagcaccg tcgcgtcggt    22146

gatgccctcc acgtccagat cctcggcgtt ggccatcccg aaggggtca tcttgcaggt     22206

ctgccgcccc atgctgggca cgcagccggg cttgtggttg caatcgcagt gcaggggat     22266

cagcatcatc tgggcctgct cggagctcat gcccgggtac atggccttca tgaaagcctc    22326

cagctggcgg aaggcctgct gcgccttgcc gccctcggtg aagaagaccc cgcaggactt    22386

gctagagaac tggttggtag cgcagcccgc gtcgtgcacg cagcagcgcg cgtcgttgtt    22446

ggccagctgc accacgctgc gcccccagcg gttctgggtg atcttggccc ggtcggggtt    22506

ctccttcagc gcgcgctgcc cgttctcgct cgccacatcc atctcgatcg tgtgctcctt    22566

ctggatcatc acggtcccgt gcaggcaccg cagcttgccc tcggcctcgg tgcagccgtg    22626

cagccacagc gcgcagccgg tgctctccca gttcttgtgg gcgatctggg agtgcgagtg    22686

cacgaagccc tgcaggaagc ggcccatcat cgcggtcagg gtcttgttgc tggtgaaggt    22746
```

```
cagcgggatg ccgcggtgct cctcgttcac atacaggtgg cagatgcggc ggtacacctc    22806

gccctgctcg ggcatcagct ggaaggcgga cttcaggtcg ctctccacgc ggtaccggtc    22866

catcagcagc gtcatcactt ccatgccctt ctcccaggcc gagacgatcg gcaggctcag    22926

ggggttcttc accgccattg tcatcttagt cgccgccgcc gaggtcaggg ggtcgttctc    22986

gtccagggtc tcaaacactc gcttgccgtc cttctcgatg atgcgcacgg ggggaaagct    23046

gaagcccacg gccgccagct cctcctcggc ctgcctttcg tcctcgctgt cctggctgat    23106

gtcttgcaaa ggcacatgct tggtcttgcg gggtttcttt ttgggcggca gaggcggcgg    23166

cgatgtgctg ggcgagcgcg agttctcgct caccacgact atttcttctc cttggccgtc    23226

gtccgagacc acgcggcggt aggcatgcct cttctggggc agaggcggag gcgacgggct    23286

ctcgcggttc ggcgggcggc tggcagagcc ccttccgcgt tcgggggtgc gctcctggcg    23346

gcgctgctct gactgacttc ctccgcggcc ggccattgtg ttctcctagg gagcaacaac    23406

aagc atg gag  act cag cca tcg tcg  cca aca tcg cca tct  gcc ccc      23452
     Met Glu  Thr Gln Pro Ser Ser  Pro Thr Ser Pro Ser  Ala Pro
         3890                 3895                 3900

gcc tcc acc  gcc gac gag aac cag  cag cag aat gaa agc  tta acc      23497
Ala Ser Thr  Ala Asp Glu Asn Gln  Gln Gln Asn Glu Ser  Leu Thr
        3905                 3910                 3915

gcc ccg ccg  ccc agc ccc acc tcc  gac gcc gcg gcc cca  gac atg      23542
Ala Pro Pro  Pro Ser Pro Thr Ser  Asp Ala Ala Ala Pro  Asp Met
        3920                 3925                 3930

caa gag atg  gag gaa tcc atc gag  att gac ctg ggc tac  gtg acg      23587
Gln Glu Met  Glu Glu Ser Ile Glu  Ile Asp Leu Gly Tyr  Val Thr
        3935                 3940                 3945

ccc gcg gag  cac gag gag gag ctg  gca gcg cgc ttt tca  gcc ccg      23632
Pro Ala Glu  His Glu Glu Glu Leu  Ala Ala Arg Phe Ser  Ala Pro
        3950                 3955                 3960

gaa gag aac  cac caa gag cag cca  gag cag gaa gca gag  aac gag      23677
Glu Glu Asn  His Gln Glu Gln Pro  Glu Gln Glu Ala Glu  Asn Glu
        3965                 3970                 3975

cag aac cag  gct ggg cac gag cat  ggc gac tac ctg agc  ggg gca      23722
Gln Asn Gln  Ala Gly His Glu His  Gly Asp Tyr Leu Ser  Gly Ala
        3980                 3985                 3990

gag gac gtg  ctc atc aag cat ctg  gcc cgc caa tgc atc  atc gtc      23767
Glu Asp Val  Leu Ile Lys His Leu  Ala Arg Gln Cys Ile  Ile Val
        3995                 4000                 4005

aag gac gcg  ctg ctc gac cgc gcc  gag gtg ccc ctc agc  gtg gcg      23812
Lys Asp Ala  Leu Leu Asp Arg Ala  Glu Val Pro Leu Ser  Val Ala
        4010                 4015                 4020

gag ctc agc  cgc gcc tac gag cgc  aac ctc ttc tcg ccg  cgc gtg      23857
Glu Leu Ser  Arg Ala Tyr Glu Arg  Asn Leu Phe Ser Pro  Arg Val
        4025                 4030                 4035

ccc ccc aag  cgc cag ccc aac ggc  acc tgt gag ccc aac  ccg cgc      23902
Pro Pro Lys  Arg Gln Pro Asn Gly  Thr Cys Glu Pro Asn  Pro Arg
        4040                 4045                 4050

ctc aac ttc  tac ccg gtc ttc gcg  gtg ccc gag gcc ctg  gcc acc      23947
Leu Asn Phe  Tyr Pro Val Phe Ala  Val Pro Glu Ala Leu  Ala Thr
```

```
        4055                4060                4065

tac cac ctc  ttt ttc aag aac caa  aga atc ccc gtc tcc  tgc cgc       23992
Tyr His Leu  Phe Phe Lys Asn Gln  Arg Ile Pro Val Ser  Cys Arg
        4070                4075                4080

gcc aac cgc  acc cgc gcc gac gcc  ctt ttc aac ctg ggc  ccc ggc       24037
Ala Asn Arg  Thr Arg Ala Asp Ala  Leu Phe Asn Leu Gly  Pro Gly
        4085                4090                4095

gcc cgc cta  cct gat atc gcc tcc  ttg gaa gag gtt ccc  aag atc       24082
Ala Arg Leu  Pro Asp Ile Ala Ser  Leu Glu Glu Val Pro  Lys Ile
        4100                4105                4110

ttc gag ggt  ctg ggc agc gac gag  act cgg gcc gcg aac  gct ctg       24127
Phe Glu Gly  Leu Gly Ser Asp Glu  Thr Arg Ala Ala Asn  Ala Leu
        4115                4120                4125

caa gga gaa  gga gga gag cat gag  cac cac agc gcc ctg  gtc gag       24172
Gln Gly Glu  Gly Gly Glu His Glu  His His Ser Ala Leu  Val Glu
        4130                4135                4140

ttg gaa ggc  gac aac gcg cgg ctg  gcg gtg ctc aaa cgc  acg gtc       24217
Leu Glu Gly  Asp Asn Ala Arg Leu  Ala Val Leu Lys Arg  Thr Val
        4145                4150                4155

gag ctg acc  cat ttc gcc tac ccg  gct ctg aac ctg ccc  ccc aaa       24262
Glu Leu Thr  His Phe Ala Tyr Pro  Ala Leu Asn Leu Pro  Pro Lys
        4160                4165                4170

gtc atg agc  gcc gtc atg gac cag  gtg ctc atc aag cgc  gcg tcg       24307
Val Met Ser  Ala Val Met Asp Gln  Val Leu Ile Lys Arg  Ala Ser
        4175                4180                4185

ccc atc tcc  gag gac gag ggc atg  caa gac ccc gag agc  acc gag       24352
Pro Ile Ser  Glu Asp Glu Gly Met  Gln Asp Pro Glu Ser  Thr Glu
        4190                4195                4200

gat ggc aag  ccc gtg gtc agc gac  gag cag ctg gcc cgg  tgg ctg       24397
Asp Gly Lys  Pro Val Val Ser Asp  Glu Gln Leu Ala Arg  Trp Leu
        4205                4210                4215

ggt cct aat  gct agt ccc cag agt  ttg gaa gag cgg cgc  aag ctc       24442
Gly Pro Asn  Ala Ser Pro Gln Ser  Leu Glu Glu Arg Arg  Lys Leu
        4220                4225                4230

atg atg gcc  gtg gtc ctg gtg acc  gtg gag ctg gag tgc  ctg cgc       24487
Met Met Ala  Val Val Leu Val Thr  Val Glu Leu Glu Cys  Leu Arg
        4235                4240                4245

cgc ttc ttc  gcc gac gcg gag acc  ctg cgc aag gtc gag  gag aac       24532
Arg Phe Phe  Ala Asp Ala Glu Thr  Leu Arg Lys Val Glu  Glu Asn
        4250                4255                4260

ctg cac tac  ctc ttc agg cac ggg  ttc gtg cgc cag gcc  tgc aag       24577
Leu His Tyr  Leu Phe Arg His Gly  Phe Val Arg Gln Ala  Cys Lys
        4265                4270                4275

atc tcc aac  gtg gag ctg acc aac  ctg gtc tcc tac atg  ggc atc       24622
Ile Ser Asn  Val Glu Leu Thr Asn  Leu Val Ser Tyr Met  Gly Ile
        4280                4285                4290

ttg cac gag  aac cgt ctg ggg cag  aac gtg ctg cac acc  acc ctg       24667
Leu His Glu  Asn Arg Leu Gly Gln  Asn Val Leu His Thr  Thr Leu
        4295                4300                4305

cgc ggg gag  gcc cgc cgc gac tac  atc cgc gac tgc gtc  tac ctc       24712
Arg Gly Glu  Ala Arg Arg Asp Tyr  Ile Arg Asp Cys Val  Tyr Leu
        4310                4315                4320
```

```
tac ctc tgc  cac acc tgg cag acg  ggc atg ggc gtg tgg  cag cag       24757
Tyr Leu Cys  His Thr Trp Gln Thr  Gly Met Gly Val Trp  Gln Gln
        4325                 4330                 4335

tgc ctg gag  gag cag aac ctg aaa  gag ctc tgc aag ctc  ctg cag       24802
Cys Leu Glu  Glu Gln Asn Leu Lys  Glu Leu Cys Lys Leu  Leu Gln
        4340                 4345                 4350

aag aac ctc  aag ggt ctg tgg acc  ggg ttc gac gag cgg  acc acc       24847
Lys Asn Leu  Lys Gly Leu Trp Thr  Gly Phe Asp Glu Arg  Thr Thr
        4355                 4360                 4365

gcc tcg gat  ctg gcc gac ctc atc  ttc ccc gag cgc ctc  agg ctg       24892
Ala Ser Asp  Leu Ala Asp Leu Ile  Phe Pro Glu Arg Leu  Arg Leu
        4370                 4375                 4380

acg ctg cgc  aac ggc ctg ccc gac  ttt atg agc caa agc  atg ttg       24937
Thr Leu Arg  Asn Gly Leu Pro Asp  Phe Met Ser Gln Ser  Met Leu
        4385                 4390                 4395

caa aac ttt  cgc tct ttc atc ctc  gaa cgc tcc gga atc  ctg ccc       24982
Gln Asn Phe  Arg Ser Phe Ile Leu  Glu Arg Ser Gly Ile  Leu Pro
        4400                 4405                 4410

gcc acc tgc  tcc gcg ctg ccc tcg  gac ttc gtg ccg ctg  acc ttc       25027
Ala Thr Cys  Ser Ala Leu Pro Ser  Asp Phe Val Pro Leu  Thr Phe
        4415                 4420                 4425

cgc gag tgc  ccc ccg ccg ctg tgg  agc cac tgc tac ctg  ctg cgc       25072
Arg Glu Cys  Pro Pro Pro Leu Trp  Ser His Cys Tyr Leu  Leu Arg
        4430                 4435                 4440

ctg gcc aac  tac ctg gcc tac cac  tcg gac gtg atc gag  gac gtc       25117
Leu Ala Asn  Tyr Leu Ala Tyr His  Ser Asp Val Ile Glu  Asp Val
        4445                 4450                 4455

agc ggc gag  ggc ctg ctc gag tgc  cac tgc cgc tgc aac  ctc tgc       25162
Ser Gly Glu  Gly Leu Leu Glu Cys  His Cys Arg Cys Asn  Leu Cys
        4460                 4465                 4470

acg ccg cac  cgc tcc ctg gcc tgc  aac ccc cag ctg ctg  agc gag       25207
Thr Pro His  Arg Ser Leu Ala Cys  Asn Pro Gln Leu Leu  Ser Glu
        4475                 4480                 4485

acc cag atc  atc ggc acc ttc gag  ttg caa ggg ccc agc  gat gag       25252
Thr Gln Ile  Ile Gly Thr Phe Glu  Leu Gln Gly Pro Ser  Asp Glu
        4490                 4495                 4500

ggt tcc gcc  gcc aag ggg ggt ctg  aaa ctc acc ccg ggg  ctg tgg       25297
Gly Ser Ala  Ala Lys Gly Gly Leu  Lys Leu Thr Pro Gly  Leu Trp
        4505                 4510                 4515

acc tcg gcc  tac ttg cgc aag ttc  gtg ccc gag gac tac  cat ccc       25342
Thr Ser Ala  Tyr Leu Arg Lys Phe  Val Pro Glu Asp Tyr  His Pro
        4520                 4525                 4530

ttc gag atc  agg ttc tac gag gac  caa tcc cag ccg ccc  aag gcc       25387
Phe Glu Ile  Arg Phe Tyr Glu Asp  Gln Ser Gln Pro Pro  Lys Ala
        4535                 4540                 4545

gag ctg tcg  gcc tgc gtc atc acc  cag ggg gcg atc ctg  gcc caa       25432
Glu Leu Ser  Ala Cys Val Ile Thr  Gln Gly Ala Ile Leu  Ala Gln
        4550                 4555                 4560

ttg caa gcc  atc cag aaa tcc cgc  caa gaa ttc ttg ctg  aaa aag       25477
Leu Gln Ala  Ile Gln Lys Ser Arg  Gln Glu Phe Leu Leu  Lys Lys
        4565                 4570                 4575
```

```
ggc cgc ggg  gtc tac ctc gac ccc  cag acc ggt gag gag  ctc aac       25522
Gly Arg Gly  Val Tyr Leu Asp Pro  Gln Thr Gly Glu Glu  Leu Asn
        4580                 4585                 4590

ccc ggc ttc  ccc cag gat gcc ccg  agg aaa caa gaa gct  gaa agt       25567
Pro Gly Phe  Pro Gln Asp Ala Pro  Arg Lys Gln Glu Ala  Glu Ser
        4595                 4600                 4605

gga gct gcc  gcc cgt gga gga ttt  gga gga aga ctg gga  gaa cag       25612
Gly Ala Ala  Ala Arg Gly Gly Phe  Gly Gly Arg Leu Gly  Glu Gln
        4610                 4615                 4620

cag tca ggc  aga gga gga gga gat  gga gga aga ctg gga  cag cac       25657
Gln Ser Gly  Arg Gly Gly Gly Asp  Gly Gly Arg Leu Gly  Gln His
        4625                 4630                 4635

tca ggc aga  gga gga cag cct gca  aga cag tct gga gga  aga cga       25702
Ser Gly Arg  Gly Gly Gln Pro Ala  Arg Gln Ser Gly Gly  Arg Arg
        4640                 4645                 4650

gga gga ggc  aga ggt gga aga agc  agc cgc cgc cag acc  gtc gtc       25747
Gly Gly Gly  Arg Gly Gly Arg Ser  Ser Arg Arg Gln Thr  Val Val
        4655                 4660                 4665

ctc ggc ggg  gga gaa agc aag cag  cac gga tac cat ctc  cgc tcc       25792
Leu Gly Gly  Gly Glu Ser Lys Gln  His Gly Tyr His Leu  Arg Ser
        4670                 4675                 4680

ggg tcg ggg  tcc cgc tcg gcc cca  cag tagatgggac gagaccgggc          25839
Gly Ser Gly  Ser Arg Ser Ala Pro  Gln
        4685                 4690

gattcccgaa ccccaccacc cagaccggta agaaggagcg gcagggatac aagtcctggc    25899

gggggcacaa aaacgccatc gtctcctgct tgcaggcctg cgggggcaac atctccttca    25959

cccggcgcta cctgctcttc caccgcgggg tgaacttccc ccgcaacatc ttgcattact    26019

accgtcacct ccacagcccc tactacttcc aagaagaggc agcagaaaaa gaccagaaaa    26079

ccagctagaa aatccacagc ggcggcagca ggtggactga ggatcgcggc gaacgagccg    26139

gcgcagaccc gggagctgag gaaccggatc tttcccaccc tctatgccat cttccagcag    26199

agtcgggggc aggagcagga actgaaagtc aagaaccgtt ctctgcgctc gctcacccgc    26259

agttgtctgt atcacaagag cgaagaccaa cttcagcgca ctctcgagga cgccgaggct    26319

ctcttcaaca agtactgcgc gctcactctt aaagagtagc ccgcgcccgc ccacacacgg    26379

aaaaaggcgg gaattacgtc accacctgcg cccttcgccc gaccatc atg agc aaa      26435
                                                  Met Ser Lys

gag  att ccc acg cct tac  atg tgg agc tac cag  ccc cag atg ggc       26480
Glu  Ile Pro Thr Pro Tyr  Met Trp Ser Tyr Gln  Pro Gln Met Gly
4695                 4700                 4705

ctg  gcc gcc ggc gcc gcc  cag gac tac tcc acc  cgc atg aac tgg       26525
Leu  Ala Ala Gly Ala Ala  Gln Asp Tyr Ser Thr  Arg Met Asn Trp
4710                 4715                 4720

ctc  agt gcc ggg ccc gcg  atg atc tca cgg gtg  aat gac atc cgc       26570
Leu  Ser Ala Gly Pro Ala  Met Ile Ser Arg Val  Asn Asp Ile Arg
4725                 4730                 4735

gcc  cgc cga aac cag ata  ctc cta gaa cag tca  gcg atc gcc gcc       26615
Ala  Arg Arg Asn Gln Ile  Leu Leu Glu Gln Ser  Ala Ile Ala Ala
4740                 4745                 4750
```

```
acg  ccc cgc cat cac ctt  aat ccg cgt aat tgg  ccc gcc gcc ctg       26660
Thr  Pro Arg His His Leu  Asn Pro Arg Asn Trp  Pro Ala Ala Leu
4755                 4760                 4765

gtg  tac cag gaa att ccc  cag ccc acg acc gta  cta ctt ccg cga       26705
Val  Tyr Gln Glu Ile Pro  Gln Pro Thr Thr Val  Leu Leu Pro Arg
4770                 4775                 4780

gac  gcc cag gcc gaa gtc  cag ctg act aac tca  ggt gtc cag ctg       26750
Asp  Ala Gln Ala Glu Val  Gln Leu Thr Asn Ser  Gly Val Gln Leu
4785                 4790                 4795

gcc  ggc ggc gcc gcc ctg  tgt cgt cac cgc ccc  gct cag ggt ata       26795
Ala  Gly Gly Ala Ala Leu  Cys Arg His Arg Pro  Ala Gln Gly Ile
4800                 4805                 4810

aag  cgg ctg gtg atc cga  ggc aga ggc aca cag  ctc aac gac gag       26840
Lys  Arg Leu Val Ile Arg  Gly Arg Gly Thr Gln  Leu Asn Asp Glu
4815                 4820                 4825

gtg  gtg agc tct tcg ctg  ggt ctg cga cct gac  gga gtc ttc caa       26885
Val  Val Ser Ser Ser Leu  Gly Leu Arg Pro Asp  Gly Val Phe Gln
4830                 4835                 4840

ctc  gcc gga tcg ggg aga  tct tcc ttc acg cct  cgt cag gcc gtc       26930
Leu  Ala Gly Ser Gly Arg  Ser Ser Phe Thr Pro  Arg Gln Ala Val
4845                 4850                 4855

ctg  act ttg gag agt tcg  tcc tcg cag ccc cgc  tcg ggc ggc atc       26975
Leu  Thr Leu Glu Ser Ser  Ser Ser Gln Pro Arg  Ser Gly Gly Ile
4860                 4865                 4870

ggc  act ctc cag ttc gtg  gag gag ttc act ccc  tcg gtc tac ttc       27020
Gly  Thr Leu Gln Phe Val  Glu Glu Phe Thr Pro  Ser Val Tyr Phe
4875                 4880                 4885

aac  ccc ttc tcc ggc tcc  ccc ggc cac tac ccg  gac gag ttc atc       27065
Asn  Pro Phe Ser Gly Ser  Pro Gly His Tyr Pro  Asp Glu Phe Ile
4890                 4895                 4900

ccg  aac ttc gac gcc atc  agc gag tcg gtg gac  ggc tac gat tga       27110
Pro  Asn Phe Asp Ala Ile  Ser Glu Ser Val Asp  Gly Tyr Asp
4905                 4910                 4915

atg tcc  cat ggt ggc gca gct  gac cta gct cgg ctt  cga cac ctg       27155
Met Ser  His Gly Gly Ala Ala  Asp Leu Ala Arg Leu  Arg His Leu
    4920                 4925                 4930

gac cac  tgc cgc cgc ttc cgc  tgc ttc gct cgg gat  ctc gcc gag       27200
Asp His  Cys Arg Arg Phe Arg  Cys Phe Ala Arg Asp  Leu Ala Glu
    4935                 4940                 4945

ttt gcc  tac ttt gag ctg ccc  gag gag cac cct cag  ggc cca gcc       27245
Phe Ala  Tyr Phe Glu Leu Pro  Glu Glu His Pro Gln  Gly Pro Ala
    4950                 4955                 4960

cac gga  gtg cgg atc atc gtc  gaa ggg ggc ctc gac  tcc cac ctg       27290
His Gly  Val Arg Ile Ile Val  Glu Gly Gly Leu Asp  Ser His Leu
    4965                 4970                 4975

ctt cgg  atc ttc agc cag cga  ccg atc ctg gtc gag  cgc gaa caa       27335
Leu Arg  Ile Phe Ser Gln Arg  Pro Ile Leu Val Glu  Arg Glu Gln
    4980                 4985                 4990

gga cag  acc cgt ctg acc ctg  tac tgc atc tgc aac  cac ccc ggc       27380
Gly Gln  Thr Arg Leu Thr Leu  Tyr Cys Ile Cys Asn  His Pro Gly
    4995                 5000                 5005
```

```
ctg cat  gaa agt ctt tgt tgt  ctg ctg tgt act gag  tat aat aaa       27425
Leu His  Glu Ser Leu Cys Cys  Leu Leu Cys Thr Glu  Tyr Asn Lys
    5010                5015                5020

agc tgagatcagc gactactccg gactcgattg tggtgttcct gctatcaacc          27478
Ser


ggtccctgtt cttcaccggg aacgaaaccg agctccagct ccagtgtaag ccccacaaga   27538

agtacctcac ctggctgttc cagggctccc ccatcgccgt tgtcaaccac tgcgacaacg   27598

acggagtcct gctgagcggc cctgccaacc ttacttttc cacccgcaga agcaagctcc    27658

agctcttcca acccttcctc cccgggacct atcagtgcgt ctcgggaccc tgccatcaca   27718

ccttccacct gatcccgaat accacagcgc cgctccccgc tactaacaac caaactaacc   27778

tccaccaacg ccaccgtcgc gacctttcct ctgaatctaa taccactacc ggaggtgagc   27838

tccgaggtcg accaacctct gggatttact acggcccctg ggaggtggtg gggttaatag   27898

cgctaggcct agttgtgggt gggcttttgg ctctctgcta cctatacctc ccttgctgtt   27958

cgtacttagt ggtgctgtgt tgctggttta agaa atg  ggg cag atc acc cta       28010
                                      Met  Gly Gln Ile Thr Leu
                                      5025                5030

gtg agc tgc ggt gtg  ctg gtg gcg gtg ctt  tcg att gtg gga ctg       28055
Val Ser Cys Gly Val  Leu Val Ala Val Leu  Ser Ile Val Gly Leu
                5035                5040                5045

ggc ggc gcg gct gta  gtg aag gag gag aag  gcc gat ccc tgc ttg       28100
Gly Gly Ala Ala Val  Val Lys Glu Glu Lys  Ala Asp Pro Cys Leu
                5050                5055                5060

cat ttc aat ccc gac  aaa tgc cag ctg agt  ttt cag ccc gat ggc       28145
His Phe Asn Pro Asp  Lys Cys Gln Leu Ser  Phe Gln Pro Asp Gly
                5065                5070                5075

aat cgg tgc gcg gtg  ctg atc aag tgc gga  tgg gaa tgc gag aac       28190
Asn Arg Cys Ala Val  Leu Ile Lys Cys Gly  Trp Glu Cys Glu Asn
                5080                5085                5090

gtg aga atc gag tac  aat aac aag act cgg  aac aat act ctc gcg       28235
Val Arg Ile Glu Tyr  Asn Asn Lys Thr Arg  Asn Asn Thr Leu Ala
                5095                5100                5105

tcc gtg tgg cag ccc  ggg gac ccc gag tgg  tac acc gtc tct gtc       28280
Ser Val Trp Gln Pro  Gly Asp Pro Glu Trp  Tyr Thr Val Ser Val
                5110                5115                5120

ccc ggt gct gac ggc  tcc ccg cgc acc gtg  aat aat act ttc att       28325
Pro Gly Ala Asp Gly  Ser Pro Arg Thr Val  Asn Asn Thr Phe Ile
                5125                5130                5135

ttt gcg cac atg tgc  aac acg gtc atg tgg  atg agc aag cag tac       28370
Phe Ala His Met Cys  Asn Thr Val Met Trp  Met Ser Lys Gln Tyr
                5140                5145                5150

gat atg tgg ccc ccc  acg aag gag aac atc  gtg gtc ttc tcc atc       28415
Asp Met Trp Pro Pro  Thr Lys Glu Asn Ile  Val Val Phe Ser Ile
                5155                5160                5165

gct tac agc ctg tgc  acg gcg cta atc acc  gct atc gtg tgc ctg       28460
Ala Tyr Ser Leu Cys  Thr Ala Leu Ile Thr  Ala Ile Val Cys Leu
                5170                5175                5180

agc att cac atg ctc  atc gct att cgc ccc  aga aat aat gcc gag       28505
```

```
Ser Ile His Met Leu  Ile Ala Ile Arg Pro  Arg Asn Asn Ala Glu
                5185                5190                5195

aaa gag aaa cag cca  taacacgttt tttcacacac cttgttttta cagaca atg     28559
Lys Glu Lys Gln Pro                                          Met
                5200

cgt ctg tta aat  ttt tta aac att gtg  ctc agt att gct tat  gcc       28604
Arg Leu Leu Asn  Phe Leu Asn Ile Val  Leu Ser Ile Ala Tyr  Ala
            5205                5210                5215

tct ggt tat gca  aac ata cag aaa acc  ctt tat gta gga tct  gat       28649
Ser Gly Tyr Ala  Asn Ile Gln Lys Thr  Leu Tyr Val Gly Ser  Asp
            5220                5225                5230

ggt aca cta gag  ggt acc caa tca caa  gcc aag gtt gca tgg  tat       28694
Gly Thr Leu Glu  Gly Thr Gln Ser Gln  Ala Lys Val Ala Trp  Tyr
            5235                5240                5245

ttt tat aga acc  aac act gat cca gtt  aaa ctt tgt aag ggt  gaa       28739
Phe Tyr Arg Thr  Asn Thr Asp Pro Val  Lys Leu Cys Lys Gly  Glu
            5250                5255                5260

ttg ccg cgt aca  cat aaa act cca ctt  aca ttt agt tgc agc  aat       28784
Leu Pro Arg Thr  His Lys Thr Pro Leu  Thr Phe Ser Cys Ser  Asn
            5265                5270                5275

aat aat ctt aca  ctt ttt tca att aca  aaa caa tat act ggt  act       28829
Asn Asn Leu Thr  Leu Phe Ser Ile Thr  Lys Gln Tyr Thr Gly  Thr
            5280                5285                5290

tat tac agt aca  aac ttt cat aca gga  caa gat aaa tat tat  act       28874
Tyr Tyr Ser Thr  Asn Phe His Thr Gly  Gln Asp Lys Tyr Tyr  Thr
            5295                5300                5305

gtt aag gta gaa  aat cct acc act cct  aga act acc acc acc  acc       28919
Val Lys Val Glu  Asn Pro Thr Thr Pro  Arg Thr Thr Thr Thr  Thr
            5310                5315                5320

acc act act gca  aag ccc act gtg aaa  act aca act agg acc  acc       28964
Thr Thr Thr Ala  Lys Pro Thr Val Lys  Thr Thr Thr Arg Thr  Thr
            5325                5330                5335

aca act aca gaa  acc acc acc agc aca  aca ctt gct gca act  aca       29009
Thr Thr Thr Glu  Thr Thr Thr Ser Thr  Thr Leu Ala Ala Thr  Thr
            5340                5345                5350

cac aca cac act  aag cta acc tta cag  acc act aat gat ttg  atc       29054
His Thr His Thr  Lys Leu Thr Leu Gln  Thr Thr Asn Asp Leu  Ile
            5355                5360                5365

gcc ctg ctg caa  aag ggg gat aac agc  acc act tcc aat gag  gag       29099
Ala Leu Leu Gln  Lys Gly Asp Asn Ser  Thr Thr Ser Asn Glu  Glu
            5370                5375                5380

ata ccc aaa tcc  atg att ggc att att  gtt gct gta gtg gtg  tgc       29144
Ile Pro Lys Ser  Met Ile Gly Ile Ile  Val Ala Val Val Val  Cys
            5385                5390                5395

atg ttg atc atc  gcc ttg tgc atg gtg  tac tat gcc ttc tgc  tac       29189
Met Leu Ile Ile  Ala Leu Cys Met Val  Tyr Tyr Ala Phe Cys  Tyr
            5400                5405                5410

aga aag cac aga  ctg aac gac aag ctg  gaa cac tta cta agt  gtt       29234
Arg Lys His Arg  Leu Asn Asp Lys Leu  Glu His Leu Leu Ser  Val
            5415                5420                5425

gaa ttt taatttttta gaacc atg aag  atc cta ggc ctt ttt  agt ttt       29282
Glu Phe                  Met Lys  Ile Leu Gly Leu Phe  Ser Phe
```

```
                                5430                5435

tct atc att  acc tct gct ctt tgt  gaa tca gtg gat aga  gat gtt       29327
Ser Ile Ile  Thr Ser Ala Leu Cys  Glu Ser Val Asp Arg  Asp Val
        5440                5445                5450

act att acc  act ggt tct aat tat  aca ctg aaa ggg cca  ccc tca       29372
Thr Ile Thr  Thr Gly Ser Asn Tyr  Thr Leu Lys Gly Pro  Pro Ser
        5455                5460                5465

ggt atg ctt  tcg tgg tat tgc tat  ttt gga act gac act  gat caa       29417
Gly Met Leu  Ser Trp Tyr Cys Tyr  Phe Gly Thr Asp Thr  Asp Gln
        5470                5475                5480

act gaa tta  tgc aat ttt caa aaa  ggc aaa acc tca aac  tct aaa       29462
Thr Glu Leu  Cys Asn Phe Gln Lys  Gly Lys Thr Ser Asn  Ser Lys
        5485                5490                5495

atc tct aat  tat caa tgc aat ggc  act gat ctg ata cta  ctc aat       29507
Ile Ser Asn  Tyr Gln Cys Asn Gly  Thr Asp Leu Ile Leu  Leu Asn
        5500                5505                5510

gtc acg aaa  gca tat ggt ggc agt  tat tat tgc cct gga  caa aac       29552
Val Thr Lys  Ala Tyr Gly Gly Ser  Tyr Tyr Cys Pro Gly  Gln Asn
        5515                5520                5525

act gaa gaa  atg att ttt tac aaa  gtg gaa gtg gtt gat  ccc act       29597
Thr Glu Glu  Met Ile Phe Tyr Lys  Val Glu Val Val Asp  Pro Thr
        5530                5535                5540

aca cca ccc  acc acc aca act att  cat acc aca cac aca  gaa caa       29642
Thr Pro Pro  Thr Thr Thr Thr Ile  His Thr Thr His Thr  Glu Gln
        5545                5550                5555

aca cca gag  gca aca gaa gca gag  ttg gcc ttc cag gtt  cac gga       29687
Thr Pro Glu  Ala Thr Glu Ala Glu  Leu Ala Phe Gln Val  His Gly
        5560                5565                5570

gat tcc ttt  gct gtc aat acc cct  aca ccc gat cag cgg  tgt ccg       29732
Asp Ser Phe  Ala Val Asn Thr Pro  Thr Pro Asp Gln Arg  Cys Pro
        5575                5580                5585

ggg ccg cta  gtc agc ggc att gtc  ggt gtg ctt tcg gga  tta gca       29777
Gly Pro Leu  Val Ser Gly Ile Val  Gly Val Leu Ser Gly  Leu Ala
        5590                5595                5600

gtc ata atc  atc tgc atg ttc att  ttt gct tgc tgc tat  aga agg       29822
Val Ile Ile  Ile Cys Met Phe Ile  Phe Ala Cys Cys Tyr  Arg Arg
        5605                5610                5615

ctt tac cga  caa aaa tca gac cca  ctg ctg aac ctc tat  gtt           29864
Leu Tyr Arg  Gln Lys Ser Asp Pro  Leu Leu Asn Leu Tyr  Val
        5620                5625                5630

taatttttc cagagcc atg aag gca gtt  agc gct cta gtt ttt  tgt tct     29914
                  Met Lys Ala Val  Ser Ala Leu Val Phe  Cys Ser
                           5635                5640

ttg att gac  att gtt ttt aat agt  aaa att acc aaa gtt  agc ttt       29959
Leu Ile Asp  Ile Val Phe Asn Ser  Lys Ile Thr Lys Val  Ser Phe
        5645                5650                5655

att aaa cat  gtt aat gta act gaa  gga gat aac atc aca  cta gca       30004
Ile Lys His  Val Asn Val Thr Glu  Gly Asp Asn Ile Thr  Leu Ala
        5660                5665                5670

ggt gta gaa  ggt gct caa aac acc  acc tgg aca aaa tac  cat cta       30049
Gly Val Glu  Gly Ala Gln Asn Thr  Thr Trp Thr Lys Tyr  His Leu
        5675                5680                5685
```

```
gga tgg aga  gat att tgc acc tgg  aat gta act tat tat  tgc ata       30094
Gly Trp Arg  Asp Ile Cys Thr Trp  Asn Val Thr Tyr Tyr  Cys Ile
        5690                 5695                 5700

gga att aat  ctt acc att gtt aac  gct aac caa tct cag  aat ggg       30139
Gly Ile Asn  Leu Thr Ile Val Asn  Ala Asn Gln Ser Gln  Asn Gly
        5705                 5710                 5715

tta att aaa  gga cag agt gtt agt  gtg acc agt gat ggg  tac tat       30184
Leu Ile Lys  Gly Gln Ser Val Ser  Val Thr Ser Asp Gly  Tyr Tyr
        5720                 5725                 5730

acc cag cat  agt ttt aac tac aac  att act gtc ata cca  ctg cct       30229
Thr Gln His  Ser Phe Asn Tyr Asn  Ile Thr Val Ile Pro  Leu Pro
        5735                 5740                 5745

acg cct agc  cca cct agc act acc  aca cag aca acc aca  tac agt       30274
Thr Pro Ser  Pro Pro Ser Thr Thr  Thr Gln Thr Thr Thr  Tyr Ser
        5750                 5755                 5760

aca tca aat  cag cct acc acc act  aca gca gca gag gtt  gcc agc       30319
Thr Ser Asn  Gln Pro Thr Thr Thr  Thr Ala Ala Glu Val  Ala Ser
        5765                 5770                 5775

tcg tct ggg  gtc cga gtg gca ttt  ttg atg ttg gcc cca  tct agc       30364
Ser Ser Gly  Val Arg Val Ala Phe  Leu Met Leu Ala Pro  Ser Ser
        5780                 5785                 5790

agt ccc act  gct agt acc aat gag  cag act act gaa ttt  ttg tcc       30409
Ser Pro Thr  Ala Ser Thr Asn Glu  Gln Thr Thr Glu Phe  Leu Ser
        5795                 5800                 5805

act gtc gag  agc cac acc aca gct  acc tcc agt gcc ttc  tct agc       30454
Thr Val Glu  Ser His Thr Thr Ala  Thr Ser Ser Ala Phe  Ser Ser
        5810                 5815                 5820

acc gcc aat  ctc tcc tcg ctt tcc  tct aca cca atc agc  ccc gct       30499
Thr Ala Asn  Leu Ser Ser Leu Ser  Ser Thr Pro Ile Ser  Pro Ala
        5825                 5830                 5835

act act cct  agc ccc gct cct ctt  ccc act ccc ctg aag  caa aca       30544
Thr Thr Pro  Ser Pro Ala Pro Leu  Pro Thr Pro Leu Lys  Gln Thr
        5840                 5845                 5850

gac ggc ggc  atg caa tgg cag atc  acc ctg ctc att gtg  atc ggg       30589
Asp Gly Gly  Met Gln Trp Gln Ile  Thr Leu Leu Ile Val  Ile Gly
        5855                 5860                 5865

ttg gtc atc  ctg gcc gtg ttg ctc  tac tac atc ttc tgc  cgc cgc       30634
Leu Val Ile  Leu Ala Val Leu Leu  Tyr Tyr Ile Phe Cys  Arg Arg
        5870                 5875                 5880

att ccc aac  gcg cac cgc aag ccg  gcc tac aag ccc atc  gtt atc       30679
Ile Pro Asn  Ala His Arg Lys Pro  Ala Tyr Lys Pro Ile  Val Ile
        5885                 5890                 5895

ggg cag ccg  gag ccg ctt cag gtg  gaa ggg ggt cta agg  aat ctt       30724
Gly Gln Pro  Glu Pro Leu Gln Val  Glu Gly Gly Leu Arg  Asn Leu
        5900                 5905                 5910

ctc ttc tct  ttt aca gta tgg tgattgaact atgattccta gacaattctt       30775
Leu Phe Ser  Phe Thr Val Trp
        5915

gatcactatt cttatctgcc tcctccaagt ctgtgccacc ctcgctctgg tggccaacgc   30835

cagtccagac tgtattgggc ccttcgcctc ctacgtgctc tttgccttca tcacctgcat   30895
```

```
ctgctgctgt agcatagtct gcctgcttat caccttcttc cagttcattg actggatctt    30955

tgtgcgcatc gcctacctgc gccaccaccc ccagtaccgc gaccagcgag tggcgcagct    31015

gctcaggctc ctctgataag c atg  cgg gct ctg cta ctt  ctc gca ctt ctg    31066
                        Met  Arg Ala Leu Leu Leu  Leu Ala Leu Leu
                        5920                 5925

ctg  tta gtg ctc ccc cgt  ccc gtt gac ccc cgg  ccc ccc act cag      31111
Leu  Leu Val Leu Pro Arg  Pro Val Asp Pro Arg  Pro Pro Thr Gln
5930                 5935                 5940

tcc  ccc gag gag gtc cgc  aaa tgc aaa ttc caa  gaa ccc tgg aaa      31156
Ser  Pro Glu Glu Val Arg  Lys Cys Lys Phe Gln  Glu Pro Trp Lys
5945                 5950                 5955

ttc  ctc aaa tgc tac cgc  caa aaa tca gac atg  cat ccc agc tgg      31201
Phe  Leu Lys Cys Tyr Arg  Gln Lys Ser Asp Met  His Pro Ser Trp
5960                 5965                 5970

atc  atg atc att ggg atc  gtg aac att ctg gcc  tgc acc ctc atc      31246
Ile  Met Ile Ile Gly Ile  Val Asn Ile Leu Ala  Cys Thr Leu Ile
5975                 5980                 5985

tcc  ttt gtg att tac ccc  tgc ttt gac ttt ggt  tgg aac tcg cca      31291
Ser  Phe Val Ile Tyr Pro  Cys Phe Asp Phe Gly  Trp Asn Ser Pro
5990                 5995                 6000

gag  gcg ctc tat ctc ccg  cct gaa cct gac aca  cca cca cag caa      31336
Glu  Ala Leu Tyr Leu Pro  Pro Glu Pro Asp Thr  Pro Pro Gln Gln
6005                 6010                 6015

cct  cag gca cac gca cta  cca cca cca cca cag  cct agg cca caa      31381
Pro  Gln Ala His Ala Leu  Pro Pro Pro Pro Gln  Pro Arg Pro Gln
6020                 6025                 6030

tac  atg ccc ata tta gac  tat gag gcc gag cca  cag cga ccc atg      31426
Tyr  Met Pro Ile Leu Asp  Tyr Glu Ala Glu Pro  Gln Arg Pro Met
6035                 6040                 6045

ctc  ccc gct att agt tac  ttc aat cta acc ggc  gga gat gac          31468
Leu  Pro Ala Ile Ser Tyr  Phe Asn Leu Thr Gly  Gly Asp Asp
6050                 6055                 6060

tgacccactg gccaacaaca acgtcaacga ccttctcctg gacatggacg gccgcgcctc    31528

ggagcagcga ctcgcccaac ttcgcattcg ccagcagcag gagagagccg tcaaggagct    31588

gcaggacggc atagccatcc accagtgcaa gaaaggcatc ttctgcctgg tgaaacaggc    31648

caagatctcc tacgaggtca cccagaccga ccatcgcctc tcctacgagc tcctgcagca    31708

gcgccagaag ttcacctgcc tggtcggagt caaccccatc gtcatcaccc agcagtcggg    31768

cgataccaag gggtgcatcc actgctcctg cgactccccc gactgcgtcc acactctgat    31828

caagaccctc tgcggcctcc gcgacctcct ccccatgaac taatcacccc cttatccagt    31888

gaaataaaga tcatattgat gattaaataa aaaaaataat catttgattt gaaataaaga    31948

tacaatcata ttgatgattt gagtttaata aaaataaaga atcacttact tgaaatctga    32008

taccaggtct ctgtccatgt tttctgccaa caccacttca ctcccctctt cccagctctg    32068

gtactgcagg ccccggcggg ctgcaaactt cctccacacc ctgaagggga tgtcaaattc    32128

ctcctgtccc tcaatcttca ttttatcttc tatcag atg tcc  aaa aag cgc gtc     32182
                                       Met Ser  Lys Lys Arg Val
                                           6065
```

```
cgg  gtg gat gat gac ttc  gac ccc gtc tac ccc  tac gat gca gac       32227
Arg  Val Asp Asp Asp Phe  Asp Pro Val Tyr Pro  Tyr Asp Ala Asp
6070                 6075                 6080

aac  gca ccg acc gtg ccc  ttc atc aac ccc ccc  ttc gtc tct tca       32272
Asn  Ala Pro Thr Val Pro  Phe Ile Asn Pro Pro  Phe Val Ser Ser
6085                 6090                 6095

gat  gga ttc caa gag aag  ccc ctg ggg gtg ctg  tcc ctg cgt ctg       32317
Asp  Gly Phe Gln Glu Lys  Pro Leu Gly Val Leu  Ser Leu Arg Leu
6100                 6105                 6110

gcc  gat ccc gtc acc acc  aag aac ggg gaa atc  acc ctc aag ctg       32362
Ala  Asp Pro Val Thr Thr  Lys Asn Gly Glu Ile  Thr Leu Lys Leu
6115                 6120                 6125

gga  gat ggg gtg gac ctc  gac gac tcg gga aaa  ctc atc tcc aac       32407
Gly  Asp Gly Val Asp Leu  Asp Asp Ser Gly Lys  Leu Ile Ser Asn
6130                 6135                 6140

acg  gcc acc aag gcc gcc  gcc cct ctc agt ttt  tcc aac aac acc       32452
Thr  Ala Thr Lys Ala Ala  Ala Pro Leu Ser Phe  Ser Asn Asn Thr
6145                 6150                 6155

att  tcc ctt aac atg gat  acc cct ctt tac aac  aac aat gga aag       32497
Ile  Ser Leu Asn Met Asp  Thr Pro Leu Tyr Asn  Asn Asn Gly Lys
6160                 6165                 6170

cta  ggt atg aag gta acc  gca cca tta aag ata  tta gac aca gat       32542
Leu  Gly Met Lys Val Thr  Ala Pro Leu Lys Ile  Leu Asp Thr Asp
6175                 6180                 6185

cta  cta aaa aca ctt gtt  gtt gct tat ggg cag  gga tta gga aca       32587
Leu  Leu Lys Thr Leu Val  Val Ala Tyr Gly Gln  Gly Leu Gly Thr
6190                 6195                 6200

aac  acc aat ggt gct ctt  gtt gcc caa cta gca  tac cca ctt gtt       32632
Asn  Thr Asn Gly Ala Leu  Val Ala Gln Leu Ala  Tyr Pro Leu Val
6205                 6210                 6215

ttt  aat acc gct agc aaa  att gcc ctt aat tta  ggc aat gga cca       32677
Phe  Asn Thr Ala Ser Lys  Ile Ala Leu Asn Leu  Gly Asn Gly Pro
6220                 6225                 6230

tta  aaa gtg gat gca aat  aga ctg aac att aat  tgc aaa aga ggt       32722
Leu  Lys Val Asp Ala Asn  Arg Leu Asn Ile Asn  Cys Lys Arg Gly
6235                 6240                 6245

atc  tat gtc act acc aca  aaa gat gca ctg gag  att aat atc agt       32767
Ile  Tyr Val Thr Thr Thr  Lys Asp Ala Leu Glu  Ile Asn Ile Ser
6250                 6255                 6260

tgg  gca aat gct atg aca  ttt ata gga aat gcc  att ggt gtc aat       32812
Trp  Ala Asn Ala Met Thr  Phe Ile Gly Asn Ala  Ile Gly Val Asn
6265                 6270                 6275

att  gac aca aaa aaa ggc  cta cag ttc ggc act  tca agc act gaa       32857
Ile  Asp Thr Lys Lys Gly  Leu Gln Phe Gly Thr  Ser Ser Thr Glu
6280                 6285                 6290

aca  gat gtt aaa aat gct  ttt cca ctc caa gta  aaa ctt gga gct       32902
Thr  Asp Val Lys Asn Ala  Phe Pro Leu Gln Val  Lys Leu Gly Ala
6295                 6300                 6305

ggt  ctt aca ttt gac agc  aca ggt gcc att gtt  gct tgg aac aaa       32947
Gly  Leu Thr Phe Asp Ser  Thr Gly Ala Ile Val  Ala Trp Asn Lys
6310                 6315                 6320
```

```
gaa  gat gac aaa ctt aca  ctg tgg acc aca gcc  gat cca tct cca       32992
Glu  Asp Asp Lys Leu Thr  Leu Trp Thr Thr Ala  Asp Pro Ser Pro
6325                 6330                 6335

aac  tgt cac ata tat tct  gca aag gat gct aag  ctt aca ctc tgc       33037
Asn  Cys His Ile Tyr Ser  Ala Lys Asp Ala Lys  Leu Thr Leu Cys
6340                 6345                 6350

ttg  aca aag tgt ggt agt  cag ata ctg ggc act  gtt tct ctc ata       33082
Leu  Thr Lys Cys Gly Ser  Gln Ile Leu Gly Thr  Val Ser Leu Ile
6355                 6360                 6365

gct  gtt gat act ggt agc  tta aat cca ata aca  gga caa gta acc       33127
Ala  Val Asp Thr Gly Ser  Leu Asn Pro Ile Thr  Gly Gln Val Thr
6370                 6375                 6380

act  gct ctt gtt tca ctt  aaa ttc gat gcc aat  gga gtt ttg caa       33172
Thr  Ala Leu Val Ser Leu  Lys Phe Asp Ala Asn  Gly Val Leu Gln
6385                 6390                 6395

acc  agt tca aca ttg gac  aaa gaa tat tgg aat  ttt aga aaa gga       33217
Thr  Ser Ser Thr Leu Asp  Lys Glu Tyr Trp Asn  Phe Arg Lys Gly
6400                 6405                 6410

gat  gtg aca cct gct gag  cca tat act aat gct  ata ggt ttt atg       33262
Asp  Val Thr Pro Ala Glu  Pro Tyr Thr Asn Ala  Ile Gly Phe Met
6415                 6420                 6425

ccc  aat ata aag gca tat  ccg aaa aac aca aat  tca gct gca aaa       33307
Pro  Asn Ile Lys Ala Tyr  Pro Lys Asn Thr Asn  Ser Ala Ala Lys
6430                 6435                 6440

agt  cac att gtg gga aaa  gta tac cta cat ggg  gaa gta agc aag       33352
Ser  His Ile Val Gly Lys  Val Tyr Leu His Gly  Glu Val Ser Lys
6445                 6450                 6455

cca  cta gac ttg ata att  aca ttt aat gaa acc  agt aat gaa acc       33397
Pro  Leu Asp Leu Ile Ile  Thr Phe Asn Glu Thr  Ser Asn Glu Thr
6460                 6465                 6470

tgt  acc tat tgc att aac  ttt cag tgg cag tgg  gga act gac aaa       33442
Cys  Thr Tyr Cys Ile Asn  Phe Gln Trp Gln Trp  Gly Thr Asp Lys
6475                 6480                 6485

tat  aaa aat gaa acg ctt  gct gtc agt tca ttc  acc ttt tcc tac       33487
Tyr  Lys Asn Glu Thr Leu  Ala Val Ser Ser Phe  Thr Phe Ser Tyr
6490                 6495                 6500

att  gcc caa gaa taaacccgcc ctgcatgtca accccattgt tcccaccact        33539
Ile  Ala Gln Glu
6505

atggaaaact ctgaagcaga aaaataaagt tcaagtgttt tattgattca acagttttca    33599

cagaattcga gtagttattt ttcctccacc ctcccaggac atggaataca ccaccctctc    33659

cccccgcaca gccttgaaca tctgaatgtc attggtgatg gacatgcttt tggtctccac    33719

attccacaca gtttcagagc gagccagtct cgggtcggtc agggagatga aaccctccgg    33779

gcactcccgc atctgcacct caaagttcag tagctgaggg ctgtcctcgg tggtcgggat    33839

cacggttatc tggaagaagc agaagagcgg cggtgggaat catagtccgc gaacgggatc    33899

ggccggtggt gtcgcatcag gccccgcagc agtcgctgtc gccgccgctc cgtcaaactg    33959

ctgctcaggg ggtccgggtc cagggactcc ctcagcatga tgcccacggc cctcagcatc    34019

agtcgcctgg tgcggcgggc gcagcagcgc atgcggatct cgctcaggtc gctgcagtac    34079
```

gtgcaacaca ggaccaccag gttgttcaac agtccatagt tcaacacgct ccagccgaaa 34139
ctcatcgcgg gaaggatgct acccacgtgg ccgtcgtacc agatcctcag gtaaatcaag 34199
tggcgctccc tccagaacac gctgcccaca tacatgatct ccttgggcat gtggtggttc 34259
accacctccc ggtaccacat caccctctgg ttgaacatgc agccccggat gatcctgcgg 34319
aaccacaggg ccagcaccgc cccgcccgcc atgcagcgaa gagaccccgg gtcccggcaa 34379
tggcaatgga ggacccaccg ctcgtacccg tggatcatct gggagctgaa caagtctatg 34439
ttggcacagc acaggcacac gctcatgcat ctcttcagca ctctcagctc ctcgggggtc 34499
aaaaccatat cccagggcac ggggaactct tgcaggacag cgaaccccgc agaacagggc 34559
aatcctcgca cataacttac attgtgcatg gacagggtat cgcaatcagg cagcaccggg 34619
tgatcctcca ccagagaagc gcgggtctcg gtttcctcac agcgtggtaa gggggccggc 34679
cgatacgggt gatggcggga cgcggctgat cgtgttctcg accgtgtcat gatgcagttg 34739
ctttcggaca ttttcgtact tgctgtagca gaacctggtc cgggcgctgc acaccgatcg 34799
ccggcggcgg tctcggcgct tggaacgctc ggtgttgaaa ttgtaaaaca gccactctct 34859
cagaccgtgc agcagatcta gggcctcagg agtgatgaag atcccatcat gcctgatggc 34919
tctgatcaca tcgaccaccg tggaatgggc cagacccagc cagatgatgc aattttgttg 34979
ggtttcggtg acggcggggg agggaagaac aggaagaacc atgattaact tttaatccaa 35039
acggtctcgg agcacttcaa aatgaaggtc gcggagatgg cacctctcgc ccccgctgtg 35099
ttggtggaaa ataacagcca ggtcaaaggt gatacggttc tcgagatgtt ccacggtggc 35159
ttccagcaaa gcctccacgc gcacatccag aaacaagaca atagcgaaag cgggagggtt 35219
ctctaattcc tcaatcatca tgttacactc ctgcaccatc cccagataat tttcattttt 35279
ccagccttga atgattcgaa ctagttcctg aggtaaatcc aagccagcca tgataaagag 35339
ctcgcgcaga gcgccctcca ccggcattct taagcacacc ctcataattc caagagattc 35399
tgctcctggt tcacctgcag cagattaaca aggggaatat caaaatctct gccgcgatct 35459
ctaagctcct ccctcagcaa taactgcaag tactctttca tatcttctcc gaaattttta 35519
gccatagggc cgccaggaat gagagcaggg caagccacat tacagataaa gcgaagtcct 35579
ccccagtgag cattgccaaa tgtaagattg aaataagcat gctggctaga cccggtgata 35639
tcttccagat aactggacag aaaatcaggc aagcaatttt taagaaaatc aacaaaagaa 35699
aagtcgtcca ggtgcaagtt tagagcctca ggaacaacga tggaataagt gcaaggagtg 35759
cgttccagca tggttagtgt ttttttggtg atctgtagaa caaaaaataa acatgcaata 35819
ttaaaccatg ctagcctggc gaacaggtgg gtaaatcact ctttccagca ccaggcaggc 35879
tacggggtct ccggcgcgac cctcgtagaa gctgtcgcca tgattgaaaa gcatcaccga 35939
aagactttcc cggtggccgg catggatgat tcgcgaagac gcgtacactc cgggaacatt 35999
ggcatccgtg agtgaaaaaa atcgccccaa gaagccccga ggcactacaa tgctcaacct 36059
taattccagc agagcgaccc catgcggatg aagcacaaaa ttggtaggtg cgtaaaaaat 36119

gtaattactc ccctcctgca caggcagcaa agcccccgct ccctccagaa acacatacaa 36179

agcctcagcg tccatagctt accgagcacg gcaggcgcaa gattcagaga aaaggctgag 36239

ctctaacctg actgcccgct cctgagctca atatatagcc ctaacctaca ctgacgtaaa 36299

ggccaaagtc taaaaatacc cgccaaaatg acacacacgc ccagcacacg cccagaaacc 36359

ggtgacacac tcaaaaaaat acgtgcgctt cctcaaacgc ccaaaccggc gtcatttccg 36419

ggttcccacg ctacgtcacc gctcagcgac tttcaaattt cgtcgaccgt taaacacgtc 36479

actcgccccg cccctaacgg tcgccgctcc cacagccaat caccttcctc catccccaaa 36539

ttcaaacggc tcatttgcat attaacgcgc accaaaagtt tgaggtatat tatwkakrww 36599

gatcatttaa atatgcggtg tgaaataccg cacagatgcg taaggagaaa ataccgcatc 36659

aggcgctctt ccgcttcctc gctcactgac tcgctgcgct cggtcgttcg gctgcggcga 36719

gcggtatcag ctcactcaaa ggcggtaata cggttatcca cagaatcagg ggataacgca 36779

ggaaagaaca tgtgagcaaa aggccagcaa aaggccagga accgtaaaaa ggccgcgttg 36839

ctggcgtttt tccataggct ccgccccccct gacgagcatc acaaaaatcg acgctcaagt 36899

cagaggtggc gaaacccgac aggactataa agataccagg cgtttccccc tggaagctcc 36959

ctcgtgcgct ctcctgttcc gaccctgccg cttaccggat acctgtccgc ctttctccct 37019

tcgggaagcg tggcgctttc tcatagctca cgctgtaggt atctcagttc ggtgtaggtc 37079

gttcgctcca agctgggctg tgtgcacgaa ccccccgttc agcccgaccg ctgcgcctta 37139

tccggtaact atcgtcttga gtccaacccg gtaagacacg acttatcgcc actggcagca 37199

gccactggta acaggattag cagagcgagg tatgtaggcg gtgctacaga gttcttgaag 37259

tggtggccta actacggcta cactagaagg acagtatttg gtatctgcgc tctgctgaag 37319

ccagttacct tcggaaaaag agttggtagc tcttgatccg gcaaacaaac caccgctggt 37379

agcggtggtt tttttgtttg caagcagcag attacgcgca gaaaaaaagg atctcaagaa 37439

gatcctttga tcttttctac ggggtctgac gctcagtgga acgaaaactc acgttaaggg 37499

attttggtca tgagattatc aaaaaggatc ttcacctaga tccttttaaa ttaaaaatga 37559

agttttaaat caatctaaag tatatatgag taaacttggt ctgacagtta ccaatgctta 37619

atcagtgagg cacctatctc agcgatctgt ctatttcgtt catccatagt tgcctgactc 37679

cccgtcgtgt agataactac gatacgggag ggcttaccat ctggccccag tgctgcaatg 37739

ataccgcgag acccacgctc accggctcca gatttatcag caataaacca gccagccgga 37799

agggccgagc gcagaagtgg tcctgcaact ttatccgcct ccatccagtc tattaattgt 37859

tgccgggaag ctagagtaag tagttcgcca gttaatagtt tgcgcaacgt tgttgccatt 37919

gctgcaggca tcgtggtgtc acgctcgtcg tttggtatgg cttcattcag ctccggttcc 37979

caacgatcaa ggcgagttac atgatccccc atgttgtgca aaaaagcggt tagctccttc 38039

ggtcctccga tcgttgtcag aagtaagttg gccgcagtgt tatcactcat ggttatggca 38099

gcactgcata attctcttac tgtcatgcca tccgtaagat gcttttctgt gactggtgag 38159

tactcaacca agtcattctg agaatagtgt atgcggcgac cgagttgctc ttgcccggcg 38219

tcaacacggg ataataccgc gccacatagc agaactttaa aagtgctcat cattggaaaa 38279

cgttcttcgg ggcgaaaact ctcaaggatc ttaccgctgt tgagatccag ttcgatgtaa 38339

cccactcgtg cacccaactg atcttcagca tcttttactt tcaccagcgt ttctgggtga 38399

gcaaaaacag gaaggcaaaa tgccgcaaaa aagggaataa gggcgacacg gaaatgttga 38459

atactcatac tcttcctttt tcaatattat tgaagcattt atcagggtta ttgtctcatg 38519

agcggataca tatttgaatg tatttagaaa aataaacaaa taggggttcc gcgcacattt 38579

ccccgaaaag tgccacctga cgtctaagaa accattatta tcatgacatt aacctataaa 38639

aataggcgta tcacgaggcc ctttcgtctt caag 38673

<210> 152
<211> 363
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 152

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

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
20 25 30

His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
35 40 45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
50 55 60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65 70 75 80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
100 105 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val
115 120 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His
130 135 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
145 150 155 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser

```
                165                 170                 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
            180                 185                 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
        195                 200                 205

Ala Ala Asp Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala
    210                 215                 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225                 230                 235                 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
                245                 250                 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
            260                 265                 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
        275                 280                 285

Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
    290                 295                 300

Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr
305                 310                 315                 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
                325                 330                 335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
            340                 345                 350

Val Gly Gly Pro Gly His Lys Ala Arg Val Leu
        355                 360


<210>  153
<211>  392
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  153

Met His Pro Val Leu Arg Gln Met Arg Pro His Pro Pro Pro Gln Pro
1               5                   10                  15

Pro Leu Pro Gln Gln Gln Gln Gln Pro Ala Leu Leu Pro Pro Pro Gln
            20                  25                  30
```

```
Gln Gln Gln Gln Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala
        35                  40                  45

Gly Val Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg
    50                  55                  60

Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys Arg
65                  70                  75                  80

Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp Arg
                85                  90                  95

Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ser Arg Phe His Ala Gly
            100                 105                 110

Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp Glu
        115                 120                 125

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

Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys Glu
145                 150                 155                 160

Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu Ile
                165                 170                 175

Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu Leu
            180                 185                 190

Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu
        195                 200                 205

Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Thr Phe Arg Glu Ala
    210                 215                 220

Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu Val
225                 230                 235                 240

Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu Ser
                245                 250                 255

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

Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu
        275                 280                 285

Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu Thr
    290                 295                 300

Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg Ala
```

305 310 315 320

Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met His
325 330 335

Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser Tyr
340 345 350

Phe Asp Met Gly Ala Asp Leu Arg Trp Gln Pro Ser Arg Arg Ala Leu
355 360 365

Glu Ala Ala Gly Gly Val Pro Tyr Val Glu Glu Val Asp Asp Glu Glu
370 375 380

Glu Glu Gly Glu Tyr Leu Glu Asp
385 390

<210> 154
<211> 586
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 154

Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu
1 5 10 15

Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala
20 25 30

Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg
35 40 45

Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val
50 55 60

Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn
65 70 75 80

Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val
85 90 95

Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val
100 105 110

Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser
115 120 125

Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala
130 135 140

```
Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln
145                 150                 155                 160

Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu
                165                 170                 175

Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln
            180                 185                 190

Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys
        195                 200                 205

Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala
    210                 215                 220

Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu
225                 230                 235                 240

Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu
                245                 250                 255

Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val
            260                 265                 270

Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly
        275                 280                 285

Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr
    290                 295                 300

Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu
305                 310                 315                 320

Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met
                325                 330                 335

Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn
            340                 345                 350

Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu
        355                 360                 365

Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr
    370                 375                 380

Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr
385                 390                 395                 400

Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp
                405                 410                 415

Val Asp Ser Ser Val Phe Ser Pro Arg Pro Thr Thr Thr Val Trp Lys
```

420 425 430

Lys Glu Gly Gly Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly Arg Ala
435 440 445

Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro Ser Leu
450 455 460

Pro Phe Ser Leu Asn Ser Val Arg Ser Ser Asp Leu Gly Arg Leu Thr
465 470 475 480

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

Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu Ser Leu
500 505 510

Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala His Glu His Arg Asp
515 520 525

Glu Pro Arg Ala Ser Ser Ser Thr Gly Ala Arg Arg Arg Gln Arg His
530 535 540

Asp Arg Gln Arg Gly Leu Val Trp Asp Asp Glu Asp Ser Ala Asp Asp
545 550 555 560

Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe Ala
565 570 575

His Leu Arg Pro Arg Ile Gly Arg Leu Met
580 585

<210> 155
<211> 539
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 155

Met Met Arg Arg Val Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1 5 10 15

Val Met Gln Gln Ala Val Ala Ala Ala Met Gln Pro Pro Leu Glu Ala
20 25 30

Pro Tyr Val Pro Pro Arg Tyr Leu Ala Pro Thr Glu Gly Arg Asn Ser
35 40 45

Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg Leu Tyr
50 55 60

```
Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr Gln Asn
65                  70                  75                  80

Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp Phe Thr
                85                  90                  95

Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg Ser Arg
            100                 105                 110

Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro Asn Val
        115                 120                 125

Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met Val Ser
    130                 135                 140

Arg Lys Thr Pro Asn Gly Val Thr Val Thr Asp Gly Ser Gln Asp Glu
145                 150                 155                 160

Leu Thr Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly Asn Phe Ser
                165                 170                 175

Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile Asp Asn Tyr
            180                 185                 190

Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp Ile Gly Val
        195                 200                 205

Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro Val Thr Glu
    210                 215                 220

Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His Pro Asp Ile
225                 230                 235                 240

Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser Arg Leu Ser
                245                 250                 255

Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu Gly Phe Gln
            260                 265                 270

Ile Leu Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala Leu Leu Asp
        275                 280                 285

Val Glu Ala Tyr Glu Lys Ser Lys Glu Glu Ala Ala Ala Ala Ala Thr
    290                 295                 300

Ala Ala Val Ala Thr Ala Ala Thr Thr Asp Ala Asp Ala Ala Thr Thr
305                 310                 315                 320

Thr Arg Gly Asp Thr Phe Ala Thr Gln Ala Glu Glu Ala Ala Ala Leu
                325                 330                 335

Ala Ala Thr Asp Asp Ser Glu Ser Lys Ile Val Ile Lys Pro Val Glu
```

```
            340                 345                 350

Lys Asp Ser Lys Asp Arg Ser Tyr Asn Val Leu Ser Asp Gly Lys Asn
        355                 360                 365

Thr Ala Tyr Arg Ser Trp Tyr Leu Ala Tyr Asn Tyr Gly Asp Pro Glu
    370                 375                 380

Lys Gly Val Arg Ser Trp Thr Leu Leu Thr Thr Ser Asp Val Thr Cys
385                 390                 395                 400

Gly Val Glu Gln Val Tyr Trp Ser Leu Pro Asp Met Met Gln Asp Pro
                405                 410                 415

Val Thr Phe Arg Ser Thr Arg Gln Val Ser Asn Tyr Pro Val Val Gly
            420                 425                 430

Ala Glu Leu Leu Pro Val Tyr Ser Lys Ser Phe Phe Asn Glu Gln Ala
        435                 440                 445

Val Tyr Ser Gln Gln Leu Arg Ala Phe Thr Ser Leu Thr His Val Phe
    450                 455                 460

Asn Arg Phe Pro Glu Asn Gln Ile Leu Val Arg Pro Pro Ala Pro Thr
465                 470                 475                 480

Ile Thr Thr Val Ser Glu Asn Val Pro Ala Leu Thr Asp His Gly Thr
                485                 490                 495

Leu Pro Leu Arg Ser Ser Ile Arg Gly Val Gln Arg Val Thr Val Thr
            500                 505                 510

Asp Ala Arg Arg Arg Thr Cys Pro Tyr Val Tyr Lys Ala Leu Gly Val
        515                 520                 525

Val Ala Pro Arg Val Leu Ser Ser Arg Thr Phe
    530                 535


<210>  156
<211>  194
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  156

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1               5                   10                  15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
            20                  25                  30
```

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
35 40 45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
50 55 60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Ala Ser Thr
65 70 75 80

Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
85 90 95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
100 105 110

Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
115 120 125

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ser
130 135 140

Ser Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala
145 150 155 160

Ala Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val
165 170 175

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

Arg Thr

<210> 157
<211> 346
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 157

Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1 5 10 15

Glu Ile Tyr Gly Pro Ala Ala Ala Val Lys Glu Glu Arg Lys Pro Arg
20 25 30

Lys Leu Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Glu Asp Asp Gly
35 40 45

Leu Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln Trp
50 55 60

```
Arg Gly Arg Lys Val Lys Pro Val Leu Arg Pro Gly Thr Thr Val Val
65                  70                  75                  80

Phe Thr Pro Gly Glu Arg Ser Gly Ser Ala Ser Lys Arg Ser Tyr Asp
                85                  90                  95

Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu Gln Ala Ala Glu Arg Leu
            100                 105                 110

Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Pro Ala Pro Leu Lys Glu
        115                 120                 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
    130                 135                 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Ser Ala Ala Pro Arg Arg
145                 150                 155                 160

Gly Phe Lys Arg Glu Gly Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu
                165                 170                 175

Met Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu His Met Lys
            180                 185                 190

Val Asp Pro Glu Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln
        195                 200                 205

Val Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr
    210                 215                 220

Glu Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr
225                 230                 235                 240

Met Glu Val Gln Thr Asp Pro Trp Met Pro Ala Pro Ala Ser Thr Thr
                245                 250                 255

Thr Arg Arg Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn
            260                 265                 270

Tyr Ala Leu His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg Gly Thr
        275                 280                 285

Arg Phe Tyr Arg Gly Tyr Ser Ser Arg Arg Lys Thr Thr Thr Arg Arg
    290                 295                 300

Arg Arg Arg Arg Thr Arg Arg Ser Thr Thr Ala Thr Ser Ala Ala Ala
305                 310                 315                 320

Leu Val Arg Arg Val Tyr Arg Ser Gly Arg Glu Pro Leu Thr Leu Pro
                325                 330                 335
```

Arg Ala Arg Tyr His Pro Ser Ile Ala Ile
340 345

<210> 158
<211> 77
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 158

Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1 5 10 15

Arg Lys Pro Arg Arg Arg Arg Leu Thr Gly Asn Gly Leu Arg Arg His
20 25 30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
35 40 45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
50 55 60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65 70 75

<210> 159
<211> 239
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 159

Met Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg
1 5 10 15

Pro Phe Met Gly Thr Trp Ser Asp Ile Gly Asn Ser Gln Leu Asn Gly
20 25 30

Gly Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly
35 40 45

Ser Thr Leu Lys Thr Tyr Gly Asn Lys Ala Trp Asn Ser Ser Thr Gly
50 55 60

Gln Ala Leu Arg Glu Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val
65 70 75 80

Val Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn
85 90 95

Gln Ala Val Gln Lys Gln Ile Asn Ser Arg Leu Asp Ala Val Pro Pro

100 105 110

Ala Gly Ser Val Glu Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu
115 120 125

Asp Lys Arg Gly Asp Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu
130 135 140

Leu Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu
145 150 155 160

Gly Leu Pro Thr Thr Arg Pro Ile Ala Pro Leu Ala Thr Gly Val Leu
165 170 175

Lys Pro Glu Ser Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Pro Thr
180 185 190

Ser Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Arg Ala
195 200 205

Arg Pro Gly Ser Arg Pro Gln Ala Asn Trp Gln Ser Thr Leu Asn Ser
210 215 220

Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg Arg Arg Cys Tyr
225 230 235

<210> 160
<211> 944
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 160

Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1 5 10 15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
20 25 30

Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
35 40 45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
50 55 60

Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65 70 75 80

Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
85 90 95

```
Ala Ser Thr Tyr Phe Asp Ile Arg Gly Val Leu Asp Arg Gly Pro Ser
            100                 105                 110

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
        115                 120                 125

Ala Pro Asn Ser Ser Gln Trp Glu Gln Thr Glu Asn Gly Gly Gly Gln
    130                 135                 140

Ala Thr Thr Lys Thr His Thr Tyr Gly Val Ala Pro Met Gly Gly Thr
145                 150                 155                 160

Asn Ile Thr Val Asp Gly Leu Gln Ile Gly Thr Asp Ala Thr Ala Asp
                165                 170                 175

Thr Glu Lys Pro Ile Tyr Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln
            180                 185                 190

Ile Gly Glu Glu Asn Trp Gln Glu Thr Glu Ser Phe Tyr Gly Gly Arg
        195                 200                 205

Ala Leu Lys Lys Asp Thr Asn Met Lys Pro Cys Tyr Gly Ser Phe Ala
    210                 215                 220

Arg Pro Thr Asn Glu Lys Gly Gly Gln Ala Lys Leu Lys Val Gly Ala
225                 230                 235                 240

Asp Gly Leu Pro Thr Lys Glu Phe Asp Ile Asp Leu Ala Phe Phe Asp
                245                 250                 255

Thr Pro Gly Gly Thr Val Thr Gly Gly Thr Glu Glu Tyr Lys Ala Asp
            260                 265                 270

Ile Val Met Tyr Thr Glu Asn Thr Tyr Leu Glu Thr Pro Asp Thr His
        275                 280                 285

Val Val Tyr Lys Pro Gly Lys Asp Asn Thr Ser Ser Lys Ile Asn Leu
    290                 295                 300

Val Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Gly Phe Arg Asp
305                 310                 315                 320

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
                325                 330                 335

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
            340                 345                 350

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Leu Gly Asp
        355                 360                 365

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp
```

```
    370                 375                 380

Pro Asp Val Arg Ile Ile Glu Asn His Gly Val Glu Asp Glu Leu Pro
385                 390                 395                 400

Asn Tyr Cys Phe Pro Leu Asp Gly Ser Gly Thr Asn Ala Ala Tyr Gln
                405                 410                 415

Gly Val Lys Val Lys Asn Gly Gln Asp Gly Asp Val Glu Ser Glu Trp
            420                 425                 430

Glu Lys Asp Asp Thr Val Ala Ala Arg Asn Gln Leu Cys Lys Gly Asn
        435                 440                 445

Ile Phe Ala Met Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe
    450                 455                 460

Leu Tyr Ser Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr
465                 470                 475                 480

Pro Ala Asn Ile Thr Leu Pro Thr Asn Thr Asn Thr Tyr Asp Tyr Met
                485                 490                 495

Asn Gly Arg Val Val Pro Pro Ser Leu Val Asp Ala Tyr Ile Asn Ile
            500                 505                 510

Gly Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn Pro Phe Asn
        515                 520                 525

His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn
    530                 535                 540

Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala
545                 550                 555                 560

Ile Lys Ser Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn
                565                 570                 575

Phe Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp
            580                 585                 590

Leu Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr
        595                 600                 605

Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala
    610                 615                 620

Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser
625                 630                 635                 640

Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro
                645                 650                 655
```

```
Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe
            660                 665                 670

Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp
        675                 680                 685

Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe
    690                 695                 700

Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser
705                 710                 715                 720

Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu
                725                 730                 735

Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn
            740                 745                 750

Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile
        755                 760                 765

Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr
    770                 775                 780

Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu
785                 790                 795                 800

Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn
                805                 810                 815

Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln
            820                 825                 830

Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val
        835                 840                 845

Thr Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg
    850                 855                 860

Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu
865                 870                 875                 880

Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn
                885                 890                 895

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

Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile
        915                 920                 925
```

Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
    930   935   940

<210> 161
<211> 208
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 161

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

Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys Arg
            20   25   30

Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val Asn
        35   40   45

Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala Trp
    50   55   60

Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe Ser
65   70   75   80

Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu Leu
                85   90   95

Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu Lys
            100   105   110

Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu Phe
        115   120   125

Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro Met
    130   135   140

Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly Met
145   150   155   160

Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu Ala
                165   170   175

Leu Tyr Arg Phe Leu Asn Ala His Ser Ala Tyr Phe Arg Ser His Arg
            180   185   190

Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Gln Asp Met
        195   200   205

<210> 162
<211> 803

<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 162

Met Glu Thr Gln Pro Ser Ser Pro Thr Ser Pro Ser Ala Pro Ala Ser
1 5 10 15

Thr Ala Asp Glu Asn Gln Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro
20 25 30

Pro Ser Pro Thr Ser Asp Ala Ala Ala Pro Asp Met Gln Glu Met Glu
35 40 45

Glu Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His Glu
50 55 60

Glu Glu Leu Ala Ala Arg Phe Ser Ala Pro Glu Glu Asn His Gln Glu
65 70 75 80

Gln Pro Glu Gln Glu Ala Glu Asn Glu Gln Asn Gln Ala Gly His Glu
85 90 95

His Gly Asp Tyr Leu Ser Gly Ala Glu Asp Val Leu Ile Lys His Leu
100 105 110

Ala Arg Gln Cys Ile Ile Val Lys Asp Ala Leu Leu Asp Arg Ala Glu
115 120 125

Val Pro Leu Ser Val Ala Glu Leu Ser Arg Ala Tyr Glu Arg Asn Leu
130 135 140

Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr Cys Glu
145 150 155 160

Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro Glu Ala
165 170 175

Leu Ala Thr Tyr His Leu Phe Phe Lys Asn Gln Arg Ile Pro Val Ser
180 185 190

Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Phe Asn Leu Gly Pro
195 200 205

Gly Ala Arg Leu Pro Asp Ile Ala Ser Leu Glu Glu Val Pro Lys Ile
210 215 220

Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala Leu Gln
225 230 235 240

Gly Glu Gly Gly Glu His Glu His His Ser Ala Leu Val Glu Leu Glu

```
                245                 250                 255

Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu Leu Thr
            260                 265                 270

His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met Ser Ala
        275                 280                 285

Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Ile Ser Glu Asp
    290                 295                 300

Glu Gly Met Gln Asp Pro Glu Ser Thr Glu Asp Gly Lys Pro Val Val
305                 310                 315                 320

Ser Asp Glu Gln Leu Ala Arg Trp Leu Gly Pro Asn Ala Ser Pro Gln
                325                 330                 335

Ser Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr
            340                 345                 350

Val Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu
        355                 360                 365

Arg Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val
    370                 375                 380

Arg Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser
385                 390                 395                 400

Tyr Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His
                405                 410                 415

Thr Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val
            420                 425                 430

Tyr Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln
        435                 440                 445

Gln Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln
    450                 455                 460

Lys Asn Leu Lys Gly Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala
465                 470                 475                 480

Ser Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu
                485                 490                 495

Arg Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe
            500                 505                 510

Arg Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser
        515                 520                 525
```

```
Ala Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro
    530                 535                 540

Pro Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala
545                 550                 555                 560

Tyr His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu
                565                 570                 575

Cys His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys
            580                 585                 590

Asn Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu
        595                 600                 605

Gln Gly Pro Ser Asp Glu Gly Ser Ala Ala Lys Gly Gly Leu Lys Leu
    610                 615                 620

Thr Pro Gly Leu Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu
625                 630                 635                 640

Asp Tyr His Pro Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro
                645                 650                 655

Pro Lys Ala Glu Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu
            660                 665                 670

Ala Gln Leu Gln Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys
        675                 680                 685

Lys Gly Arg Gly Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn
    690                 695                 700

Pro Gly Phe Pro Gln Asp Ala Pro Arg Lys Gln Glu Ala Glu Ser Gly
705                 710                 715                 720

Ala Ala Ala Arg Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Gln Ser
                725                 730                 735

Gly Arg Gly Gly Gly Asp Gly Gly Arg Leu Gly Gln His Ser Gly Arg
            740                 745                 750

Gly Gly Gln Pro Ala Arg Gln Ser Gly Gly Arg Arg Gly Gly Gly Arg
        755                 760                 765

Gly Gly Arg Ser Ser Arg Arg Gln Thr Val Val Leu Gly Gly Gly Glu
    770                 775                 780

Ser Lys Gln His Gly Tyr His Leu Arg Ser Gly Ser Gly Ser Arg Ser
785                 790                 795                 800
```

Ala Pro Gln

<210> 163
<211> 227
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 163

Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1 5 10 15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
20 25 30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala Arg Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Ile Ala Ala Thr
50 55 60

Pro Arg His His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
100 105 110

Ala Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
115 120 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
130 135 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Leu Ala Gly Ser Gly Arg Ser
145 150 155 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
165 170 175

Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
180 185 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
195 200 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
210 215 220

Gly Tyr Asp
225

<210> 164
<211> 106
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 164

Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1 5 10 15

His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Ala
20 25 30

Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
35 40 45

Arg Ile Ile Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
50 55 60

Ser Gln Arg Pro Ile Leu Val Glu Arg Glu Gln Gly Gln Thr Arg Leu
65 70 75 80

Thr Leu Tyr Cys Ile Cys Asn His Pro Gly Leu His Glu Ser Leu Cys
85 90 95

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
100 105

<210> 165
<211> 176
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 165

Met Gly Gln Ile Thr Leu Val Ser Cys Gly Val Leu Val Ala Val Leu
1 5 10 15

Ser Ile Val Gly Leu Gly Gly Ala Ala Val Val Lys Glu Glu Lys Ala
20 25 30

Asp Pro Cys Leu His Phe Asn Pro Asp Lys Cys Gln Leu Ser Phe Gln
35 40 45

Pro Asp Gly Asn Arg Cys Ala Val Leu Ile Lys Cys Gly Trp Glu Cys
50 55 60

```
Glu Asn Val Arg Ile Glu Tyr Asn Asn Lys Thr Arg Asn Asn Thr Leu
65                  70                  75                  80

Ala Ser Val Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
                85                  90                  95

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

Ala His Met Cys Asn Thr Val Met Trp Met Ser Lys Gln Tyr Asp Met
        115                 120                 125

Trp Pro Pro Thr Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
    130                 135                 140

Leu Cys Thr Ala Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145                 150                 155                 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
                165                 170                 175
```

<210> 166
<211> 228
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 166

```
Met Arg Leu Leu Asn Phe Leu Asn Ile Val Leu Ser Ile Ala Tyr Ala
1               5                   10                  15

Ser Gly Tyr Ala Asn Ile Gln Lys Thr Leu Tyr Val Gly Ser Asp Gly
            20                  25                  30

Thr Leu Glu Gly Thr Gln Ser Gln Ala Lys Val Ala Trp Tyr Phe Tyr
        35                  40                  45

Arg Thr Asn Thr Asp Pro Val Lys Leu Cys Lys Gly Glu Leu Pro Arg
    50                  55                  60

Thr His Lys Thr Pro Leu Thr Phe Ser Cys Ser Asn Asn Asn Leu Thr
65                  70                  75                  80

Leu Phe Ser Ile Thr Lys Gln Tyr Thr Gly Thr Tyr Tyr Ser Thr Asn
                85                  90                  95

Phe His Thr Gly Gln Asp Lys Tyr Tyr Thr Val Lys Val Glu Asn Pro
            100                 105                 110

Thr Thr Pro Arg Thr Thr Thr Thr Thr Thr Thr Thr Ala Lys Pro Thr
        115                 120                 125
```

Val Lys Thr Thr Thr Arg Thr Thr Thr Thr Thr Glu Thr Thr Thr Ser
130 135 140

Thr Thr Leu Ala Ala Thr Thr His Thr His Thr Lys Leu Thr Leu Gln
145 150 155 160

Thr Thr Asn Asp Leu Ile Ala Leu Leu Gln Lys Gly Asp Asn Ser Thr
165 170 175

Thr Ser Asn Glu Glu Ile Pro Lys Ser Met Ile Gly Ile Ile Val Ala
180 185 190

Val Val Val Cys Met Leu Ile Ile Ala Leu Cys Met Val Tyr Tyr Ala
195 200 205

Phe Cys Tyr Arg Lys His Arg Leu Asn Asp Lys Leu Glu His Leu Leu
210 215 220

Ser Val Glu Phe
225

<210> 167
<211> 203
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 167

Met Lys Ile Leu Gly Leu Phe Ser Phe Ser Ile Ile Thr Ser Ala Leu
1 5 10 15

Cys Glu Ser Val Asp Arg Asp Val Thr Ile Thr Thr Gly Ser Asn Tyr
20 25 30

Thr Leu Lys Gly Pro Pro Ser Gly Met Leu Ser Trp Tyr Cys Tyr Phe
35 40 45

Gly Thr Asp Thr Asp Gln Thr Glu Leu Cys Asn Phe Gln Lys Gly Lys
50 55 60

Thr Ser Asn Ser Lys Ile Ser Asn Tyr Gln Cys Asn Gly Thr Asp Leu
65 70 75 80

Ile Leu Leu Asn Val Thr Lys Ala Tyr Gly Gly Ser Tyr Tyr Cys Pro
85 90 95

Gly Gln Asn Thr Glu Glu Met Ile Phe Tyr Lys Val Glu Val Val Asp
100 105 110

Pro Thr Thr Pro Pro Thr Thr Thr Thr Ile His Thr Thr His Thr Glu

115 120 125

Gln Thr Pro Glu Ala Thr Glu Ala Glu Leu Ala Phe Gln Val His Gly
130 135 140

Asp Ser Phe Ala Val Asn Thr Pro Thr Pro Asp Gln Arg Cys Pro Gly
145 150 155 160

Pro Leu Val Ser Gly Ile Val Gly Val Leu Ser Gly Leu Ala Val Ile
165 170 175

Ile Ile Cys Met Phe Ile Phe Ala Cys Cys Tyr Arg Arg Leu Tyr Arg
180 185 190

Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
195 200

<210> 168
<211> 288
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 168

Met Lys Ala Val Ser Ala Leu Val Phe Cys Ser Leu Ile Asp Ile Val
1 5 10 15

Phe Asn Ser Lys Ile Thr Lys Val Ser Phe Ile Lys His Val Asn Val
20 25 30

Thr Glu Gly Asp Asn Ile Thr Leu Ala Gly Val Glu Gly Ala Gln Asn
35 40 45

Thr Thr Trp Thr Lys Tyr His Leu Gly Trp Arg Asp Ile Cys Thr Trp
50 55 60

Asn Val Thr Tyr Tyr Cys Ile Gly Ile Asn Leu Thr Ile Val Asn Ala
65 70 75 80

Asn Gln Ser Gln Asn Gly Leu Ile Lys Gly Gln Ser Val Ser Val Thr
85 90 95

Ser Asp Gly Tyr Tyr Thr Gln His Ser Phe Asn Tyr Asn Ile Thr Val
100 105 110

Ile Pro Leu Pro Thr Pro Ser Pro Pro Ser Thr Thr Thr Gln Thr Thr
115 120 125

Thr Tyr Ser Thr Ser Asn Gln Pro Thr Thr Thr Thr Ala Ala Glu Val
130 135 140

```
Ala Ser Ser Ser Gly Val Arg Val Ala Phe Leu Met Leu Ala Pro Ser
145                 150                 155                 160

Ser Ser Pro Thr Ala Ser Thr Asn Glu Gln Thr Thr Glu Phe Leu Ser
                165                 170                 175

Thr Val Glu Ser His Thr Thr Ala Thr Ser Ser Ala Phe Ser Ser Thr
            180                 185                 190

Ala Asn Leu Ser Ser Leu Ser Ser Thr Pro Ile Ser Pro Ala Thr Thr
        195                 200                 205

Pro Ser Pro Ala Pro Leu Pro Thr Pro Leu Lys Gln Thr Asp Gly Gly
    210                 215                 220

Met Gln Trp Gln Ile Thr Leu Leu Ile Val Ile Gly Leu Val Ile Leu
225                 230                 235                 240

Ala Val Leu Leu Tyr Tyr Ile Phe Cys Arg Arg Ile Pro Asn Ala His
                245                 250                 255

Arg Lys Pro Ala Tyr Lys Pro Ile Val Ile Gly Gln Pro Glu Pro Leu
            260                 265                 270

Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser Phe Thr Val Trp
        275                 280                 285
```

<210> 169
<211> 144
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 169

```
Met Arg Ala Leu Leu Leu Leu Ala Leu Leu Leu Leu Val Leu Pro Arg
1               5                   10                  15

Pro Val Asp Pro Arg Pro Pro Thr Gln Ser Pro Glu Glu Val Arg Lys
            20                  25                  30

Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Lys Cys Tyr Arg Gln Lys
        35                  40                  45

Ser Asp Met His Pro Ser Trp Ile Met Ile Ile Gly Ile Val Asn Ile
    50                  55                  60

Leu Ala Cys Thr Leu Ile Ser Phe Val Ile Tyr Pro Cys Phe Asp Phe
65                  70                  75                  80

Gly Trp Asn Ser Pro Glu Ala Leu Tyr Leu Pro Pro Glu Pro Asp Thr
                85                  90                  95
```

```
Pro Pro Gln Gln Pro Gln Ala His Ala Leu Pro Pro Pro Pro Gln Pro
            100                 105                 110

Arg Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala Glu Pro Gln Arg
        115                 120                 125

Pro Met Leu Pro Ala Ile Ser Tyr Phe Asn Leu Thr Gly Gly Asp Asp
    130                 135                 140
```

<210> 170
<211> 445
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 170

```
Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
1               5                   10                  15

Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
            20                  25                  30

Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
        35                  40                  45

Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
    50                  55                  60

Lys Leu Gly Asp Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser
65                  70                  75                  80

Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
                85                  90                  95

Ile Ser Leu Asn Met Asp Thr Pro Leu Tyr Asn Asn Asn Gly Lys Leu
            100                 105                 110

Gly Met Lys Val Thr Ala Pro Leu Lys Ile Leu Asp Thr Asp Leu Leu
        115                 120                 125

Lys Thr Leu Val Val Ala Tyr Gly Gln Gly Leu Gly Thr Asn Thr Asn
    130                 135                 140

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

Ser Lys Ile Ala Leu Asn Leu Gly Asn Gly Pro Leu Lys Val Asp Ala
                165                 170                 175

Asn Arg Leu Asn Ile Asn Cys Lys Arg Gly Ile Tyr Val Thr Thr Thr
            180                 185                 190
```

```
Lys Asp Ala Leu Glu Ile Asn Ile Ser Trp Ala Asn Ala Met Thr Phe
        195                 200                 205

Ile Gly Asn Ala Ile Gly Val Asn Ile Asp Thr Lys Lys Gly Leu Gln
    210                 215                 220

Phe Gly Thr Ser Ser Thr Glu Thr Asp Val Lys Asn Ala Phe Pro Leu
225                 230                 235                 240

Gln Val Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile
                245                 250                 255

Val Ala Trp Asn Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala
            260                 265                 270

Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Ala Lys Asp Ala Lys Leu
        275                 280                 285

Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser
    290                 295                 300

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

Thr Thr Ala Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Val Leu Gln
                325                 330                 335

Thr Ser Ser Thr Leu Asp Lys Glu Tyr Trp Asn Phe Arg Lys Gly Asp
            340                 345                 350

Val Thr Pro Ala Glu Pro Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn
        355                 360                 365

Ile Lys Ala Tyr Pro Lys Asn Thr Asn Ser Ala Ala Lys Ser His Ile
    370                 375                 380

Val Gly Lys Val Tyr Leu His Gly Glu Val Ser Lys Pro Leu Asp Leu
385                 390                 395                 400

Ile Ile Thr Phe Asn Glu Thr Ser Asn Glu Thr Cys Thr Tyr Cys Ile
                405                 410                 415

Asn Phe Gln Trp Gln Trp Gly Thr Asp Lys Tyr Lys Asn Glu Thr Leu
            420                 425                 430

Ala Val Ser Ser Phe Thr Phe Ser Tyr Ile Ala Gln Glu
        435                 440                 445
```

<210> 171
<211> 31920
<212> DNA

<213> Artificial Sequence

<220>
<223> Simian adenovirus A1331 clone

<220>
<221> CDS
<222> (25539)..(26084)
<223> 22K

<220>
<221> CDS
<222> (27385)..(28008)
<223> E3\CR1-alpha

<220>
<221> CDS
<222> (31464)..(31868)
<223> E3\14.7K

<400> 171
aattatttaa atccwwymtm wataatatac ctcaaacttt tggtgcgcgt taatatgcaa 60

atgagccgtt tgaatttggg gatggaggaa ggtgattggc tgtgggagcg gcgaccgtta 120

ggggcggggc gggtgacgtt ttgatgacgt ggccatgagg cggagccggt ttgcaagttc 180

tcgtgggaaa agtgacgtca aacgaggtgt ggtttgaaca cggaaatact caattttccc 240

gcgctctctg acaggaaatg aggtgtttct gggcggatgc aagtgaaaac gggccatttt 300

cgcgcgaaaa ctgaatgagg aagtgaaaat ctgagtaatt ccgcgtttat ggcagggagg 360

agtatttgcc gagggccgag tagactttga ccgattacgt gggggtttcg attaccgtat 420

ttttcaccta aatttccgcg tacggtgtca aagtccggtg tttttacgta actataacgg 480

tcctaaggta gcgaaagctc agatctggat ctcccgatcc cctatggcga ctctcagtac 540

aatctgctct gatgccgcat agttaagcca gtatctgctc cctgcttgtg tgttggaggt 600

cgctgagtag tgcgcgagca aaatttaagc tacaacaagg caaggcttga ccgacaattg 660

catgaagaat ctgcttaggg ttaggcgttt tgcgctgctt cgcgatgtac gggccagata 720

tacgcgttga cattgattat tgactagtta ttaatagtaa tcaattacgg ggtcattagt 780

tcatagccca tatatggagt tccgcgttac ataacttacg gtaaatggcc cgcctggctg 840

accgcccaac gacccccgcc cattgacgtc aataatgacg tatgttccca tagtaacgcc 900

aatagggact ttccattgac gtcaatgggt ggactattta cggtaaactg cccacttggc 960

agtacatcaa gtgtatcata tgccaagtac gccccctatt gacgtcaatg acggtaaatg 1020

gcccgcctgg cattatgccc agtacatgac cttatgggac tttcctactt ggcagtacat 1080

ctacgtatta gtcatcgcta ttaccatggt gatgcggttt tggcagtaca tcaatgggcg 1140

tggatagcgg tttgactcac ggggatttcc aagtctccac cccattgacg tcaatgggag 1200

tttgttttgg caccaaaatc aacgggactt tccaaaatgt cgtaacaact ccgccccatt 1260

gacgcaaatg ggcggtaggc gtgtacggtg ggaggtctat ataagcagag ctcgtttagt 1320

gaaccgtcag atcgcctgga gacgccatcc acgctgtttt gacctccata gaagacaccg 1380

ggaccgatcc agcctccgcg ggcgcgcgtc gacagagaga tgggtgcgag agcgtcagta 1440

ttaagcgggg gagaattaga tcgatgggaa aaaattcggt taaggccagg gggaaagaag 1500
aagtacaagc taaagcacat cgtatgggca agcagggagc tagaacgatt cgcagttaat 1560
cctggcctgt tagaaacatc agaaggctgt agacaaatac tgggacagct acaaccatcc 1620
cttcagacag gatcagagga gcttcgatca ctatacaaca cagtagcaac cctctattgt 1680
gtgcaccagc ggatcgagat caaggacacc aaggaagctt tagacaagat agaggaagag 1740
caaaacaagt ccaagaagaa ggcccagcag gcagcagctg acacaggaca cagcaatcag 1800
gtcagccaaa attaccctat agtgcagaac atccaggggc aaatggtaca tcaggccata 1860
tcacctagaa ctttaaatgc atgggtaaaa gtagtagaag agaaggcttt cagcccagaa 1920
gtgataccca tgttttcagc attatcagaa ggagccaccc cacaggacct gaacacgatg 1980
ttgaacaccg tgggggggaca tcaagcagcc atgcaaatgt taaaagagac catcaatgag 2040
gaagctgcag attgggatag agtgcatcca gtgcatgcag ggcctattgc accaggccag 2100
atgagagaac caaggggaag tgacatagca ggaactacta gtacccttca ggaacaaata 2160
ggatggatga caaataatcc acctatccca gtaggagaga tctacaagag gtggataatc 2220
ctgggattga acaagatcgt gaggatgtat agccctacca gcattctgga cataagacaa 2280
ggaccaaagg aacccttag agactatgta gaccggttct ataaaactct aagagctgag 2340
caagcttcac aggaggtaaa aaattggatg acagaaacct tgttggtcca aaatgcgaac 2400
ccagattgta agaccatcct gaaggctctc ggcccagcgg ctacactaga agaaatgatg 2460
acagcatgtc agggagtagg aggacccggc cataaggcaa gagttttgta gggatccact 2520
agttctagac tcgaggggggg gcccggtacc tttaagacca atgacttaca aggcagctgt 2580
agatcttagc cacttttaa aagaaaaggg gggactggaa gggctaattc actcccaaag 2640
aagacaagat aaaccgctga tcagcctcga ctgtgccttc tagttgccag ccatctgttg 2700
tttgcccctc ccccgtgcct tccttgaccc tggaaggtgc cactcccact gtcctttcct 2760
aataaaatga ggaaattgca tcgcattgtc tgagtaggtg tcattctatt ctgggggggtg 2820
gggtggggca ggacagcaag ggggaggatt gggaagacaa tagcaggcat gctggggatg 2880
cggtgggctc tatggcttct gaggcggaaa gaaccagcag atctgcagat ctgaattcat 2940
ctatgtcggg tgcggagaaa gaggtaatga aatggcacat atgctggcca ccgtgcatgt 3000
ggcctcgcac ccccgcaaga catggcccga gttcgagcac aacgtcatga cccgctgcaa 3060
tgtgcacctg ggctcccgcc gaggcatgtt catgccatac cagtgcaaca tgcaatttgt 3120
gaaggtgctg ctggagcccg atgccatgtc cagagtgagc ctggcggggg tgtttgacat 3180
gaatgtggag ctgtggaaaa ttctgagata tgatgaatcc aagaccaggt gccgggcctg 3240
cgaatgcgga ggcaagcacg ccaggcttca gcccgtgtgt gtggaggtga cggaggacct 3300
gcgacccgat catttggtgt tgtcctgcaa cgggacggag ttcggctcca gcggggaaga 3360
atctgactag agtgagtagt gtttgggggc gggtgggagc ctgcatgagg ggcagaatga 3420
ctaaaatctg tgtttttctg tgcagcagca tgagcggaag cgcctccttt gagggagggg 3480

tattcagccc ttatctgacg gggcgtctcc cctcctgggc gggagtgcgt cagaatgtga 3540

tgggatctac ggtggacggc cggcccgtgc agcccgcgaa ctcttcaacc ctgacctacg 3600

cgaccctgag ctcctcgtcc gtggacgcag ctgccgccgc agctgctgct tccgccgcca 3660

gcgccgtgcg cggaatggcc ctgggcgccg gctactacag ctctctggtg gccaactcga 3720

gttccaccaa taatcccgcc agcctgaacg aggagaagct gctgctgctg atggcccagc 3780

tcgaggccct gacccagcgc ctgggcgagc tgacccagca ggtggctcag ctgcaggcgg 3840

agacgcgggc cgcggttgcc acggtgaaaa ccaaataaaa aatgaatcaa taaataaacg 3900

gagacggttg ttgattttaa cacagagtct tgaatcttta tttgattttt cgcgcgcggt 3960

aggccctgga ccaccggtct cgatcattga gcacccggtg gatcttttcc aggacccggt 4020

agaggtgggc ttggatgttg aggtacatgg gcatgagccc gtcccggggg tggaggtagc 4080

tccattgcag ggcctcgtgc tcgggggtgg tgttgtaaat cacccagtca tagcaggggc 4140

gcagtgcgtg gtgctgcacg atgtccttga ggaggagact gatggccacg ggcagcccct 4200

tggtgtaggt gttgacgaac ctgttgagct gggagggatg catgcggggg gagatgagat 4260

gcatcttggc ctggatcttg agattggcga tgttcccgcc cagatcccgc cgggggttca 4320

tgttgtgcag gaccaccagc acggtgtatc cggtgcactt ggggaatttg tcatgcaact 4380

tggaagggaa ggcgtgaaag aatttggaga cgcccttgtg accgcccagg ttttccatgc 4440

actcatccat gatgatggcg atgggcccgt gggcggcggc ctgggcaaag acgtttcggg 4500

ggtcggacac atcgtagttg tggtcctggg tgagctcgtc ataggccatt ttaatgaatt 4560

tggggcggag ggtgcccgac tgggggacga aggtgccttc gatcccgggg gcgtagttgc 4620

cctcgcagat ctgcatctcc caggccttga gctcggaggg ggggatcatg tccacctgcg 4680

gggcgatgaa aaaaacggtt tccggggcgg gggagatgag ctgcgccgaa agcaggttcc 4740

ggagcagctg ggacttgccg cagccggtgg ggccgtagat gaccccgatg accggctgca 4800

ggtggtagtt gagggagaga cagctgccgt cctcgcgtag gagggggcc acctcgttca 4860

tcatctcgcg cacatgcatg ttctcgcgca cgagttccgc caggaggcgc tcgcccccca 4920

gcgagaggag ctcttgcagc gaggcgaagt ttttcagcgg cttgagcccg tcggccatgg 4980

gcattttgga gagggtctgt tgcaagagtt ccagacggtc ccagagctcg gtgatgtgct 5040

ctacggcatc tcgatccagc agacctcctc gtttcgcggg ttgggacgac tgcgggagta 5100

gggcaccaga cgatgggcgt ccagcgcagc cagggtccgg tccttccagg gtcgcagcgt 5160

ccgcgtcagc gtggtctccg tcacggtgaa ggggtgcgcg ccgggctggg cgcttgcgag 5220

ggtgcgcttc aggctcatcc ggctggtcga gaaccgctcc cgatcggcgc cctgcgcgtc 5280

ggccaggtag caattgacca tgagttcgta gttgagcgcc tcggccgcgt ggcctttggc 5340

gcggagctta cctttggaag tctgcccgca ggcgggacag aggagggact tgagggcgta 5400

gagcttgggg gcgaggaaga cggactcggg ggcgtaggcg tccgcgccgc agtgggcgca 5460

gacggtctcg cactccacaa gccaggtgag gtcgggctgg tcggggtcaa aaaccagttt 5520

tccgccgttc tttttgatgc gtttcttacc tttggtctcc atgagctcgt gtccccgctg 5580

ggtgacaaag aggctgtccg tgtccccgta gaccgacttt atgggccggt cctcgagcgg 5640
tgtgccacgg tcctcctcgt agaggaaccc cgcccactcc gagacgaaag cccgggtcca 5700
ggccagcacg aaggaggcca cgtgggacgg gtagcggtcg ttgtccacca gcgggtccac 5760
tttctccagg gtatgcaaac acatgtcccc ctcgtccaca tccaggaagg tgattggctt 5820
gtaagtgtag gccacgtgac cgggggtccc ggccgggggg gtataaaagg gggcgggccc 5880
ctgctcgtcc tcactgtctt ccggatcgct gtccaggagc gccagctgtt ggggtaggta 5940
ttccctctcg aaggcgggca tgacctcggc actcaggttg tcagtttcta gaaacgagga 6000
ggatttgata ttgacggtgc cgttggagac gcctttcatg agcccctcgt ccatctggtc 6060
agaaaagacg atctttttgt tgtcgagctt ggtggcgaag gagccgtaga gggcgttgga 6120
gagcagcttg gcgatggagc gcatggtctg gttcttttcc ttgtcggcgc gctccttggc 6180
ggcgatgttg agctgcacgt actcgcgcgc cacgcacttc cattcgggga agacggtggt 6240
gagctcgtcg ggcacgattc tgacccgcca gccgcggttg tgcagggtga tgaggtccac 6300
gctggtggcc acctcgccgc gcaggggctc gttggtccag cagaggcgcc cgcccttgcg 6360
cgagcagaag gggggcagcg ggtccagcat gagctcgtcg ggggggtcgg cgtccacggt 6420
gaagatgccg ggcaggagct cggggtcgaa gtagctgatg caggtgccca gatcgtccag 6480
cgccgcttgc cagtcgcgca cggccagcgc gcgctcgtag gggctgaggg gcgtgcccca 6540
gggcatgggg tgcgtgagcg cggaggcgta catgccgcag atgtcgtaga cgtagagggg 6600
ctcctcgagg acgccgatgt aggtggggta gcagcgcccc ccgcggatgc tggcgcgcac 6660
gtagtcgtac agctcgtgcg agggcgcgag gagccccgcg ccgaggttgg agcgctgcgg 6720
cttttcggcg cggtagacga tctggcggaa gatggcgtgg gagttggagg agatggtggg 6780
cctctggaag atgttgaagt gggcgtgggg caggccgacc gagtccctga tgaagtgggc 6840
gtaggagtcc tgcagcttgg cgacgagctc ggcggtgacg aggacgtcca gggcgcagta 6900
gtcgagggtc tcttggatga tgtcgtactt gagctggccc ttctgcttcc acagctcgcg 6960
gttgagaagg aactcttcgc ggtccttcca gtactcttcg agggggaacc cgtcctgatc 7020
ggcacggtaa gagcccacca tgtagaactg gttgacggcc ttgtaggcgc agcagccctt 7080
ctccacgggg agggcgtaag cttgcgcggc cttgcgcagg gaggtgtggg tgagggcgaa 7140
ggtgtcgcgc accatgacct tgaggaactg gtgcttgaag tcgaggtcgt cgcagccgcc 7200
ctgctcccag agttggaagt ccgtgcgctt cttgtaggcg gggttgggca aagcgaaagt 7260
aacatcgttg aagaggatct tgcccgcgcg gggcatgaag ttgcgagtga tgcggaaagg 7320
ctggggcacc tcggcccggt tgttgatgac ctgggcggcg aggacgatct cgtcgaagcc 7380
gttgatgttg tgcccgacga tgtagagttc cacgaatcgc gggcggccct tgacgtgggg 7440
cagcttcttg agctcgtcgt aggtgagctc ggcggggtcg ctgagcccgt gctgctcaag 7500
ggcccagtcg gcgacgtggg ggttggcgct gaggaaggaa gtccagagat ccacggccag 7560
ggcggtttgc aagcggtccc ggtactgacg gaactgctgg cccacggcca ttttttcggg 7620

ggtgatgcag tagaaggtgc gggggtcgcc gtgccagcgg tcccacttga gctggagggc 7680
gaggtcgtgg gcgagctcga cgagcggcgg gtccccggag agtttcatga ccagcatgaa 7740
ggggacgagc tgcttgccga aggaccccat ccaggtgtag gtttccacat cgtaggtgag 7800
gaagagcctt tcggtgcgag gatgcgagcc gatggggaag aactggatct cctgccacca 7860
gttggaggaa tggctgttga tgtgatggaa gtagaaatgc cgacggcgcg ccgagcactc 7920
gtgcttgtgt ttatacaagc gtccgcagtg ctcgcaacgc tgcacgggat gcacgtgctg 7980
cacgagctgt acctgggttc ctttgacgag gaatttcagt gggcagtgga gcgctggcgg 8040
ctgcatctgg tgctgtacta cgtcctggcc atcggcgtgg ccatcgtctg cctcgatggt 8100
ggtcatgctg acgagcccgc gcgggaggca ggtccagacc tcggctcgga cgggtcggag 8160
agcgaggacg agggcgcgca ggccggagct gtccagggtc ctgagacgct gcggagtcag 8220
gtcagtgggc agcggcggcg cgcggttgac ttgcaggagc ttttccaggg cgcgcgggag 8280
gtccagatgg tacttgatct ccacggcgcc gttggtggcg acgtccacgg cttgcagggt 8340
cccgtgcccc tggggcgcca ccaccgtgcc ccgtttcttc ttgggcgctg gcgttggcgc 8400
tgcttccatg tcggtcagaa gcggcggcga ggacgcgcgc cgggcggcag gggcggctcg 8460
gggcccggag gcaggggcgg caggggcacg tcggcgccgc gcgcgggcag gttctggtac 8520
tgcgcccgga gaagactggc gtgagcgacg acgcgacggt tgacgtcctg gatctgacgc 8580
ctctgggtga aggccacggg acccgtgagt ttgaacctga aagagagttc gacagaatca 8640
atctcggtat cgttgacggc ggcctgccgc aggatctctt gcacgtcgcc cgagttgtcc 8700
tggtaggcga tctcggtcat gaactgctcg atctcctcct cctgaaggtc tccgcggccg 8760
gcgcgctcga cggtggccgc gaggtcgttg gagatgcggc ccatgagctg cgagaaggcg 8820
ttcatgccgg cctcgttcca gacgcggctg tagaccacgg atccgtcggg gtcgcgcgcg 8880
cgcatgacca cctgggcgag gttgagctcc acgtggcgcg tgaagaccgc gtagttgcag 8940
aggcgctggt agaggtagtt gagcgtggtg gcgatgtgct cggtgacgaa gaagtacatg 9000
atccagcggc ggagcggcat ctcgctgacg tcgcccaggg cttccaagcg ctccatggcc 9060
tcgtagaagt ccacggcgaa gttgaaaaac tgggagttgc gcgccgagac ggtcaactcc 9120
tcctccagaa gacggatgag ctcggcgatg gtggcgcgca cctcgcgctc gaaggccccg 9180
gggggctcct cttccatctc ctcctcttct tcctcctcca ctaacatctc ttctacttcc 9240
tcctcaggag gcggcggcgg gggaggggggc ctgcgtcgcc ggcggcgcac gggcagacgg 9300
tcgatgaagc gctcgatggt ctccccgcgc cggcgacgca tggtctcggt gacggcgcgc 9360
ccgtcctcgc ggggccgcag cgtgaagacg ccgccgcgca tctccaggtg gccgccgggg 9420
gggtctccgt tgggcaggga gagggcgctg acgatgcatc ttatcaattg acccgtaggg 9480
actccgcgca aggacctgag cgtctcgaga tccacgggat ccgaaaaccg ctgaacgaag 9540
gcttcgagcc agtcgcagtc gcaaggtagg ctgagcccgg tttcttcttc ggggatttgc 9600
tggtcgggag gcgggcgggc gatgctgctg gtgatgaagt tgaagtaggc ggtcctgaga 9660
cggcggatgg tggcgaggag caccaggtcc ttgggcccgg cttgctggat gcgcagacgg 9720

tcggccatgc cccaggcgtg gtcctgacac ctggcgaggt ccttgtagta gtcctgcatg 9780
agccgctcca cgggcacctc ctcctcgccc gcgcggccgt gcatgcgcgt gagcccgaac 9840
ccgcgctggg gctggacgag cgccaggtcg gcgacgacgc gctcggcgag gatggcctgc 9900
tggatctggg tgagggtggt ctggaagtcg tcgaagtcga cgaagcggtg gtaggctccg 9960
gtgttgatgg tgtaggagca gttggccatg acggaccagt tgacggtctg gtggccgggg 10020
cgcacgagct cgtggtactt gaggcgcgag taggcgcgcg tgtcgaagat gtagtcgttg 10080
caggtgcgca cgaggtactg gtatccgacg aggaagtgag gcggcggctg gcggtagagc 10140
ggccatcgct cggtggcggg ggcgccgggc gcgaggtctt cgagcatgag gcggtggtag 10200
ccgtagatgt acctggacat ccaggtgatg ccagcggcgg tggtggaggc gcgcgggaac 10260
tcgcggacgc ggttccagat gttgcgcagc ggcaggaagt agttcatggt ggccgcggtc 10320
tggcccgtga ggcgcgcgca gtcgtggatg ctctagacat acgggcaaaa acgaaagcgg 10380
tcagcggctc gactccgtgg cctggaggct aagcgaacgg gttgggctgc gcgtgtaccc 10440
cggttcgagt ccctgctcga atcaggctgg agccgcagct aacgtggtac tggcactccc 10500
gtctcgaccc aagcctgcta acgaaacctc caggatacgg aggcgggtcg ttttttggcc 10560
ttggtcactg gtcatgaaaa actagtaagc gcggaaagcg gccgcccgcg atggctcgct 10620
gccgtagtct ggagaaagaa tcgccagggt tgcgttgcgg tgtgccccgg ttcgagcctc 10680
agcgctcggc gccggccgga ttccgcggct aacgtgggcg tggctgcccc gtcgtttcca 10740
agacccctta gccagccgac ttctccagtt acggagcgag cccctctttt tcttgtgttt 10800
ttgccagatg catcccgtac tgcggcagat gcgcccccac cctccacctc aaccgcccct 10860
accgcagcag cagcaacagc cggcgctttt gcccccgccc cagcagcagc agcagccagc 10920
cactaccgcg gcggccgccg tgagcggagc cggcgttcaa tatgacctgg ccttggaaga 10980
gggcgagggg ctggcgcggc tgggggcgtc gtcgccggag cggcacccgc gcgtgcagat 11040
gaaaagggac gctcgcgagg cctacgtgcc caagcagaac ctgttcagag acaggagcgg 11100
cgaggagccc gaggagatgc gcgcctcccg cttccacgcg gggcgggagc tgcggcgcgg 11160
cctggaccga aagcgggtgc tgagggacga ggatttcgag gcggacgagc tgacggggat 11220
cagccccgcg cgcgcgcacg tggccgcggc caacctggtc acggcgtacg agcagaccgt 11280
gaaggaggag agcaacttcc aaaaatcctt caacaaccac gtgcgcacgc tgatcgcgcg 11340
cgaggaggtg accctgggcc tgatgcacct gtgggacctg ctggaggcca tcgtgcagaa 11400
ccccacgagc aagccgctga cggcgcagct gttcctggtg gtgcagcaca gtcgggacaa 11460
cgagacgttc agggaggcgc tgctgaatat caccgagccc gagggccgct ggctcctgga 11520
cctggtgaac attctgcaga gcatcgtggt gcaggagcgc gggctgccgc tgtccgagaa 11580
gctggcggcc atcaacttct cggtgctgag cctgggcaag tactacgcta ggaagatcta 11640
caagaccccg tacgtgccca tagacaagga ggtgaagatc gatgggtttt acatgcgcat 11700
gaccctgaaa gtgctgaccc tgagcgacga tctgggggtg taccgcaacg acaggatgca 11760

ccgcgcggtg agcgccagcc gccggcgcga gctgagcgac caggagctga tgcacagcct 11820

gcagcgggcc ctgaccgggg ccgggaccga gggggagagc tactttgaca tgggcgcgga 11880

cctgcgctgg cagcccagcc gccgggcctt ggaagctgcc ggcggcgtgc cctacgtgga 11940

ggaggtggac gatgaggagg aggagggcga gtacctggaa gactgatggc gcgaccgtat 12000

ttttgctaga tgcagcaaca gccaccgcct cctgatcccg cgatgcgggc ggcgctgcag 12060

agccagccgt ccggcattaa ctcctcggac gattggaccc aggccatgca acgcatcatg 12120

gcgctgacga cccgcaatcc cgaagccttt agacagcagc ctcaggccaa ccggctctcg 12180

gccatcctgg aggccgtggt gccctcgcgc tcgaacccca cgcacgagaa ggtgctggcc 12240

atcgtgaacg cgctggtgga gaacaaggcc atccgcggcg acgaggccgg gctggtgtac 12300

aacgcgctgc tggagcgcgt ggcccgctac aacagcacca acgtgcagac gaacctggac 12360

cgcatggtga ccgacgtgcg cgaggcggtg tcgcagcgcg agcggttcca ccgcgagtcg 12420

aacctgggct ccatggtggc gctgaacgcc ttcctgagca cgcagcccgc caacgtgccc 12480

cggggccagg aggactacac caacttcatc agcgcgctgc ggctgatggt ggccgaggtg 12540

ccccagagcg aggtgtacca gtcggggccg gactacttct tccagaccag tcgccagggc 12600

ttgcagaccg tgaacctgag ccaggctttc aagaacttgc agggactgtg gggcgtgcag 12660

gccccggtcg gggaccgcgc gacggtgtcg agcctgctga cgccgaactc gcgcctgctg 12720

ctgctgctgg tggcgccctt cacggacagc ggcagcgtga gccgcgactc gtacctgggc 12780

tacctgctta acctgtaccg cgaggccatc gggcaggcgc acgtggacga gcagacctac 12840

caggagatca cccacgtgag ccgcgcgctg ggccaggagg acccgggcaa cctggaggcc 12900

accctgaact tcctgctgac caaccggtcg cagaagatcc cgccccagta cgcgctgagc 12960

accgaggagg agcgcatcct gcgctacgtg cagcagagcg tggggctgtt cctgatgcag 13020

gaggggggca cgcccagcgc cgcgctcgac atgaccgcgc gcaacatgga gcccagcatg 13080

tacgcccgca accgcccgtt catcaataag ctgatggact acttgcatcg ggcggccgcc 13140

atgaactcgg actactttac caacgccatc ttgaacccgc actggctccc gccgcccggg 13200

ttctacacgg gcgagtacga catgcccgac cccaacgacg ggttcctgtg ggacgacgtg 13260

gacagcagcg tgttctcgcc gcgccccacc accaccgtgt ggaagaaaga gggcggggac 13320

cggcggccgt cctcggcgct gtccggtcgc gcgggtgctg ccgcggcggt gcccgaggcc 13380

gccagcccct tcccgagcct gccctttcg ctgaacagcg tgcgcagcag cgatctgggt 13440

cggctgacgc ggccgcgcct gctgggcgag gaggagtacc tgaacgactc cttgttgagg 13500

cccgagcgcg agaaaaactt ccccaataac gggatagaga gcctggtgga caagatgagc 13560

cgctggaaga cgtacgcgca cgagcacagg gacgagcccc gagctagcag cagcaccggc 13620

gcccgtagac gccagcggca cgacaggcag cggggactgg tgtgggacga tgaggattcc 13680

gccgacgaca gcagcgtgtt ggacttgggt gggagtggtg gtggtaaccc gttcgctcac 13740

ctgcgccccc gtatcgggcg cctgatgtaa gaatctgaaa aaataaaaaa acggtactca 13800

ccaaggccat ggcgaccagc gtgcgttctt ctctgttgtt tgtagtagta tgatgaggcg 13860

cgtgtacccg gagggtcctc ctccctcgta cgagagcgtg atgcagcagg cggtggcggc 13920

ggcgatgcag cccccgctgg aggcgcctta cgtgcccccg cggtacctgg cgcctacgga 13980

ggggcggaac agcattcgtt actcggagct ggcacccttg tacgatacca cccggttgta 14040

cctggtggac aacaagtcgg cggacatcgc ctcgctgaac taccagaacg accacagcaa 14100

cttcctgacc accgtggtgc agaacaacga tttcaccccc acggaggcca gcacccagac 14160

catcaacttt gacgagcgct cgcggtgggg cggccagctg aaaaccatca tgcacaccaa 14220

catgcccaac gtgaacgagt tcatgtacag caacaagttc aaggcgcggg tgatggtctc 14280

gcgcaagacc cccaacgggg tcacagtaac agatggtagt caggacgagc tgacctacga 14340

gtgggtggag tttgagctgc ccgagggcaa cttctcggtg accatgacca tcgatctgat 14400

gaacaacgcc atcatcgaca actacttggc ggtgggacgg cagaacgggg tgctggagag 14460

cgacatcggc gtgaagttcg acacgcgcaa cttccggctg ggctgggacc ccgtgaccga 14520

gctggtgatg ccgggcgtgt acaccaacga ggccttccac cccgacatcg tcctgctgcc 14580

cggctgcggc gtggacttca ccgagagccg cctcagcaac ctgctgggca tccgcaagcg 14640

gcagcccttc caggagggct tccagatcct gtacgaggac ctggaggggg gcaacatccc 14700

cgcgctgctg gacgtcgaag cctacgagaa aagcaaggag gaggccgccg cagcggcgac 14760

cgcggccgtg gctaccgctg cgaccaccga tgcagatgca gctactacta ccaggggcga 14820

tacattcgcc acccaggcgg aggaagcagc cgccctagcg gcgaccgatg atagtgaaag 14880

taagatagtc atcaagccgg tggagaagga cagcaaggac aggagctaca acgttctatc 14940

ggatggaaag aacaccgcct accgcagctg gtacctggcc tacaactacg gcgaccctga 15000

gaagggcgtg cgctcctgga cgctgctcac cacctcggac gtcacctgcg gcgtggagca 15060

agtctactgg tcgctgcccg acatgatgca agacccggtc accttccgct ccacgcgtca 15120

agttagcaac tacccggtgg tgggcgccga gctcctgccc gtctactcca agagcttctt 15180

caacgagcag gccgtctact cgcagcagct gcgcgccttc acctcgctca cgcacgtctt 15240

caaccgcttc cccgagaacc agatcctcgt ccgcccgccc gcgcccacca ttaccaccgt 15300

cagtgaaaac gttcctgctc tcacagatca cgggaccctg ccgctgcgca gcagtatccg 15360

gggagtccag cgcgtgaccg tcactgacgc cagacgccgc acctgcccct acgtctacaa 15420

ggccctgggc gtagtcgcgc cgcgcgtcct ctcgagccgc accttctaaa aaatgtccat 15480

tctcatctcg cccagtaata acaccggttg gggcctgcgc gcgcccagca agatgtacgg 15540

aggcgctcgc caacgctcca cgcaacaccc cgtgcgcgtg cgcgggcact tccgcgctcc 15600

ctggggcgcc ctcaagggcc gcgtgcgctc gcgcaccacc gtcgacgacg tgatcgacca 15660

ggtggtggcc gacgcgcgca actacacgcc cgccgccgcg cccgcctcca ccgtggacgc 15720

cgtcatcgac agcgtggtgg ccgacgcgcg ccggtacgcc cgcgccaaga gccggcggcg 15780

gcgcatcgcc cggcggcacc ggagcacccc cgccatgcgc gcggcgcgag ccttgctgcg 15840

cagggccagg cgcacgggac gcagggccat gctcagggcg gccagacgcg cggcctccgg 15900

cagcagcagc gccggcagga cccgcagacg cgcggccacg gcggcggcgg cggccatcgc 15960

cagcatgtcc cgcccgcggc gcggcaacgt gtactgggtg cgcgacgccg ccaccggtgt 16020

gcgcgtgccc gtgcgcaccc gccccccctcg cacttgaaga tgctgacttc gcgatgttga 16080

tgtgtcccag cggcgaggag gatgtccaag cgcaaattca aggaagagat gctccaggtc 16140

atcgcgcctg agatctacgg ccccgcggcg gcggtgaagg aggaaagaaa gccccgcaaa 16200

ctgaagcggg tcaaaaagga caaaaaggag gaggaagatg acggactggt ggagtttgtg 16260

cgcgagttcg ccccccggcg gcgcgtgcag tggcgcgggc ggaaagtgaa accggtgctg 16320

cggcccggca ccacggtggt cttcacgccc ggcgagcgtt ccggctccgc ctccaagcgc 16380

tcctacgacg aggtgtacgg ggacgaggac atcctcgagc aggcggcaga gcgtctgggc 16440

gagtttgctt acggcaagcg cagccgcccc gcgcccttga aagaggaggc ggtgtccatc 16500

ccgctggacc acggcaaccc cacgccgagc ctgaagccgg tgaccctgca gcaggtgctg 16560

ccgagcgcgg cgccgcgccg gggcttcaag cgcgagggcg gcgaggatct gtacccgacc 16620

atgcagctga tggtgcccaa gcgccagaag ctggaggacg tgctggagca catgaaggtg 16680

gaccccgagg tgcagcccga ggtcaaggtg cggcccatca agcaggtggc cccgggcctg 16740

ggcgtgcaga ccgtggacat caagatcccc acggagccca tggaaacgca gaccgagccc 16800

gtgaagccca gcaccagcac catggaggtg cagacggatc cctggatgcc ggcgccggct 16860

tccaccacca ctcgccgaag acgcaagtac ggcgcggcca gcctgctgat gcccaactac 16920

gcgctgcatc cttccatcat ccccacgccg ggctaccgcg gcacgcgctt ctaccgcggc 16980

tacagcagcc gccgcaagac caccacccgc cgccgccgtc gccgcacccg ccgcagcacc 17040

accgcgactt ccgccgccgc cttggtgcgg agagtgtacc gcagcgggcg tgagcctctg 17100

accctgccgc gcgcgcgcta ccacccgagc atcgccattt aactctgccg tcgcctcctt 17160

gcagatatgg ccctcacatg ccgcctccgc gtccccatta cgggctaccg aggaagaaag 17220

ccgcgccgta gaaggctgac ggggaacggg ctgcgtcgcc atcaccaccg gcggcggcgc 17280

gccatcagca agcggttggg gggaggcttc ctgcccgcgc tgatccccat catcgccgcg 17340

gcgatcgggg cgatccccgg catagcttcc gtggcggtgc aggcctctca gcgccactga 17400

gacacagctt ggaaaatttg taataaaaaa atggactgac gctcctggtc ctgtgatgtg 17460

tgtttttaga tggaagacat caatttttcg tccctggcac cgcgacacgg cacgcggccg 17520

tttatgggca cctggagcga catcggcaac agccaactga acgggggcgc cttcaattgg 17580

agcagtctct ggagcgggct taagaatttc gggtccacgc tcaaaaccta tggcaacaag 17640

gcgtggaaca gcagcacagg gcaggcgctg agggaaaagc tgaaagagca gaacttccag 17700

cagaaggtgg tcgatggcct ggcctcgggc atcaacgggg tggtggacct ggccaaccag 17760

gccgtgcaga aacagatcaa cagccgcctg gacgcggtcc cgcccgcggg gtccgtggag 17820

atgccccagg tggaggagga gctgcctccc ctggacaagc gcggcgacaa gcgaccgcgt 17880

cccgacgcgg aggagacgct gctgacgcac acggacgagc cgcccccgta cgaggaggcg 17940

gtgaaactgg gtctgcccac cacgcggccc atcgcgcccc tggccaccgg ggtgctgaaa 18000

cccgagtcta agcccgcgac cctggacttg cctcctcccc cgacctcccg cccctccaca 18060
gtggctaagc ccctgccgcc ggtggcccgc gcgcgacccg ggagccgccc gcaggcgaac 18120
tggcagagca ctctgaacag catcgtgggt ctgggagtgc agagtgtgaa gcgccgccgc 18180
tgctattaaa cataccgtag cgcttaactt gcttgtctgt gtgtgtatgt attatgtcgc 18240
cgccgctgtc cagaaggagg agtgaagagg cgcgtcgccg agttgcaaga tggccacccc 18300
atcgatgctg ccccagtggg cgtacatgca catcgccgga caggacgctt cggagtacct 18360
gagtccgggt ctggtgcagt tcgcccgcgc cacagacacc tacttcagtc tggggaacaa 18420
gtttaggaac cccacggtgg cgcccacgca cgatgtgacc accgaccgca gccagcggct 18480
gacgctgcgc ttcgtgcccg tggaccgcga ggacaacacc tactcgtaca aagtgcgcta 18540
cacgctggcc gtgggcgaca accgcgtgct ggacatggcc agcacctact ttgacatccg 18600
cggcgtgctg gaccggggcc ctagcttcaa accctactcc ggcaccgcct acaacagcct 18660
ggcccccaag ggagctccca attccagtca gtgggagcag acggagaacg ggggcggaca 18720
ggctacgact aaaacacaca cctatggagt tgccccaatg ggtggaacta atattacagt 18780
cgacggacta caaattggaa ctgacgctac agctgatacg gaaaaaccaa tttatgctga 18840
taaaacattc caacctgagc ctcagatagg agaggaaaac tggcaagaaa ctgaaagctt 18900
ttatggcggt agggctctta agaaagacac aaacatgaag ccttgttatg gctcatttgc 18960
cagacctacc aatgaaaagg gaggtcaagc taaacttaaa gttggagctg atgggctgcc 19020
gaccaaagaa tttgacatag acctagcatt ctttgatact cctggtggca ctgtgaccgg 19080
aggtacagag gagtataaag cagatattgt tatgtatacc gaaaacacgt atctggaaac 19140
tccagacaca catgtggtgt ataaaccagg caaggataac acaagttcta aaattaacct 19200
ggtccagcag tctatgccca acaggcccaa ctacattggg tttagggaca actttattgg 19260
gctcatgtat tacaacagca ctggcaatat gggtgtgctg gccggtcagg cttctcagtt 19320
gaatgctgtg gttgacttgc aagacagaaa cactgaactg tcttaccagc tcttgcttga 19380
ctctttgggt gacagaacca ggtatttcag tatgtggaat caggcggtgg acagttatga 19440
tcctgatgtg cgcattattg aaaaccatgg tgtggaagat gaacttccca actattgctt 19500
ccccctggat gggtctggca ctaacgccgc ttaccaaggt gtgaaagtaa aaaatggtca 19560
agatggtgat gttgagagcg aatgggaaaa agatgatact gtcgcagctc gaaatcaatt 19620
atgcaagggc aacatttttg ccatggagat caatctccag gccaacctgt ggagaagttt 19680
tctctactcg aacgtggccc tgtacctgcc cgattcttac aagtacacgc cggccaacat 19740
caccctgccc accaacacca acacctacga ttacatgaac gggagagtgg tgcctccctc 19800
gctggtggac gcctacatca acatcggggc gcgctggtcg ctggacccca tggacaacgt 19860
caatcccttc aaccaccatc gcaacgcggg gctgcgctac cgctccatgc tcctgggcaa 19920
cgggcgctac gtgcccttcc acatccaggt gccccagaaa tttttcgcca ttaagagcct 19980
cctgctcctg cccgggtcct acacctacga gtggaacttc cgcaaggacg tcaacatgat 20040

cctgcagagc tccctcggca acgacctgcg cacggacggg gcctccatct ccttcaccag 20100

catcaacctc tacgccacct tcttccccat ggcgcacaac accgcctcca cgctcgaggc 20160

catgctgcgc aacgacacca acgaccagtc cttcaacgac tacctctcgg cggccaacat 20220

gctctacccc atcccggcca acgccaccaa cgtgcccatc tccatcccct cgcgcaactg 20280

ggccgccttc cgcggctggt ccttcacgcg cctcaagacc aaggagacgc cctcgctggg 20340

ctccgggttc gacccctact tcgtctactc gggctccatc ccctacctcg acggcacctt 20400

ctacctcaac cacaccttca agaaggtctc catcaccttc gactcctccg tcagctggcc 20460

cggcaacgac cggctcctga cgcccaacga gttcgaaatc aagcgcaccg tcgacggcga 20520

gggctacaac gtggcccagt gcaacatgac caaggactgg ttcctggtcc agatgctggc 20580

ccactacaac atcggctacc agggcttcta cgtgcccgag ggctacaagg accgcatgta 20640

ctccttcttc cgcaacttcc agcccatgag ccgccaggtg gtggacgagg tcaactacaa 20700

ggactaccag gccgtcaccc tggcctacca gcacaacaac tcgggcttcg tcggctacct 20760

cgcgcccacc atgcgccagg gccagcccta ccccgccaac tacccgtacc cgctcatcgg 20820

caagagcgcc gtcaccagcg tcacccagaa aaagttcctc tgcgacaggg tcatgtggcg 20880

catccccttc tccagcaact tcatgtccat gggcgcgctc accgacctcg gccagaacat 20940

gctctatgcc aactccgccc acgcgctaga catgaatttc gaagtcgacc ccatggatga 21000

gtccaccctt ctctatgttg tcttcgaagt cttcgacgtc gtccgagtgc accagcccca 21060

ccgcggcgtc atcgaggccg tctacctgcg cacccccttc tcggccggta acgccaccac 21120

ctaagctctt gcttcttgca agatggctga gcccacgggc tccggcgagc aggagctcag 21180

ggccatcatc cgcgacctgg gctgcgggcc ctacttcctg ggcaccttcg ataagcgctt 21240

cccgggattc atggccccgc acaagctggc ctgcgccatc gtcaacacgg ccggccgcga 21300

gaccgggggc gagcactggc tggccttcgc ctggaacccg cgctcgaaca cctgctacct 21360

cttcgacccc ttcgggttct cggacgagcg cctcaagcag atctaccagt tcgagtacga 21420

gggcctgctg cgccgcagcg ccctggccac cgaggaccgc tgcgtcaccc tggaaaagtc 21480

cacccagacc gtgcagggtc cgcgctcggc cgcctgcggg ctcttttgct gcatgttcct 21540

gcacgccttc gtgcactggc ccgaccgccc catggacaag aaccccacca tgaacttgct 21600

gacgggggtg cccaacggca tgctccagtc gccccaggtg gaacccaccc tgcgccgcaa 21660

ccaggaggcg ctctaccgct tcctcaacgc ccactccgcc tactttcgct cccaccgcgc 21720

gcgcatcgag aaggccaccg ccttcgaccg catgaatcaa gacatgtaaa ccgtgtgtgt 21780

gtatgttaaa atgtctttaa taaacagcac tttcatgtta cacatgcatc tgagatgatt 21840

tatttagaaa tcgaaagggt tctgccgggt ctcggcatgg cccgcgggca gggacacgtt 21900

gcggaactgg tacttggcca gccacttgaa ctcggggatc agcagtttcg gcagcggggt 21960

gtcggggaag gagtcggtcc acagcttccg cgtcagttgc agggcgccca gcaggtcggg 22020

cgcggagatc ttgaaatcgc agttgggacc cgcgttctgc gcgcgagagt tgcggtacac 22080

ggggttgcag cactggaaca ccatcagggc cgggtgcttc acgctcgcca gcaccgtcgc 22140

gtcggtgatg ccctccacgt ccagatcctc ggcgttggcc atcccgaagg gggtcatctt 22200
gcaggtctgc cgccccatgc tgggcacgca gccgggcttg tggttgcaat cgcagtgcag 22260
ggggatcagc atcatctggg cctgctcgga gctcatgccc gggtacatgg ccttcatgaa 22320
agcctccagc tggcggaagg cctgctgcgc cttgccgccc tcggtgaaga agaccccgca 22380
ggacttgcta gagaactggt tggtagcgca gcccgcgtcg tgcacgcagc agcgcgcgtc 22440
gttgttggcc agctgcacca cgctgcgccc ccagcggttc tgggtgatct tggcccggtc 22500
ggggttctcc ttcagcgcgc gctgcccgtt ctcgctcgcc acatccatct cgatcgtgtg 22560
ctccttctgg atcatcacgg tcccgtgcag gcaccgcagc ttgccctcgg cctcggtgca 22620
gccgtgcagc cacagcgcgc agccggtgct ctcccagttc ttgtgggcga tctgggagtg 22680
cgagtgcacg aagccctgca ggaagcggcc catcatcgcg gtcagggtct tgttgctggt 22740
gaaggtcagc gggatgccgc ggtgctcctc gttcacatac aggtggcaga tgcggcggta 22800
cacctcgccc tgctcgggca tcagctggaa ggcggacttc aggtcgctct ccacgcggta 22860
ccggtccatc agcagcgtca tcacttccat gcccttctcc caggccgaga cgatcggcag 22920
gctcaggggg ttcttcaccg ccattgtcat cttagtcgcc gccgccgagg tcaggggtc 22980
gttctcgtcc agggtctcaa acactcgctt gccgtccttc tcgatgatgc gcacgggggg 23040
aaagctgaag cccacggccg ccagctcctc ctcggcctgc ctttcgtcct cgctgtcctg 23100
gctgatgtct tgcaaaggca catgcttggt cttgcggggt ttctttttgg gcggcagagg 23160
cggcggcgat gtgctgggcg agcgcgagtt ctcgctcacc acgactattt cttctccttg 23220
gccgtcgtcc gagaccacgc ggcggtaggc atgcctcttc tggggcagag gcggaggcga 23280
cgggctctcg cggttcggcg ggcggctggc agagcccctt ccgcgttcgg gggtgcgctc 23340
ctggcggcgc tgctctgact gacttcctcc gcggccggcc attgtgttct cctagggagc 23400
aacaacaagc atggagactc agccatcgtc gccaacatcg ccatctgccc ccgcctccac 23460
cgccgacgag aaccagcagc agaatgaaag cttaaccgcc ccgccgccca gccccacctc 23520
cgacgccgcg gccccagaca tgcaagagat ggaggaatcc atcgagattg acctgggcta 23580
cgtgacgccc gcggagcacg aggaggagct ggcagcgcgc ttttcagccc cggaagagaa 23640
ccaccaagag cagccagagc aggaagcaga gaacgagcag aaccaggctg ggcacgagca 23700
tggcgactac ctgagcgggg cagaggacgt gctcatcaag catctggccc gccaatgcat 23760
catcgtcaag gacgcgctgc tcgaccgcgc cgaggtgccc ctcagcgtgg cggagctcag 23820
ccgcgcctac gagcgcaacc tcttctcgcc gcgcgtgccc cccaagcgcc agcccaacgg 23880
cacctgtgag cccaacccgc gcctcaactt ctacccggtc ttcgcggtgc ccgaggccct 23940
ggccacctac cacctctttt tcaagaacca aagaatcccc gtctcctgcc gcgccaaccg 24000
cacccgcgcc gacgcccttt tcaacctggg ccccggcgcc cgcctacctg atatcgcctc 24060
cttggaagag gttcccaaga tcttcgaggg tctgggcagc gacgagactc gggccgcgaa 24120
cgctctgcaa ggagaaggag gagagcatga gcaccacagc gccctggtcg agttggaagg 24180

```
cgacaacgcg cggctggcgg tgctcaaacg cacggtcgag ctgacccatt tcgcctaccc    24240

ggctctgaac ctgcccccca aagtcatgag cgccgtcatg gaccaggtgc tcatcaagcg    24300

cgcgtcgccc atctccgagg acgagggcat gcaagacccc gagagcaccg aggatggcaa    24360

gcccgtggtc agcgacgagc agctggcccg gtggctgggt cctaatgcta gtccccagag    24420

tttggaagag cggcgcaagc tcatgatggc cgtggtcctg gtgaccgtgg agctggagtg    24480

cctgcgccgc ttcttcgccg acgcggagac cctgcgcaag gtcgaggaga acctgcacta    24540

cctcttcagg cacgggttcg tgcgccaggc ctgcaagatc tccaacgtgg agctgaccaa    24600

cctggtctcc tacatgggca tcttgcacga gaaccgtctg gggcagaacg tgctgcacac    24660

caccctgcgc ggggaggccc gccgcgacta catccgcgac tgcgtctacc tctacctctg    24720

ccacacctgg cagacgggca tgggcgtgtg gcagcagtgc ctggaggagc agaacctgaa    24780

agagctctgc aagctcctgc agaagaacct caagggtctg tggaccgggt tcgacgagcg    24840

gaccaccgcc tcggatctgg ccgacctcat cttccccgag cgcctcaggc tgacgctgcg    24900

caacggcctg cccgacttta tgagccaaag catgttgcaa aactttcgct ctttcatcct    24960

cgaacgctcc ggaatcctgc ccgccacctg ctccgcgctg ccctcggact tcgtgccgct    25020

gaccttccgc gagtgccccc cgccgctgtg gagccactgc tacctgctgc gcctggccaa    25080

ctacctggcc taccactcgg acgtgatcga ggacgtcagc ggcgagggcc tgctcgagtg    25140

ccactgccgc tgcaacctct gcacgccgca ccgctccctg gcctgcaacc cccagctgct    25200

gagcgagacc cagatcatcg gcaccttcga gttgcaaggg cccagcgatg agggttccgc    25260

cgccaagggg ggtctgaaac tcaccccggg gctgtggacc tcggcctact tgcgcaagtt    25320

cgtgcccgag gactaccatc ccttcgagat caggttctac gaggaccaat cccagccgcc    25380

caaggccgag ctgtcggcct gcgtcatcac ccaggggcg atcctggccc aattgcaagc    25440

catccagaaa tcccgccaag aattcttgct gaaaaagggc cgcggggtct acctcgaccc    25500

ccagaccggt gaggagctca accccggctt cccccagg atg ccc cga gga aac aag    25556
                                          Met Pro Arg Gly Asn Lys
                                          1               5

aag ctg aaa gtg gag ctg ccg ccc gtg gag gat ttg gag gaa gac tgg      25604
Lys Leu Lys Val Glu Leu Pro Pro Val Glu Asp Leu Glu Glu Asp Trp
            10                  15                  20

gag aac agc agt cag gca gag gag gag gag atg gag gaa gac tgg gac      25652
Glu Asn Ser Ser Gln Ala Glu Glu Glu Glu Met Glu Glu Asp Trp Asp
        25                  30                  35

agc act cag gca gag gag gac agc ctg caa gac agt ctg gag gaa gac      25700
Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu Glu Glu Asp
    40                  45                  50

gag gag gag gca gag gtg gaa gaa gca gcc gcc gcc aga ccg tcg tcc      25748
Glu Glu Glu Ala Glu Val Glu Glu Ala Ala Ala Ala Arg Pro Ser Ser
55                  60                  65                  70

tcg gcg ggg gag aaa gca agc agc acg gat acc atc tcc gct ccg ggt      25796
Ser Ala Gly Glu Lys Ala Ser Ser Thr Asp Thr Ile Ser Ala Pro Gly
                75                  80                  85

cgg ggt ccc gct cgg ccc cac agt aga tgg gac gag acc ggg cga ttc      25844
```

```
Arg Gly Pro Ala Arg Pro His Ser Arg Trp Asp Glu Thr Gly Arg Phe
            90                  95                  100

ccg aac ccc acc acc cag acc ggt aag aag gag cgg cag gga tac aag      25892
Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu Arg Gln Gly Tyr Lys
        105                 110                 115

tcc tgg cgg ggg cac aaa aac gcc atc gtc tcc tgc ttg cag gcc tgc      25940
Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser Cys Leu Gln Ala Cys
    120                 125                 130

ggg ggc aac atc tcc ttc acc cgg cgc tac ctg ctc ttc cac cgc ggg      25988
Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu Leu Phe His Arg Gly
135                 140                 145                 150

gtg aac ttc ccc cgc aac atc ttg cat tac tac cgt cac ctc cac agc      26036
Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr Arg His Leu His Ser
                155                 160                 165

ccc tac tac ttc caa gaa gag gca gca gaa aaa gac cag aaa acc agc      26084
Pro Tyr Tyr Phe Gln Glu Glu Ala Ala Glu Lys Asp Gln Lys Thr Ser
            170                 175                 180

tagaaaatcc acagcggcgg cagcaggtgg actgaggatc gcggcgaacg agccggcgca    26144

gacccgggag ctgaggaacc ggatctttcc caccctctat gccatcttcc agcagagtcg    26204

ggggcaggag caggaactga aagtcaagaa ccgttctctg cgctcgctca cccgcagttg    26264

tctgtatcac aagagcgaag accaacttca gcgcactctc gaggacgccg aggctctctt    26324

caacaagtac tgcgcgctca ctcttaaaga gtagcccgcg cccgcccaca cacggaaaaa    26384

ggcgggaatt acgtcaccac ctgcgccctt cgcccgacca tcatgagcaa agagattccc    26444

acgccttaca tgtggagcta ccagccccag atgggcctgg ccgccggcgc cgcccaggac    26504

tactccaccc gcatgaactg gctcagtgcc gggcccgcga tgatctcacg ggtgaatgac    26564

atccgcgccc gccgaaacca gatactccta gaacagtcag cgatcgccgc cacgccccgc    26624

catcacctta atccgcgtaa ttggcccgcc gccctggtgt accaggaaat tccccagccc    26684

acgaccgtac tacttccgcg agacgcccag gccgaagtcc agctgactaa ctcaggtgtc    26744

cagctggccg gcggcgccgc cctgtgtcgt caccgccccg ctcagggtat aaagcggctg    26804

gtgatccgag gcagaggcac acagctcaac gacgaggtgg tgagctcttc gctgggtctg    26864

cgacctgacg gagtcttcca actcgccgga tcggggagat cttccttcac gcctcgtcag    26924

gccgtcctga ctttggagag ttcgtcctcg cagccccgct cgggcggcat cggcactctc    26984

cagttcgtgg aggagttcac tccctcggtc tacttcaacc ccttctccgg ctccccccggc   27044

cactacccgg acgagttcat cccgaacttc gacgccatca gcgagtcggt ggacggctac    27104

gattgaatgt cccatggtgg cgcagctgac ctagctcggc ttcgacacct ggaccactgc    27164

cgccgcttcc gctgcttcgc tcgggatctc gccgagtttg cctactttga gctgcccgag    27224

gagcaccctc agggcccagc ccacggagtg cggatcatcg tcgaaggggg cctcgactcc    27284

cacctgcttc ggatcttcag ccagcgaccg atcctggtcg agcgcgaaca aggacagacc    27344

cgtctgaccc tgtactgcat ctgcaaccac cccggcctgc atg aaa gtc ttt gtt      27399
                                            Met Lys Val Phe Val
                                                    185
```

```
gtc tgc tgt gta ctg agt ata ata aaa gct gag atc agc gac tac tcc      27447
Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu Ile Ser Asp Tyr Ser
        190                 195                 200

gga ctc gat tgt ggt gtt cct gct atc aac cgg tcc ctg ttc ttc acc      27495
Gly Leu Asp Cys Gly Val Pro Ala Ile Asn Arg Ser Leu Phe Phe Thr
    205                 210                 215

ggg aac gaa acc gag ctc cag ctc cag tgt aag ccc cac aag aag tac      27543
Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys Pro His Lys Lys Tyr
220                 225                 230                 235

ctc acc tgg ctg ttc cag ggc tcc ccc atc gcc gtt gtc aac cac tgc      27591
Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala Val Val Asn His Cys
                240                 245                 250

gac aac gac gga gtc ctg ctg agc ggc cct gcc aac ctt act ttt tcc      27639
Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala Asn Leu Thr Phe Ser
            255                 260                 265

acc cgc aga agc aag ctc cag ctc ttc caa ccc ttc ctc ccc ggg acc      27687
Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro Phe Leu Pro Gly Thr
        270                 275                 280

tat cag tgc gtc tcg gga ccc tgc cat cac acc ttc cac ctg atc ccg      27735
Tyr Gln Cys Val Ser Gly Pro Cys His His Thr Phe His Leu Ile Pro
    285                 290                 295

aat acc aca gcg ccg ctc ccc gct act aac aac caa act aac ctc cac      27783
Asn Thr Thr Ala Pro Leu Pro Ala Thr Asn Asn Gln Thr Asn Leu His
300                 305                 310                 315

caa cgc cac cgt cgc gac ctt tcc tct gaa tct aat acc act acc gga      27831
Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn Thr Thr Thr Gly
                320                 325                 330

ggt gag ctc cga ggt cga cca acc tct ggg att tac tac ggc ccc tgg      27879
Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr Tyr Gly Pro Trp
            335                 340                 345

gag gtg gtg ggg tta ata gcg cta ggc cta gtt gtg ggt ggg ctt ttg      27927
Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Val Gly Gly Leu Leu
        350                 355                 360

gct ctc tgc tac cta tac ctc cct tgc tgt tcg tac tta gtg gtg ctg      27975
Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr Leu Val Val Leu
    365                 370                 375

tgt tgc tgg ttt aag aaa tgg ggc aga tca ccc tagtgagctg cggtgtgctg    28028
Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
380                 385                 390

gtggcggtgc tttcgattgt gggactgggc ggcgcggctg tagtgaagga ggagaaggcc    28088

gatccctgct tgcatttcaa tcccgacaaa tgccagctga gttttcagcc cgatggcaat    28148

cggtgcgcgg tgctgatcaa gtgcggatgg gaatgcgaga acgtgagaat cgagtacaat    28208

aacaagactc ggaacaatac tctcgcgtcc gtgtggcagc ccggggaccc cgagtggtac    28268

accgtctctg tccccggtgc tgacggctcc ccgcgcaccg tgaataatac tttcattttt    28328

gcgcacatgt gcaacacggt catgtggatg agcaagcagt acgatatgtg gccccccacg    28388

aaggagaaca tcgtggtctt ctccatcgct tacagcctgt gcacggcgct aatcaccgct    28448

atcgtgtgcc tgagcattca catgctcatc gctattcgcc ccagaaataa tgccgagaaa    28508

gagaaacagc cataacacgt tttttcacac accttgtttt tacagacaat gcgtctgtta    28568
```

aatttttaa acattgtgct cagtattgct tatgcctctg gttatgcaaa catacagaaa 28628
acccttatg taggatctga tggtacacta gagggtaccc aatcacaagc caaggttgca 28688
tggtattttt atagaaccaa cactgatcca gttaaacttt gtaagggtga attgccgcgt 28748
acacataaaa ctccacttac atttagttgc agcaataata atcttacact tttttcaatt 28808
acaaaacaat atactggtac ttattacagt acaaactttc atacaggaca agataaatat 28868
tatactgtta aggtagaaaa tcctaccact cctagaacta ccaccaccac caccactact 28928
gcaaagccca ctgtgaaaac tacaactagg accaccacaa ctacagaaac caccaccagc 28988
acaacacttg ctgcaactac acacacacac actaagctaa ccttacagac cactaatgat 29048
ttgatcgccc tgctgcaaaa gggggataac agcaccactt ccaatgagga gatacccaaa 29108
tccatgattg gcattattgt tgctgtagtg gtgtgcatgt tgatcatcgc cttgtgcatg 29168
gtgtactatg ccttctgcta cagaaagcac agactgaacg acaagctgga acacttacta 29228
agtgttgaat tttaattttt tagaaccatg aagatcctag gccttttag tttttctatc 29288
attacctctg ctctttgtga atcagtggat agagatgtta ctattaccac tggttctaat 29348
tatacactga aagggccacc ctcaggtatg ctttcgtggt attgctattt tggaactgac 29408
actgatcaaa ctgaattatg caattttcaa aaaggcaaaa cctcaaactc taaaatctct 29468
aattatcaat gcaatggcac tgatctgata ctactcaatg tcacgaaagc atatggtggc 29528
agttattatt gccctggaca aaacactgaa gaaatgattt tttacaaagt ggaagtggtt 29588
gatcccacta caccacccac caccacaact attcatacca cacacacaga acaaacacca 29648
gaggcaacag aagcagagtt ggccttccag gttcacggag attcctttgc tgtcaatacc 29708
cctacacccg atcagcggtg tccggggccg ctagtcagcg gcattgtcgg tgtgctttcg 29768
ggattagcag tcataatcat ctgcatgttc atttttgctt gctgctatag aaggctttac 29828
cgacaaaaat cagacccact gctgaacctc tatgtttaat tttttccaga gccatgaagg 29888
cagttagcgc tctagttttt tgttctttga ttgacattgt ttttaatagt aaaattacca 29948
aagttagctt tattaaacat gttaatgtaa ctgaaggaga taacatcaca ctagcaggtg 30008
tagaaggtgc tcaaaacacc acctggacaa aataccatct aggatggaga gatatttgca 30068
cctggaatgt aacttattat tgcataggaa ttaatcttac cattgttaac gctaaccaat 30128
ctcagaatgg gttaattaaa ggacagagtg ttagtgtgac cagtgatggg tactataccc 30188
agcatagttt taactacaac attactgtca taccactgcc tacgcctagc ccacctagca 30248
ctaccacaca gacaaccaca tacagtacat caaatcagcc taccaccact acagcagcag 30308
aggttgccag ctcgtctggg gtccgagtgg catttttgat gttggcccca tctagcagtc 30368
ccactgctag taccaatgag cagactactg aatttttgtc cactgtcgag agccacacca 30428
cagctacctc cagtgccttc tctagcaccg ccaatctctc ctcgctttcc tctacaccaa 30488
tcagccccgc tactactcct agccccgctc ctcttcccac tcccctgaag caaacagacg 30548
gcggcatgca atggcagatc accctgctca ttgtgatcgg gttggtcatc ctggccgtgt 30608

```
tgctctacta catcttctgc cgccgcattc ccaacgcgca ccgcaagccg gcctacaagc    30668

ccatcgttat cgggcagccg gagccgcttc aggtggaagg gggtctaagg aatcttctct    30728

tctcttttac agtatggtga ttgaactatg attcctagac aattcttgat cactattctt    30788

atctgcctcc tccaagtctg tgccaccctc gctctggtgg ccaacgccag tccagactgt    30848

attgggccct tcgcctccta cgtgctcttt gccttcatca cctgcatctg ctgctgtagc    30908

atagtctgcc tgcttatcac cttcttccag ttcattgact ggatctttgt gcgcatcgcc    30968

tacctgcgcc accaccccca gtaccgcgac cagcgagtgg cgcagctgct caggctcctc    31028

tgataagcat gcgggctctg ctacttctcg cacttctgct gttagtgctc ccccgtcccg    31088

ttgacccccg gccccccact cagtcccccg aggaggtccg caaatgcaaa ttccaagaac    31148

cctggaaatt cctcaaatgc taccgccaaa aatcagacat gcatcccagc tggatcatga    31208

tcattgggat cgtgaacatt ctggcctgca ccctcatctc ctttgtgatt tacccctgct    31268

ttgactttgg ttggaactcg ccagaggcgc tctatctccc gcctgaacct gacacaccac    31328

cacagcaacc tcaggcacac gcactaccac caccaccaca gcctaggcca caatacatgc    31388

ccatattaga ctatgaggcc gagccacagc gacccatgct ccccgctatt agttacttca    31448

atctaaccgg cggag atg act gac cca ctg gcc aac aac aac gtc aac gac      31499
                Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp
                395                 400

ctt ctc ctg gac atg gac ggc cgc gcc tcg gag cag cga ctc gcc caa      31547
Leu Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln
        405                 410                 415

ctt cgc att cgc cag cag cag gag aga gcc gtc aag gag ctg cag gac      31595
Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp
    420                 425                 430

ggc ata gcc atc cac cag tgc aag aaa ggc atc ttc tgc ctg gtg aaa      31643
Gly Ile Ala Ile His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys
435                 440                 445                 450

cag gcc aag atc tcc tac gag gtc acc cag acc gac cat cgc ctc tcc      31691
Gln Ala Lys Ile Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser
                455                 460                 465

tac gag ctc ctg cag cag cgc cag aag ttc acc tgc ctg gtc gga gtc      31739
Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val
            470                 475                 480

aac ccc atc gtc atc acc cag cag tcg ggc gat acc aag ggg tgc atc      31787
Asn Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile
        485                 490                 495

cac tgc tcc tgc gac tcc ccc gac tgc gtc cac act ctg atc aag acc      31835
His Cys Ser Cys Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr
    500                 505                 510

ctc tgc ggc ctc cgc gac ctc ctc ccc atg aac taatcacccc cttatccagt    31888
Leu Cys Gly Leu Arg Asp Leu Leu Pro Met Asn
515                 520                 525

gaaataaaga tcatattgat gattaaataa aa                                  31920
```

<210> 172
<211> 182

<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 172

Met Pro Arg Gly Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val Glu
1 5 10 15

Asp Leu Glu Glu Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Glu Glu
20 25 30

Met Glu Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
35 40 45

Asp Ser Leu Glu Glu Asp Glu Glu Glu Ala Glu Val Glu Glu Ala Ala
50 55 60

Ala Ala Arg Pro Ser Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr Asp
65 70 75 80

Thr Ile Ser Ala Pro Gly Arg Gly Pro Ala Arg Pro His Ser Arg Trp
85 90 95

Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys
100 105 110

Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val
115 120 125

Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr
130 135 140

Leu Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr
145 150 155 160

Tyr Arg His Leu His Ser Pro Tyr Tyr Phe Gln Glu Glu Ala Ala Glu
165 170 175

Lys Asp Gln Lys Thr Ser
180

<210> 173
<211> 208
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 173

Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1 5 10 15

```
Ile Ser Asp Tyr Ser Gly Leu Asp Cys Gly Val Pro Ala Ile Asn Arg
            20                  25                  30

Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys
        35                  40                  45

Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala
    50                  55                  60

Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala
65                  70                  75                  80

Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro
                85                  90                  95

Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr
            100                 105                 110

Phe His Leu Ile Pro Asn Thr Thr Ala Pro Leu Pro Ala Thr Asn Asn
        115                 120                 125

Gln Thr Asn Leu His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser
    130                 135                 140

Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile
145                 150                 155                 160

Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val
                165                 170                 175

Val Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser
            180                 185                 190

Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
        195                 200                 205


<210>  174
<211>  135
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  174

Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp Leu Leu Leu Asp
1               5                   10                  15

Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg
            20                  25                  30

Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Gly Ile Ala Ile
        35                  40                  45
```

```
His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile
    50                  55                  60

Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser Tyr Glu Leu Leu
65                  70                  75                  80

Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val
                85                  90                  95

Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys
            100                 105                 110

Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu
        115                 120                 125

Arg Asp Leu Leu Pro Met Asn
    130                 135
```

<210> 175
<211> 38677
<212> DNA
<213> Artificial Sequence

<220>
<223> Simian adenovirus A1337 clone

<220>
<221> misc_feature
<222> (5)..(12)
<223> Pme\I

<220>
<221> repeat_region
<222> (22)..(144)
<223> ITR

<220>
<221> misc_feature
<222> (471)..(496)
<223> I-Ceu\recognition site

<220>
<221> misc_feature
<222> (484)..(485)
<223> cleavage point for bottom strand

<220>
<221> misc_feature
<222> (488)..(489)
<223> cleavage point for top strand

<220>
<221> enhancer
<222> (838)..(1098)
<223> Enhancer

<220>
<221> misc_feature
<222> (1099)..(1326)
<223> CMV promoter

<220>
<221> TATA_signal
<222> (1300)..(1303)
<223> TATA

<220>
<221> CDS
<222> (1422)..(2513)
<223> Gag\short

<220>
<221> polyA_signal
<222> (2666)..(2868)
<223> BGH-PolyA

<220>
<221> misc_feature
<222> (2941)..(2979)
<223> PI-Scel recognition site

<220>
<221> misc_feature
<222> (2951)..(2952)
<223> cleavage point on bottom strand

<220>
<221> misc_feature
<222> (2955)..(2956)
<223> cleavage point on top strand

<220>
<221> misc_feature
<222> (3947)..(5568)
<223> IVa2   complement (3947..5277,5557..5568)

<220>
<221> misc_feature
<222> (5557)..(13808)
<223> pol   complement (5557..8622,13800..13808)

<220>
<221> misc_feature
<222> (8430)..(13808)
<223> pTP   complement (8430..10358,13800..13808)

<220>
<221> CDS
<222> (10795)..(11976)
<223> 52K

<220>
<221> CDS
<222> (12003)..(13769)
<223> pIIIa

<220>
<221> CDS
<222> (13853)..(15448)
<223> penton

<220>
<221> CDS
<222> (15455)..(16033)
<223> pVII

<220>
<221> CDS
<222> (16078)..(17103)

<223> V

<220>
<221> CDS
<222> (17130)..(17360)
<223> pX

<220>
<221> CDS
<222> (17395)..(18171)
<223> pVI

<220>
<221> CDS
<222> (18277)..(21069)
<223> hexon

<220>
<221> CDS
<222> (21085)..(21714)
<223> protease

<220>
<221> misc_feature
<222> (21794)..(23329)
<223> DBP complement (21794..23329)

<220>
<221> CDS
<222> (23358)..(25760)
<223> 100K

<220>
<221> CDS
<222> (26382)..(27062)
<223> pVIII

<220>
<221> CDS
<222> (27066)..(27383)
<223> E3\12.5K

<220>
<221> CDS
<222> (27960)..(28487)
<223> E3\gp19K

<220>
<221> CDS
<222> (28526)..(29266)
<223> E3\CR1-beta

<220>
<221> CDS
<222> (29928)..(30800)
<223> E3\CR1-delta

<220>
<221> CDS
<222> (31087)..(31533)
<223> E3\RID-beta

<220>
<221> CDS
<222> (32042)..(33511)
<223> fiber

<220>
<221> misc_feature

<222> (33607)..(34934)
<223> E4\orf6/7 complement (33607..33857,34581..34934)

<220>
<221> misc_feature
<222> (33858)..(34754)
<223> E4\orf6 complement (33858..34754)

<220>
<221> misc_feature
<222> (34660)..(35025)
<223> E4\orf4 complement (34660..35025)

<220>
<221> misc_feature
<222> (35037)..(35387)
<223> E4\orf3 complement (35037..35387)

<220>
<221> misc_feature
<222> (35387)..(35773)
<223> E4\orf2 complement (35387..35773)

<220>
<221> misc_feature
<222> (35826)..(36197)
<223> E4\orf1 complement (35826..36197)

<220>
<221> repeat_region
<222> (36475)..(36697)
<223> ITR

<220>
<221> misc_feature
<222> (36607)..(36614)
<223> Pme\I

<220>
<221> misc_feature
<222> (36843)..(36849)
<223> pMB1\ORI complement (36843..36849)

<220>
<221> misc_feature
<222> (36852)..(37440)
<223> pMB1\ori

<220>
<221> rep_origin
<222> (36853)..(36853)
<223> ORI

<220>
<221> misc_feature
<222> (37611)..(38474)
<223> AP(R) complement (37611..38474)

<400> 175
aattgtttaa actaccatca tcaataatat acctcaaact ttttgtgcgc gttaatatgc 60

aaatgaggcg tttgaatttg ggaagggagg aaggtgattg gccgagagaa gggcgaccgt 120

taggggcggg gcgagtgacg ttttgatgac gtggccgcga ggaggagcca gtttgcaagt 180

tctcgtggga aaagtgacgt caaacgaggt gtggtttgaa cacggaaata ctcaattttc 240

ccgcgctctc tgacaggaaa tgaggtgttt ttgggcggat gcaagttaaa acgggccatt 300

```
ttcgcgcgaa aactgaatga ggaagtgaaa atctgagtaa tttcgcgttt atggcaggga      360

ggagtatttg ccgagggccg agtagacttt gaccgattac gtgggggttt cgattaccgt      420

gtttttcacc taaatttccg cgtacggtgt caaagtccgg tgtttttacg taactataac      480

ggtcctaagg tagcgaaagc tcagatctgg atctcccgat cccctatggc gactctcagt      540

acaatctgct ctgatgccgc atagttaagc cagtatctgc tccctgcttg tgtgttggag      600

gtcgctgagt agtgcgcgag caaaatttaa gctacaacaa ggcaaggctt gaccgacaat      660

tgcatgaaga atctgcttag ggttaggcgt tttgcgctgc ttcgcgatgt acgggccaga      720

tatacgcgtt gacattgatt attgactagt tattaatagt aatcaattac ggggtcatta      780

gttcatagcc catatatgga gttccgcgtt acataactta cggtaaatgg cccgcctggc      840

tgaccgccca acgacccccg cccattgacg tcaataatga cgtatgttcc catagtaacg      900

ccaataggga ctttccattg acgtcaatgg gtggactatt tacggtaaac tgcccacttg      960

gcagtacatc aagtgtatca tatgccaagt acgccccta ttgacgtcaa tgacggtaaa     1020

tggcccgcct ggcattatgc ccagtacatg accttatggg actttcctac ttggcagtac     1080

atctacgtat tagtcatcgc tattaccatg gtgatgcggt tttggcagta catcaatggg     1140

cgtggatagc ggtttgactc acggggattt ccaagtctcc accccattga cgtcaatggg     1200

agtttgtttt ggcaccaaaa tcaacgggac tttccaaaat gtcgtaacaa ctccgcccca     1260

ttgacgcaaa tgggcggtag gcgtgtacgg tgggaggtct atataagcag agctcgttta     1320

gtgaaccgtc agatcgcctg gagacgccat ccacgctgtt ttgacctcca tagaagacac     1380

cgggaccgat ccagcctccg cgggcgcgcg tcgacagaga g atg ggt gcg aga gcg     1436
                                              Met Gly Ala Arg Ala
                                              1               5

tca gta tta agc ggg gga gaa tta gat cga tgg gaa aaa att cgg tta      1484
Ser Val Leu Ser Gly Gly Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu
                10                  15                  20

agg cca ggg gga aag aag aag tac aag cta aag cac atc gta tgg gca      1532
Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys His Ile Val Trp Ala
            25                  30                  35

agc agg gag cta gaa cga ttc gca gtt aat cct ggc ctg tta gaa aca      1580
Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro Gly Leu Leu Glu Thr
        40                  45                  50

tca gaa ggc tgt aga caa ata ctg gga cag cta caa cca tcc ctt cag      1628
Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln
    55                  60                  65

aca gga tca gag gag ctt cga tca cta tac aac aca gta gca acc ctc      1676
Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu
70                  75                  80                  85

tat tgt gtg cac cag cgg atc gag atc aag gac acc aag gaa gct tta      1724
Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu
                90                  95                  100

gac aag ata gag gaa gag caa aac aag tcc aag aag aag gcc cag cag      1772
Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys Lys Lys Ala Gln Gln
            105                 110                 115

gca gca gct gac aca gga cac agc aat cag gtc agc caa aat tac cct      1820
```

```
Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro
        120                 125                 130

ata gtg cag aac atc cag ggg caa atg gta cat cag gcc ata tca cct       1868
Ile Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro
    135                 140                 145

aga act tta aat gca tgg gta aaa gta gta gaa gag aag gct ttc agc       1916
Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser
150                 155                 160                 165

cca gaa gtg ata ccc atg ttt tca gca tta tca gaa gga gcc acc cca       1964
Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro
                170                 175                 180

cag gac ctg aac acg atg ttg aac acc gtg ggg gga cat caa gca gcc       2012
Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala
            185                 190                 195

atg caa atg tta aaa gag acc atc aat gag gaa gct gca gat tgg gat       2060
Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Asp Trp Asp
        200                 205                 210

aga gtg cat cca gtg cat gca ggg cct att gca cca ggc cag atg aga       2108
Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg
    215                 220                 225

gaa cca agg gga agt gac ata gca gga act act agt acc ctt cag gaa       2156
Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu
230                 235                 240                 245

caa ata gga tgg atg aca aat aat cca cct atc cca gta gga gag atc       2204
Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly Glu Ile
                250                 255                 260

tac aag agg tgg ata atc ctg gga ttg aac aag atc gtg agg atg tat       2252
Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr
            265                 270                 275

agc cct acc agc att ctg gac ata aga caa gga cca aag gaa ccc ttt       2300
Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe
        280                 285                 290

aga gac tat gta gac cgg ttc tat aaa act cta aga gct gag caa gct       2348
Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala
    295                 300                 305

tca cag gag gta aaa aat tgg atg aca gaa acc ttg ttg gtc caa aat       2396
Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn
310                 315                 320                 325

gcg aac cca gat tgt aag acc atc ctg aag gct ctc ggc cca gcg gct       2444
Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Ala Ala
                330                 335                 340

aca cta gaa gaa atg atg aca gca tgt cag gga gta gga gga ccc ggc       2492
Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro Gly
            345                 350                 355

cat aag gca aga gtt ttg tag ggatccacta gttctagact cgaggggggg          2543
His Lys Ala Arg Val Leu
        360

cccggtacct ttaagaccaa tgacttacaa ggcagctgta gatcttagcc acttttaaa      2603

agaaaagggg ggactggaag ggctaattca ctcccaaaga agacaagata aaccgctgat     2663

cagcctcgac tgtgccttct agttgccagc catctgttgt ttgcccctcc cccgtgcctt     2723
```

ccttgaccct ggaaggtgcc actcccactg tcctttccta ataaaatgag gaaattgcat 2783

cgcattgtct gagtaggtgt cattctattc tgggggtgtgg ggtggggcag gacagcaagg 2843

gggaggattg ggaagacaat agcaggcatg ctggggatgc ggtgggctct atggcttctg 2903

aggcggaaag aaccagcaga tctgcagatc tgaattcatc tatgtcgggt gcggagaaag 2963

aggtaatgaa atggcacata tgctggccac cgtgcatgtg gcttcccatg cccgcaagcc 3023

ctggcccgag ttcgagcaca atgtcatgac caggtgcaat atgcatctgg ggtctcgccg 3083

aggcatgttc atgccctacc agtgcaacct gaattatgtg aaggtgctgc tggagcccga 3143

tgccatgtcc agagtgagcc tgacgggggt gtttgacatg aatgtggagg tgtggaagat 3203

tctgagatat gatgaatcca agaccaggtg ccgagcctgc gagtgcggag ggaagcatgc 3263

caggttccag cccgtgtgtg tggatgtgac ggaggacctg cgacccgatc atttggtgtt 3323

gtcctgcacc gggacggagt tcggttccag cggggaagaa tctgactaga gtgagtagtg 3383

ttctggggcg ggggaggacc tgcatgaggg ccagaatgat tgaaatctgt gcttttctgt 3443

gtgttgcagc agcatgagcg gaagcggctc ctttgaggga ggggtattca gcccttatct 3503

gacggggcgt ctcccctcct gggcgggagt gcgtcagaat gtgatgggat ccacggtgga 3563

cggccggccc gtgcagcccg cgaactcttc aaccctgacc tatgcaaccc tgagctcttc 3623

gtcggtggac gcagctgccg ccgcagctgc tgcatctgcc gccagcgccg tgcgcggaat 3683

ggccatgggc gccggctact acggcactct ggtggccaac tcgagttcca ccaataatcc 3743

cgccagcctg aacgaggaga agctgctgct gctgatggcc cagctcgagg ccttgaccca 3803

gcgcctgggc gagctgaccc agcaggtggc tcagctgcag gagcagacgc gggccgcggt 3863

tgccacggtg aaatccaaat aaaaaatgaa tcaataaata aacggagacg gttgttgatt 3923

ttaacacaga gtctgaatct ttatttgatt tttcgcgcgc ggtaggccct ggaccaccgg 3983

tctcgatcat tgagcactcg gtggatcttt tccaggaccc ggtagaggtg ggcttggatg 4043

ttgaggtaca tgggcatgag cccgtcccgg gggtggaggt agctccattg cagggcctcg 4103

tgctcggggg tggtgttgta aatcacccag tcatagcagg ggcgcagggc atggtgttgc 4163

acaatatctt tgaggaggag actgatggcc acgggcagcc ctttggtgta ggtgtttaca 4223

aatctgttga gctgggaggg atgcatgcgg ggggagatga ggtgcatctt ggcctggatc 4283

ttgagattgg cgatgttacc gcccagatcc cgcctggggt tcatgttgtg caggaccacc 4343

agcacggtgt atccggtgca cttggggaat ttatcatgca acttggaagg gaaggcgtga 4403

aagaatttgg cgacgccctt gtgcccgccc aggttttcca tgcactcatc catgatgatg 4463

gcgatggggc cgtgggcggc ggcctgggca aaaacgtttc gggggtcgga cacatcatag 4523

ttgtggtcct gggtgagatc atcataggcc attttaatga atttggggcg gagggtgccg 4583

gactggggga caaaggtacc ctcgatcccg ggggcgtagt tcccctcaca gatctgcatc 4643

tcccaggctt tgagctcgga gggggggatc atgtccacct gcggggcgat aaagaacacg 4703

gtttccgggg cgggagagat gagctgggcc gaaagcaagt tccggagcag ctgggacttg 4763

ccgcagccgg tggggccgta gatgaccccg atgaccggtt gcaggtggta gttgagggag 4823

agacagctgc cgtcctcccg gaggaggggg gccacctcgt tcatcatctc gcgcacgtgc 4883
atgttctcgc gcaccagttc cgccaggagg cgctctcccc ccagggatag gagctcctgg 4943
agcgaggcga agtttttcag cggcttgagt ccgtcggcca tgggcatttt ggagagggtc 5003
tgttgcaaga gttccaagcg gtcccagagc tcggtgatgt gctctacggc atctcgatcc 5063
agcagacctc ctcgtttcgc gggttggggc ggctgcggga gtagggcacc agacgatggg 5123
cgtccagcgc agccagggtc cggtccttcc agggtcgcag cgtccgcgtc agggtggtct 5183
ccgtcacggt gaaggggtgc gcgccgggct gggcgcttgc gagggtgcgc ttcaggctca 5243
tccggctggt cgaaaaccgc tcccgatcgg cgccctgcgc gtcggccagg tagcaattga 5303
ccatgagttc gtaattgagc gcctcggccg cgtgaccttt ggcgcggagc ttacctttgg 5363
aagtctgccc gcaggtggga cagaggaggg acttgagggc gtagagcttg ggggcgagga 5423
agacggactc gggggcgtag gcgtccgcgc cgcagtgggc gcagacggtc tcgcactcca 5483
cgagccaggt gaggtcgggc tggtcggggt caaaaaccag tttcccgccg ttctttttga 5543
tgcgtttctt acctttggtc tccatgagct cgtgtccccg ctgggtgaca aagaggctgt 5603
ccgtgtcccc gtagaccgac tttatgggcc ggtcctcgag cggtgtgccg cggtcctcct 5663
cgtagaggaa ccccgcccac tccgagacga aagcccgggt ccaggccagc acgaaggagg 5723
ccacgtggga cgggtagcgg tcgttgtcca ccagcgggtc caccttctcc agggtatgca 5783
aacacatgtc cccctcgtcc acatccagga aggtgattgg cttgtaagtg taggccacgt 5843
gaccgggggt cccagccggg ggggtataaa agggggcggg cccctgctcg tcctcactgt 5903
cttccggatc gctgtccagg agcgccagct gttggggtag gtattccctc tcgaaggcgg 5963
gcatgacctc ggcactcagg ttgtcagttt ctagaaacga ggaggatttg atattgacgg 6023
tgccggcgga gatgcctttc aagagcccct cgtccatctg gtcagaaaag acgatctttt 6083
tgttgtcgag tttggtggcg aaggagccgt agagggcatt ggagaggagc ttggcgatag 6143
agcgcatggt ctggtttttt tccttgtcgg cgcgctcctt ggccgcgatg ttgagctgca 6203
cgtactcgcg cgccacgcac ttccattcgg ggaagacggt ggtcagctcg tcgggcacga 6263
ttctgacttg ccagccccgg ttatgcaggg tgatgaggtc cacactggtg cccacctcgc 6323
cgcgcagggg ctcgttggtc cagcagagtc gaccgccctt gcgcgagcag aaggggggca 6383
gggggtccag catgacctcg tcgggggggt cggcatcgat ggtgaagatg cctggcagga 6443
gatcggggtc gaagtagctg atggaagtgg ccagatcgtc cagggcagct tgccattcgc 6503
gcacggccag cgcgcgctcg tagggactga ggggcgtgcc ccaaggcatg gggtgtgtga 6563
gcgcggaggc gtacatgccg cagatgtcgt agacgtagag gggctcctcg aggatgccga 6623
tgtaggtggg gtaacagcgc cccccgcgga tgctggcgcg cacgtagtca tacagctcat 6683
gcgagggggc gaggagcccc gggcccaggt tggtgcgact gggcttttcg gcgcggtaga 6743
cgatctggcg aaagatggca tgcgagttgg aggagatggt gggcctttgg aagatgttga 6803
agtgggcgtg gggcagaccg accgagtcgc ggatgaagtg ggcgtaggag tcttgcagtt 6863

tggcgacgag ctcggcggtg acgaggacgt ccagagcgca gtagtcgagg gtctcctgga 6923

tgatgtcata cttgagctgg ccctttttgtt tccacagctc gcggttgaga aggaactctt 6983

cgcggtcctt ccagtactct tcgaggggga acccgtcctg atctgcacgg taagagccta 7043

gcatgtagaa ctggttgacg gccttgtagg cgcagcagcc cttctccacg gggagggcgt 7103

aggcctgggc ggccttgcgc agggaggtgt gcgtgagggc gaaggtgtcc ctgaccatga 7163

ccttgaggaa ctggtgcttg aaatcgatat cgtcgcagcc cccctgctcc cagagctgga 7223

agtccgtgcg cttcttgtag gcggggttgg gcaaagcgaa agtaacatcg ttgaaaagga 7283

tcttgcccgc gcggggcata aagttgcgag tgatgcggaa aggctggggc acctcggccc 7343

ggttgttgat gacctgggcg gcgagcacga tctcgtcgaa accgttgatg ttgtggccca 7403

cgatgtagag ttccacgaat cgcgggcggc ccttgacgtg gggcagcttc ttgagctcct 7463

cgtaggtgag ctcgtcgggg tcgctgagac cgtgctgctc gagcgcccag tcggcgagat 7523

gggggttggc gcggaggaag gaagtccaga gatccacggc cagggcggtt tgcagacggt 7583

cccggtactg acggaactgc tgcccgacgg ccatttttc gggggtgacg cagtagaagg 7643

tgcgggggtc cccgtgccag cggtcccatt tgagctggag ggcgagatcg agggcgagct 7703

cgacgaggcg gtcgtccccg gagagtttca tgaccagcat gaaggggacg agctgcttgc 7763

cgaaggaccc catccaggtg taggtttcca catcgtaggt gaggaagagc ctttcggtgc 7823

gaggatgcga gccgatgggg aagaactgga tctcctgcca ccaattggag gaatggctgt 7883

tgatgtgatg gaagtagaaa tgccgacggc gcgccgaaca ctcgtgcttg tgtttataca 7943

agcggccaca gtgctcgcaa cgctgcacgg gatgcacgtg ctgcacgagc tgtacctgag 8003

ttcctttgac gaggaatttc agtgggaagt ggagtcgtgg cgcctgcatc tcgtgctgta 8063

ctacgtcgtg gtggtcggcc tggccctctt ctgcctcgat ggtggtcatg ctgacgagcc 8123

cgcgcgggag gcaggtccag acctcggcgc gagcgggtcg gagagcgagg acgagggcgc 8183

gcaggccgga gctgtccagg gtcctgagac gctgcggagt caggtcagtg ggcagcggcg 8243

gcgcgcggtt gacttgcagg agtttttcca gggcgcgcgg gaggtccaga tggtacttga 8303

tctccaccgc gccgttggtg gcgacgtcga tggcttgcag ggtcccgtgc ccctggggtg 8363

tgaccaccgt cccccgtttc ttcttgggcg gctggggcga cgggggcggt gcctcttcca 8423

tggttagaag cggcggcgag gacgcgcgcc gggcggcaga ggcggctcgg ggcccggagg 8483

caggggcggc aggggcacgt cggcgccgcg cgcgggtagg ttctggtact gcgcccggag 8543

aagactggcg tgagcgacga cgcgacggtt gacgtcctgg atctgacgcc tctgggtgaa 8603

ggccacggga cccgtgagtt tgaacctgaa agagagttcg acagaatcaa tctcggtatc 8663

gttgacggcg gcctgccgca ggatctcttg cacgtcgccc gagttgtcct ggtaggcgat 8723

ctcggtcatg aactgctcga tctcctcctc ctgaaggtct ccgcggccgg cgcgctccac 8783

ggtggccgcg aggtcgttgg agatgcggcc catgagctgc gagaaggcgt tcatgcccgc 8843

ctcgttccag acgcggctgt agaccacgac gccctcggga tcgcgggcgc gcatgaccac 8903

ctgggcgagg ttgagctcca cgtggcgcgt gaagaccgcg tagttgcaga ggcgctggta 8963

```
gaggtagttg agcgtggtgg cgatgtgctc ggtgacgaag aaatacatga tccagcggcg     9023

gagcggcatc tcgctgacgt cgcccagcgc ctccaagcgt tccatggcct cgtaaaagtc     9083

cacggcgaag ttgaaaaact gggagttgcg cgccgagacg gtcaactcct cctccagaag     9143

acggatgagc tcggcgatgg tggcgcgcac ctcgcgctcg aaggcccccg ggagttcctc     9203

ctcttccatc tcctcttctt cctcctccac taacatctct tctacttcct cctcaggcgg     9263

tggtggcggg ggaggggggcc tgcgtcgccg gcggcgcacg ggcagacggt cgatgaagcg     9323

ctcgatggtc tcgccgcgcc ggcgtcgcat ggtctcggtg acggcgcgcc cgtcctcgcg     9383

gggccgcagc gtgaagacgc cgccgcgcat ctccaggtgg ccgggggggt ccccgttggg     9443

cagggagagg gcgctgacga tgcatcttat caattgcccc gtagggactc cgcgcaagga     9503

cctgagcgtc tcgagatcca cgggatctga aaaccgttga acgaaggctt cgagccagtc     9563

gcagtcgcaa ggtaggctga gcacggtttc ttctggcggg tcatgttggg gagcggggcg     9623

ggcgatgctg ctggtgatga agttgaaata ggcggttctg agacggcgga tggtggcgag     9683

gagcaccagg tctttgggcc cggcttgctg gatgcgcaga cggtcggcca tgccccaggc     9743

gtggtcctga cacctggcca ggtccttgta gtagtcctgc atgagccgct ccacgggcac     9803

ctcctcctcg cccgcgcggc cgtgcatgcg cgtgagcccg aagccgcgct ggggctggac     9863

gagcgccagg tcggcgacga cgcgctcggc gaggatggcc tgctggatct gggtgagggt     9923

ggtctggaag tcgtcaaagt cgacgaagcg gtggtaggct ccggtgttga tggtgtagga     9983

gcagttggcc atgacggacc agttgacggt ctggtggccc ggacgcacga gctcgtggta    10043

cttgaggcgc gagtaggcgc gcgtgtcgaa gatgtagtcg ttgcaggtgc gcaccaggta    10103

ctggtagccg atgaggaagt gcggcggcgg ctggcggtag agcggccatc gctcggtggc    10163

gggggcgccg ggcgcgaggt cctcgagcat ggtgcggtgg tagccgtaga tgtacctgga    10223

catccaggtg atgccggcgg cggtggtgga ggcgcgcggg aactcgcgga cgcggttcca    10283

gatgttgcgc agcggcagga agtagttcat ggtgggcacg gtctggcccg tgaggcgcgc    10343

gcagtcgtgg atgctctata cgggcaaaaa cgaaagcggt cagcggctcg actccgtggc    10403

ctggaggcta agcgaacggg ttgggctgcg cgtgtacccc ggttcgaatc tcgaatcagg    10463

ctggagccgc agctaacgtg gtactggcac tcccgtctcg acccaagcct gcaccaaccc    10523

tccaggatac ggaggcgggt cgttttgcaa ctttttttcg gaggccggaa atgaagacta    10583

gtaagcgcgg aaagcggccg accgcgatgg ctcgctgccg tagtctggag aagaatcgcc    10643

agggttgcgt tgcggtgtgc cccggttcga ggccggccgg attccgcggc taacgagggc    10703

gtggctgccc cgtcgtttcc aagacccccct agccagccga cttctccagt tacggagcga    10763

gcccctcttt tgttttgttt gtttttgcca g atg cat ccc gta ctg cgg cag        10815
                                    Met His Pro Val Leu Arg Gln
                                        365                 370

atg cgc ccc cac cac cct cca ccg caa caa cag ccc cct cca cag ccg      10863
Met Arg Pro His His Pro Pro Pro Gln Gln Gln Pro Pro Pro Gln Pro
                375                 380                 385
```

```
gcg ctt ctg ccc ccg ccc cag cag cag cag caa ctt cca gcc acg acc      10911
Ala Leu Leu Pro Pro Pro Gln Gln Gln Gln Leu Pro Ala Thr Thr
            390                 395                 400

gcc gcg gcc gcc gtg agc ggg gct gga cag act tct cag tat gac ctg      10959
Ala Ala Ala Ala Val Ser Gly Ala Gly Gln Thr Ser Gln Tyr Asp Leu
        405                 410                 415

gcc ttg gaa gag ggc gag ggg ctg gcg cgc ctg ggg gcg tcg tcg ccg      11007
Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser Pro
    420                 425                 430

gag cgg cac ccg cgc gtg cag atg aaa agg gac gct cgc gag gcc tac      11055
Glu Arg His Pro Arg Val Gln Met Lys Arg Asp Ala Arg Glu Ala Tyr
435                 440                 445                 450

gtg ccc aag cag aac ctg ttc aga gac agg agc ggc gag gag ccc gag      11103
Val Pro Lys Gln Asn Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro Glu
                455                 460                 465

gag atg cgc gcg gcc cgg ttc cac gcg ggg cgg gag ctg cgg cgc ggc      11151
Glu Met Arg Ala Ala Arg Phe His Ala Gly Arg Glu Leu Arg Arg Gly
            470                 475                 480

ctg gac cga aag agg gtg ctg agg gac gag gat ttc gag gcg gac gag      11199
Leu Asp Arg Lys Arg Val Leu Arg Asp Glu Asp Phe Glu Ala Asp Glu
        485                 490                 495

ctg acg ggg atc agc ccc gcg cgc gcg cac gtg gcc gcg gcc aac ctg      11247
Leu Thr Gly Ile Ser Pro Ala Arg Ala His Val Ala Ala Ala Asn Leu
    500                 505                 510

gtc acg gcg tac gag cag acc gtg aag gag gag agc aac ttc caa aaa      11295
Val Thr Ala Tyr Glu Gln Thr Val Lys Glu Glu Ser Asn Phe Gln Lys
515                 520                 525                 530

tcc ttc aac aac cac gtg cgc acc ctg atc gcg cgc gag gag gtg acc      11343
Ser Phe Asn Asn His Val Arg Thr Leu Ile Ala Arg Glu Glu Val Thr
                535                 540                 545

ctg ggc ctg atg cac ctg tgg gac ctg ctg gag gcc atc gtg cag aac      11391
Leu Gly Leu Met His Leu Trp Asp Leu Leu Glu Ala Ile Val Gln Asn
            550                 555                 560

ccc acc agc aag ccg ctg acg gcg cag ctg ttc ctg gtg gtg cag cat      11439
Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu Phe Leu Val Val Gln His
        565                 570                 575

agt cgg gac aac gag gcg ttc agg gag gcg ctg ctg aat atc acc gag      11487
Ser Arg Asp Asn Glu Ala Phe Arg Glu Ala Leu Leu Asn Ile Thr Glu
    580                 585                 590

ccc gag ggc cgc tgg ctc ctg gac ctg gtg aac att ctg cag agc atc      11535
Pro Glu Gly Arg Trp Leu Leu Asp Leu Val Asn Ile Leu Gln Ser Ile
595                 600                 605                 610

gtg gtg cag gag cgc ggg ctg ccg ctg tcc gag aag ctg gcg gcc atc      11583
Val Val Gln Glu Arg Gly Leu Pro Leu Ser Glu Lys Leu Ala Ala Ile
                615                 620                 625

aac ttc tcg gtg ctg agt ctg ggc aag tac tac gct agg aag atc tac      11631
Asn Phe Ser Val Leu Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile Tyr
            630                 635                 640

aag acc ccg tac gtg ccc ata gac aag gag gtg aag atc gac ggg ttt      11679
Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu Val Lys Ile Asp Gly Phe
        645                 650                 655

tac atg cgc atg acc ctg aaa gtg ctg acc ctg agc gac gat ctg ggg      11727
```

```
Tyr Met Arg Met Thr Leu Lys Val Leu Thr Leu Ser Asp Asp Leu Gly
    660                 665                 670

gtg tac cgc aac gac agg atg cac cgc gcg gtg agc gcc agc agg cgg      11775
Val Tyr Arg Asn Asp Arg Met His Arg Ala Val Ser Ala Ser Arg Arg
675                 680                 685                 690

cgc gag ctg agc gac cag gag ctg atg cat agt ctg cag cgg gcc ctg      11823
Arg Glu Leu Ser Asp Gln Glu Leu Met His Ser Leu Gln Arg Ala Leu
                695                 700                 705

acc ggg gcc ggg acc gag ggg gag agc tac ttt gac atg ggc gcg gac      11871
Thr Gly Ala Gly Thr Glu Gly Glu Ser Tyr Phe Asp Met Gly Ala Asp
            710                 715                 720

ctg cac tgg cag ccc agc cgc cgg gcc ttg gag gcg gca ggc ggt ccc      11919
Leu His Trp Gln Pro Ser Arg Arg Ala Leu Glu Ala Ala Gly Gly Pro
        725                 730                 735

ccc tac ata gaa gag gtg gac gat gag gtg gac gag gag ggc gag tac      11967
Pro Tyr Ile Glu Glu Val Asp Asp Glu Val Asp Glu Glu Gly Glu Tyr
    740                 745                 750

ctg gaa gac tgatggcgcg accgtatttt tgctag atg caa caa cag cca cct     12020
Leu Glu Asp                             Met Gln Gln Gln Pro Pro
755                                             760

cct gat ccc gcg atg cgg gcg gcg ctg cag agc cag ccg tcc ggc att      12068
Pro Asp Pro Ala Met Arg Ala Ala Leu Gln Ser Gln Pro Ser Gly Ile
    765                 770                 775

aac tcc tcg gac gat tgg acc cag gcc atg caa cgc atc atg gcg ctg      12116
Asn Ser Ser Asp Asp Trp Thr Gln Ala Met Gln Arg Ile Met Ala Leu
780                 785                 790                 795

acg acc cgc aac ccc gaa gcc ttt aga cag cag ccc cag gcc aac cgg      12164
Thr Thr Arg Asn Pro Glu Ala Phe Arg Gln Gln Pro Gln Ala Asn Arg
                800                 805                 810

ctc tcg gcc atc ctg gag gcc gtg gtg ccc tcg cgc tcc aac ccc acg      12212
Leu Ser Ala Ile Leu Glu Ala Val Val Pro Ser Arg Ser Asn Pro Thr
            815                 820                 825

cac gag aag gtc ctg gcc atc gtg aac gcg ctg gtg gag aac aag gcc      12260
His Glu Lys Val Leu Ala Ile Val Asn Ala Leu Val Glu Asn Lys Ala
        830                 835                 840

atc cgc ggc gac gag gcc ggc ctg gtg tac aac gcg ctg ctg gag cgc      12308
Ile Arg Gly Asp Glu Ala Gly Leu Val Tyr Asn Ala Leu Leu Glu Arg
    845                 850                 855

gtg gcc cgc tac aac agc acc aac gtg cag acc aac ctg gac cgc atg      12356
Val Ala Arg Tyr Asn Ser Thr Asn Val Gln Thr Asn Leu Asp Arg Met
860                 865                 870                 875

gtg acc gac gtg cgc gag gcc gtg gcc cag cgc gag cgg ttc cac cgc      12404
Val Thr Asp Val Arg Glu Ala Val Ala Gln Arg Glu Arg Phe His Arg
                880                 885                 890

gag tcc aac ctg gga tcc atg gtg gcg ctg aac gcc ttc ctc agc acc      12452
Glu Ser Asn Leu Gly Ser Met Val Ala Leu Asn Ala Phe Leu Ser Thr
            895                 900                 905

cag ccc gcc aac gtg ccc cgg ggc cag gag gac tac acc aac ttc atc      12500
Gln Pro Ala Asn Val Pro Arg Gly Gln Glu Asp Tyr Thr Asn Phe Ile
        910                 915                 920

agc gcc ctg cgc ctg atg gtg acc gag gtg ccc cag agc gag gtg tac      12548
Ser Ala Leu Arg Leu Met Val Thr Glu Val Pro Gln Ser Glu Val Tyr
```

```
    925                 930                 935

cag tcc ggg ccg gac tac ttc ttc cag acc agt cgc cag ggc ttg cag      12596
Gln Ser Gly Pro Asp Tyr Phe Phe Gln Thr Ser Arg Gln Gly Leu Gln
940                 945                 950                 955

acc gtg aac ctg agc cag gcg ttc aag aac ttg cag ggc ctg tgg ggc      12644
Thr Val Asn Leu Ser Gln Ala Phe Lys Asn Leu Gln Gly Leu Trp Gly
                960                 965                 970

gtg cag gcc ccg gtc ggg gac cgc gcg acg gtg tcg agc ctg ctg acg      12692
Val Gln Ala Pro Val Gly Asp Arg Ala Thr Val Ser Ser Leu Leu Thr
            975                 980                 985

ccg aac tcg cgc ctg ctg ctg ctg ctg gtg gcc ccc ttc  acg gac agc     12740
Pro Asn Ser Arg Leu Leu Leu Leu Leu Val Ala Pro Phe  Thr Asp Ser
        990                 995                 1000

ggc agc  atc aac cgc aac tcg  tac ctg ggc tac ctg  att aac ctg       12785
Gly Ser  Ile Asn Arg Asn Ser  Tyr Leu Gly Tyr Leu  Ile Asn Leu
    1005                1010                1015

tac cgc  gag gcc atc ggc cag  gcg cac gtg gac gag  cag acc tac       12830
Tyr Arg  Glu Ala Ile Gly Gln  Ala His Val Asp Glu  Gln Thr Tyr
    1020                1025                1030

cag gag  atc acc cac gtg agc  cgc gcc ctg ggc cag  gac gac ccg       12875
Gln Glu  Ile Thr His Val Ser  Arg Ala Leu Gly Gln  Asp Asp Pro
    1035                1040                1045

ggc aat  ctg gaa gcc acc ctg  aac ttt ttg ctg acc  aac cgg tcg       12920
Gly Asn  Leu Glu Ala Thr Leu  Asn Phe Leu Leu Thr  Asn Arg Ser
    1050                1055                1060

cag aag  atc ccg ccc cag tac  acg ctc agc gcc gag  gag gag cgc       12965
Gln Lys  Ile Pro Pro Gln Tyr  Thr Leu Ser Ala Glu  Glu Glu Arg
    1065                1070                1075

atc ctg  cga tac gtg cag cag  agc gtg ggc ctg ttc  ctg atg cag       13010
Ile Leu  Arg Tyr Val Gln Gln  Ser Val Gly Leu Phe  Leu Met Gln
    1080                1085                1090

gag ggg  gcc acc ccc agc gcc  gcg ctc gac atg acc  gcg cgc aac       13055
Glu Gly  Ala Thr Pro Ser Ala  Ala Leu Asp Met Thr  Ala Arg Asn
    1095                1100                1105

atg gag  ccc agc atg tac gcc  agc aac cgc ccg ttc  atc aat aaa       13100
Met Glu  Pro Ser Met Tyr Ala  Ser Asn Arg Pro Phe  Ile Asn Lys
    1110                1115                1120

ctg atg  gac tac ttg cat cgg  gcg gcc gcc atg aac  tct gac tat       13145
Leu Met  Asp Tyr Leu His Arg  Ala Ala Ala Met Asn  Ser Asp Tyr
    1125                1130                1135

ttc acc  aac gcc atc ctg aat  ccc cac tgg ctc ccg  ccg ccg ggg       13190
Phe Thr  Asn Ala Ile Leu Asn  Pro His Trp Leu Pro  Pro Pro Gly
    1140                1145                1150

ttc tac  acg ggc gag tac gac  atg ccc gac ccc aat  gac ggg ttc       13235
Phe Tyr  Thr Gly Glu Tyr Asp  Met Pro Asp Pro Asn  Asp Gly Phe
    1155                1160                1165

ctg tgg  gac gat gtg gac agc  agc gtg ttc tcc ccc  cga ccg ggt       13280
Leu Trp  Asp Asp Val Asp Ser  Ser Val Phe Ser Pro  Arg Pro Gly
    1170                1175                1180

gct aac  gag cgc ccc ttg tgg  aag aag gaa ggc agc  gac cga cgc       13325
Ala Asn  Glu Arg Pro Leu Trp  Lys Lys Glu Gly Ser  Asp Arg Arg
    1185                1190                1195
```

```
ccg tcc  tcg gcg ctg tcc ggc  cgc gag ggt gct gcc  gcg gcg gtg       13370
Pro Ser  Ser Ala Leu Ser Gly  Arg Glu Gly Ala Ala  Ala Ala Val
    1200                 1205                 1210

ccc gag  gcc gcc agt cct ttc  ccg agc ttg ccc ttc  tcg ctg aac       13415
Pro Glu  Ala Ala Ser Pro Phe  Pro Ser Leu Pro Phe  Ser Leu Asn
    1215                 1220                 1225

agt att  cgc agc agc gag ctg  ggc agg atc acg cgc  ccg cgc ttg       13460
Ser Ile  Arg Ser Ser Glu Leu  Gly Arg Ile Thr Arg  Pro Arg Leu
    1230                 1235                 1240

ctg ggc  gag gag gag tac ttg  aat gac tcg ctg ttg  aga ccc gag       13505
Leu Gly  Glu Glu Glu Tyr Leu  Asn Asp Ser Leu Leu  Arg Pro Glu
    1245                 1250                 1255

cgg gag  aag aac ttc ccc aat  aac ggg ata gag agc  ctg gtg gac       13550
Arg Glu  Lys Asn Phe Pro Asn  Asn Gly Ile Glu Ser  Leu Val Asp
    1260                 1265                 1270

aag atg  agc cgc tgg aag acg  tat gcg cag gag cac  agg gac gat       13595
Lys Met  Ser Arg Trp Lys Thr  Tyr Ala Gln Glu His  Arg Asp Asp
    1275                 1280                 1285

ccg tcg  cag ggg gcc acg agc  cgg ggc agc gcc gcc  cgt aaa cgc       13640
Pro Ser  Gln Gly Ala Thr Ser  Arg Gly Ser Ala Ala  Arg Lys Arg
    1290                 1295                 1300

cgg tgg  cac gac agg cag cgg  gga ctg atg tgg gac  gat gag gat       13685
Arg Trp  His Asp Arg Gln Arg  Gly Leu Met Trp Asp  Asp Glu Asp
    1305                 1310                 1315

tcc gcc  gac gac agc agc gtg  ttg gac ttg ggt ggg  agt ggt aac       13730
Ser Ala  Asp Asp Ser Ser Val  Leu Asp Leu Gly Gly  Ser Gly Asn
    1320                 1325                 1330

ccg ttc  gct cac ctg cgc ccc  cgc atc ggg cgc atg  atg taagagaaac    13779
Pro Phe  Ala His Leu Arg Pro  Arg Ile Gly Arg Met  Met
    1335                 1340                 1345

cgaaaataaa tgatactcac caaggccatg gcgaccagcg tgcgttcgtt tcttctctgt    13839

tgttgtatct agt atg atg agg cgt  gcg tac ccg gag ggt  cct cct ccc     13888
              Met Met Arg Arg  Ala Tyr Pro Glu Gly  Pro Pro Pro
                          1350                 1355

tcg tac  gag agc gtg atg cag  cag gcg atg gcg gcg  gcg gcg gcg       13933
Ser Tyr  Glu Ser Val Met Gln  Gln Ala Met Ala Ala  Ala Ala Ala
    1360                 1365                 1370

atg cag  ccc ccg ctg gag gct  cct tac gtg ccc ccg  cgg tac ctg       13978
Met Gln  Pro Pro Leu Glu Ala  Pro Tyr Val Pro Pro  Arg Tyr Leu
    1375                 1380                 1385

gcg cct  acg gag ggg cgg aac  agc att cgt tac tcg  gag ctg gca       14023
Ala Pro  Thr Glu Gly Arg Asn  Ser Ile Arg Tyr Ser  Glu Leu Ala
    1390                 1395                 1400

ccc ttg  tac gat acc acc cgg  ttg tac ctg gtg gac  aac aag tcg       14068
Pro Leu  Tyr Asp Thr Thr Arg  Leu Tyr Leu Val Asp  Asn Lys Ser
    1405                 1410                 1415

gcg gac  atc gcc tcg ctg aac  tac cag aac gac cac  agc aac ttc       14113
Ala Asp  Ile Ala Ser Leu Asn  Tyr Gln Asn Asp His  Ser Asn Phe
    1420                 1425                 1430

ctg acc  acc gtg gtg cag aac  aat gac ttc acc ccc  acg gag gcc       14158
Leu Thr  Thr Val Val Gln Asn  Asn Asp Phe Thr Pro  Thr Glu Ala
```

```
    1435                1440                1445

agc acc  cag acc atc aac ttt  gac gag cgc tcg cgg  tgg ggc ggt       14203
Ser Thr  Gln Thr Ile Asn Phe  Asp Glu Arg Ser Arg  Trp Gly Gly
    1450                1455                1460

cag ctg  aaa acc atc atg cac  acc aac atg ccc aac  gtg aac gag       14248
Gln Leu  Lys Thr Ile Met His  Thr Asn Met Pro Asn  Val Asn Glu
    1465                1470                1475

ttc atg  tac agc aac aag ttc  aag gcg cgg gtg atg  gtc tcc cgc       14293
Phe Met  Tyr Ser Asn Lys Phe  Lys Ala Arg Val Met  Val Ser Arg
    1480                1485                1490

aag acc  ccc aac ggg gtg aca  gtg aca gat ggt agt  cag gat atc       14338
Lys Thr  Pro Asn Gly Val Thr  Val Thr Asp Gly Ser  Gln Asp Ile
    1495                1500                1505

ttg gag  tat gaa tgg gtg gag  ttt gag ctg ccc gaa  ggc aac ttc       14383
Leu Glu  Tyr Glu Trp Val Glu  Phe Glu Leu Pro Glu  Gly Asn Phe
    1510                1515                1520

tcg gtg  acc atg acc atc gac  ctg atg aac aac gcc  atc atc gac       14428
Ser Val  Thr Met Thr Ile Asp  Leu Met Asn Asn Ala  Ile Ile Asp
    1525                1530                1535

aat tac  ttg gcg gtg ggg cgg  cag aac ggg gtc ctg  gag agc gat       14473
Asn Tyr  Leu Ala Val Gly Arg  Gln Asn Gly Val Leu  Glu Ser Asp
    1540                1545                1550

atc ggc  gtg aag ttc gac act  agg aac ttc agg ctg  ggc tgg gac       14518
Ile Gly  Val Lys Phe Asp Thr  Arg Asn Phe Arg Leu  Gly Trp Asp
    1555                1560                1565

ccc gtg  acc gag ctg gtc atg  ccc ggg gtg tac acc  aac gag gcc       14563
Pro Val  Thr Glu Leu Val Met  Pro Gly Val Tyr Thr  Asn Glu Ala
    1570                1575                1580

ttc cac  ccc gat att gtc ttg  ctg ccc ggc tgc ggg  gtg gac ttc       14608
Phe His  Pro Asp Ile Val Leu  Leu Pro Gly Cys Gly  Val Asp Phe
    1585                1590                1595

acc gag  agc cgc ctc agc aac  ctg ctg ggc att cgc  aag agg cag       14653
Thr Glu  Ser Arg Leu Ser Asn  Leu Leu Gly Ile Arg  Lys Arg Gln
    1600                1605                1610

ccc ttc  cag gag ggc ttc cag  atc atg tac gag gat  ctg gag ggg       14698
Pro Phe  Gln Glu Gly Phe Gln  Ile Met Tyr Glu Asp  Leu Glu Gly
    1615                1620                1625

ggc aac  atc ccc gcg ctc ctg  gat gtc gac gcc tat  gag aaa agc       14743
Gly Asn  Ile Pro Ala Leu Leu  Asp Val Asp Ala Tyr  Glu Lys Ser
    1630                1635                1640

aag gag  gag agc gcc gcc gcg  gcg act gca gct gta  gcc acc gcc       14788
Lys Glu  Glu Ser Ala Ala Ala  Ala Thr Ala Ala Val  Ala Thr Ala
    1645                1650                1655

tct acc  gag gtc agg ggc gat  aat ttt gcc agc cct  gca gca gtg       14833
Ser Thr  Glu Val Arg Gly Asp  Asn Phe Ala Ser Pro  Ala Ala Val
    1660                1665                1670

gca gcg  gcc gag gcg gct gaa  acc gaa agt aag ata  gtc att cag       14878
Ala Ala  Ala Glu Ala Ala Glu  Thr Glu Ser Lys Ile  Val Ile Gln
    1675                1680                1685

ccg gtg  gag aag gat agc aag  gac agg agc tac aac  gtg ctg ccg       14923
Pro Val  Glu Lys Asp Ser Lys  Asp Arg Ser Tyr Asn  Val Leu Pro
    1690                1695                1700
```

```
gac aag  ata aac acc gcc tac  cgc agc tgg tac ctg  gcc tac aac       14968
Asp Lys  Ile Asn Thr Ala Tyr  Arg Ser Trp Tyr Leu  Ala Tyr Asn
    1705                 1710                 1715

tat ggc  gac ccc gag aag ggc  gtg cgc tcc tgg acg  ctg ctc acc       15013
Tyr Gly  Asp Pro Glu Lys Gly  Val Arg Ser Trp Thr  Leu Leu Thr
    1720                 1725                 1730

acc tcg  gac gtc acc tgc ggc  gtg gag caa gtc tac  tgg tcg ctg       15058
Thr Ser  Asp Val Thr Cys Gly  Val Glu Gln Val Tyr  Trp Ser Leu
    1735                 1740                 1745

ccc gac  atg atg caa gac ccg  gtc acc ttc cgc tcc  acg cgt caa       15103
Pro Asp  Met Met Gln Asp Pro  Val Thr Phe Arg Ser  Thr Arg Gln
    1750                 1755                 1760

gtt agc  aac tac ccg gtg gtg  ggc gcc gag ctc ctg  ccc gtc tac       15148
Val Ser  Asn Tyr Pro Val Val  Gly Ala Glu Leu Leu  Pro Val Tyr
    1765                 1770                 1775

tcc aag  agc ttc ttc aac gag  cag gcc gtc tac tcg  cag cag ctg       15193
Ser Lys  Ser Phe Phe Asn Glu  Gln Ala Val Tyr Ser  Gln Gln Leu
    1780                 1785                 1790

cgc gcc  ttc acc tcg ctc acg  cac gtc ttc aac cgc  ttc ccc gag       15238
Arg Ala  Phe Thr Ser Leu Thr  His Val Phe Asn Arg  Phe Pro Glu
    1795                 1800                 1805

aac cag  atc ctc gtc cgc ccg  ccc gcg ccc acc att  acc acc gtc       15283
Asn Gln  Ile Leu Val Arg Pro  Pro Ala Pro Thr Ile  Thr Thr Val
    1810                 1815                 1820

agt gaa  aac gtt cct gct ctc  aca gat cac ggg acc  ctg ccg ctg       15328
Ser Glu  Asn Val Pro Ala Leu  Thr Asp His Gly Thr  Leu Pro Leu
    1825                 1830                 1835

cgc agc  agt atc cgg gga gtc  cag cgc gtg acc gtt  act gac gcc       15373
Arg Ser  Ser Ile Arg Gly Val  Gln Arg Val Thr Val  Thr Asp Ala
    1840                 1845                 1850

aga cgc  cgc acc tgc ccc tac  gtc tac aag gcc ctg  ggc ata gtc       15418
Arg Arg  Arg Thr Cys Pro Tyr  Val Tyr Lys Ala Leu  Gly Ile Val
    1855                 1860                 1865

gcg ccg  cgc gtc ctc tcg agc  cgc acc ttc taaaaa atg tcc  att ctc    15466
Ala Pro  Arg Val Leu Ser Ser  Arg Thr Phe        Met Ser  Ile Leu
    1870                 1875                     1880

atc tcg ccc  agt aat aac acc ggt  tgg ggc ctg cgc gcg  ccc agc       15511
Ile Ser Pro  Ser Asn Asn Thr Gly  Trp Gly Leu Arg Ala  Pro Ser
        1885                 1890                 1895

aag atg tac  gga ggc gct cgc caa  cgc tcc acg caa cac  ccc gtg       15556
Lys Met Tyr  Gly Gly Ala Arg Gln  Arg Ser Thr Gln His  Pro Val
        1900                 1905                 1910

cgc gtg cgc  ggg cac ttc cgc gct  ccc tgg ggc gcc ctc  aag ggc       15601
Arg Val Arg  Gly His Phe Arg Ala  Pro Trp Gly Ala Leu  Lys Gly
        1915                 1920                 1925

cgc gtg cgg  tcg cgc acc acc gtc  gac gac gtg atc gac  cag gtg       15646
Arg Val Arg  Ser Arg Thr Thr Val  Asp Asp Val Ile Asp  Gln Val
        1930                 1935                 1940

gtg gcc gac  gcg cgc aac tac acc  ccc gcc gcc gcg ccc  gtc tcc       15691
Val Ala Asp  Ala Arg Asn Tyr Thr  Pro Ala Ala Ala Pro  Val Ser
        1945                 1950                 1955
```

```
acc gtg gac  gcc gtc atc gac agc  gtg gtg gcc gac gcg  cgc cgg       15736
Thr Val Asp  Ala Val Ile Asp Ser  Val Val Ala Asp Ala  Arg Arg
        1960                 1965                 1970

tac gcc cgc  gcc aag agc cgg cgg  cgg cgc atc gcc cgg  cgg cac       15781
Tyr Ala Arg  Ala Lys Ser Arg Arg  Arg Arg Ile Ala Arg  Arg His
        1975                 1980                 1985

cgg agc acc  ccc gcc atg cgc gcg  gcg cga gcc ttg ctg  cgc agg       15826
Arg Ser Thr  Pro Ala Met Arg Ala  Ala Arg Ala Leu Leu  Arg Arg
        1990                 1995                 2000

gcc agg cgc  acg gga cgc agg gcc  atg ctc agg gcg gcc  aga cgc       15871
Ala Arg Arg  Thr Gly Arg Arg Ala  Met Leu Arg Ala Ala  Arg Arg
        2005                 2010                 2015

gcg gcc tca  ggc gcc agc gcc ggc  agg acc cgg aga cgc  gcg gcc       15916
Ala Ala Ser  Gly Ala Ser Ala Gly  Arg Thr Arg Arg Arg  Ala Ala
        2020                 2025                 2030

acg gcg gcg  gca gcg gcc atc gcc  agc atg tcc cgc ccg  cgg cga       15961
Thr Ala Ala  Ala Ala Ala Ile Ala  Ser Met Ser Arg Pro  Arg Arg
        2035                 2040                 2045

ggg aac gtg  tac tgg gtg cgc gac  gcc gcc acc ggt gtg  cgc gtg       16006
Gly Asn Val  Tyr Trp Val Arg Asp  Ala Ala Thr Gly Val  Arg Val
        2050                 2055                 2060

ccc gtg cgc  acc cgc ccc cct cgc  act tgaagatgtt cacttcgcga         16053
Pro Val Arg  Thr Arg Pro Pro Arg  Thr
        2065                 2070

tgttgatgtg tcccagcggc gagg atg tcc aag cgc  aaa ttc aag gaa gag      16104
                          Met Ser Lys Arg  Lys Phe Lys Glu Glu
                                       2075                 2080

atg ctc cag gtc atc  gcg cct gag atc tac  ggc ccc gcg gtg gtg       16149
Met Leu Gln Val Ile  Ala Pro Glu Ile Tyr  Gly Pro Ala Val Val
                2085                 2090                 2095

aag gag gaa aga aag  ccc cgc aaa atc aag  cgg gtc aaa aag gac       16194
Lys Glu Glu Arg Lys  Pro Arg Lys Ile Lys  Arg Val Lys Lys Asp
                2100                 2105                 2110

aaa aag gaa gaa gaa  agt gat gtg gac gga  ctg gtg gag ttt gtg       16239
Lys Lys Glu Glu Glu  Ser Asp Val Asp Gly  Leu Val Glu Phe Val
                2115                 2120                 2125

cgc gag ttc gcc ccc  cgg cgg cgc gtg cag  tgg cgc ggg cgg aag       16284
Arg Glu Phe Ala Pro  Arg Arg Arg Val Gln  Trp Arg Gly Arg Lys
                2130                 2135                 2140

gtg cgc ccg gtg ctg  aga cca ggc act acg  gtg gtc ttc acg ccc       16329
Val Arg Pro Val Leu  Arg Pro Gly Thr Thr  Val Val Phe Thr Pro
                2145                 2150                 2155

ggc gag cgc tcc ggc  acc gct tcc aag cgc  tcc tac gac gag gtg       16374
Gly Glu Arg Ser Gly  Thr Ala Ser Lys Arg  Ser Tyr Asp Glu Val
                2160                 2165                 2170

tac ggg gac gag gac  atc ctc gag cag gcg  gcc gag cgc ctg ggc       16419
Tyr Gly Asp Glu Asp  Ile Leu Glu Gln Ala  Ala Glu Arg Leu Gly
                2175                 2180                 2185

gag ttt gct tac ggc  aag cgc agc cgc tcc  gcg ccg aag gaa gag       16464
Glu Phe Ala Tyr Gly  Lys Arg Ser Arg Ser  Ala Pro Lys Glu Glu
                2190                 2195                 2200

gcg gtg tcc atc ccg  ctg gac cac ggc aac  ccc acg ccg agc ctc       16509
```

```
Ala Val Ser Ile Pro  Leu Asp His Gly Asn  Pro Thr Pro Ser Leu
                2205                2210                2215

aag ccc gtg acc ctg  cag cag gtg ctg ccg  acc gcg gcg ccg cgc        16554
Lys Pro Val Thr Leu  Gln Gln Val Leu Pro  Thr Ala Ala Pro Arg
                2220                2225                2230

cgg ggg ttc aag cgc  gag ggc gag gat ctg  tac ccc acc atg cag        16599
Arg Gly Phe Lys Arg  Glu Gly Glu Asp Leu  Tyr Pro Thr Met Gln
                2235                2240                2245

ctg atg gtg ccc aag  cgc cag aag ctg gaa  gac gtg ctg gag acc        16644
Leu Met Val Pro Lys  Arg Gln Lys Leu Glu  Asp Val Leu Glu Thr
                2250                2255                2260

atg aag gtg gac ccg  gac gtg cag ccc gag  gtc aag gtg cgg ccc        16689
Met Lys Val Asp Pro  Asp Val Gln Pro Glu  Val Lys Val Arg Pro
                2265                2270                2275

atc aag cag gtg gcc  ccg ggc ctg ggc gtg  cag acc gtg gac atc        16734
Ile Lys Gln Val Ala  Pro Gly Leu Gly Val  Gln Thr Val Asp Ile
                2280                2285                2290

aag atc ccc acg gag  ccc atg gaa acg cag  acc gag ccc gtg aaa        16779
Lys Ile Pro Thr Glu  Pro Met Glu Thr Gln  Thr Glu Pro Val Lys
                2295                2300                2305

ccc agc acc agc acc  atg gag gtg cag acg  gat cct tgg atg cca        16824
Pro Ser Thr Ser Thr  Met Glu Val Gln Thr  Asp Pro Trp Met Pro
                2310                2315                2320

tcg gct act agc cga  aga ccc cgg cgc aag  tac ggc gcg gcc agc        16869
Ser Ala Thr Ser Arg  Arg Pro Arg Arg Lys  Tyr Gly Ala Ala Ser
                2325                2330                2335

ctg ctg atg ccc aac  tac gcg ctg cat cct  tcc atc atc ccc acg        16914
Leu Leu Met Pro Asn  Tyr Ala Leu His Pro  Ser Ile Ile Pro Thr
                2340                2345                2350

ccg ggc tac cgc ggc  acg cgc ttc tac cgc  ggt cat aca agc cgc        16959
Pro Gly Tyr Arg Gly  Thr Arg Phe Tyr Arg  Gly His Thr Ser Arg
                2355                2360                2365

cgc cgc aag acc acc  acc cgc cgc cgc cgt  cgc cgc aca acc gct        17004
Arg Arg Lys Thr Thr  Thr Arg Arg Arg Arg  Arg Arg Thr Thr Ala
                2370                2375                2380

gct gca tct acc cct  gcc gcc ctg gtg cgg  aga gtg tac cgc cgc        17049
Ala Ala Ser Thr Pro  Ala Ala Leu Val Arg  Arg Val Tyr Arg Arg
                2385                2390                2395

ggc cgc gcg cct ctg  acc ctg ccg cgc gcg  cgc tac cac ccg agc        17094
Gly Arg Ala Pro Leu  Thr Leu Pro Arg Ala  Arg Tyr His Pro Ser
                2400                2405                2410

att gcc att taaactttcg cctgctttgc agatca atg gcc  ctc aca tgc cgc    17147
Ile Ala Ile                              Met Ala  Leu Thr Cys Arg
                                             2415

ctc  cgc gtt ccc att acg  ggc tac cga gga aga  aaa ccg cgc cgt       17192
Leu  Arg Val Pro Ile Thr  Gly Tyr Arg Gly Arg  Lys Pro Arg Arg
2420                2425                2430

aga  agg ctg gcg ggg aac  ggg atg cgt cgc cac  cac cac cgg cgg       17237
Arg  Arg Leu Ala Gly Asn  Gly Met Arg Arg His  His His Arg Arg
2435                2440                2445

cgg  cgc gcc atc agc aag  cgg ttg ggg gga ggc  ttc ctg ccc gcg       17282
Arg  Arg Ala Ile Ser Lys  Arg Leu Gly Gly Gly  Phe Leu Pro Ala
```

```
2450                 2455                 2460

ctg  atc ccc atc atc gcc  gcg gcg atc ggg gcg  atc ccc ggc att       17327
Leu  Ile Pro Ile Ile Ala  Ala Ala Ile Gly Ala  Ile Pro Gly Ile
2465                 2470                 2475

gct  tcc gtg gcg gtg cag  gcc tct cag cgc cac  tgagacacac           17370
Ala  Ser Val Ala Val Gln  Ala Ser Gln Arg His
2480                 2485                 2490

ttggaaacat cttgtaataa acca atg gac tct gac gct  cct ggt cct gtg      17421
                           Met Asp Ser Asp Ala  Pro Gly Pro Val
                                                2495

atg  tgt ttt cgt aga cag  atg gaa gac atc aat  ttt tcg tcc ctg       17466
Met  Cys Phe Arg Arg Gln  Met Glu Asp Ile Asn  Phe Ser Ser Leu
2500                 2505                 2510

gct  ccg cga cac ggc acg  cgg ccg ttc atg ggc  acc tgg agc gac       17511
Ala  Pro Arg His Gly Thr  Arg Pro Phe Met Gly  Thr Trp Ser Asp
2515                 2520                 2525

atc  ggc acc agc caa ctg  aac ggg ggc gcc ttc  aat tgg agc agt       17556
Ile  Gly Thr Ser Gln Leu  Asn Gly Gly Ala Phe  Asn Trp Ser Ser
2530                 2535                 2540

ctc  tgg agc ggg ctt aag  aat ttc ggg tcc acg  ctt aaa acc tat       17601
Leu  Trp Ser Gly Leu Lys  Asn Phe Gly Ser Thr  Leu Lys Thr Tyr
2545                 2550                 2555

ggc  agc aag gcg tgg aac  agc acc aca ggg cag  gcg ctg agg gat       17646
Gly  Ser Lys Ala Trp Asn  Ser Thr Thr Gly Gln  Ala Leu Arg Asp
2560                 2565                 2570

aag  ctg aaa gag cag aac  ttc cag cag aag gtg  gtc gat ggc ctg       17691
Lys  Leu Lys Glu Gln Asn  Phe Gln Gln Lys Val  Val Asp Gly Leu
2575                 2580                 2585

gcc  tcg ggc atc aac ggg  gtg gtg gac ctg gcc  aac cag gcc gtg       17736
Ala  Ser Gly Ile Asn Gly  Val Val Asp Leu Ala  Asn Gln Ala Val
2590                 2595                 2600

cag  cgg cag atc aac agc  cgc ctg gac ccg gtg  ccg ccc gcc ggc       17781
Gln  Arg Gln Ile Asn Ser  Arg Leu Asp Pro Val  Pro Pro Ala Gly
2605                 2610                 2615

tcc  gtg gag atg ccg cag  gtg gag gag gag ctg  cct ccc ctg gac       17826
Ser  Val Glu Met Pro Gln  Val Glu Glu Glu Leu  Pro Pro Leu Asp
2620                 2625                 2630

aag  cgg ggc gag aag cga  ccc cgc ccc gac gcg  gag gag acg ctg       17871
Lys  Arg Gly Glu Lys Arg  Pro Arg Pro Asp Ala  Glu Glu Thr Leu
2635                 2640                 2645

ctg  acg cac acg gac gag  ccg ccc ccg tac gag  gag gcg gtg aaa       17916
Leu  Thr His Thr Asp Glu  Pro Pro Pro Tyr Glu  Glu Ala Val Lys
2650                 2655                 2660

ctg  ggc ctg ccc acc acg  cgg ccc atc gcg cct  ctg gcc acc ggg       17961
Leu  Gly Leu Pro Thr Thr  Arg Pro Ile Ala Pro  Leu Ala Thr Gly
2665                 2670                 2675

gtg  ctg aaa ccc gaa agt  agt aag ccc gcg acc  ctg gac ttg cct       18006
Val  Leu Lys Pro Glu Ser  Ser Lys Pro Ala Thr  Leu Asp Leu Pro
2680                 2685                 2690

cct  ccc cag cct tcc cgc  ccc tcc aca gtg gct  aag cct ctg ccg       18051
Pro  Pro Gln Pro Ser Arg  Pro Ser Thr Val Ala  Lys Pro Leu Pro
2695                 2700                 2705
```

```
ccg  gtg gcc gtg gcc cgc  gcg cga ccc ggg ggc  acc gcc cgc cct       18096
Pro  Val Ala Val Ala Arg  Ala Arg Pro Gly Gly  Thr Ala Arg Pro
2710                 2715                 2720

cat  gcg aac tgg cag agc  act ctg aac agc atc  gtg ggt ctg gga       18141
His  Ala Asn Trp Gln Ser  Thr Leu Asn Ser Ile  Val Gly Leu Gly
2725                 2730                 2735

gtg  cag agt gtg aag cgc  cgc cgc tgc tat taaacctacc gtagcgctta      18191
Val  Gln Ser Val Lys Arg  Arg Arg Cys Tyr
2740                 2745

acttgcttgt ctgtgtgtgt atgtattatg tcgccgccgc tgtcgccaga aggaggagtg    18251

aagaggcgcg tcgccgagtt gcaag atg  gcc acc cca tcg atg  ctg ccc cag    18303
                            Met  Ala Thr Pro Ser Met  Leu Pro Gln
                            2750                 2755

tgg gcg  tac atg cac atc gcc  gga cag gac gct tcg  gag tac ctg       18348
Trp Ala  Tyr Met His Ile Ala  Gly Gln Asp Ala Ser  Glu Tyr Leu
    2760                 2765                 2770

agt ccg  ggt ctg gtg cag ttc  gcc cgc gcc aca gac  acc tac ttc       18393
Ser Pro  Gly Leu Val Gln Phe  Ala Arg Ala Thr Asp  Thr Tyr Phe
    2775                 2780                 2785

agt ctg  ggg aac aag ttt agg  aac ccc acg gtg gcg  ccc acg cac       18438
Ser Leu  Gly Asn Lys Phe Arg  Asn Pro Thr Val Ala  Pro Thr His
    2790                 2795                 2800

gat gtg  acc acc gac cgc agc  cag cgg ctg acg ctg  cgc ttc gtg       18483
Asp Val  Thr Thr Asp Arg Ser  Gln Arg Leu Thr Leu  Arg Phe Val
    2805                 2810                 2815

ccc gtg  gac cgc gag gac aac  acc tac tcg tac aaa  gtg cgc tac       18528
Pro Val  Asp Arg Glu Asp Asn  Thr Tyr Ser Tyr Lys  Val Arg Tyr
    2820                 2825                 2830

acg ctg  gcc gtg ggc gac aac  cgc gtg ctg gac atg  gcc agc acc       18573
Thr Leu  Ala Val Gly Asp Asn  Arg Val Leu Asp Met  Ala Ser Thr
    2835                 2840                 2845

tac ttt  gac atc cgc ggc gtg  ctg gac cgg ggc cct  agc ttc aaa       18618
Tyr Phe  Asp Ile Arg Gly Val  Leu Asp Arg Gly Pro  Ser Phe Lys
    2850                 2855                 2860

ccc tac  tcc ggc acc gcc tac  aat gct ctg gcc ccc  aag gga gca       18663
Pro Tyr  Ser Gly Thr Ala Tyr  Asn Ala Leu Ala Pro  Lys Gly Ala
    2865                 2870                 2875

ccc aac  act tgc cag tgg aca  tac aca gat aag caa  acc gaa aaa       18708
Pro Asn  Thr Cys Gln Trp Thr  Tyr Thr Asp Lys Gln  Thr Glu Lys
    2880                 2885                 2890

aca gcc  acg tat ggg aat gcg  cct gta caa ggc att  gcc atc aca       18753
Thr Ala  Thr Tyr Gly Asn Ala  Pro Val Gln Gly Ile  Ala Ile Thr
    2895                 2900                 2905

aaa gat  ggt att caa ctt gga  act gac agt gat gga  aat cct gta       18798
Lys Asp  Gly Ile Gln Leu Gly  Thr Asp Ser Asp Gly  Asn Pro Val
    2910                 2915                 2920

tat gct  caa aag aca ttt gaa  ccc gaa cct caa gtg  ggt gat gca       18843
Tyr Ala  Gln Lys Thr Phe Glu  Pro Glu Pro Gln Val  Gly Asp Ala
    2925                 2930                 2935

gaa tgg  cat gac act aca ggt  aca gat gaa aag tat  gga ggc agg       18888
Glu Trp  His Asp Thr Thr Gly  Thr Asp Glu Lys Tyr  Gly Gly Arg
```

```
    2940                2945                2950

gca ctt  aag cct gac acc aaa  atg aag cct tgc tat  ggt tct ttt       18933
Ala Leu  Lys Pro Asp Thr Lys  Met Lys Pro Cys Tyr  Gly Ser Phe
    2955                2960                2965

gcc aaa  ccc act aac aaa gaa  ggt gga cag gca aag  aac aga aca       18978
Ala Lys  Pro Thr Asn Lys Glu  Gly Gly Gln Ala Lys  Asn Arg Thr
    2970                2975                2980

aaa act  gat gga act ggc gaa  gag cct gat att gat  atg gca ttt       19023
Lys Thr  Asp Gly Thr Gly Glu  Glu Pro Asp Ile Asp  Met Ala Phe
    2985                2990                2995

ttt gac  ggc aga aat gca act  aca gct ggt ttg gct  cca gaa att       19068
Phe Asp  Gly Arg Asn Ala Thr  Thr Ala Gly Leu Ala  Pro Glu Ile
    3000                3005                3010

gtt ttg  tat act gag aat gtg  gat ctg gag act cca  gat acc cat       19113
Val Leu  Tyr Thr Glu Asn Val  Asp Leu Glu Thr Pro  Asp Thr His
    3015                3020                3025

att gta  tac aaa gca ggc aca  gat gac agc agc tct  tcg att aat       19158
Ile Val  Tyr Lys Ala Gly Thr  Asp Asp Ser Ser Ser  Ser Ile Asn
    3030                3035                3040

ttg ggg  cag caa tcc atg ccc  aac aga ccc aac tac  att ggg ttc       19203
Leu Gly  Gln Gln Ser Met Pro  Asn Arg Pro Asn Tyr  Ile Gly Phe
    3045                3050                3055

aga gac  aac ttt atc ggg ctc  atg tac tac aac agc  act ggc aat       19248
Arg Asp  Asn Phe Ile Gly Leu  Met Tyr Tyr Asn Ser  Thr Gly Asn
    3060                3065                3070

atg ggg  gtg ctg gcc ggt cag  gct tct cag ctg aat  gct gtg gtt       19293
Met Gly  Val Leu Ala Gly Gln  Ala Ser Gln Leu Asn  Ala Val Val
    3075                3080                3085

gac ttg  caa gac aga aac acc  gaa ctg tcc tac cag  ctc ttg ctt       19338
Asp Leu  Gln Asp Arg Asn Thr  Glu Leu Ser Tyr Gln  Leu Leu Leu
    3090                3095                3100

gac tct  ctg ggc gac aga acc  ctg tat ttc agt atg  tgg aat cag       19383
Asp Ser  Leu Gly Asp Arg Thr  Leu Tyr Phe Ser Met  Trp Asn Gln
    3105                3110                3115

gcg gtg  gac agc tat gat cct  gat gtg cgc att att  gaa aac cat       19428
Ala Val  Asp Ser Tyr Asp Pro  Asp Val Arg Ile Ile  Glu Asn His
    3120                3125                3130

ggt gtg  gaa gat gaa ctt ccc  aac tat tgc ttc cct  ctg gat gct       19473
Gly Val  Glu Asp Glu Leu Pro  Asn Tyr Cys Phe Pro  Leu Asp Ala
    3135                3140                3145

gtt ggt  agg aca gat act tat  cag gga att aag ccc  aat gga ggc       19518
Val Gly  Arg Thr Asp Thr Tyr  Gln Gly Ile Lys Pro  Asn Gly Gly
    3150                3155                3160

gat cca  gcc aca tgg gcc aaa  gat gac agc gcc aat  gat gct aat       19563
Asp Pro  Ala Thr Trp Ala Lys  Asp Asp Ser Ala Asn  Asp Ala Asn
    3165                3170                3175

gaa atg  ggc aag ggc aat cca  ttc gcc atg gaa atc  aac atc caa       19608
Glu Met  Gly Lys Gly Asn Pro  Phe Ala Met Glu Ile  Asn Ile Gln
    3180                3185                3190

gcc aac  ctg tgg agg aac ttc  ctc tac gcc aac gtg  gcc ctg tac       19653
Ala Asn  Leu Trp Arg Asn Phe  Leu Tyr Ala Asn Val  Ala Leu Tyr
    3195                3200                3205
```

```
cta ccc  gat tct tac aag tac  acg ccg gcc aac gtc  acc ctg ccc       19698
Leu Pro  Asp Ser Tyr Lys Tyr  Thr Pro Ala Asn Val  Thr Leu Pro
    3210                 3215                 3220

acc aac  acc aac acc tac gat  tat atg aac ggc cgg  gtg gtg gcg       19743
Thr Asn  Thr Asn Thr Tyr Asp  Tyr Met Asn Gly Arg  Val Val Ala
    3225                 3230                 3235

cct tcg  ctg gtg gac tcc tac  atc aac atc ggg gcg  cgc tgg tcg       19788
Pro Ser  Leu Val Asp Ser Tyr  Ile Asn Ile Gly Ala  Arg Trp Ser
    3240                 3245                 3250

ctg gac  ccc atg gac aac gtc  aat ccc ttc aac cac  cac cgc aac       19833
Leu Asp  Pro Met Asp Asn Val  Asn Pro Phe Asn His  His Arg Asn
    3255                 3260                 3265

gcg ggc  ttg cgc tac cgc tcc  atg ctc ctg ggc aac  ggg cgc tac       19878
Ala Gly  Leu Arg Tyr Arg Ser  Met Leu Leu Gly Asn  Gly Arg Tyr
    3270                 3275                 3280

gtg ccc  ttc cac atc cag gtg  ccc cag aaa ttt ttc  gcc atc aag       19923
Val Pro  Phe His Ile Gln Val  Pro Gln Lys Phe Phe  Ala Ile Lys
    3285                 3290                 3295

agc ctc  ctg ctc ctg ccc ggg  tcc tac acc tac gag  tgg aac ttc       19968
Ser Leu  Leu Leu Leu Pro Gly  Ser Tyr Thr Tyr Glu  Trp Asn Phe
    3300                 3305                 3310

cgc aag  gac gtc aac atg atc  ctg cag agc tcc ctc  ggc aac gac       20013
Arg Lys  Asp Val Asn Met Ile  Leu Gln Ser Ser Leu  Gly Asn Asp
    3315                 3320                 3325

ctg cgc  acg gac ggg gcc tcc  atc tcc ttc acc agc  atc aac ctc       20058
Leu Arg  Thr Asp Gly Ala Ser  Ile Ser Phe Thr Ser  Ile Asn Leu
    3330                 3335                 3340

tac gcc  acc ttc ttc ccc atg  gcg cac aac acg gcc  tcc acg ctc       20103
Tyr Ala  Thr Phe Phe Pro Met  Ala His Asn Thr Ala  Ser Thr Leu
    3345                 3350                 3355

gag gcc  atg ctg cgc aac gac  acc aac gac cag tcc  ttc aac gac       20148
Glu Ala  Met Leu Arg Asn Asp  Thr Asn Asp Gln Ser  Phe Asn Asp
    3360                 3365                 3370

tac ctc  tcg gcg gcc aac atg  ctc tac ccc atc ccg  gcc aac gcc       20193
Tyr Leu  Ser Ala Ala Asn Met  Leu Tyr Pro Ile Pro  Ala Asn Ala
    3375                 3380                 3385

acc aac  gtg ccc atc tcc atc  ccc tcg cgc aac tgg  gcc gcc ttc       20238
Thr Asn  Val Pro Ile Ser Ile  Pro Ser Arg Asn Trp  Ala Ala Phe
    3390                 3395                 3400

cgc ggc  tgg tcc ttc acg cgc  ctc aag acc aag gag  acg ccc tcg       20283
Arg Gly  Trp Ser Phe Thr Arg  Leu Lys Thr Lys Glu  Thr Pro Ser
    3405                 3410                 3415

ctg ggc  tcc ggg ttc gac ccc  tac ttc gtc tac tcg  ggc tcc atc       20328
Leu Gly  Ser Gly Phe Asp Pro  Tyr Phe Val Tyr Ser  Gly Ser Ile
    3420                 3425                 3430

ccc tac  ctc gac ggc acc ttc  tac ctc aac cac acc  ttc aag aag       20373
Pro Tyr  Leu Asp Gly Thr Phe  Tyr Leu Asn His Thr  Phe Lys Lys
    3435                 3440                 3445

gtc tcc  atc acc ttc gac tcc  tcc gtc agc tgg ccc  ggc aac gac       20418
Val Ser  Ile Thr Phe Asp Ser  Ser Val Ser Trp Pro  Gly Asn Asp
    3450                 3455                 3460
```

```
cgg ctc  ctg acg ccc aac gag  ttc gaa atc aag cgc  acc gtc gac       20463
Arg Leu  Leu Thr Pro Asn Glu  Phe Glu Ile Lys Arg  Thr Val Asp
    3465                 3470                 3475

ggc gag  ggc tac aac gtg gcc  cag tgc aac atg acc  aag gac tgg       20508
Gly Glu  Gly Tyr Asn Val Ala  Gln Cys Asn Met Thr  Lys Asp Trp
    3480                 3485                 3490

ttc ctg  gtc cag atg ctg gcc  cac tac aac atc ggc  tac cag ggc       20553
Phe Leu  Val Gln Met Leu Ala  His Tyr Asn Ile Gly  Tyr Gln Gly
    3495                 3500                 3505

ttc tac  gtg ccc gag ggc tac  aag gac cgc atg tac  tcc ttc ttc       20598
Phe Tyr  Val Pro Glu Gly Tyr  Lys Asp Arg Met Tyr  Ser Phe Phe
    3510                 3515                 3520

cgc aac  ttc cag ccc atg agc  cgc cag gtg gtg gac  gag gtc aac       20643
Arg Asn  Phe Gln Pro Met Ser  Arg Gln Val Val Asp  Glu Val Asn
    3525                 3530                 3535

tac aag  gac tac cag gcc gtc  acc ctg gcc tac cag  cac aac aac       20688
Tyr Lys  Asp Tyr Gln Ala Val  Thr Leu Ala Tyr Gln  His Asn Asn
    3540                 3545                 3550

tcg ggc  ttc gtc ggc tac ctc  gcg ccc acc atg cgc  cag ggc cag       20733
Ser Gly  Phe Val Gly Tyr Leu  Ala Pro Thr Met Arg  Gln Gly Gln
    3555                 3560                 3565

ccc tac  ccc gcc aac tac ccg  tac ccg ctc atc ggc  aag agc gcc       20778
Pro Tyr  Pro Ala Asn Tyr Pro  Tyr Pro Leu Ile Gly  Lys Ser Ala
    3570                 3575                 3580

gtc acc  agc gtc acc cag aaa  aag ttc ctc tgc gac  agg gtc atg       20823
Val Thr  Ser Val Thr Gln Lys  Lys Phe Leu Cys Asp  Arg Val Met
    3585                 3590                 3595

tgg cgc  atc ccc ttc tcc agc  aac ttc atg tcc atg  ggc gcg ctc       20868
Trp Arg  Ile Pro Phe Ser Ser  Asn Phe Met Ser Met  Gly Ala Leu
    3600                 3605                 3610

acc gac  ctc ggc cag aac atg  ctc tat gcc aac tcc  gcc cac gcg       20913
Thr Asp  Leu Gly Gln Asn Met  Leu Tyr Ala Asn Ser  Ala His Ala
    3615                 3620                 3625

cta gac  atg aat ttc gaa gtc  gac ccc atg gat gag  tcc acc ctt       20958
Leu Asp  Met Asn Phe Glu Val  Asp Pro Met Asp Glu  Ser Thr Leu
    3630                 3635                 3640

ctc tat  gtt gtc ttc gaa gtc  ttc gac gtc gtc cga  gtg cac cag       21003
Leu Tyr  Val Val Phe Glu Val  Phe Asp Val Val Arg  Val His Gln
    3645                 3650                 3655

ccc cac  cgc ggc gtc atc gag  gcc gtc tac ctg cgc  acc ccc ttc       21048
Pro His  Arg Gly Val Ile Glu  Ala Val Tyr Leu Arg  Thr Pro Phe
    3660                 3665                 3670

tcg gcc  ggt aac gcc acc acc  taaattgcta cttgc atg atg gct gag       21096
Ser Ala  Gly Asn Ala Thr Thr                  Met Met Ala Glu
    3675                 3680

gcc  gcg ggc tcc ggc gag  cag gag ctc agg gcc  atc atc cgc gac       21141
Ala  Ala Gly Ser Gly Glu  Gln Glu Leu Arg Ala  Ile Ile Arg Asp
3685                 3690                 3695

ctg  ggc tgc ggg ccc tac  ttc ctg ggc acc ttc  gat aag cgc ttc       21186
Leu  Gly Cys Gly Pro Tyr  Phe Leu Gly Thr Phe  Asp Lys Arg Phe
3700                 3705                 3710

ccg  gga ttc atg gcc ccg  cac aag ctg gcc tgc  gcc atc gtc aac       21231
```

```
Pro  Gly Phe Met Ala Pro  His Lys Leu Ala Cys  Ala Ile Val Asn
3715                 3720                 3725

acg  gcc ggt cgc gag acc  ggg ggc gag cac tgg  ctg gcc ttc gcc       21276
Thr  Ala Gly Arg Glu Thr  Gly Gly Glu His Trp  Leu Ala Phe Ala
3730                 3735                 3740

tgg  aac ccg cgc tcg aac  acc tgc tac ctc ttc  gac ccc ttc ggg       21321
Trp  Asn Pro Arg Ser Asn  Thr Cys Tyr Leu Phe  Asp Pro Phe Gly
3745                 3750                 3755

ttc  tcg gac gag cgc ctc  aag cag atc tac cag  ttc gag tac gag       21366
Phe  Ser Asp Glu Arg Leu  Lys Gln Ile Tyr Gln  Phe Glu Tyr Glu
3760                 3765                 3770

ggc  ctg ctg cgc cgc agc  gcc ctg gcc acc gag  gac cgc tgc gtc       21411
Gly  Leu Leu Arg Arg Ser  Ala Leu Ala Thr Glu  Asp Arg Cys Val
3775                 3780                 3785

acc  ctg gaa aag tcc acc  cag acc gtg cag ggt  ccg cgc tcg gcc       21456
Thr  Leu Glu Lys Ser Thr  Gln Thr Val Gln Gly  Pro Arg Ser Ala
3790                 3795                 3800

gcc  tgc ggg ctc ttc tgc  tgc atg ttc ctg cac  gcc ttc gtg cac       21501
Ala  Cys Gly Leu Phe Cys  Cys Met Phe Leu His  Ala Phe Val His
3805                 3810                 3815

tgg  ccc gac cgc ccc atg  gac aag aac ccc acc  atg aac ttg ctg       21546
Trp  Pro Asp Arg Pro Met  Asp Lys Asn Pro Thr  Met Asn Leu Leu
3820                 3825                 3830

acg  ggg gtg ccc aac ggc  atg ctc cag tcg ccc  cag gtg gaa ccc       21591
Thr  Gly Val Pro Asn Gly  Met Leu Gln Ser Pro  Gln Val Glu Pro
3835                 3840                 3845

acc  ctg cgc cgc aac cag  gag gcg ctc tac cgc  ttc ctc aac tcc       21636
Thr  Leu Arg Arg Asn Gln  Glu Ala Leu Tyr Arg  Phe Leu Asn Ser
3850                 3855                 3860

cac  tcc gcc tac ttt cgc  tcc cac cgc gcg cgc  atc gag aag gcc       21681
His  Ser Ala Tyr Phe Arg  Ser His Arg Ala Arg  Ile Glu Lys Ala
3865                 3870                 3875

acc  gcc ttc gat cgc atg  aac aat caa gac atg  taaaccgtgt           21724
Thr  Ala Phe Asp Arg Met  Asn Asn Gln Asp Met
3880                 3885                 3890

gtgtatgttt aaaatatctt ttaataaaca gcactttcat gttacacatg catctgagat    21784

gattatttag aaatcgaaag ggttctgccg ggtctcggca tggcccgcgg gcagggacac    21844

gttgcggaac tggtacttgg ccagccactt gaactcgggg atcagcagtt tcggcagcgg    21904

ggtgtcgggg aaggagtcgg tccacagctt ccgcgtcagt tgcagggcgc ccagcaggtc    21964

gggcgcggag atcttgaaat cgcagttggg acccgcgttc tgcgcgcgag agttgcggta    22024

cacggggttg cagcactgga acaccatcag ggccgggtgc ttcacgctcg ccagcaccgt    22084

cgcgtcggtg atgctctcca cgtcgaggtc ctcggcgttg gccatcccga agggggtcat    22144

cttgcaggtc tgccttccca tagtgggcac gcacccgggc ttgtggttgc aatcgcagtg    22204

caggggatc agcatcatct gggcctggtc ggcgttcatc cccgggtaca tggccttcat    22264

gaaagcctcc aattgcctga aagcctgctg ggccttggct ccctcggtga agaagacccc    22324

gcaggacttg ctagagaact ggttggtagc gcacccggcg tcgtgcacgc agcagcgcgc    22384
```

```
gtcgttgttg gccagctgca ccacgctgcg cccccagcgg ttctgggtga tcttggcccg    22444

gtcggggttc tccttcagcg cgcgctgccc gttctcgctc gccacatcca tctcgatcat    22504

gtgctccttc tggatcatgg tggtcccgtg caggcaccgc agcttgccct cggtctcggt    22564

gcacccgtgc agccacagcg cgcacccggt gcactcccag ttcttgtggg cgatctggga    22624

atgcgcgtgc acgaacccct gcaggaagcg gcccatcatg gtggtcaggg tcttgttgct    22684

agtgaaggtc agcgggatgc cgcggtgctc ctcgttgatg tacaggtggc agatgcggcg    22744

gtacacctcg ccctgctcgg gcatcagctg gaagttggct ttcaggtcgg tctccacgcg    22804

gtagcggtcc atcagtatag tcatgatttc catacccttc tcccaggccg agacgatggg    22864

caggctcata gggttcttca ccatcatctt agcactagca gccgcggcca gggggtcgct    22924

ctcatccagg gtctcaaagc tccgcttgcc gtccttctcg gtgatccgca ccgggggggta   22984

gctgaagccc acggccgcca gctcctcctc ggcctgcctt tcgtcctcgc tgtcctggct    23044

gacgtcctgc aggaccacat gcttggtctt gcggggtttc ttcttgggcg gcagcggcgg    23104

cggagatgct tgtggcgagg gggagcgcga gttctcgctc accactacta tctcttcctc    23164

ttcgtggtcc gaggccacgc ggcggtaggt atgtctcttc gggggcagag gcggaggcga    23224

cgggctctcg ccgccgcgac ttggcggatg gctggcagag ccccttccgc gatcgggggt    23284

gcgctcccgg cggcgctctg actgacttcc tccgcggccg gccattgtgt tctcctaggg    23344

aggaacaaca agc atg gag act cag cca  tcg cca acc tcg cca  tct gcc      23393
              Met Glu Thr Gln Pro  Ser Pro Thr Ser Pro  Ser Ala
                                3895                3900

ccc acc acc  gcc gac gag aag cag  cag aat gaa agc tta  acc gcc       23438
Pro Thr Thr  Ala Asp Glu Lys Gln  Gln Asn Glu Ser Leu  Thr Ala
        3905                3910                3915

ccg ccg ccc  agc ccc gcc acc tcc  gac gca gcc gcg gtc  cca gac       23483
Pro Pro Pro  Ser Pro Ala Thr Ser  Asp Ala Ala Ala Val  Pro Asp
        3920                3925                3930

atg caa gag  atg gag gaa tcc atc  gag att gac ctg ggc  tat gtg       23528
Met Gln Glu  Met Glu Glu Ser Ile  Glu Ile Asp Leu Gly  Tyr Val
        3935                3940                3945

acg ccc gcg  gag cac gag gag gag  ctg gca gtg cgc ttt  caa tcg       23573
Thr Pro Ala  Glu His Glu Glu Glu  Leu Ala Val Arg Phe  Gln Ser
        3950                3955                3960

tca agc cag  gaa gat aaa gaa cag  cca gag cag gaa gca  gaa aac       23618
Ser Ser Gln  Glu Asp Lys Glu Gln  Pro Glu Gln Glu Ala  Glu Asn
        3965                3970                3975

gag cag agt  cag gct ggg ctc gag  cat gac ggc gac tac  ctc cac       23663
Glu Gln Ser  Gln Ala Gly Leu Glu  His Asp Gly Asp Tyr  Leu His
        3980                3985                3990

ctg agc ggg  gag gag gac gcg ctc  atc aag cat ctg gcc  cgg cag       23708
Leu Ser Gly  Glu Glu Asp Ala Leu  Ile Lys His Leu Ala  Arg Gln
        3995                4000                4005

gcc atc atc  gtc aag gat gcg ctg  ctc gac cgc acc gag  gtg ccc       23753
Ala Ile Ile  Val Lys Asp Ala Leu  Leu Asp Arg Thr Glu  Val Pro
        4010                4015                4020

ctc agc gtg  gag gag ctc agc cgc  gcc tac gag ctc aac  ctc ttc       23798
```

```
Leu Ser Val  Glu Glu Leu Ser Arg  Ala Tyr Glu Leu Asn  Leu Phe
        4025                 4030                 4035

tcg ccg cgc  gtg ccc ccc aag cgc  cag ccc aac ggc acc  tgc gag       23843
Ser Pro Arg  Val Pro Pro Lys Arg  Gln Pro Asn Gly Thr  Cys Glu
        4040                 4045                 4050

ccc aac ccg  cgc ctc aac ttc tac  ccg gtc ttc gcg gtg  ccc gag       23888
Pro Asn Pro  Arg Leu Asn Phe Tyr  Pro Val Phe Ala Val  Pro Glu
        4055                 4060                 4065

gcc ctg gcc  acc tac cac atc ttt  ttc aag aac caa aag  atc ccc       23933
Ala Leu Ala  Thr Tyr His Ile Phe  Phe Lys Asn Gln Lys  Ile Pro
        4070                 4075                 4080

gtc tcc tgt  cgc gcc aac cgc acc  cgc gcc gac gcc ctc  ttc aac       23978
Val Ser Cys  Arg Ala Asn Arg Thr  Arg Ala Asp Ala Leu  Phe Asn
        4085                 4090                 4095

ctg ggc ccc  ggc gcc cgc cta cct  gat atc gcc tcc ttg  gaa gag       24023
Leu Gly Pro  Gly Ala Arg Leu Pro  Asp Ile Ala Ser Leu  Glu Glu
        4100                 4105                 4110

gtt ccc aag  atc ttc gag ggt ctg  ggc agc gac gag act  cgg gcc       24068
Val Pro Lys  Ile Phe Glu Gly Leu  Gly Ser Asp Glu Thr  Arg Ala
        4115                 4120                 4125

gca aac gct  ctg caa gga gaa gga  gga gag cat gag cac  cac agc       24113
Ala Asn Ala  Leu Gln Gly Glu Gly  Gly Glu His Glu His  His Ser
        4130                 4135                 4140

gcc ctg gtc  gag ttg gaa ggc gac  aac gcg cgg ctg gcg  gtg ctc       24158
Ala Leu Val  Glu Leu Glu Gly Asp  Asn Ala Arg Leu Ala  Val Leu
        4145                 4150                 4155

aaa cgc acg  gtc gag ctg acc cat  ttc gcc tac ccg gct  ctg aac       24203
Lys Arg Thr  Val Glu Leu Thr His  Phe Ala Tyr Pro Ala  Leu Asn
        4160                 4165                 4170

ctg ccc ccc  aaa gtc atg agc gcg  gtc atg gac cag gtg  ctc atc       24248
Leu Pro Pro  Lys Val Met Ser Ala  Val Met Asp Gln Val  Leu Ile
        4175                 4180                 4185

aag cgc gcg  tcg ccc atc tcc gag  gac gag ggc atg caa  gac tcc       24293
Lys Arg Ala  Ser Pro Ile Ser Glu  Asp Glu Gly Met Gln  Asp Ser
        4190                 4195                 4200

gag gat ggc  aag ccc gtg gtc agc  gac gag cag ctg gcc  cgg tgg       24338
Glu Asp Gly  Lys Pro Val Val Ser  Asp Glu Gln Leu Ala  Arg Trp
        4205                 4210                 4215

ctg ggt cct  aat gct agt ccc cag  agt ttg gaa gag cgg  cgc aag       24383
Leu Gly Pro  Asn Ala Ser Pro Gln  Ser Leu Glu Glu Arg  Arg Lys
        4220                 4225                 4230

ctc atg atg  gcc gtg gtc ctg gtg  acc gtg gag ctg gag  tgc ctg       24428
Leu Met Met  Ala Val Val Leu Val  Thr Val Glu Leu Glu  Cys Leu
        4235                 4240                 4245

cgc cgc ttc  ttc gcc gac gcg gag  acc ctg cgc aag gtc  gag gag       24473
Arg Arg Phe  Phe Ala Asp Ala Glu  Thr Leu Arg Lys Val  Glu Glu
        4250                 4255                 4260

aac ctg cac  tac ctc ttc agg cac  ggg ttc gtg cgc cag  gcc tgc       24518
Asn Leu His  Tyr Leu Phe Arg His  Gly Phe Val Arg Gln  Ala Cys
        4265                 4270                 4275

aag atc tcc  aac gtg gag ctg acc  aac ctg gtc tcc tac  atg ggc       24563
Lys Ile Ser  Asn Val Glu Leu Thr  Asn Leu Val Ser Tyr  Met Gly
```

```
        4280                4285                4290

atc ttg cac  gag aac cgc ctg ggg  cag aac gtg ctg cac  acc acc       24608
Ile Leu His  Glu Asn Arg Leu Gly  Gln Asn Val Leu His  Thr Thr
        4295                4300                4305

ctg cgc ggg  gag gcc cgc cgc gac  tac atc cgc gac tgc  gtc tac       24653
Leu Arg Gly  Glu Ala Arg Arg Asp  Tyr Ile Arg Asp Cys  Val Tyr
        4310                4315                4320

ctc tac ctc  tgc cac acc tgg cag  acg ggc atg ggc gtg  tgg cag       24698
Leu Tyr Leu  Cys His Thr Trp Gln  Thr Gly Met Gly Val  Trp Gln
        4325                4330                4335

cag tgt ctg  gag gag cag aac ctg  aaa gag ctc tgc aag  ctc ctg       24743
Gln Cys Leu  Glu Glu Gln Asn Leu  Lys Glu Leu Cys Lys  Leu Leu
        4340                4345                4350

cag aag aac  ctc aag ggt ctg tgg  acc ggg ttc gac gag  cgg acc       24788
Gln Lys Asn  Leu Lys Gly Leu Trp  Thr Gly Phe Asp Glu  Arg Thr
        4355                4360                4365

acc gcc tcg  gac ctg gcc gac ctc  atc ttc ccc gag cgc  ctc agg       24833
Thr Ala Ser  Asp Leu Ala Asp Leu  Ile Phe Pro Glu Arg  Leu Arg
        4370                4375                4380

ctg acg ctg  cgc aac ggc ctg ccc  gac ttt atg agc caa  agc atg       24878
Leu Thr Leu  Arg Asn Gly Leu Pro  Asp Phe Met Ser Gln  Ser Met
        4385                4390                4395

ttg caa aac  ttt cgc tct ttc atc  ctc gaa cgc tcc gga  atc ctg       24923
Leu Gln Asn  Phe Arg Ser Phe Ile  Leu Glu Arg Ser Gly  Ile Leu
        4400                4405                4410

ccc gcc acc  tgc tcc gcg ctg ccc  tcg gac ttc gtg ccg  ctg acc       24968
Pro Ala Thr  Cys Ser Ala Leu Pro  Ser Asp Phe Val Pro  Leu Thr
        4415                4420                4425

ttc cgc gag  tgc ccc ccg ccg ctg  tgg agc cac tgc tac  ctg ctg       25013
Phe Arg Glu  Cys Pro Pro Pro Leu  Trp Ser His Cys Tyr  Leu Leu
        4430                4435                4440

cgc ctg gcc  aac tac ctg gcc tac  cac tcg gac gtg atc  gag gac       25058
Arg Leu Ala  Asn Tyr Leu Ala Tyr  His Ser Asp Val Ile  Glu Asp
        4445                4450                4455

gtc agc ggc  gag ggc ctg ctt gag  tgc cac tgc cgc tgc  aac ctc       25103
Val Ser Gly  Glu Gly Leu Leu Glu  Cys His Cys Arg Cys  Asn Leu
        4460                4465                4470

tgc acg ccg  cac cgc tcc ctg gcc  tgc aac ccc cag ctg  ctg agc       25148
Cys Thr Pro  His Arg Ser Leu Ala  Cys Asn Pro Gln Leu  Leu Ser
        4475                4480                4485

gag acc cag  atc atc ggc acc ttc  gag ttg caa ggg ccc  agc gat       25193
Glu Thr Gln  Ile Ile Gly Thr Phe  Glu Leu Gln Gly Pro  Ser Asp
        4490                4495                4500

gac ggc gag  gga gcc aag ggg ggt  ctg aaa ctc acc ccg  ggg ctg       25238
Asp Gly Glu  Gly Ala Lys Gly Gly  Leu Lys Leu Thr Pro  Gly Leu
        4505                4510                4515

tgg acc tcg  gcc tac ttg cgc aag  ttc gtg ccc gag gac  tac cat       25283
Trp Thr Ser  Ala Tyr Leu Arg Lys  Phe Val Pro Glu Asp  Tyr His
        4520                4525                4530

ccc ttc gag  atc agg ttc tac gag  gac caa tcc cag ccg  cct aag       25328
Pro Phe Glu  Ile Arg Phe Tyr Glu  Asp Gln Ser Gln Pro  Pro Lys
        4535                4540                4545
```

```
gcc gag ctg  tcg gcc tgc gtc atc  acc cag ggg gcc atc  ctg gcc       25373
Ala Glu Leu  Ser Ala Cys Val Ile  Thr Gln Gly Ala Ile  Leu Ala
        4550                 4555                 4560

caa ttg caa  gcc atc cag aaa tcc  cgc caa gaa ttc ttg  ctg aaa       25418
Gln Leu Gln  Ala Ile Gln Lys Ser  Arg Gln Glu Phe Leu  Leu Lys
        4565                 4570                 4575

aag ggc cgc  ggg gtc tac ctc gac  ccc cag acc ggt gag  gag ctc       25463
Lys Gly Arg  Gly Val Tyr Leu Asp  Pro Gln Thr Gly Glu  Glu Leu
        4580                 4585                 4590

aac ccc ggc  ttc ccc cag gat gcc  ccg agg aaa caa gaa  gct gaa       25508
Asn Pro Gly  Phe Pro Gln Asp Ala  Pro Arg Lys Gln Glu  Ala Glu
        4595                 4600                 4605

agt gga gct  gcc gcc cgt gga gga  ttt gga gga aga ctg  gga gaa       25553
Ser Gly Ala  Ala Ala Arg Gly Gly  Phe Gly Gly Arg Leu  Gly Glu
        4610                 4615                 4620

cag cag tca  ggc aga gga gga gat  gga gga aga ctg gga  cag cac       25598
Gln Gln Ser  Gly Arg Gly Gly Asp  Gly Gly Arg Leu Gly  Gln His
        4625                 4630                 4635

tca ggc aga  gga gga cag cct gca  aga cag tct gga gga  aga cga       25643
Ser Gly Arg  Gly Gly Gln Pro Ala  Arg Gln Ser Gly Gly  Arg Arg
        4640                 4645                 4650

gga gga ggc  aga ggt gga aga agc  agc cgc cgc cag acc  gtc gtc       25688
Gly Gly Gly  Arg Gly Gly Arg Ser  Ser Arg Arg Gln Thr  Val Val
        4655                 4660                 4665

ctc ggc ggg  gga gaa agc aag cag  cac gga tac cat ctc  cgc tcc       25733
Leu Gly Gly  Gly Glu Ser Lys Gln  His Gly Tyr His Leu  Arg Ser
        4670                 4675                 4680

ggg tcg ggg  tcc cgc tcg gcc cca  cag tagatgggac gagaccgggc          25780
Gly Ser Gly  Ser Arg Ser Ala Pro  Gln
        4685                 4690

gattcccgaa ccccaccatc cagaccggta agaaggagcg gcagggatac aagtcctggc    25840

gggggcacaa aaacgccatc gtctcctgct tgcaggcctg cgggggcaac atctccttca    25900

ccaggcgcta cctgctcttc caccgcgggg tgaacttccc ccgcaacatc ttgcattact    25960

accgtcacct ccacagcccc tactacttcc aagaagaggc agcagcagaa aaagaccagc    26020

agaaaaccag cagctagaaa atccacagcg gcagcaggtg gactgaggat cgcggcgaac    26080

gagccggcgc agacccggga gctgaggaac cggatctttc ccaccctcta tgccatcttc    26140

cagcagagtc gggggcagga gcaggaactg aaagtcaaga accgttctct gcgctcgctc    26200

acccgcagtt gtctgtatca caagagcgaa gaccaacttc agcgcactct cgaggacgcc    26260

gaggctctct tcaacaagta ctgcgcgctc actcttaaag agtagcccgc gcccgcccag    26320

tcgcagaaaa aggcgggaat tacgtcacct gtgcccttcg ccctagccgc ctccacccat    26380

c atg agc aaa gag  att ccc acg cct tac  atg tgg agc tac cag  ccc      26426
  Met Ser Lys Glu  Ile Pro Thr Pro Tyr  Met Trp Ser Tyr Gln  Pro
              4695                 4700                 4705

cag atg ggc ctg  gcc gcc ggc gcc gcc  cag gac tac tcc acc  cgc       26471
Gln Met Gly Leu  Ala Ala Gly Ala Ala  Gln Asp Tyr Ser Thr  Arg
            4710                 4715                 4720
```

```
atg aat tgg ctc  agc gcc ggg ccc gcg  atg atc tca cgg gtg  aat       26516
Met Asn Trp Leu  Ser Ala Gly Pro Ala  Met Ile Ser Arg Val  Asn
            4725                 4730                 4735

gac atc cgc gcc  cac cga aac cag ata  ctc cta gaa cag tca  gcg       26561
Asp Ile Arg Ala  His Arg Asn Gln Ile  Leu Leu Glu Gln Ser  Ala
            4740                 4745                 4750

ctc acc gcc acg  ccc cgc aat cac ctc  aat ccg cgt aat tgg  ccc       26606
Leu Thr Ala Thr  Pro Arg Asn His Leu  Asn Pro Arg Asn Trp  Pro
            4755                 4760                 4765

gcc gcc ctg gtg  tac cag gaa att ccc  cag ccc acg acc gta  cta       26651
Ala Ala Leu Val  Tyr Gln Glu Ile Pro  Gln Pro Thr Thr Val  Leu
            4770                 4775                 4780

ctt ccg cga gac  gcc cag gcc gaa gtc  cag ctg act aac tca  ggt       26696
Leu Pro Arg Asp  Ala Gln Ala Glu Val  Gln Leu Thr Asn Ser  Gly
            4785                 4790                 4795

gtc cag ctg gcg  ggc ggc gcc acc ctg  tgt cgt cac cgc ccc  gct       26741
Val Gln Leu Ala  Gly Gly Ala Thr Leu  Cys Arg His Arg Pro  Ala
            4800                 4805                 4810

cag ggt ata aag  cgg ctg gtg atc cgg  ggc aga ggc aca cag  ctc       26786
Gln Gly Ile Lys  Arg Leu Val Ile Arg  Gly Arg Gly Thr Gln  Leu
            4815                 4820                 4825

aac gac gag gtg  gtg agc tct tcg ctg  ggt ctg cga cct gac  gga       26831
Asn Asp Glu Val  Val Ser Ser Ser Leu  Gly Leu Arg Pro Asp  Gly
            4830                 4835                 4840

gtc ttc caa atc  gcc gga tcg ggg aga  tct tcc ttc acg cct  cgt       26876
Val Phe Gln Ile  Ala Gly Ser Gly Arg  Ser Ser Phe Thr Pro  Arg
            4845                 4850                 4855

cag gcg gtc ctg  act ttg gag agt tcg  tcc tcg cag ccc cgc  tcg       26921
Gln Ala Val Leu  Thr Leu Glu Ser Ser  Ser Ser Gln Pro Arg  Ser
            4860                 4865                 4870

ggc ggc atc ggc  act ctc cag ttc gtg  gag gag ttc act ccc  tcg       26966
Gly Gly Ile Gly  Thr Leu Gln Phe Val  Glu Glu Phe Thr Pro  Ser
            4875                 4880                 4885

gtc tac ttc aac  ccc ttc tcc ggc tcc  ccc ggc cac tac ccg  gac       27011
Val Tyr Phe Asn  Pro Phe Ser Gly Ser  Pro Gly His Tyr Pro  Asp
            4890                 4895                 4900

gag ttc atc ccg  aac ttt gac gcc atc  agc gag tcg gtg gac  ggc       27056
Glu Phe Ile Pro  Asn Phe Asp Ala Ile  Ser Glu Ser Val Asp  Gly
            4905                 4910                 4915

tac gat tga atg tcc  cat ggt ggc gcg gct  gac cta gct cgg ctt       27101
Tyr Asp     Met Ser  His Gly Gly Ala Ala  Asp Leu Ala Arg Leu
                4920                 4925                 4930

cga cac ctg gac cac  tgc cgc cgc ttt cgc  tgc ttc gct cgg gac       27146
Arg His Leu Asp His  Cys Arg Arg Phe Arg  Cys Phe Ala Arg Asp
                4935                 4940                 4945

ctc gcc gag ttc acc  tac ttc gag ctg ccc  gag gag cat cct cag       27191
Leu Ala Glu Phe Thr  Tyr Phe Glu Leu Pro  Glu Glu His Pro Gln
                4950                 4955                 4960

ggc ccg gcc cac gga  gtg cgg atc gtc gtc  gaa ggg ggc cta gac       27236
Gly Pro Ala His Gly  Val Arg Ile Val Val  Glu Gly Gly Leu Asp
                4965                 4970                 4975

tcc cac ctg ctt cgg  atc ttc agc cag cgc  ccg atc ctg gtc gag       27281
```

```
Ser His Leu Leu Arg  Ile Phe Ser Gln Arg  Pro Ile Leu Val Glu
                4980                4985                4990

cgc caa cag ggc aac  acc ctc ctg acc ctc  tac tgc atc tgc gac        27326
Arg Gln Gln Gly Asn  Thr Leu Leu Thr Leu  Tyr Cys Ile Cys Asp
                4995                5000                5005

cac ccc ggc ctg cat  gaa agt ctt tgt tgt  ctg ctg tgt act gag        27371
His Pro Gly Leu His  Glu Ser Leu Cys Cys  Leu Leu Cys Thr Glu
                5010                5015                5020

tat aat aaa agc tgagatcagc gactactccg gactcaactg tggtgtttct          27423
Tyr Asn Lys Ser


gcatccatca accagtctct gaccttcacc gggaacgaga ccgagctcca gctccagtgt    27483

aagccccaca agaagtacct cacctggctg taccagggct ccccgatcgc cgttgttaac    27543

cactgcgacg acgacggagt cctgctgaac ggccccgcca accttacttt ttccacccgc    27603

agaagcaagc tactgctctt cagacccttc ctccccggga tctatcagtg catctcggga    27663

ccctgccatc acaccttcca cctgatcccg aataccacct cttccccagc accgctcccc    27723

actaacaacc aaactaacca ccaacgccac cgtcgagacc tttcctctga ttctaatacc    27783

actaccggag gtgagctccg aggtactaag aagtcctcac ctgggattta ttacggcccc    27843

tgggaggtgg tggggttaat agctttaggc ttagtagcgg gtgggctttt ggctctctgc    27903

tacctatacc tcccttgctg ttcctactta gtggtgcttt gttgctggtt taagaa        27959

atg  ggg aag atc acc cta  gtg tgc ggt gtg ctg  gtg acg gtg gtg       28004
Met  Gly Lys Ile Thr Leu  Val Cys Gly Val Leu  Val Thr Val Val
5025                5030                5035

ctt  tcg att ctg gga ggg  gga agc gcg gct gta  gtg acg gag aag       28049
Leu  Ser Ile Leu Gly Gly  Gly Ser Ala Ala Val  Val Thr Glu Lys
5040                5045                5050

aag  gcc gat ccc tgc ttg  act ttc aat ccc gat  aaa tgc cgg ctg       28094
Lys  Ala Asp Pro Cys Leu  Thr Phe Asn Pro Asp  Lys Cys Arg Leu
5055                5060                5065

agt  ttt cag cca gat ggc  aat cgg tgc acg gtg  ctg atc aag tgc       28139
Ser  Phe Gln Pro Asp Gly  Asn Arg Cys Thr Val  Leu Ile Lys Cys
5070                5075                5080

gga  tgg gaa tgc gag agc  gtg gcg atc cag tat  aaa aac aag acg       28184
Gly  Trp Glu Cys Glu Ser  Val Ala Ile Gln Tyr  Lys Asn Lys Thr
5085                5090                5095

cgg  aac aat act ctc gcg  tcc aca tgg cag ccc  ggg gac ccc gag       28229
Arg  Asn Asn Thr Leu Ala  Ser Thr Trp Gln Pro  Gly Asp Pro Glu
5100                5105                5110

tgg  tac acc gtc tct gtc  cct ggt gct gac ggc  tcc ctc cac acg       28274
Trp  Tyr Thr Val Ser Val  Pro Gly Ala Asp Gly  Ser Leu His Thr
5115                5120                5125

gtg  aac aac act ttc att  ttt gag cac atg tgc  gaa acc gcc atg       28319
Val  Asn Asn Thr Phe Ile  Phe Glu His Met Cys  Glu Thr Ala Met
5130                5135                5140

ttc  atg agc aag cag tac  ggt atg tgg ccc cca  cga aaa gag aat       28364
Phe  Met Ser Lys Gln Tyr  Gly Met Trp Pro Pro  Arg Lys Glu Asn
5145                5150                5155
```

```
atc  gtg gtc ttc tcc atc  gct tac agc gcg tgc  acg gtg cta atc       28409
Ile  Val Val Phe Ser Ile  Ala Tyr Ser Ala Cys  Thr Val Leu Ile
5160                5165                5170

acc  gcg atc gtg tgc ctg  agc att cac atg ctc  atc gct att cgc       28454
Thr  Ala Ile Val Cys Leu  Ser Ile His Met Leu  Ile Ala Ile Arg
5175                5180                5185

ccc  aga aat aat gcc gag  aaa gag aaa cag cca  taacacactt           28497
Pro  Arg Asn Asn Ala Glu  Lys Glu Lys Gln Pro
5190                5195                5200

ttttcacaca ccttgttttt tacagaca atg cgt ctg tta att  ttt gtt atc      28549
                                Met Arg Leu Leu Ile  Phe Val Ile
                                                    5205

att aca  ctc agc ttt aac tat  gcc cat ggc tat gca  aat ata caa       28594
Ile Thr  Leu Ser Phe Asn Tyr  Ala His Gly Tyr Ala  Asn Ile Gln
    5210                5215                5220

aaa acc  ctc tat gta ggc tct  gac tct aca tta gaa  ggt act caa       28639
Lys Thr  Leu Tyr Val Gly Ser  Asp Ser Thr Leu Glu  Gly Thr Gln
    5225                5230                5235

tct caa  gcc agg gtt tca tgg  tat ttt tat aaa ggc  tct gat gac       28684
Ser Gln  Ala Arg Val Ser Trp  Tyr Phe Tyr Lys Gly  Ser Asp Asp
    5240                5245                5250

cca att  act ctt tgc aaa ggt  gat cag ggg cgc ata  aca aag cca       28729
Pro Ile  Thr Leu Cys Lys Gly  Asp Gln Gly Arg Ile  Thr Lys Pro
    5255                5260                5265

cct atc  aca ttt agc tgc acc  aga aca aac ctc acg  ctt tta tcc       28774
Pro Ile  Thr Phe Ser Cys Thr  Arg Thr Asn Leu Thr  Leu Leu Ser
    5270                5275                5280

att aca  aaa gaa tat gct ggc  act tat tac agc aca  aat ttt cat       28819
Ile Thr  Lys Glu Tyr Ala Gly  Thr Tyr Tyr Ser Thr  Asn Phe His
    5285                5290                5295

cgt ggg  caa gat aaa tat tat  act gtt aag gta gaa  aac cct acc       28864
Arg Gly  Gln Asp Lys Tyr Tyr  Thr Val Lys Val Glu  Asn Pro Thr
    5300                5305                5310

acc cct  aga aca act aca aag  ccc acc aca act aag  aag ccc act       28909
Thr Pro  Arg Thr Thr Thr Lys  Pro Thr Thr Thr Lys  Lys Pro Thr
    5315                5320                5325

aca cct  aag aag cct acc aca  ccc aaa acc act aag  aca aca act       28954
Thr Pro  Lys Lys Pro Thr Thr  Pro Lys Thr Thr Lys  Thr Thr Thr
    5330                5335                5340

gct aag  acc act acc aca aag  cca acc aca acc agc  acc aca ctt       28999
Ala Lys  Thr Thr Thr Thr Lys  Pro Thr Thr Thr Ser  Thr Thr Leu
    5345                5350                5355

gct ata  act aca cac aca cac  act gag ctg acc tca  cag gca act       29044
Ala Ile  Thr Thr His Thr His  Thr Glu Leu Thr Ser  Gln Ala Thr
    5360                5365                5370

act gaa  aat gat ttg gtt gcc  ctg ttg caa aag ggg  gag aac agt       29089
Thr Glu  Asn Asp Leu Val Ala  Leu Leu Gln Lys Gly  Glu Asn Ser
    5375                5380                5385

agc agc  agt cct ctg cct act  acc ccc agt gag gaa  ata ccc aag       29134
Ser Ser  Ser Pro Leu Pro Thr  Thr Pro Ser Glu Glu  Ile Pro Lys
    5390                5395                5400

tcc atg  gtt ggc att atc gct  gct gta gtg gtg tgt  atg ctg att       29179
```

```
Ser Met  Val Gly Ile Ile Ala  Ala Val Val Val Cys  Met Leu Ile
    5405                 5410                 5415

atc atc  ttg tgc atg atg tac  tat gcc tgc tac tac  aga aaa cac       29224
Ile Ile  Leu Cys Met Met Tyr  Tyr Ala Cys Tyr Tyr  Arg Lys His
    5420                 5425                 5430

agg ctg  aac aac aaa ctg gac  ccc tta ctg agt gtt  gat ttt           29266
Arg Leu  Asn Asn Lys Leu Asp  Pro Leu Leu Ser Val  Asp Phe
    5435                 5440                 5445

taatttttta gaaccatgaa gatcctaagc ctttttgttt tttctataat tattacctct    29326

gctatttgtg aatcagtgga taaggacgtt actgtcacca ctggctctaa ttatacacta    29386

aaagggcctt cctcaggtat gctttcgtgg tattgttatt ttggaaatga tgataaacag    29446

acagagctat gtaactttca gaacggcaaa accaaaaatt ctaaaataga taactatcaa    29506

tgccagggta ctaatttagt actgatgaat atcacgaaag catatgctgg cagttattcc    29566

tgtcctggac aaaacaccga ggaaatgatt ttttacaaat taattgtagt tgaccctact    29626

actccagcac cacccaccac aaccaaggca cataccacag acacacagga aaccactcca    29686

gaggcagaag tagcagagtt agcaaagcag attcatgaag attcatttgt tgccaatacc    29746

cccacacacc ccggaccgca atgtccaggg ccattagtca gcggcattgt cggtgtgctt    29806

tgcgggttag cagttataat catctgcatg ttcatttttg cttgctgcta cagaaggctt    29866

caccgacaaa aatcagaccc actgctgaac ctctatgttt aatttttgat tttccagagc    29926

c atg aag gca  ctt agc act tta gta  ttt ttg tcc ttg att  ggc att     29972
  Met Lys Ala  Leu Ser Thr Leu Val  Phe Leu Ser Leu Ile  Gly Ile
          5450                 5455                 5460

gtt ttc agt  gct ggg ttt ttg aaa  aat ctt acc att att  gaa ggt       30017
Val Phe Ser  Ala Gly Phe Leu Lys  Asn Leu Thr Ile Ile  Glu Gly
        5465                 5470                 5475

gat aat gca  aca ctg gta gga atc  agc ggt cag aat gtt  agt tgg       30062
Asp Asn Ala  Thr Leu Val Gly Ile  Ser Gly Gln Asn Val  Ser Trp
        5480                 5485                 5490

cta aaa tat  cat cta gat ggg tgg  aaa cct att tgc acc  tgg aat       30107
Leu Lys Tyr  His Leu Asp Gly Trp  Lys Pro Ile Cys Thr  Trp Asn
        5495                 5500                 5505

gtc agt gtg  tac aca tgc cat ggt  gtt aac ctc acc att  acc aat       30152
Val Ser Val  Tyr Thr Cys His Gly  Val Asn Leu Thr Ile  Thr Asn
        5510                 5515                 5520

gcc acc caa  gat cag aat ggc agg  ttt aag ggt cag agt  ttc act       30197
Ala Thr Gln  Asp Gln Asn Gly Arg  Phe Lys Gly Gln Ser  Phe Thr
        5525                 5530                 5535

agc aac aat  ggg tat gaa acc cat  aac atg ttc atc tat  gat gtc       30242
Ser Asn Asn  Gly Tyr Glu Thr His  Asn Met Phe Ile Tyr  Asp Val
        5540                 5545                 5550

act gtc ata  tca aat aag act aca  cct acc aca cag aca  ccc act       30287
Thr Val Ile  Ser Asn Lys Thr Thr  Pro Thr Thr Gln Thr  Pro Thr
        5555                 5560                 5565

aca cat agc  tca act cat gcc atg  cag acc act cag aca  acc aca       30332
Thr His Ser  Ser Thr His Ala Met  Gln Thr Thr Gln Thr  Thr Thr
        5570                 5575                 5580
```

```
tac act aca  tct act gag tcc acc  acc acc act aca gca  gag gta       30377
Tyr Thr Thr  Ser Thr Glu Ser Thr  Thr Thr Thr Thr Ala  Glu Val
        5585                 5590                 5595

tcc agc aca  gcg cct cag ccc cag  gca ttg gct ttg atg  gct cag       30422
Ser Ser Thr  Ala Pro Gln Pro Gln  Ala Leu Ala Leu Met  Ala Gln
        5600                 5605                 5610

cct agc agc  atg act gct aaa acc  aat gag cag act act  gaa ttt       30467
Pro Ser Ser  Met Thr Ala Lys Thr  Asn Glu Gln Thr Thr  Glu Phe
        5615                 5620                 5625

ttg tcc act  att cag agc agc acc  aca gct acc tcg agt  gcc ttc       30512
Leu Ser Thr  Ile Gln Ser Ser Thr  Thr Ala Thr Ser Ser  Ala Phe
        5630                 5635                 5640

tct agc acc  gcc aat ctc acc tcg  ctt tcc tct acg cca  atc agt       30557
Ser Ser Thr  Ala Asn Leu Thr Ser  Leu Ser Ser Thr Pro  Ile Ser
        5645                 5650                 5655

aac gct act  acc tcc ccc gct cct  ctt ccc act cct ctg  aag caa       30602
Asn Ala Thr  Thr Ser Pro Ala Pro  Leu Pro Thr Pro Leu  Lys Gln
        5660                 5665                 5670

tcc gag tct  agc acg cag ctg cag  atc acc ctg ctc att  gtg atc       30647
Ser Glu Ser  Ser Thr Gln Leu Gln  Ile Thr Leu Leu Ile  Val Ile
        5675                 5680                 5685

ggg gtg gtc  atc ctg gca gtg ctg  ctc tac ttt atc ttc  tgc cgc       30692
Gly Val Val  Ile Leu Ala Val Leu  Leu Tyr Phe Ile Phe  Cys Arg
        5690                 5695                 5700

cgc atc ccc  aac gcg aaa ccg gcc  tac aag ccc att gtt  atc ggg       30737
Arg Ile Pro  Asn Ala Lys Pro Ala  Tyr Lys Pro Ile Val  Ile Gly
        5705                 5710                 5715

acg ccg gag  ccg ctt cag gtg gag  gga ggt cta agg aat  ctt ctc       30782
Thr Pro Glu  Pro Leu Gln Val Glu  Gly Gly Leu Arg Asn  Leu Leu
        5720                 5725                 5730

ttc tct ttt  aca gta tgg tgatttgaac tatgattcct agacatttca           30830
Phe Ser Phe  Thr Val Trp
        5735

ttatcacttc tctaatctgt gtgctccaag tctgtgccac cctcgctctc gtggctaacg   30890

cgagtccaga ctgcattgga gcgttcgcct cctacgtgct ctttgccttc atcacctgca   30950

tctgctgctg tagcatagtc tgcctgctta tcaccttctt ccagttcgtt gactgggtct   31010

ttgtgcgcat cgcctacctg cgccaccacc cccagtaccg cgaccagaga gtggcgcaac   31070

tgttgagact catctg atg ata  agc atg cgg gct ctg  cta cta ctt ctc      31119
                  Met Ile  Ser Met Arg Ala Leu  Leu Leu Leu Leu
                      5740                 5745

gcg  ctt ctg cta gct ccc  ctc gcc gcc ccc cta  tcc ctc aaa tcc      31164
Ala  Leu Leu Leu Ala Pro  Leu Ala Ala Pro Leu  Ser Leu Lys Ser
5750                 5755                 5760

ccc  acc cag tcc cct gaa  gag gtt cga aaa tgt  aaa ttc caa gaa      31209
Pro  Thr Gln Ser Pro Glu  Glu Val Arg Lys Cys  Lys Phe Gln Glu
5765                 5770                 5775

ccc  tgg aaa ttc ctt tca  tgc tac aaa ctc aaa  tca gaa atg cac      31254
Pro  Trp Lys Phe Leu Ser  Cys Tyr Lys Leu Lys  Ser Glu Met His
5780                 5785                 5790

ccc  agc tgg atc atg atc  gtt gga atc gta aac  atc ctt gcc tgt      31299
```

```
Pro  Ser Trp Ile Met Ile  Val Gly Ile Val Asn  Ile Leu Ala Cys
5795                5800                5805

acc  ctc ttc tcc ttt gtg  att tac ccc cgc ttt  gac ttt ggg tgg       31344
Thr  Leu Phe Ser Phe Val  Ile Tyr Pro Arg Phe  Asp Phe Gly Trp
5810                5815                5820

aac  gca ccc gag gcg ctc  tgg ctc ccg cct gat  ccc gac aca cca       31389
Asn  Ala Pro Glu Ala Leu  Trp Leu Pro Pro Asp  Pro Asp Thr Pro
5825                5830                5835

cca  cag cag cag caa aat  cag gca cag gca cat  gca cca cca cag       31434
Pro  Gln Gln Gln Gln Asn  Gln Ala Gln Ala His  Ala Pro Pro Gln
5840                5845                5850

cct  agg cca caa tac atg  ccc atc tta gac tat  gag gcc gag cca       31479
Pro  Arg Pro Gln Tyr Met  Pro Ile Leu Asp Tyr  Glu Ala Glu Pro
5855                5860                5865

cag  cga gcc atg ctt cct  gct att agt tac ttc  aat cta acc ggc       31524
Gln  Arg Ala Met Leu Pro  Ala Ile Ser Tyr Phe  Asn Leu Thr Gly
5870                5875                5880

gga  gat gac tgaccccatg gccaacaaca ccgtcaacga cctcctggac            31573
Gly  Asp Asp
5885

atggacggcc gcgcctcgga gcagcgactc gcccaactcc gcatccgcca gcagcaggag    31633

agagccgtca aggagctgca ggacgcggtg gccatccacc agtgcaagag aggcatcttc    31693

tgcctggtga agcaggccaa gatctccttc gaggtcacgt ccaccgacca tcgcctctcc    31753

tacgagctcc tgcagcagcg ccagaagttc acctgcctgg tcggagtcaa ccccatcgtc    31813

atcacccagc agtctggcga taccaagggt tgcatccact gctcctgcga ctccccgag     31873

tgcgttcaca ccctgatcaa gaccctctgc ggcctccgcg acctcctccc catgaactaa    31933

tcaactaacc ccctacccct ttaccctcca gtaaaaataa agattaaaaa tgattgaatt    31993

gatcaataaa gaatcactta cttgaaatct gaaaccaggt ctctgtcc atg ttt tct     32050
                                                    Met Phe Ser
                                                           5890

gtc agc agc act tca  ctc ccc tct tcc caa  ctc tgg tac tgc agg       32095
Val Ser Ser Thr Ser  Leu Pro Ser Ser Gln  Leu Trp Tyr Cys Arg
               5895                5900                5905

ccc cgg cgg gct gca  aac ttc ctc cac act  ctg aag ggg atg tca       32140
Pro Arg Arg Ala Ala  Asn Phe Leu His Thr  Leu Lys Gly Met Ser
               5910                5915                5920

aat tcc tcc tgt ccc  tca atc ttc att ttt  atc ttc tat cag atg       32185
Asn Ser Ser Cys Pro  Ser Ile Phe Ile Phe  Ile Phe Tyr Gln Met
               5925                5930                5935

tcc aaa aag cgc gcg  cgg gtg gat gat ggc  ttc gac ccc gtg tac       32230
Ser Lys Lys Arg Ala  Arg Val Asp Asp Gly  Phe Asp Pro Val Tyr
               5940                5945                5950

ccc tac gat gca gac  aac gca ccg act gtg  ccc ttc atc aac cct       32275
Pro Tyr Asp Ala Asp  Asn Ala Pro Thr Val  Pro Phe Ile Asn Pro
               5955                5960                5965

ccc ttc gtc tct tca  gat gga ttc caa gaa  aag ccc ctg ggg gtg       32320
Pro Phe Val Ser Ser  Asp Gly Phe Gln Glu  Lys Pro Leu Gly Val
               5970                5975                5980
```

```
ttg tcc ctg cga ctg  gcc gac ccc gtc acc  acc aag aat ggg gct        32365
Leu Ser Leu Arg Leu  Ala Asp Pro Val Thr  Thr Lys Asn Gly Ala
                5985                5990                5995

gtc acc ctc aag ctg  ggg gag ggg gtg gac  ctc gac gac tcg gga        32410
Val Thr Leu Lys Leu  Gly Glu Gly Val Asp  Leu Asp Asp Ser Gly
                6000                6005                6010

aaa ctc atc tcc aaa  aat gcc acc aag gcc  act gcc cct ctc agt        32455
Lys Leu Ile Ser Lys  Asn Ala Thr Lys Ala  Thr Ala Pro Leu Ser
                6015                6020                6025

att tcc aac ggc acc  att tcc ctt aac atg  gcc gcc cct ttt tac        32500
Ile Ser Asn Gly Thr  Ile Ser Leu Asn Met  Ala Ala Pro Phe Tyr
                6030                6035                6040

aac aac aat gga acg  tta agt ctc aat gtt  tct aca cca tta gca        32545
Asn Asn Asn Gly Thr  Leu Ser Leu Asn Val  Ser Thr Pro Leu Ala
                6045                6050                6055

gta ttt ccc act ttt  aac act tta ggt atc  agt ctt gga aac ggt        32590
Val Phe Pro Thr Phe  Asn Thr Leu Gly Ile  Ser Leu Gly Asn Gly
                6060                6065                6070

ctt caa act tct aat  aag ttg ctg act gta  cag tta act cat cct        32635
Leu Gln Thr Ser Asn  Lys Leu Leu Thr Val  Gln Leu Thr His Pro
                6075                6080                6085

ctt aca ttc agc tca  aat agc atc aca gta  aaa aca gac aaa gga        32680
Leu Thr Phe Ser Ser  Asn Ser Ile Thr Val  Lys Thr Asp Lys Gly
                6090                6095                6100

ctc tat att aat tct  agt gga aac aga ggg  ctt gag gct aac ata        32725
Leu Tyr Ile Asn Ser  Ser Gly Asn Arg Gly  Leu Glu Ala Asn Ile
                6105                6110                6115

agc cta aaa aga gga  ctg att ttt gat ggt  aat gct att gca aca        32770
Ser Leu Lys Arg Gly  Leu Ile Phe Asp Gly  Asn Ala Ile Ala Thr
                6120                6125                6130

tac ctt gga agt ggt  tta gac tat gga tcc  tat gat agc gat ggg        32815
Tyr Leu Gly Ser Gly  Leu Asp Tyr Gly Ser  Tyr Asp Ser Asp Gly
                6135                6140                6145

aaa aca aga ccc atc  atc acc aaa att gga  gca ggt ttg aat ttt        32860
Lys Thr Arg Pro Ile  Ile Thr Lys Ile Gly  Ala Gly Leu Asn Phe
                6150                6155                6160

gat gct aat aat gcc  atg gct gtg aag cta  ggc aca ggt tta agt        32905
Asp Ala Asn Asn Ala  Met Ala Val Lys Leu  Gly Thr Gly Leu Ser
                6165                6170                6175

ttt gac tct gcc ggt  gcc tta aca gct gga  aac aaa gag gat gac        32950
Phe Asp Ser Ala Gly  Ala Leu Thr Ala Gly  Asn Lys Glu Asp Asp
                6180                6185                6190

aag cta aca ctt tgg  act aca cct gac cca  agc cct aat tgt caa        32995
Lys Leu Thr Leu Trp  Thr Thr Pro Asp Pro  Ser Pro Asn Cys Gln
                6195                6200                6205

tta ctt tca gac aga  gat gcc aaa ttt acc  cta tgt ctt aca aaa        33040
Leu Leu Ser Asp Arg  Asp Ala Lys Phe Thr  Leu Cys Leu Thr Lys
                6210                6215                6220

tgc ggt agt caa ata  cta ggc act gtt gca  gta gct gct gtt act        33085
Cys Gly Ser Gln Ile  Leu Gly Thr Val Ala  Val Ala Ala Val Thr
                6225                6230                6235

gta ggt tca gca cta  aat cca att aat gac  aca gta aaa agc gcc        33130
```

```
Val Gly Ser Ala Leu  Asn Pro Ile Asn Asp  Thr Val Lys Ser Ala
                6240                6245                6250

ata gta ttc ctt aga  ttt gac tct gac ggt  gtg ctc atg tca aac        33175
Ile Val Phe Leu Arg  Phe Asp Ser Asp Gly  Val Leu Met Ser Asn
                6255                6260                6265

tca tca atg gta ggt  gat tac tgg aac ttt  agg gaa gga cag acc        33220
Ser Ser Met Val Gly  Asp Tyr Trp Asn Phe  Arg Glu Gly Gln Thr
                6270                6275                6280

acc caa agt gtg gcc  tat aca aat gct gtg  gga ttc atg ccc aat        33265
Thr Gln Ser Val Ala  Tyr Thr Asn Ala Val  Gly Phe Met Pro Asn
                6285                6290                6295

cta ggt gca tat cct  aaa acc caa agc aaa  aca cca aaa aat agt        33310
Leu Gly Ala Tyr Pro  Lys Thr Gln Ser Lys  Thr Pro Lys Asn Ser
                6300                6305                6310

ata gta agt cag gta  tat tta aat gga gaa  act act atg cca atg        33355
Ile Val Ser Gln Val  Tyr Leu Asn Gly Glu  Thr Thr Met Pro Met
                6315                6320                6325

aca ctg aca ata act  ttc aat ggc act gat  gaa aaa gac aca aca        33400
Thr Leu Thr Ile Thr  Phe Asn Gly Thr Asp  Glu Lys Asp Thr Thr
                6330                6335                6340

cct gtg agc act tac  tcc atg act ttt aca  tgg cag tgg act gga        33445
Pro Val Ser Thr Tyr  Ser Met Thr Phe Thr  Trp Gln Trp Thr Gly
                6345                6350                6355

gac tat aag gac aag  aat att acc ttt gct  acc aac tcc ttt act        33490
Asp Tyr Lys Asp Lys  Asn Ile Thr Phe Ala  Thr Asn Ser Phe Thr
                6360                6365                6370

ttc tcc tac atg gcc  caa gaa taaaccctgc atgccaaccc cattgttccc        33541
Phe Ser Tyr Met Ala  Gln Glu
                6375

accactatgg aaaactctga agcagaaaaa aataaagttc aagtgtttta ttgattcaac    33601

agttttcaca gaattcgagt agttattttc cctcctccct cccaactcat ggaatacacc    33661

accctctccc cacgcacagc cttaaacatc tgaatgccat tggtaatgga catggttttg    33721

gtctccacat tccacacagt ttcagagcga gccagtctcg ggtcggtcag ggagatgaaa    33781

ccctccgggc actcctgcat ctgcacctca aagttcagta gctgagggct gtcctcggtg    33841

gtcgggatca cagttatctg gaagaagagc ggtgagagtc ataatccgcg aacgggatcg    33901

ggcggttgtg gcgcatcagg ccccgcagca gtcgctgtct gcgccgctcc gtcaagctgc    33961

tgctcaaggg gtctgggtcc agggactccc tgcgcatgat gccgatggcc ctgagcatca    34021

gtcgcctggt gcggcgggcg cagcagcgga tgcggatctc actcaggtcg gagcagtacg    34081

tgcagcacag cactaccaag ttgttcaaca gtccatagtt caacgtgctc cagccaaaac    34141

tcatctgtgg aactatgctg cccacatgtc catcgtacca gatcctgatg taaatcaggt    34201

ggcgcccccc ccagaacaca ctgcccatgt acatgatctc cttgggcatg tgcaggttca    34261

ccacctcccg gtaccacatc acccgctggt tgaacatgca gccctggata atcctgcgga    34321

accagatggc cagcaccgcc ccgcccgcca tgcagcgcag ggaccccggg tcctggcaat    34381

ggcagtggag cacccaccgc tcacggccgt ggattaactg ggagctgaac aagtctatgt    34441
```

tggcacagca caggcacacg ctcatgcatg tcttcagcac tctcagttcc tcgggggtca 34501

ggaccatgtc ccagggcacg gggaactctt gcaggacagt gaacccggca gaacagggca 34561

gccctcgcac acaacttaca ttgtgcatgg acagggtatc gcaatcaggc agcaccggat 34621

gatcctccac cagagaagcg cgggtctcgg tctcctcaca gcgaggtaag ggggccggcg 34681

gttggtacgg atgatggcgg gatgacgcta atcgtgttct ggatcgtgtc atgatggagc 34741

tgtttcctga cattttcgta cttcacgaag cagaacctgg tacgggcact gcacaccgct 34801

cgccggcgac ggtctcggcg cttcgagcgc tcggtgttga agttatagaa cagccactcc 34861

ctcagagcgt gcagtatctc ctgagcctct tgggtgatga aaatcccatc cgctctgatg 34921

gctctgatca catcggccac ggtggaatgg gccagaccca gccagatgat gcaattttgt 34981

tgggtttcgg tgacggaggg agagggaaga acaggaagaa ccatgattaa ctttattcca 35041

aacggtctcg gagcacttca aaatgcaggt cccggaggtg gcacctctcg cccccactgt 35101

gttggtggaa aataacagcc aggtcaaagg tgacacggtt ctcgagatgt tccacggtgg 35161

cttccagcaa agcctccacg cgcacatcca gaaacaagag gacagcgaaa gcgggagcgt 35221

tttctaattc ctcaatcatc atattacact cctgcaccat ccccagataa ttttcatttt 35281

tccagccttg aatgattcgt attagttcct gaggtaaatc caagccagcc atgataaaaa 35341

gctcgcgcag agcgccctcc accggcattc ttaagcacac cctcataatt ccaagagatt 35401

ctgctcctgg ttcacctgca gcagattaac aatgggaata tcaaaatctc tgccgcgatc 35461

cctaagctcc tccctcaaca ataactgtat gtaatctttc atatcatctc cgaaattttt 35521

agccataggg ccgccaggaa taagagcagg gcaagccaca ttacagataa agcgaagtcc 35581

tccccagtga gcattgccaa atgtaagatt gaaataagca tgctggctag accctgtgat 35641

atcttccaga taactggaca gaaaatcagg caagcaattt ttaagaaaat caacaaaaga 35701

aaagtcgtcc aggtgcaggt ttagagcctc aggaacaacg atggaataag tgcaaggagt 35761

gcgttccagc atggttagtg ttttttggt gatctgtaga acaaaaaata aacatgcaat 35821

attaaaccat gctagcctgg cgaacaggtg ggtaaatcac tctttccagc accaggcagg 35881

ctacggggtc tccggcgcga ccctcgtaga agctgtcgcc atgattgaaa agcatcaccg 35941

agagaccttc ccggtggccg gcatggatga ttcgagaaga agcatacact ccgggaacat 36001

tggcatccgt gagtgaaaaa aagcgaccta taaagcctcg gggcactaca atgctcaatc 36061

tcaattccag caaagccacc ccatgcggat ggagcacaaa attggcaggt gcgtaaaaaa 36121

tgtaattact cccctcctgc acaggcagca aagcccccgc tccctccaga aacacataca 36181

aagcctcagc gtccatagct taccgagcac ggcaggcgca agagtcagag aaaaggctga 36241

gctctaacct gactgcccgc tcctgtgctc aatatatagc cctaacctac actgacgtaa 36301

aggccaaagt ctaaaaatac ccgccaaaat gacacacacg cccagcacac gcccagaaac 36361

cggtgacaca ctcaaaaaaa tacgtgcgct tcctcaaacg cccaaaccgg cgtcatttcc 36421

gggttcccac gctacgtcac cgctcagcga ctttcaaatt ccgtcgaccg ttaaaaacgt 36481

cactcgcccc gcccctaacg gtcgcccttc tctcggccaa tcaccttcct cccttcccaa 36541

attcaaacgc ctcatttgca tattaacgcg cacaaaaagt ttgaggtata ttattgatga 36601
tgatcgttta aactatgcgg tgtgaaatac cgcacagatg cgtaaggaga aaataccgca 36661
tcaggcgctc ttccgcttcc tcgctcactg actcgctgcg ctcggtcgtt cggctgcggc 36721
gagcggtatc agctcactca aaggcggtaa tacggttatc cacagaatca ggggataacg 36781
caggaaagaa catgtgagca aaaggccagc aaaaggccag gaaccgtaaa aaggccgcgt 36841
tgctggcgtt tttccatagg ctccgccccc ctgacgagca tcacaaaaat cgacgctcaa 36901
gtcagaggtg gcgaaacccg acaggactat aaagatacca ggcgtttccc cctggaagct 36961
ccctcgtgcg ctctcctgtt ccgaccctgc cgcttaccgg atacctgtcc gcctttctcc 37021
cttcgggaag cgtggcgctt tctcatagct cacgctgtag gtatctcagt tcggtgtagg 37081
tcgttcgctc caagctgggc tgtgtgcacg aacccccccgt tcagcccgac cgctgcgcct 37141
tatccggtaa ctatcgtctt gagtccaacc cggtaagaca cgacttatcg ccactggcag 37201
cagccactgg taacaggatt agcagagcga ggtatgtagg cggtgctaca gagttcttga 37261
agtggtggcc taactacggc tacactagaa ggacagtatt tggtatctgc gctctgctga 37321
agccagttac cttcggaaaa agagttggta gctcttgatc cggcaaacaa accaccgctg 37381
gtagcggtgg ttttttgtt tgcaagcagc agattacgcg cagaaaaaaa ggatctcaag 37441
aagatccttt gatcttttct acggggtctg acgctcagtg gaacgaaaac tcacgttaag 37501
ggattttggt catgagatta tcaaaaagga tcttcaccta gatcctttta aattaaaaat 37561
gaagttttaa atcaatctaa agtatatatg agtaaacttg gtctgacagt taccaatgct 37621
taatcagtga ggcacctatc tcagcgatct gtctatttcg ttcatccata gttgcctgac 37681
tccccgtcgt gtagataact acgatacggg agggcttacc atctggcccc agtgctgcaa 37741
tgataccgcg agacccacgc tcaccggctc cagatttatc agcaataaac cagccagccg 37801
gaagggccga gcgcagaagt ggtcctgcaa ctttatccgc ctccatccag tctattaatt 37861
gttgccggga agctagagta agtagttcgc cagttaatag tttgcgcaac gttgttgcca 37921
ttgctgcagg catcgtggtg tcacgctcgt cgtttggtat ggcttcattc agctccggtt 37981
cccaacgatc aaggcgagtt acatgatccc ccatgttgtg caaaaaagcg gttagctcct 38041
tcggtcctcc gatcgttgtc agaagtaagt tggccgcagt gttatcactc atggttatgg 38101
cagcactgca taattctctt actgtcatgc catccgtaag atgcttttct gtgactggtg 38161
agtactcaac caagtcattc tgagaatagt gtatgcggcg accgagttgc tcttgcccgg 38221
cgtcaacacg ggataatacc gcgccacata gcagaacttt aaaagtgctc atcattggaa 38281
aacgttcttc ggggcgaaaa ctctcaagga tcttaccgct gttgagatcc agttcgatgt 38341
aacccactcg tgcacccaac tgatcttcag catcttttac tttcaccagc gtttctgggt 38401
gagcaaaaac aggaaggcaa aatgccgcaa aaaagggaat aagggcgaca cggaaatgtt 38461
gaatactcat actcttcctt tttcaatatt attgaagcat ttatcagggt tattgtctca 38521
tgagcggata catatttgaa tgtatttaga aaaataaaca aatagggggtt ccgcgcacat 38581

ttccccgaaa agtgccacct gacgtctaag aaaccattat tatcatgaca ttaacctata 38641

aaaataggcg tatcacgagg ccctttcgtc ttcaag 38677

<210> 176
<211> 363
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 176

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

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
20 25 30

His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
35 40 45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
50 55 60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65 70 75 80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
100 105 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val
115 120 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His
130 135 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
145 150 155 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
165 170 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
180 185 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
195 200 205

Ala Ala Asp Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala
210 215 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225 230 235 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
245 250 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
260 265 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
275 280 285

Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
290 295 300

Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr
305 310 315 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
325 330 335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
340 345 350

Val Gly Gly Pro Gly His Lys Ala Arg Val Leu
355 360

<210> 177
<211> 394
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 177

Met His Pro Val Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln
1 5 10 15

Gln Gln Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln
20 25 30

Gln Gln Leu Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly
35 40 45

Gln Thr Ser Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala
50 55 60

Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys
65 70 75 80

Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp

```
                85                  90                  95

Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ala Arg Phe His Ala
            100                 105                 110

Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp
        115                 120                 125

Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala
    130                 135                 140

His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys
145                 150                 155                 160

Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu
                165                 170                 175

Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu
            180                 185                 190

Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln
        195                 200                 205

Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Ala Phe Arg Glu
    210                 215                 220

Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu
225                 230                 235                 240

Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu
                245                 250                 255

Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys
            260                 265                 270

Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys
        275                 280                 285

Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu
    290                 295                 300

Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg
305                 310                 315                 320

Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met
                325                 330                 335

His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser
            340                 345                 350

Tyr Phe Asp Met Gly Ala Asp Leu His Trp Gln Pro Ser Arg Arg Ala
        355                 360                 365
```

```
Leu Glu Ala Ala Gly Gly Pro Pro Tyr Ile Glu Glu Val Asp Asp Glu
    370                 375                 380

Val Asp Glu Glu Gly Glu Tyr Leu Glu Asp
385                 390
```

<210> 178
<211> 589
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 178

```
Met Gln Gln Gln Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu Gln
1               5                   10                  15

Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala Met
            20                  25                  30

Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg Gln
        35                  40                  45

Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val Pro
    50                  55                  60

Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn Ala
65                  70                  75                  80

Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val Tyr
                85                  90                  95

Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val Gln
            100                 105                 110

Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ala Gln
        115                 120                 125

Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala Leu
    130                 135                 140

Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln Glu
145                 150                 155                 160

Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Thr Glu Val
                165                 170                 175

Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln Thr
            180                 185                 190

Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys Asn
```

```
        195                 200                 205

Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala Thr
    210                 215                 220

Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu Val
225                 230                 235                 240

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

Tyr Leu Ile Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val Asp
            260                 265                 270

Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly Gln
        275                 280                 285

Asp Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr Asn
    290                 295                 300

Arg Ser Gln Lys Ile Pro Pro Gln Tyr Thr Leu Ser Ala Glu Glu Glu
305                 310                 315                 320

Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met Gln
                325                 330                 335

Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn Met
            340                 345                 350

Glu Pro Ser Met Tyr Ala Ser Asn Arg Pro Phe Ile Asn Lys Leu Met
        355                 360                 365

Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr Asn
    370                 375                 380

Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr Gly
385                 390                 395                 400

Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp Val
                405                 410                 415

Asp Ser Ser Val Phe Ser Pro Arg Pro Gly Ala Asn Glu Arg Pro Leu
            420                 425                 430

Trp Lys Lys Glu Gly Ser Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly
        435                 440                 445

Arg Glu Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro
    450                 455                 460

Ser Leu Pro Phe Ser Leu Asn Ser Ile Arg Ser Ser Glu Leu Gly Arg
465                 470                 475                 480
```

```
Ile Thr Arg Pro Arg Leu Leu Gly Glu Glu Glu Tyr Leu Asn Asp Ser
                485                 490                 495

Leu Leu Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu
            500                 505                 510

Ser Leu Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala Gln Glu His
        515                 520                 525

Arg Asp Asp Pro Ser Gln Gly Ala Thr Ser Arg Gly Ser Ala Ala Arg
    530                 535                 540

Lys Arg Arg Trp His Asp Arg Gln Arg Gly Leu Met Trp Asp Asp Glu
545                 550                 555                 560

Asp Ser Ala Asp Asp Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Asn
                565                 570                 575

Pro Phe Ala His Leu Arg Pro Arg Ile Gly Arg Met Met
            580                 585
```

<210> 179
<211> 532
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 179

```
Met Met Arg Arg Ala Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1               5                   10                  15

Val Met Gln Gln Ala Met Ala Ala Ala Ala Ala Met Gln Pro Pro Leu
            20                  25                  30

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

Asn Ser Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg
    50                  55                  60

Leu Tyr Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr
65                  70                  75                  80

Gln Asn Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp
                85                  90                  95

Phe Thr Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg
            100                 105                 110

Ser Arg Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro
```

```
        115                 120                 125

Asn Val Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met
    130                 135                 140

Val Ser Arg Lys Thr Pro Asn Gly Val Thr Val Thr Asp Gly Ser Gln
145                 150                 155                 160

Asp Ile Leu Glu Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly Asn
                165                 170                 175

Phe Ser Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile Asp
            180                 185                 190

Asn Tyr Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp Ile
        195                 200                 205

Gly Val Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro Val
    210                 215                 220

Thr Glu Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His Pro
225                 230                 235                 240

Asp Ile Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser Arg
                245                 250                 255

Leu Ser Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu Gly
            260                 265                 270

Phe Gln Ile Met Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala Leu
        275                 280                 285

Leu Asp Val Asp Ala Tyr Glu Lys Ser Lys Glu Glu Ser Ala Ala Ala
    290                 295                 300

Ala Thr Ala Ala Val Ala Thr Ala Ser Thr Glu Val Arg Gly Asp Asn
305                 310                 315                 320

Phe Ala Ser Pro Ala Ala Val Ala Ala Ala Glu Ala Ala Glu Thr Glu
                325                 330                 335

Ser Lys Ile Val Ile Gln Pro Val Glu Lys Asp Ser Lys Asp Arg Ser
            340                 345                 350

Tyr Asn Val Leu Pro Asp Lys Ile Asn Thr Ala Tyr Arg Ser Trp Tyr
        355                 360                 365

Leu Ala Tyr Asn Tyr Gly Asp Pro Glu Lys Gly Val Arg Ser Trp Thr
    370                 375                 380

Leu Leu Thr Thr Ser Asp Val Thr Cys Gly Val Glu Gln Val Tyr Trp
385                 390                 395                 400
```

```
Ser Leu Pro Asp Met Met Gln Asp Pro Val Thr Phe Arg Ser Thr Arg
                405                 410                 415

Gln Val Ser Asn Tyr Pro Val Val Gly Ala Glu Leu Leu Pro Val Tyr
            420                 425                 430

Ser Lys Ser Phe Phe Asn Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg
        435                 440                 445

Ala Phe Thr Ser Leu Thr His Val Phe Asn Arg Phe Pro Glu Asn Gln
    450                 455                 460

Ile Leu Val Arg Pro Pro Ala Pro Thr Ile Thr Thr Val Ser Glu Asn
465                 470                 475                 480

Val Pro Ala Leu Thr Asp His Gly Thr Leu Pro Leu Arg Ser Ser Ile
                485                 490                 495

Arg Gly Val Gln Arg Val Thr Val Thr Asp Ala Arg Arg Arg Thr Cys
            500                 505                 510

Pro Tyr Val Tyr Lys Ala Leu Gly Ile Val Ala Pro Arg Val Leu Ser
        515                 520                 525

Ser Arg Thr Phe
    530


<210>  180
<211>  193
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  180

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1               5                   10                  15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
            20                  25                  30

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
        35                  40                  45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
    50                  55                  60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Val Ser Thr
65                  70                  75                  80

Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
```

```
                85                  90                  95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
            100                 105                 110

Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
        115                 120                 125

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ala
    130                 135                 140

Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala Ala
145                 150                 155                 160

Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val Arg
                165                 170                 175

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

Thr
```

<210> 181
<211> 342
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 181

```
Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1               5                   10                  15

Glu Ile Tyr Gly Pro Ala Val Val Lys Glu Glu Arg Lys Pro Arg Lys
            20                  25                  30

Ile Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Glu Ser Asp Val Asp
        35                  40                  45

Gly Leu Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln
    50                  55                  60

Trp Arg Gly Arg Lys Val Arg Pro Val Leu Arg Pro Gly Thr Thr Val
65                  70                  75                  80

Val Phe Thr Pro Gly Glu Arg Ser Gly Thr Ala Ser Lys Arg Ser Tyr
                85                  90                  95

Asp Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu Gln Ala Ala Glu Arg
            100                 105                 110
```

```
Leu Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Ser Ala Pro Lys Glu
        115                 120                 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
    130                 135                 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Thr Ala Ala Pro Arg Arg
145                 150                 155                 160

Gly Phe Lys Arg Glu Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu Met
                165                 170                 175

Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu Thr Met Lys Val
            180                 185                 190

Asp Pro Asp Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln Val
        195                 200                 205

Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr Glu
    210                 215                 220

Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr Met
225                 230                 235                 240

Glu Val Gln Thr Asp Pro Trp Met Pro Ser Ala Thr Ser Arg Arg Pro
                245                 250                 255

Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn Tyr Ala Leu
            260                 265                 270

His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg Gly Thr Arg Phe Tyr
        275                 280                 285

Arg Gly His Thr Ser Arg Arg Arg Lys Thr Thr Thr Arg Arg Arg Arg
    290                 295                 300

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

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

His Pro Ser Ile Ala Ile
            340
```

<210> 182
<211> 77
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 182

```
Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1               5                   10                  15

Arg Lys Pro Arg Arg Arg Arg Leu Ala Gly Asn Gly Met Arg Arg His
            20                  25                  30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
        35                  40                  45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
    50                  55                  60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65                  70                  75


<210>  183
<211>  259
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  183

Met Asp Ser Asp Ala Pro Gly Pro Val Met Cys Phe Arg Arg Gln Met
1               5                   10                  15

Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg Pro
            20                  25                  30

Phe Met Gly Thr Trp Ser Asp Ile Gly Thr Ser Gln Leu Asn Gly Gly
        35                  40                  45

Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly Ser
    50                  55                  60

Thr Leu Lys Thr Tyr Gly Ser Lys Ala Trp Asn Ser Thr Thr Gly Gln
65                  70                  75                  80

Ala Leu Arg Asp Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val Val
                85                  90                  95

Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn Gln
            100                 105                 110

Ala Val Gln Arg Gln Ile Asn Ser Arg Leu Asp Pro Val Pro Pro Ala
        115                 120                 125

Gly Ser Val Glu Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu Asp
    130                 135                 140

Lys Arg Gly Glu Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu Leu
145                 150                 155                 160
```

```
Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu Gly
                165                 170                 175

Leu Pro Thr Thr Arg Pro Ile Ala Pro Leu Ala Thr Gly Val Leu Lys
            180                 185                 190

Pro Glu Ser Ser Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Gln Pro
        195                 200                 205

Ser Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val Ala
    210                 215                 220

Arg Ala Arg Pro Gly Gly Thr Ala Arg Pro His Ala Asn Trp Gln Ser
225                 230                 235                 240

Thr Leu Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg Arg
                245                 250                 255

Arg Cys Tyr
```

<210> 184
<211> 931
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 184

```
Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1               5                   10                  15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
            20                  25                  30

Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
        35                  40                  45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
    50                  55                  60

Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65                  70                  75                  80

Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
                85                  90                  95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
```

```
        115                 120                 125

Ala Pro Asn Thr Cys Gln Trp Thr Tyr Thr Asp Lys Gln Thr Glu Lys
    130                 135                 140

Thr Ala Thr Tyr Gly Asn Ala Pro Val Gln Gly Ile Ala Ile Thr Lys
145                 150                 155                 160

Asp Gly Ile Gln Leu Gly Thr Asp Ser Asp Gly Asn Pro Val Tyr Ala
                165                 170                 175

Gln Lys Thr Phe Glu Pro Glu Pro Gln Val Gly Asp Ala Glu Trp His
            180                 185                 190

Asp Thr Thr Gly Thr Asp Glu Lys Tyr Gly Gly Arg Ala Leu Lys Pro
        195                 200                 205

Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys Pro Thr Asn
    210                 215                 220

Lys Glu Gly Gly Gln Ala Lys Asn Arg Thr Lys Thr Asp Gly Thr Gly
225                 230                 235                 240

Glu Glu Pro Asp Ile Asp Met Ala Phe Phe Asp Gly Arg Asn Ala Thr
                245                 250                 255

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

Leu Glu Thr Pro Asp Thr His Ile Val Tyr Lys Ala Gly Thr Asp Asp
        275                 280                 285

Ser Ser Ser Ser Ile Asn Leu Gly Gln Gln Ser Met Pro Asn Arg Pro
    290                 295                 300

Asn Tyr Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn
305                 310                 315                 320

Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn
                325                 330                 335

Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu
            340                 345                 350

Leu Leu Asp Ser Leu Gly Asp Arg Thr Leu Tyr Phe Ser Met Trp Asn
        355                 360                 365

Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His
    370                 375                 380

Gly Val Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asp Ala Val
385                 390                 395                 400
```

```
Gly Arg Thr Asp Thr Tyr Gln Gly Ile Lys Pro Asn Gly Gly Asp Pro
                405                 410                 415

Ala Thr Trp Ala Lys Asp Asp Ser Ala Asn Asp Ala Asn Glu Met Gly
            420                 425                 430

Lys Gly Asn Pro Phe Ala Met Glu Ile Asn Ile Gln Ala Asn Leu Trp
        435                 440                 445

Arg Asn Phe Leu Tyr Ala Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr
    450                 455                 460

Lys Tyr Thr Pro Ala Asn Val Thr Leu Pro Thr Asn Thr Asn Thr Tyr
465                 470                 475                 480

Asp Tyr Met Asn Gly Arg Val Val Ala Pro Ser Leu Val Asp Ser Tyr
                485                 490                 495

Ile Asn Ile Gly Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn
            500                 505                 510

Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu
        515                 520                 525

Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys
    530                 535                 540

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

Glu Trp Asn Phe Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu
                565                 570                 575

Gly Asn Asp Leu Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile
            580                 585                 590

Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr
        595                 600                 605

Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp
    610                 615                 620

Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr
625                 630                 635                 640

Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly
                645                 650                 655

Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser
            660                 665                 670
```

```
Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp
        675                 680                 685

Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe
    690                 695                 700

Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn
705                 710                 715                 720

Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala
                725                 730                 735

Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His
            740                 745                 750

Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp
        755                 760                 765

Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val
    770                 775                 780

Val Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr
785                 790                 795                 800

Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg
                805                 810                 815

Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys
            820                 825                 830

Ser Ala Val Thr Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val
        835                 840                 845

Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu
    850                 855                 860

Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu
865                 870                 875                 880

Asp Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr Leu Leu Tyr
                885                 890                 895

Val Val Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg
            900                 905                 910

Gly Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn
        915                 920                 925

Ala Thr Thr
    930
```

<210> 185
<211> 210
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 185

Met Met Ala Glu Ala Ala Gly Ser Gly Glu Gln Glu Leu Arg Ala Ile
1 5 10 15

Ile Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys
20 25 30

Arg Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val
35 40 45

Asn Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala
50 55 60

Trp Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe
65 70 75 80

Ser Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu
85 90 95

Leu Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu
100 105 110

Lys Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu
115 120 125

Phe Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro
130 135 140

Met Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly
145 150 155 160

Met Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu
165 170 175

Ala Leu Tyr Arg Phe Leu Asn Ser His Ser Ala Tyr Phe Arg Ser His
180 185 190

Arg Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Asn Gln
195 200 205

Asp Met
210

<210> 186
<211> 801
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 186

Met Glu Thr Gln Pro Ser Pro Thr Ser Pro Ser Ala Pro Thr Thr Ala
1 5 10 15

Asp Glu Lys Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro Pro Ser Pro
20 25 30

Ala Thr Ser Asp Ala Ala Ala Val Pro Asp Met Gln Glu Met Glu Glu
35 40 45

Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His Glu Glu
50 55 60

Glu Leu Ala Val Arg Phe Gln Ser Ser Ser Gln Glu Asp Lys Glu Gln
65 70 75 80

Pro Glu Gln Glu Ala Glu Asn Glu Gln Ser Gln Ala Gly Leu Glu His
85 90 95

Asp Gly Asp Tyr Leu His Leu Ser Gly Glu Glu Asp Ala Leu Ile Lys
100 105 110

His Leu Ala Arg Gln Ala Ile Ile Val Lys Asp Ala Leu Leu Asp Arg
115 120 125

Thr Glu Val Pro Leu Ser Val Glu Glu Leu Ser Arg Ala Tyr Glu Leu
130 135 140

Asn Leu Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr
145 150 155 160

Cys Glu Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro
165 170 175

Glu Ala Leu Ala Thr Tyr His Ile Phe Phe Lys Asn Gln Lys Ile Pro
180 185 190

Val Ser Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Phe Asn Leu
195 200 205

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

Lys Ile Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala
225 230 235 240

Leu Gln Gly Glu Gly Gly Glu His Glu His His Ser Ala Leu Val Glu
245 250 255

```
Leu Glu Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu
            260                 265                 270

Leu Thr His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met
        275                 280                 285

Ser Ala Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Ile Ser
    290                 295                 300

Glu Asp Glu Gly Met Gln Asp Ser Glu Asp Gly Lys Pro Val Val Ser
305                 310                 315                 320

Asp Glu Gln Leu Ala Arg Trp Leu Gly Pro Asn Ala Ser Pro Gln Ser
                325                 330                 335

Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr Val
            340                 345                 350

Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu Arg
        355                 360                 365

Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val Arg
    370                 375                 380

Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr
385                 390                 395                 400

Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His Thr
                405                 410                 415

Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val Tyr
            420                 425                 430

Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln Gln
        435                 440                 445

Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln Lys
    450                 455                 460

Asn Leu Lys Gly Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala Ser
465                 470                 475                 480

Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu Arg
                485                 490                 495

Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe Arg
            500                 505                 510

Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser Ala
        515                 520                 525
```

```
Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro Pro
    530                 535                 540

Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala Tyr
545                 550                 555                 560

His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu Cys
                565                 570                 575

His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys Asn
            580                 585                 590

Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu Gln
        595                 600                 605

Gly Pro Ser Asp Asp Gly Glu Gly Ala Lys Gly Gly Leu Lys Leu Thr
    610                 615                 620

Pro Gly Leu Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp
625                 630                 635                 640

Tyr His Pro Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro Pro
                645                 650                 655

Lys Ala Glu Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu Ala
            660                 665                 670

Gln Leu Gln Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys
        675                 680                 685

Gly Arg Gly Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn Pro
    690                 695                 700

Gly Phe Pro Gln Asp Ala Pro Arg Lys Gln Glu Ala Glu Ser Gly Ala
705                 710                 715                 720

Ala Ala Arg Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Gln Ser Gly
                725                 730                 735

Arg Gly Gly Asp Gly Gly Arg Leu Gly Gln His Ser Gly Arg Gly Gly
            740                 745                 750

Gln Pro Ala Arg Gln Ser Gly Gly Arg Arg Gly Gly Gly Arg Gly Gly
        755                 760                 765

Arg Ser Ser Arg Arg Gln Thr Val Val Leu Gly Gly Gly Glu Ser Lys
    770                 775                 780

Gln His Gly Tyr His Leu Arg Ser Gly Ser Gly Ser Arg Ser Ala Pro
785                 790                 795                 800
```

Gln

<210> 187
<211> 227
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 187

Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1 5 10 15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
20 25 30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala His Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Leu Thr Ala Thr
50 55 60

Pro Arg Asn His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
100 105 110

Thr Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
115 120 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
130 135 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Ile Ala Gly Ser Gly Arg Ser
145 150 155 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
165 170 175

Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
180 185 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
195 200 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
210 215 220

Gly Tyr Asp
225

<210> 188
<211> 106
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 188

Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1 5 10 15

His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Thr
20 25 30

Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
35 40 45

Arg Ile Val Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
50 55 60

Ser Gln Arg Pro Ile Leu Val Glu Arg Gln Gln Gly Asn Thr Leu Leu
65 70 75 80

Thr Leu Tyr Cys Ile Cys Asp His Pro Gly Leu His Glu Ser Leu Cys
85 90 95

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
100 105

<210> 189
<211> 176
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 189

Met Gly Lys Ile Thr Leu Val Cys Gly Val Leu Val Thr Val Val Leu
1 5 10 15

Ser Ile Leu Gly Gly Gly Ser Ala Ala Val Val Thr Glu Lys Lys Ala
20 25 30

Asp Pro Cys Leu Thr Phe Asn Pro Asp Lys Cys Arg Leu Ser Phe Gln
35 40 45

Pro Asp Gly Asn Arg Cys Thr Val Leu Ile Lys Cys Gly Trp Glu Cys
50 55 60

```
Glu Ser Val Ala Ile Gln Tyr Lys Asn Lys Thr Arg Asn Asn Thr Leu
65                  70                  75                  80

Ala Ser Thr Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
                85                  90                  95

Pro Gly Ala Asp Gly Ser Leu His Thr Val Asn Asn Thr Phe Ile Phe
            100                 105                 110

Glu His Met Cys Glu Thr Ala Met Phe Met Ser Lys Gln Tyr Gly Met
        115                 120                 125

Trp Pro Pro Arg Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
    130                 135                 140

Ala Cys Thr Val Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145                 150                 155                 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
                165                 170                 175
```

<210> 190
<211> 247
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 190

```
Met Arg Leu Leu Ile Phe Val Ile Ile Thr Leu Ser Phe Asn Tyr Ala
1               5                   10                  15

His Gly Tyr Ala Asn Ile Gln Lys Thr Leu Tyr Val Gly Ser Asp Ser
            20                  25                  30

Thr Leu Glu Gly Thr Gln Ser Gln Ala Arg Val Ser Trp Tyr Phe Tyr
        35                  40                  45

Lys Gly Ser Asp Asp Pro Ile Thr Leu Cys Lys Gly Asp Gln Gly Arg
    50                  55                  60

Ile Thr Lys Pro Pro Ile Thr Phe Ser Cys Thr Arg Thr Asn Leu Thr
65                  70                  75                  80

Leu Leu Ser Ile Thr Lys Glu Tyr Ala Gly Thr Tyr Tyr Ser Thr Asn
                85                  90                  95

Phe His Arg Gly Gln Asp Lys Tyr Tyr Thr Val Lys Val Glu Asn Pro
            100                 105                 110

Thr Thr Pro Arg Thr Thr Thr Lys Pro Thr Thr Thr Lys Lys Pro Thr
        115                 120                 125
```

Thr Pro Lys Lys Pro Thr Thr Pro Lys Thr Thr Lys Thr Thr Thr Ala
130 135 140

Lys Thr Thr Thr Thr Lys Pro Thr Thr Thr Ser Thr Thr Leu Ala Ile
145 150 155 160

Thr Thr His Thr His Thr Glu Leu Thr Ser Gln Ala Thr Thr Glu Asn
165 170 175

Asp Leu Val Ala Leu Leu Gln Lys Gly Glu Asn Ser Ser Ser Ser Pro
180 185 190

Leu Pro Thr Thr Pro Ser Glu Glu Ile Pro Lys Ser Met Val Gly Ile
195 200 205

Ile Ala Ala Val Val Val Cys Met Leu Ile Ile Ile Leu Cys Met Met
210 215 220

Tyr Tyr Ala Cys Tyr Tyr Arg Lys His Arg Leu Asn Asn Lys Leu Asp
225 230 235 240

Pro Leu Leu Ser Val Asp Phe
245

<210> 191
<211> 291
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 191

Met Lys Ala Leu Ser Thr Leu Val Phe Leu Ser Leu Ile Gly Ile Val
1 5 10 15

Phe Ser Ala Gly Phe Leu Lys Asn Leu Thr Ile Ile Glu Gly Asp Asn
20 25 30

Ala Thr Leu Val Gly Ile Ser Gly Gln Asn Val Ser Trp Leu Lys Tyr
35 40 45

His Leu Asp Gly Trp Lys Pro Ile Cys Thr Trp Asn Val Ser Val Tyr
50 55 60

Thr Cys His Gly Val Asn Leu Thr Ile Thr Asn Ala Thr Gln Asp Gln
65 70 75 80

Asn Gly Arg Phe Lys Gly Gln Ser Phe Thr Ser Asn Asn Gly Tyr Glu
85 90 95

Thr His Asn Met Phe Ile Tyr Asp Val Thr Val Ile Ser Asn Lys Thr
100 105 110

```
Thr Pro Thr Thr Gln Thr Pro Thr Thr His Ser Ser Thr His Ala Met
        115                 120                 125

Gln Thr Thr Gln Thr Thr Thr Tyr Thr Thr Ser Thr Glu Ser Thr Thr
    130                 135                 140

Thr Thr Thr Ala Glu Val Ser Ser Thr Ala Pro Gln Pro Gln Ala Leu
145                 150                 155                 160

Ala Leu Met Ala Gln Pro Ser Ser Met Thr Ala Lys Thr Asn Glu Gln
                165                 170                 175

Thr Thr Glu Phe Leu Ser Thr Ile Gln Ser Ser Thr Thr Ala Thr Ser
            180                 185                 190

Ser Ala Phe Ser Ser Thr Ala Asn Leu Thr Ser Leu Ser Ser Thr Pro
        195                 200                 205

Ile Ser Asn Ala Thr Thr Ser Pro Ala Pro Leu Pro Thr Pro Leu Lys
    210                 215                 220

Gln Ser Glu Ser Ser Thr Gln Leu Gln Ile Thr Leu Leu Ile Val Ile
225                 230                 235                 240

Gly Val Val Ile Leu Ala Val Leu Leu Tyr Phe Ile Phe Cys Arg Arg
                245                 250                 255

Ile Pro Asn Ala Lys Pro Ala Tyr Lys Pro Ile Val Ile Gly Thr Pro
            260                 265                 270

Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser Phe
        275                 280                 285

Thr Val Trp
    290
```

<210> 192
<211> 149
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 192

```
Met Ile Ser Met Arg Ala Leu Leu Leu Leu Leu Ala Leu Leu Leu Ala
1               5                   10                  15

Pro Leu Ala Ala Pro Leu Ser Leu Lys Ser Pro Thr Gln Ser Pro Glu
            20                  25                  30

Glu Val Arg Lys Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Ser Cys
```

35 40 45

Tyr Lys Leu Lys Ser Glu Met His Pro Ser Trp Ile Met Ile Val Gly
50 55 60

Ile Val Asn Ile Leu Ala Cys Thr Leu Phe Ser Phe Val Ile Tyr Pro
65 70 75 80

Arg Phe Asp Phe Gly Trp Asn Ala Pro Glu Ala Leu Trp Leu Pro Pro
85 90 95

Asp Pro Asp Thr Pro Pro Gln Gln Gln Gln Asn Gln Ala Gln Ala His
100 105 110

Ala Pro Pro Gln Pro Arg Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu
115 120 125

Ala Glu Pro Gln Arg Ala Met Leu Pro Ala Ile Ser Tyr Phe Asn Leu
130 135 140

Thr Gly Gly Asp Asp
145

<210> 193
<211> 490
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 193

Met Phe Ser Val Ser Ser Thr Ser Leu Pro Ser Ser Gln Leu Trp Tyr
1 5 10 15

Cys Arg Pro Arg Arg Ala Ala Asn Phe Leu His Thr Leu Lys Gly Met
20 25 30

Ser Asn Ser Ser Cys Pro Ser Ile Phe Ile Phe Ile Phe Tyr Gln Met
35 40 45

Ser Lys Lys Arg Ala Arg Val Asp Asp Gly Phe Asp Pro Val Tyr Pro
50 55 60

Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro Phe
65 70 75 80

Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser Leu
85 90 95

Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Ala Val Thr Leu Lys
100 105 110

```
Leu Gly Glu Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser Lys
        115                 120                 125

Asn Ala Thr Lys Ala Thr Ala Pro Leu Ser Ile Ser Asn Gly Thr Ile
    130                 135                 140

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

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

Gly Ile Ser Leu Gly Asn Gly Leu Gln Thr Ser Asn Lys Leu Leu Thr
            180                 185                 190

Val Gln Leu Thr His Pro Leu Thr Phe Ser Ser Asn Ser Ile Thr Val
        195                 200                 205

Lys Thr Asp Lys Gly Leu Tyr Ile Asn Ser Ser Gly Asn Arg Gly Leu
    210                 215                 220

Glu Ala Asn Ile Ser Leu Lys Arg Gly Leu Ile Phe Asp Gly Asn Ala
225                 230                 235                 240

Ile Ala Thr Tyr Leu Gly Ser Gly Leu Asp Tyr Gly Ser Tyr Asp Ser
                245                 250                 255

Asp Gly Lys Thr Arg Pro Ile Ile Thr Lys Ile Gly Ala Gly Leu Asn
            260                 265                 270

Phe Asp Ala Asn Asn Ala Met Ala Val Lys Leu Gly Thr Gly Leu Ser
        275                 280                 285

Phe Asp Ser Ala Gly Ala Leu Thr Ala Gly Asn Lys Glu Asp Asp Lys
    290                 295                 300

Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Gln Leu Leu
305                 310                 315                 320

Ser Asp Arg Asp Ala Lys Phe Thr Leu Cys Leu Thr Lys Cys Gly Ser
                325                 330                 335

Gln Ile Leu Gly Thr Val Ala Val Ala Ala Val Thr Val Gly Ser Ala
            340                 345                 350

Leu Asn Pro Ile Asn Asp Thr Val Lys Ser Ala Ile Val Phe Leu Arg
        355                 360                 365

Phe Asp Ser Asp Gly Val Leu Met Ser Asn Ser Ser Met Val Gly Asp
    370                 375                 380

Tyr Trp Asn Phe Arg Glu Gly Gln Thr Thr Gln Ser Val Ala Tyr Thr
```

385 390 395 400

Asn Ala Val Gly Phe Met Pro Asn Leu Gly Ala Tyr Pro Lys Thr Gln
405 410 415

Ser Lys Thr Pro Lys Asn Ser Ile Val Ser Gln Val Tyr Leu Asn Gly
420 425 430

Glu Thr Thr Met Pro Met Thr Leu Thr Ile Thr Phe Asn Gly Thr Asp
435 440 445

Glu Lys Asp Thr Thr Pro Val Ser Thr Tyr Ser Met Thr Phe Thr Trp
450 455 460

Gln Trp Thr Gly Asp Tyr Lys Asp Lys Asn Ile Thr Phe Ala Thr Asn
465 470 475 480

Ser Phe Thr Phe Ser Tyr Met Ala Gln Glu
485 490

<210> 194
<211> 31980
<212> DNA
<213> Artificial Sequence

<220>
<223> Simian adenovirus A1337 clone

<220>
<221> CDS
<222> (25483)..(26034)
<223> 22K

<220>
<221> CDS
<222> (27340)..(27975)
<223> E3\CR1-alpha

<220>
<221> CDS
<222> (31529)..(31930)
<223> E3\14.7K

<400> 194
aattgtttaa actaccatca tcaataatat acctcaaact ttttgtgcgc gttaatatgc 60

aaatgaggcg tttgaatttg ggaagggagg aaggtgattg gccgagagaa gggcgaccgt 120

taggggcggg gcgagtgacg ttttgatgac gtggccgcga ggaggagcca gtttgcaagt 180

tctcgtggga aaagtgacgt caaacgaggt gtggtttgaa cacggaaata ctcaattttc 240

ccgcgctctc tgacaggaaa tgaggtgttt ttgggcggat gcaagttaaa acgggccatt 300

ttcgcgcgaa aactgaatga ggaagtgaaa atctgagtaa tttcgcgttt atggcaggga 360

ggagtatttg ccgagggccg agtagacttt gaccgattac gtgggggttt cgattaccgt 420

gtttttcacc taaatttccg cgtacggtgt caaagtccgg tgtttttacg taactataac 480

ggtcctaagg tagcgaaagc tcagatctgg atctcccgat cccctatggc gactctcagt 540

acaatctgct ctgatgccgc atagttaagc cagtatctgc tccctgcttg tgtgttggag 600
gtcgctgagt agtgcgcgag caaaatttaa gctacaacaa ggcaaggctt gaccgacaat 660
tgcatgaaga atctgcttag ggttaggcgt tttgcgctgc ttcgcgatgt acgggccaga 720
tatacgcgtt gacattgatt attgactagt tattaatagt aatcaattac ggggtcatta 780
gttcatagcc catatatgga gttccgcgtt acataactta cggtaaatgg cccgcctggc 840
tgaccgccca acgacccccg cccattgacg tcaataatga cgtatgttcc catagtaacg 900
ccaataggga ctttccattg acgtcaatgg gtggactatt tacggtaaac tgcccacttg 960
gcagtacatc aagtgtatca tatgccaagt acgccccta ttgacgtcaa tgacggtaaa 1020
tggcccgcct ggcattatgc ccagtacatg accttatggg actttcctac ttggcagtac 1080
atctacgtat tagtcatcgc tattaccatg gtgatgcggt tttggcagta catcaatggg 1140
cgtggatagc ggtttgactc acggggattt ccaagtctcc accccattga cgtcaatggg 1200
agtttgtttt ggcaccaaaa tcaacgggac tttccaaaat gtcgtaacaa ctccgcccca 1260
ttgacgcaaa tgggcggtag gcgtgtacgg tgggaggtct atataagcag agctcgttta 1320
gtgaaccgtc agatcgcctg gagacgccat ccacgctgtt ttgacctcca tagaagacac 1380
cgggaccgat ccagcctccg cgggcgcgcg tcgacagaga gatgggtgcg agagcgtcag 1440
tattaagcgg gggagaatta gatcgatggg aaaaaattcg gttaaggcca gggggaaaga 1500
agaagtacaa gctaaagcac atcgtatggg caagcaggga gctagaacga ttcgcagtta 1560
atcctggcct gttagaaaca tcagaaggct gtagacaaat actgggacag ctacaaccat 1620
cccttcagac aggatcagag gagcttcgat cactatacaa cacagtagca accctctatt 1680
gtgtgcacca gcggatcgag atcaaggaca ccaaggaagc tttagacaag atagaggaag 1740
agcaaaacaa gtccaagaag aaggcccagc aggcagcagc tgacacagga cacagcaatc 1800
aggtcagcca aaattaccct atagtgcaga acatccaggg gcaaatggta catcaggcca 1860
tatcacctag aactttaaat gcatgggtaa aagtagtaga agagaaggct ttcagcccag 1920
aagtgatacc catgttttca gcattatcag aaggagccac cccacaggac ctgaacacga 1980
tgttgaacac cgtgggggga catcaagcag ccatgcaaat gttaaaagag accatcaatg 2040
aggaagctgc agattgggat agagtgcatc cagtgcatgc agggcctatt gcaccaggcc 2100
agatgagaga accaagggga agtgacatag caggaactac tagtaccctt caggaacaaa 2160
taggatggat gacaaataat ccacctatcc cagtaggaga gatctacaag aggtggataa 2220
tcctgggatt gaacaagatc gtgaggatgt atagccctac cagcattctg gacataagac 2280
aaggaccaaa ggaacccttt agagactatg tagaccggtt ctataaaact ctaagagctg 2340
agcaagcttc acaggaggta aaaaattgga tgacagaaac cttgttggtc caaaatgcga 2400
acccagattg taagaccatc ctgaaggctc tcggcccagc ggctacacta gaagaaatga 2460
tgacagcatg tcagggagta ggaggacccg gccataaggc aagagttttg tagggatcca 2520
ctagttctag actcgagggg gggcccggta cctttaagac caatgactta caaggcagct 2580

gtagatctta gccacttttt aaaagaaaag gggggactgg aagggctaat tcactcccaa 2640

agaagacaag ataaaccgct gatcagcctc gactgtgcct tctagttgcc agccatctgt 2700

tgtttgcccc tcccccgtgc cttccttgac cctggaaggt gccactccca ctgtcctttc 2760

ctaataaaat gaggaaattg catcgcattg tctgagtagg tgtcattcta ttctgggggg 2820

tggggtgggg caggacagca agggggagga ttgggaagac aatagcaggc atgctgggga 2880

tgcggtgggc tctatggctt ctgaggcgga aagaaccagc agatctgcag atctgaattc 2940

atctatgtcg ggtgcggaga aagaggtaat gaaatggcac atatgctggc caccgtgcat 3000

gtggcttccc atgcccgcaa gccctggccc gagttcgagc acaatgtcat gaccaggtgc 3060

aatatgcatc tggggtctcg ccgaggcatg ttcatgccct accagtgcaa cctgaattat 3120

gtgaaggtgc tgctggagcc cgatgccatg tccagagtga gcctgacggg ggtgtttgac 3180

atgaatgtgg aggtgtggaa gattctgaga tatgatgaat ccaagaccag gtgccgagcc 3240

tgcgagtgcg gagggaagca tgccaggttc agcccgtgt gtgtggatgt gacggaggac 3300

ctgcgacccg atcatttggt gttgtcctgc accgggacgg agttcggttc cagcggggaa 3360

gaatctgact agagtgagta gtgttctggg gcgggggagg acctgcatga gggccagaat 3420

gattgaaatc tgtgcttttc tgtgtgttgc agcagcatga gcggaagcgg ctcctttgag 3480

ggaggggtat tcagccctta tctgacgggg cgtctcccct cctgggcggg agtgcgtcag 3540

aatgtgatgg gatccacggt ggacggccgg cccgtgcagc ccgcgaactc ttcaaccctg 3600

acctatgcaa ccctgagctc ttcgtcggtg gacgcagctg ccgccgcagc tgctgcatct 3660

gccgccagcg ccgtgcgcgg aatggccatg ggcgccggct actacggcac tctggtggcc 3720

aactcgagtt ccaccaataa tcccgccagc ctgaacgagg agaagctgct gctgctgatg 3780

gcccagctcg aggccttgac ccagcgcctg ggcgagctga cccagcaggt ggctcagctg 3840

caggagcaga cgcgggccgc ggttgccacg gtgaaatcca aataaaaaat gaatcaataa 3900

ataaacggag acggttgttg attttaacac agagtctgaa tctttatttg atttttcgcg 3960

cgcggtaggc cctggaccac cggtctcgat cattgagcac tcggtggatc ttttccagga 4020

cccggtagag gtgggcttgg atgttgaggt acatgggcat gagcccgtcc cgggggtgga 4080

ggtagctcca ttgcagggcc tcgtgctcgg gggtggtgtt gtaaatcacc cagtcatagc 4140

aggggcgcag ggcatggtgt tgcacaatat ctttgaggag gagactgatg gccacgggca 4200

gcccttggt gtaggtgttt acaaatctgt tgagctggga gggatgcatg cgggggggaga 4260

tgaggtgcat cttggcctgg atcttgagat tggcgatgtt accgcccaga tcccgcctgg 4320

ggttcatgtt gtgcaggacc accagcacgg tgtatccggt gcacttgggg aatttatcat 4380

gcaacttgga agggaaggcg tgaaagaatt tggcgacgcc cttgtgcccg cccaggtttt 4440

ccatgcactc atccatgatg atggcgatgg ggccgtgggc ggcggcctgg gcaaaaacgt 4500

ttcgggggtc ggacacatca tagttgtggt cctgggtgag atcatcatag gccattttaa 4560

tgaatttggg gcggagggtg ccggactggg ggacaaaggt accctcgatc ccgggggcgt 4620

agttcccctc acagatctgc atctcccagg ctttgagctc ggaggggggg atcatgtcca 4680

cctgcggggc gataaagaac acggtttccg gggcgggaga gatgagctgg gccgaaagca 4740
agttccggag cagctgggac ttgccgcagc cggtggggcc gtagatgacc ccgatgaccg 4800
gttgcaggtg gtagttgagg gagagacagc tgccgtcctc ccggaggagg ggggccacct 4860
cgttcatcat ctcgcgcacg tgcatgttct cgcgcaccag ttccgccagg aggcgctctc 4920
cccccaggga taggagctcc tggagcgagg cgaagttttt cagcggcttg agtccgtcgg 4980
ccatgggcat tttggagagg gtctgttgca agagttccaa gcggtcccag agctcggtga 5040
tgtgctctac ggcatctcga tccagcagac ctcctcgttt cgcgggttgg ggcggctgcg 5100
ggagtagggc accagacgat gggcgtccag cgcagccagg gtccggtcct tccagggtcg 5160
cagcgtccgc gtcagggtgg tctccgtcac ggtgaagggg tgcgcgccgg gctgggcgct 5220
tgcgagggtg cgcttcaggc tcatccggct ggtcgaaaac cgctcccgat cggcgccctg 5280
cgcgtcggcc aggtagcaat tgaccatgag ttcgtaattg agcgcctcgg ccgcgtgacc 5340
tttggcgcgg agcttacctt tggaagtctg cccgcaggtg ggacagagga gggacttgag 5400
ggcgtagagc ttgggggcga ggaagacgga ctcgggggcg taggcgtccg cgccgcagtg 5460
ggcgcagacg gtctcgcact ccacgagcca ggtgaggtcg ggctggtcgg ggtcaaaaac 5520
cagtttcccg ccgttctttt tgatgcgttt cttacctttg gtctccatga gctcgtgtcc 5580
ccgctgggtg acaaagaggc tgtccgtgtc cccgtagacc gactttatgg gccggtcctc 5640
gagcggtgtg ccgcggtcct cctcgtagag gaaccccgcc cactccgaga cgaaagcccg 5700
ggtccaggcc agcacgaagg aggccacgtg ggacgggtag cggtcgttgt ccaccagcgg 5760
gtccaccttc tccagggtat gcaaacacat gtccccctcg tccacatcca ggaaggtgat 5820
tggcttgtaa gtgtaggcca cgtgaccggg ggtcccagcc ggggggggtat aaaaggggggc 5880
gggcccctgc tcgtcctcac tgtcttccgg atcgctgtcc aggagcgcca gctgttgggg 5940
taggtattcc ctctcgaagg cgggcatgac ctcggcactc aggttgtcag tttctagaaa 6000
cgaggaggat ttgatattga cggtgccggc ggagatgcct ttcaagagcc cctcgtccat 6060
ctggtcagaa aagacgatct ttttgttgtc gagtttggtg gcgaaggagc cgtagagggc 6120
attggagagg agcttggcga tagagcgcat ggtctggttt ttttccttgt cggcgcgctc 6180
cttggccgcg atgttgagct gcacgtactc gcgcgccacg cacttccatt cggggaagac 6240
ggtggtcagc tcgtcgggca cgattctgac ttgccagccc cggttatgca gggtgatgag 6300
gtccacactg gtgcccacct cgccgcgcag gggctcgttg gtccagcaga gtcgaccgcc 6360
cttgcgcgag cagaaggggg gcaggggtc cagcatgacc tcgtcggggg ggtcggcatc 6420
gatggtgaag atgcctggca ggagatcggg gtcgaagtag ctgatggaag tggccagatc 6480
gtccagggca gcttgccatt cgcgcacggc cagcgcgcgc tcgtagggac tgaggggcgt 6540
gccccaaggc atggggtgtg tgagcgcgga ggcgtacatg ccgcagatgt cgtagacgta 6600
gaggggctcc tcgaggatgc cgatgtaggt ggggtaacag cgcccccgc ggatgctggc 6660
gcgcacgtag tcatacagct catgcgaggg ggcgaggagc cccgggccca ggttggtgcg 6720

actgggcttt tcggcgcggt agacgatctg gcgaaagatg gcatgcgagt tggaggagat 6780

ggtgggcctt tggaagatgt tgaagtgggc gtggggcaga ccgaccgagt cgcggatgaa 6840

gtgggcgtag gagtcttgca gtttggcgac gagctcggcg gtgacgagga cgtccagagc 6900

gcagtagtcg agggtctcct ggatgatgtc atacttgagc tggccctttt gtttccacag 6960

ctcgcggttg agaaggaact cttcgcggtc cttccagtac tcttcgaggg ggaacccgtc 7020

ctgatctgca cggtaagagc ctagcatgta gaactggttg acggccttgt aggcgcagca 7080

gcccttctcc acggggaggg cgtaggcctg ggcggccttg cgcagggagg tgtgcgtgag 7140

ggcgaaggtg tccctgacca tgaccttgag gaactggtgc ttgaaatcga tatcgtcgca 7200

gccccctgc tcccagagct ggaagtccgt gcgcttcttg taggcggggt tgggcaaagc 7260

gaaagtaaca tcgttgaaaa ggatcttgcc cgcgcggggc ataaagttgc gagtgatgcg 7320

gaaaggctgg ggcacctcgg cccggttgtt gatgacctgg gcggcgagca cgatctcgtc 7380

gaaaccgttg atgttgtggc ccacgatgta gagttccacg aatcgcgggc ggcccttgac 7440

gtggggcagc ttcttgagct cctcgtaggt gagctcgtcg gggtcgctga gaccgtgctg 7500

ctcgagcgcc cagtcggcga gatgggggtt ggcgcggagg aaggaagtcc agagatccac 7560

ggccagggcg gtttgcagac ggtcccggta ctgacggaac tgctgcccga cggccatttt 7620

ttcgggggtg acgcagtaga aggtgcgggg gtccccgtgc cagcggtccc atttgagctg 7680

gagggcgaga tcgagggcga gctcgacgag gcggtcgtcc ccggagagtt tcatgaccag 7740

catgaagggg acgagctgct tgccgaagga ccccatccag gtgtaggttt ccacatcgta 7800

ggtgaggaag agcctttcgg tgcgaggatg cgagccgatg gggaagaact ggatctcctg 7860

ccaccaattg gaggaatggc tgttgatgtg atggaagtag aaatgccgac ggcgcgccga 7920

acactcgtgc ttgtgtttat acaagcggcc acagtgctcg caacgctgca cgggatgcac 7980

gtgctgcacg agctgtacct gagttccttt gacgaggaat ttcagtggga agtggagtcg 8040

tggcgcctgc atctcgtgct gtactacgtc gtggtggtcg gcctggccct cttctgcctc 8100

gatggtggtc atgctgacga gcccgcgcgg gaggcaggtc cagacctcgg cgcgagcggg 8160

tcggagagcg aggacgaggg cgcgcaggcc ggagctgtcc agggtcctga gacgctgcgg 8220

agtcaggtca gtgggcagcg gcggcgcgcg gttgacttgc aggagttttt ccagggcgcg 8280

cgggaggtcc agatggtact tgatctccac cgcgccgttg gtggcgacgt cgatggcttg 8340

cagggtcccg tgcccctggg gtgtgaccac cgtcccccgt ttcttcttgg gcggctgggg 8400

cgacgggggc ggtgcctctt ccatggttag aagcggcggc gaggacgcgc gccgggcggc 8460

agaggcggct cggggcccgg aggcaggggc ggcaggggca cgtcggcgcc gcgcgcgggt 8520

aggttctggt actgcgcccg gagaagactg gcgtgagcga cgacgcgacg gttgacgtcc 8580

tggatctgac gcctctgggt gaaggccacg ggacccgtga gtttgaacct gaaagagagt 8640

tcgacagaat caatctcggt atcgttgacg gcggcctgcc gcaggatctc ttgcacgtcg 8700

cccgagttgt cctggtaggc gatctcggtc atgaactgct cgatctcctc ctcctgaagg 8760

tctccgcggc cggcgcgctc cacggtggcc gcgaggtcgt tggagatgcg gcccatgagc 8820

tgcgagaagg cgttcatgcc cgcctcgttc cagacgcggc tgtagaccac gacgccctcg 8880
ggatcgcggg cgcgcatgac cacctgggcg aggttgagct ccacgtggcg cgtgaagacc 8940
gcgtagttgc agaggcgctg gtagaggtag ttgagcgtgg tggcgatgtg ctcggtgacg 9000
aagaaataca tgatccagcg gcggagcggc atctcgctga cgtcgcccag cgcctccaag 9060
cgttccatgg cctcgtaaaa gtccacggcg aagttgaaaa actgggagtt gcgcgccgag 9120
acggtcaact cctcctccag aagacggatg agctcggcga tggtggcgcg cacctcgcgc 9180
tcgaaggccc ccgggagttc ctcctcttcc atctcctctt cttcctcctc cactaacatc 9240
tcttctactt cctcctcagg cggtggtggc gggggagggg gcctgcgtcg ccggcggcgc 9300
acgggcagac ggtcgatgaa gcgctcgatg gtctcgccgc gccggcgtcg catggtctcg 9360
gtgacggcgc gcccgtcctc gcggggccgc agcgtgaaga cgccgccgcg catctccagg 9420
tggccggggg ggtccccgtt gggcagggag agggcgctga cgatgcatct tatcaattgc 9480
cccgtaggga ctccgcgcaa ggacctgagc gtctcgagat ccacgggatc tgaaaaccgt 9540
tgaacgaagg cttcgagcca gtcgcagtcg caaggtaggc tgagcacggt ttcttctggc 9600
gggtcatgtt ggggagcggg gcgggcgatg ctgctggtga tgaagttgaa ataggcggtt 9660
ctgagacggc ggatggtggc gaggagcacc aggtctttgg gcccggcttg ctggatgcgc 9720
agacggtcgg ccatgcccca ggcgtggtcc tgacacctgg ccaggtcctt gtagtagtcc 9780
tgcatgagcc gctccacggg cacctcctcc tcgcccgcgc ggccgtgcat gcgcgtgagc 9840
ccgaagccgc gctggggctg gacgagcgcc aggtcggcga cgacgcgctc ggcgaggatg 9900
gcctgctgga tctgggtgag ggtggtctgg aagtcgtcaa agtcgacgaa gcggtggtag 9960
gctccggtgt tgatggtgta ggagcagttg gccatgacgg accagttgac ggtctggtgg 10020
cccggacgca cgagctcgtg gtacttgagg cgcgagtagg cgcgcgtgtc gaagatgtag 10080
tcgttgcagg tgcgcaccag gtactggtag ccgatgagga agtgcggcgg cggctggcgg 10140
tagagcggcc atcgctcggt ggcgggggcg ccgggcgcga ggtcctcgag catggtgcgg 10200
tggtagccgt agatgtacct ggacatccag gtgatgccgg cggcggtggt ggaggcgcgc 10260
gggaactcgc ggacgcggtt ccagatgttg cgcagcggca ggaagtagtt catggtgggc 10320
acggtctggc ccgtgaggcg cgcgcagtcg tggatgctct atacgggcaa aaacgaaagc 10380
ggtcagcggc tcgactccgt ggcctggagg ctaagcgaac gggttgggct gcgcgtgtac 10440
cccggttcga atctcgaatc aggctggagc cgcagctaac gtggtactgg cactcccgtc 10500
tcgacccaag cctgcaccaa ccctccagga tacggaggcg ggtcgttttg caacttttt 10560
tcggaggccg gaaatgaaga ctagtaagcg cggaaagcgg ccgaccgcga tggctcgctg 10620
ccgtagtctg gagaagaatc gccagggttg cgttgcggtg tgccccggtt cgaggccggc 10680
cggattccgc ggctaacgag ggcgtggctg ccccgtcgtt tccaagaccc cctagccagc 10740
cgacttctcc agttacggag cgagcccctc ttttgttttg tttgtttttg ccagatgcat 10800
cccgtactgc ggcagatgcg cccccaccac cctccaccgc aacaacagcc ccctccacag 10860

ccggcgcttc tgcccccgcc ccagcagcag cagcaacttc cagccacgac cgccgcggcc 10920

gccgtgagcg gggctggaca gacttctcag tatgacctgg ccttggaaga gggcgagggg 10980

ctggcgcgcc tgggggcgtc gtcgccggag cggcacccgc gcgtgcagat gaaaagggac 11040

gctcgcgagg cctacgtgcc caagcagaac ctgttcagag acaggagcgg cgaggagccc 11100

gaggagatgc gcgcggcccg gttccacgcg gggcgggagc tgcggcgcgg cctggaccga 11160

aagagggtgc tgagggacga ggatttcgag gcggacgagc tgacggggat cagccccgcg 11220

cgcgcgcacg tggccgcggc caacctggtc acggcgtacg agcagaccgt gaaggaggag 11280

agcaacttcc aaaaatcctt caacaaccac gtgcgcaccc tgatcgcgcg cgaggaggtg 11340

accctgggcc tgatgcacct gtgggacctg ctggaggcca tcgtgcagaa ccccaccagc 11400

aagccgctga cggcgcagct gttcctggtg gtgcagcata gtcgggacaa cgaggcgttc 11460

agggaggcgc tgctgaatat caccgagccc gagggccgct ggctcctgga cctggtgaac 11520

attctgcaga gcatcgtggt gcaggagcgc gggctgccgc tgtccgagaa gctggcggcc 11580

atcaacttct cggtgctgag tctgggcaag tactacgcta ggaagatcta caagaccccg 11640

tacgtgccca tagacaagga ggtgaagatc gacgggtttt acatgcgcat gaccctgaaa 11700

gtgctgaccc tgagcgacga tctgggggtg taccgcaacg acaggatgca ccgcgcggtg 11760

agcgccagca ggcggcgcga gctgagcgac caggagctga tgcatagtct gcagcgggcc 11820

ctgaccgggg ccgggaccga gggggagagc tactttgaca tgggcgcgga cctgcactgg 11880

cagcccagcc gccgggcctt ggaggcggca ggcggtcccc cctacataga agaggtggac 11940

gatgaggtgg acgaggaggg cgagtacctg gaagactgat ggcgcgaccg tatttttgct 12000

agatgcaaca acagccacct cctgatcccg cgatgcgggc ggcgctgcag agccagccgt 12060

ccggcattaa ctcctcggac gattggaccc aggccatgca acgcatcatg gcgctgacga 12120

cccgcaaccc cgaagccttt agacagcagc cccaggccaa ccggctctcg gccatcctgg 12180

aggccgtggt gccctcgcgc tccaacccca cgcacgagaa ggtcctggcc atcgtgaacg 12240

cgctggtgga gaacaaggcc atccgcggcg acgaggccgg cctggtgtac aacgcgctgc 12300

tggagcgcgt ggcccgctac aacagcacca acgtgcagac caacctggac cgcatggtga 12360

ccgacgtgcg cgaggccgtg gcccagcgcg agcggttcca ccgcgagtcc aacctgggat 12420

ccatggtggc gctgaacgcc ttcctcagca cccagcccgc caacgtgccc cggggccagg 12480

aggactacac caacttcatc agcgccctgc gcctgatggt gaccgaggtg ccccagagcg 12540

aggtgtacca gtccgggccg gactacttct tccagaccag tcgccagggc ttgcagaccg 12600

tgaacctgag ccaggcgttc aagaacttgc agggcctgtg gggcgtgcag gccccggtcg 12660

gggaccgcgc gacggtgtcg agcctgctga cgccgaactc gcgcctgctg ctgctgctgg 12720

tggcccccct cacggacagc ggcagcatca accgcaactc gtacctgggc tacctgatta 12780

acctgtaccg cgaggccatc ggccaggcgc acgtggacga gcagacctac caggagatca 12840

cccacgtgag ccgcgccctg ggccaggacg acccgggcaa tctggaagcc accctgaact 12900

ttttgctgac caaccggtcg cagaagatcc cgccccagta cacgctcagc gccgaggagg 12960

agcgcatcct gcgatacgtg cagcagagcg tgggcctgtt cctgatgcag gaggggggca 13020
cccccagcgc cgcgctcgac atgaccgcgc gcaacatgga gcccagcatg tacgccagca 13080
accgcccgtt catcaataaa ctgatggact acttgcatcg ggcggccgcc atgaactctg 13140
actatttcac caacgccatc ctgaatcccc actggctccc gccgccgggg ttctacacgg 13200
gcgagtacga catgcccgac cccaatgacg ggttcctgtg ggacgatgtg gacagcagcg 13260
tgttctcccc ccgaccgggt gctaacgagc gccccttgtg gaagaaggaa ggcagcgacc 13320
gacgcccgtc ctcggcgctg tccggccgcg agggtgctgc cgcggcggtg cccgaggccg 13380
ccagtccttt cccgagcttg cccttctcgc tgaacagtat tcgcagcagc gagctgggca 13440
ggatcacgcg cccgcgcttg ctgggcgagg aggagtactt gaatgactcg ctgttgagac 13500
ccgagcggga gaagaacttc cccaataacg ggatagagag cctggtggac aagatgagcc 13560
gctggaagac gtatgcgcag gagcacaggg acgatccgtc gcaggggcc acgagccggg 13620
gcagcgccgc ccgtaaacgc cggtggcacg acaggcagcg gggactgatg tgggacgatg 13680
aggattccgc cgacgacagc agcgtgttgg acttgggtgg gagtggtaac ccgttcgctc 13740
acctgcgccc ccgcatcggg cgcatgatgt aagagaaacc gaaaataaat gatactcacc 13800
aaggccatgg cgaccagcgt gcgttcgttt cttctctgtt gttgtatcta gtatgatgag 13860
gcgtgcgtac ccggagggtc ctcctccctc gtacgagagc gtgatgcagc aggcgatggc 13920
ggcggcggcg gcgatgcagc ccccgctgga ggctccttac gtgcccccgc ggtacctggc 13980
gcctacggag gggcggaaca gcattcgtta ctcggagctg gcacccttgt acgataccac 14040
ccggttgtac ctggtggaca acaagtcggc ggacatcgcc tcgctgaact accagaacga 14100
ccacagcaac ttcctgacca ccgtggtgca gaacaatgac ttcaccccca cggaggccag 14160
cacccagacc atcaactttg acgagcgctc gcggtggggc ggtcagctga aaaccatcat 14220
gcacaccaac atgcccaacg tgaacgagtt catgtacagc aacaagttca aggcgcgggt 14280
gatggtctcc cgcaagaccc ccaacggggt gacagtgaca gatggtagtc aggatatctt 14340
ggagtatgaa tgggtggagt ttgagctgcc cgaaggcaac ttctcggtga ccatgaccat 14400
cgacctgatg aacaacgcca tcatcgacaa ttacttggcg gtggggcggc agaacggggt 14460
cctggagagc gatatcggcg tgaagttcga cactaggaac ttcaggctgg gctgggaccc 14520
cgtgaccgag ctggtcatgc ccggggtgta caccaacgag gccttccacc ccgatattgt 14580
cttgctgccc ggctgcgggg tggacttcac cgagagccgc ctcagcaacc tgctgggcat 14640
tcgcaagagg cagcccttcc aggagggctt ccagatcatg tacgaggatc tggaggggg 14700
caacatcccc gcgctcctgg atgtcgacgc ctatgagaaa agcaaggagg agagcgccgc 14760
cgcggcgact gcagctgtag ccaccgcctc taccgaggtc aggggcgata attttgccag 14820
ccctgcagca gtggcagcgg ccgaggcggc tgaaaccgaa agtaagatag tcattcagcc 14880
ggtggagaag gatagcaagg acaggagcta caacgtgctg ccggacaaga taaacaccgc 14940
ctaccgcagc tggtacctgg cctacaacta tggcgacccc gagaagggcg tgcgctcctg 15000

gacgctgctc accacctcgg acgtcacctg cggcgtggag caagtctact ggtcgctgcc 15060

cgacatgatg caagacccgg tcaccttccg ctccacgcgt caagttagca actacccggt 15120

ggtgggcgcc gagctcctgc ccgtctactc caagagcttc ttcaacgagc aggccgtcta 15180

ctcgcagcag ctgcgcgcct tcacctcgct cacgcacgtc ttcaaccgct tccccgagaa 15240

ccagatcctc gtccgcccgc ccgcgcccac cattaccacc gtcagtgaaa acgttcctgc 15300

tctcacagat cacgggaccc tgccgctgcg cagcagtatc cggggagtcc agcgcgtgac 15360

cgttactgac gccagacgcc gcacctgccc ctacgtctac aaggccctgg gcatagtcgc 15420

gccgcgcgtc ctctcgagcc gcaccttcta aaaaatgtcc attctcatct cgcccagtaa 15480

taacaccggt tggggcctgc gcgcgcccag caagatgtac ggaggcgctc gccaacgctc 15540

cacgcaacac cccgtgcgcg tgcgcgggca cttccgcgct ccctggggcg ccctcaaggg 15600

ccgcgtgcgg tcgcgcacca ccgtcgacga cgtgatcgac caggtggtgg ccgacgcgcg 15660

caactacacc cccgccgccg cgcccgtctc caccgtggac gccgtcatcg acagcgtggt 15720

ggccgacgcg cgccggtacg cccgcgccaa gagccggcgg cggcgcatcg cccggcggca 15780

ccggagcacc cccgccatgc gcgcggcgcg agccttgctg cgcagggcca ggcgcacggg 15840

acgcagggcc atgctcaggg cggccagacg cgcggcctca ggcgccagcg ccggcaggac 15900

ccggagacgc gcggccacgg cggcggcagc ggccatcgcc agcatgtccc gcccgcggcg 15960

agggaacgtg tactgggtgc gcgacgccgc caccggtgtg cgcgtgcccg tgcgcacccg 16020

ccccctcgc acttgaagat gttcacttcg cgatgttgat gtgtcccagc ggcgaggatg 16080

tccaagcgca aattcaagga agagatgctc caggtcatcg cgcctgagat ctacggcccc 16140

gcggtggtga aggaggaaag aaagccccgc aaaatcaagc gggtcaaaaa ggacaaaaag 16200

gaagaagaaa gtgatgtgga cggactggtg gagtttgtgc gcgagttcgc cccccggcgg 16260

cgcgtgcagt ggcgcgggcg gaaggtgcgc ccggtgctga gaccaggcac tacggtggtc 16320

ttcacgcccg gcgagcgctc cggcaccgct tccaagcgct cctacgacga ggtgtacggg 16380

gacgaggaca tcctcgagca ggcggccgag cgcctgggcg agtttgctta cggcaagcgc 16440

agccgctccg cgccgaagga agaggcggtg tccatcccgc tggaccacgg caaccccacg 16500

ccgagcctca agcccgtgac cctgcagcag gtgctgccga ccgcggcgcc gcgccggggg 16560

ttcaagcgcg agggcgagga tctgtacccc accatgcagc tgatggtgcc caagcgccag 16620

aagctggaag acgtgctgga gaccatgaag gtggacccgg acgtgcagcc cgaggtcaag 16680

gtgcggccca tcaagcaggt ggccccgggc ctgggcgtgc agaccgtgga catcaagatc 16740

cccacggagc ccatggaaac gcagaccgag cccgtgaaac ccagcaccag caccatggag 16800

gtgcagacgg atccttggat gccatcggct actagccgaa gaccccggcg caagtacggc 16860

gcggccagcc tgctgatgcc caactacgcg ctgcatcctt ccatcatccc cacgccgggc 16920

taccgcggca cgcgcttcta ccgcggtcat acaagccgcc gccgcaagac caccacccgc 16980

cgccgccgtc gccgcacaac cgctgctgca tctacccctg ccgccctggt gcggagagtg 17040

taccgccgcg gccgcgcgcc tctgaccctg ccgcgcgcgc gctaccaccc gagcattgcc 17100

atttaaactt tcgcctgctt tgcagatcaa tggccctcac atgccgcctc cgcgttccca 17160
ttacgggcta ccgaggaaga aaaccgcgcc gtagaaggct ggcggggaac gggatgcgtc 17220
gccaccacca ccggcggcgg cgcgccatca gcaagcggtt ggggggaggc ttcctgcccg 17280
cgctgatccc catcatcgcc gcggcgatcg gggcgatccc cggcattgct tccgtggcgg 17340
tgcaggcctc tcagcgccac tgagacacac ttggaaacat cttgtaataa accaatggac 17400
tctgacgctc ctggtcctgt gatgtgtttt cgtagacaga tggaagacat caatttttcg 17460
tccctggctc cgcgacacgg cacgcggccg ttcatgggca cctggagcga catcggcacc 17520
agccaactga acgggggcgc cttcaattgg agcagtctct ggagcgggct taagaatttc 17580
gggtccacgc ttaaaaccta tggcagcaag gcgtggaaca gcaccacagg gcaggcgctg 17640
agggataagc tgaaagagca gaacttccag cagaaggtgg tcgatggcct ggcctcgggc 17700
atcaacgggg tggtggacct ggccaaccag gccgtgcagc ggcagatcaa cagccgcctg 17760
gacccggtgc cgcccgccgg ctccgtggag atgccgcagg tggaggagga gctgcctccc 17820
ctggacaagc ggggcgagaa gcgaccccgc cccgacgcgg aggagacgct gctgacgcac 17880
acggacgagc cgcccccgta cgaggaggcg gtgaaactgg gcctgcccac cacgcggccc 17940
atcgcgcctc tggccaccgg ggtgctgaaa cccgaaagta gtaagcccgc gaccctggac 18000
ttgcctcctc cccagccttc ccgcccctcc acagtggcta agcctctgcc gccggtggcc 18060
gtggcccgcg cgcgacccgg gggcaccgcc cgccctcatg cgaactggca gagcactctg 18120
aacagcatcg tgggtctggg agtgcagagt gtgaagcgcc gccgctgcta ttaaacctac 18180
cgtagcgctt aacttgcttg tctgtgtgtg tatgtattat gtcgccgccg ctgtcgccag 18240
aaggaggagt gaagaggcgc gtcgccgagt tgcaagatgg ccaccccatc gatgctgccc 18300
cagtgggcgt acatgcacat cgccggacag gacgcttcgg agtacctgag tccgggtctg 18360
gtgcagttcg cccgcgccac agacacctac ttcagtctgg ggaacaagtt taggaacccc 18420
acggtggcgc ccacgcacga tgtgaccacc gaccgcagcc agcggctgac gctgcgcttc 18480
gtgcccgtgg accgcgagga caacacctac tcgtacaaag tgcgctacac gctggccgtg 18540
ggcgacaacc gcgtgctgga catggccagc acctactttg acatccgcgg cgtgctggac 18600
cggggcccta gcttcaaacc ctactccggc accgcctaca atgctctggc ccccaaggga 18660
gcacccaaca cttgccagtg gacatacaca gataagcaaa ccgaaaaaac agccacgtat 18720
gggaatgcgc ctgtacaagg cattgccatc acaaaagatg gtattcaact tggaactgac 18780
agtgatggaa atcctgtata tgctcaaaag acatttgaac ccgaacctca agtgggtgat 18840
gcagaatggc atgacactac aggtacagat gaaaagtatg gaggcagggc acttaagcct 18900
gacaccaaaa tgaagccttg ctatggttct tttgccaaac ccactaacaa agaaggtgga 18960
caggcaaaga acagaacaaa aactgatgga actggcgaag agcctgatat tgatatggca 19020
ttttttgacg gcagaaatgc aactacagct ggtttggctc cagaaattgt tttgtatact 19080
gagaatgtgg atctggagac tccagatacc catattgtat acaaagcagg cacagatgac 19140

agcagctctt cgattaattt ggggcagcaa tccatgccca acagacccaa ctacattggg 19200
ttcagagaca actttatcgg gctcatgtac tacaacagca ctggcaatat gggggtgctg 19260
gccggtcagg cttctcagct gaatgctgtg gttgacttgc aagacagaaa caccgaactg 19320
tcctaccagc tcttgcttga ctctctgggc gacagaaccc tgtatttcag tatgtggaat 19380
caggcggtgg acagctatga tcctgatgtg cgcattattg aaaaccatgg tgtggaagat 19440
gaacttccca actattgctt ccctctggat gctgttggta ggacagatac ttatcaggga 19500
attaagccca atggaggcga tccagccaca tgggccaaag atgacagcgc caatgatgct 19560
aatgaaatgg gcaagggcaa tccattcgcc atggaaatca acatccaagc caacctgtgg 19620
aggaacttcc tctacgccaa cgtggccctg tacctacccg attcttacaa gtacacgccg 19680
gccaacgtca ccctgcccac caacaccaac acctacgatt atatgaacgg ccgggtggtg 19740
gcgccttcgc tggtggactc ctacatcaac atcggggcgc gctggtcgct ggaccccatg 19800
gacaacgtca atcccttcaa ccaccaccgc aacgcgggct tgcgctaccg ctccatgctc 19860
ctgggcaacg ggcgctacgt gcccttccac atccaggtgc cccagaaatt tttcgccatc 19920
aagagcctcc tgctcctgcc cgggtcctac acctacgagt ggaacttccg caaggacgtc 19980
aacatgatcc tgcagagctc cctcggcaac gacctgcgca cggacggggc ctccatctcc 20040
ttcaccagca tcaacctcta cgccaccttc ttccccatgg cgcacaacac ggcctccacg 20100
ctcgaggcca tgctgcgcaa cgacaccaac gaccagtcct tcaacgacta cctctcggcg 20160
gccaacatgc tctaccccat cccggccaac gccaccaacg tgcccatctc catcccctcg 20220
cgcaactggg ccgccttccg cggctggtcc ttcacgcgcc tcaagaccaa ggagacgccc 20280
tcgctgggct ccgggttcga cccctacttc gtctactcgg gctccatccc ctacctcgac 20340
ggcaccttct acctcaacca caccttcaag aaggtctcca tcaccttcga ctcctccgtc 20400
agctggcccg gcaacgaccg gctcctgacg cccaacgagt tcgaaatcaa gcgcaccgtc 20460
gacggcgagg gctacaacgt ggcccagtgc aacatgacca aggactggtt cctggtccag 20520
atgctggccc actacaacat cggctaccag ggcttctacg tgcccgaggg ctacaaggac 20580
cgcatgtact ccttcttccg caacttccag cccatgagcc gccaggtggt ggacgaggtc 20640
aactacaagg actaccaggc cgtcaccctg gcctaccagc acaacaactc gggcttcgtc 20700
ggctacctcg cgcccaccat gcgccagggc cagccctacc ccgccaacta cccgtacccg 20760
ctcatcggca agagcgccgt caccagcgtc acccagaaaa agttcctctg cgacagggtc 20820
atgtggcgca tccccttctc cagcaacttc atgtccatgg gcgcgctcac cgacctcggc 20880
cagaacatgc tctatgccaa ctccgcccac gcgctagaca tgaatttcga agtcgacccc 20940
atggatgagt ccacccttct ctatgttgtc ttcgaagtct tcgacgtcgt ccgagtgcac 21000
cagccccacc gcggcgtcat cgaggccgtc tacctgcgca ccccttctc ggccggtaac 21060
gccaccacct aaattgctac ttgcatgatg gctgaggccg cgggctccgg cgagcaggag 21120
ctcagggcca tcatccgcga cctgggctgc gggccctact tcctgggcac cttcgataag 21180
cgcttcccgg gattcatggc cccgcacaag ctggcctgcg ccatcgtcaa cacggccggt 21240

cgcgagaccg ggggcgagca ctggctggcc ttcgcctgga acccgcgctc gaacacctgc 21300
tacctcttcg acccccttcgg gttctcggac gagcgcctca agcagatcta ccagttcgag 21360
tacgagggcc tgctgcgccg cagcgccctg gccaccgagg accgctgcgt caccctggaa 21420
aagtccaccc agaccgtgca gggtccgcgc tcggccgcct gcgggctctt ctgctgcatg 21480
ttcctgcacg ccttcgtgca ctggcccgac cgccccatgg acaagaaccc caccatgaac 21540
ttgctgacgg gggtgcccaa cggcatgctc cagtcgcccc aggtggaacc caccctgcgc 21600
cgcaaccagg aggcgctcta ccgcttcctc aactcccact ccgcctactt tcgctcccac 21660
cgcgcgcgca tcgagaaggc caccgccttc gatcgcatga acaatcaaga catgtaaacc 21720
gtgtgtgtat gtttaaaata tcttttaata aacagcactt tcatgttaca catgcatctg 21780
agatgattat ttagaaatcg aaagggttct gccgggtctc ggcatggccc gcgggcaggg 21840
acacgttgcg gaactggtac ttggccagcc acttgaactc ggggatcagc agtttcggca 21900
gcggggtgtc ggggaaggag tcggtccaca gcttccgcgt cagttgcagg gcgcccagca 21960
ggtcgggcgc ggagatcttg aaatcgcagt tgggacccgc gttctgcgcg cgagagttgc 22020
ggtacacggg gttgcagcac tggaacacca tcagggccgg gtgcttcacg ctcgccagca 22080
ccgtcgcgtc ggtgatgctc tccacgtcga ggtcctcggc gttggccatc ccgaaggggg 22140
tcatcttgca ggtctgcctt cccatagtgg gcacgcaccc gggcttgtgg ttgcaatcgc 22200
agtgcagggg gatcagcatc atctgggcct ggtcggcgtt catccccggg tacatggcct 22260
tcatgaaagc ctccaattgc ctgaaagcct gctgggcctt ggctccctcg gtgaagaaga 22320
ccccgcagga cttgctagag aactggttgg tagcgcaccc ggcgtcgtgc acgcagcagc 22380
gcgcgtcgtt gttggccagc tgcaccacgc tgcgccccca gcggttctgg gtgatcttgg 22440
cccggtcggg gttctccttc agcgcgcgct gcccgttctc gctcgccaca tccatctcga 22500
tcatgtgctc cttctggatc atggtggtcc cgtgcaggca ccgcagcttg ccctcggtct 22560
cggtgcaccc gtgcagccac agcgcgcacc cggtgcactc ccagttcttg tgggcgatct 22620
gggaatgcgc gtgcacgaac ccctgcagga agcggcccat catggtggtc agggtcttgt 22680
tgctagtgaa ggtcagcggg atgccgcggt gctcctcgtt gatgtacagg tggcagatgc 22740
ggcggtacac ctcgccctgc tcgggcatca gctggaagtt ggctttcagg tcggtctcca 22800
cgcggtagcg gtccatcagt atagtcatga tttccatacc cttctcccag gccgagacga 22860
tgggcaggct catagggttc ttcaccatca tcttagcact agcagccgcg gccaggggt 22920
cgctctcatc cagggtctca aagctccgct tgccgtcctt ctcggtgatc cgcaccgggg 22980
ggtagctgaa gcccacggcc gccagctcct cctcggcctg cctttcgtcc tcgctgtcct 23040
ggctgacgtc ctgcaggacc acatgcttgg tcttgcgggg tttcttcttg ggcggcagcg 23100
gcggcggaga tgcttgtggc gaggggggagc gcgagttctc gctcaccact actatctctt 23160
cctcttcgtg gtccgaggcc acgcggcggt aggtatgtct cttcgggggc agaggcggag 23220
gcgacgggct ctcgccgccg cgacttggcg gatggctggc agagcccctt ccgcgatcgg 23280

gggtgcgctc ccggcggcgc tctgactgac ttcctccgcg gccggccatt gtgttctcct 23340
agggaggaac aacaagcatg gagactcagc catcgccaac ctcgccatct gcccccacca 23400
ccgccgacga gaagcagcag aatgaaagct taaccgcccc gccgcccagc cccgccacct 23460
ccgacgcagc cgcggtccca gacatgcaag agatggagga atccatcgag attgacctgg 23520
gctatgtgac gcccgcggag cacgaggagg agctggcagt gcgctttcaa tcgtcaagcc 23580
aggaagataa agaacagcca gagcaggaag cagaaaacga gcagagtcag gctgggctcg 23640
agcatgacgg cgactacctc cacctgagcg gggaggagga cgcgctcatc aagcatctgg 23700
cccggcaggc catcatcgtc aaggatgcgc tgctcgaccg caccgaggtg cccctcagcg 23760
tggaggagct cagccgcgcc tacgagctca acctcttctc gccgcgcgtg ccccccaagc 23820
gccagcccaa cggcacctgc gagcccaacc cgcgcctcaa cttctacccg gtcttcgcgg 23880
tgcccgaggc cctggccacc taccacatct ttttcaagaa ccaaaagatc cccgtctcct 23940
gtcgcgccaa ccgcacccgc gccgacgccc tcttcaacct gggccccggc gcccgcctac 24000
ctgatatcgc ctccttggaa gaggttccca agatcttcga gggtctgggc agcgacgaga 24060
ctcgggccgc aaacgctctg caaggagaag gaggagagca tgagcaccac agcgccctgg 24120
tcgagttgga aggcgacaac gcgcggctgg cggtgctcaa acgcacggtc gagctgaccc 24180
atttcgccta cccggctctg aacctgcccc ccaaagtcat gagcgcggtc atggaccagg 24240
tgctcatcaa gcgcgcgtcg cccatctccg aggacgaggg catgcaagac tccgaggatg 24300
gcaagcccgt ggtcagcgac gagcagctgg cccggtggct gggtcctaat gctagtcccc 24360
agagtttgga agagcggcgc aagctcatga tggccgtggt cctggtgacc gtggagctgg 24420
agtgcctgcg ccgcttcttc gccgacgcgg agaccctgcg caaggtcgag gagaacctgc 24480
actacctctt caggcacggg ttcgtgcgcc aggcctgcaa gatctccaac gtggagctga 24540
ccaacctggt ctcctacatg ggcatcttgc acgagaaccg cctggggcag aacgtgctgc 24600
acaccaccct gcgcggggag gcccgccgcg actacatccg cgactgcgtc tacctctacc 24660
tctgccacac ctggcagacg ggcatgggcg tgtggcagca gtgtctggag gagcagaacc 24720
tgaaagagct ctgcaagctc ctgcagaaga acctcaaggg tctgtggacc gggttcgacg 24780
agcggaccac cgcctcggac ctggccgacc tcatcttccc cgagcgcctc aggctgacgc 24840
tgcgcaacgg cctgcccgac tttatgagcc aaagcatgtt gcaaaacttt cgctctttca 24900
tcctcgaacg ctccggaatc ctgcccgcca cctgctccgc gctgccctcg gacttcgtgc 24960
cgctgacctt ccgcgagtgc cccccgccgc tgtggagcca ctgctacctg ctgcgcctgg 25020
ccaactacct ggcctaccac tcggacgtga tcgaggacgt cagcggcgag ggcctgcttg 25080
agtgccactg ccgctgcaac ctctgcacgc cgcaccgctc cctggcctgc aacccccagc 25140
tgctgagcga gacccagatc atcggcacct tcgagttgca agggcccagc gatgacggcg 25200
agggagccaa ggggggtctg aaactcaccc cggggctgtg gacctcggcc tacttgcgca 25260
agttcgtgcc cgaggactac catcccttcg agatcaggtt ctacgaggac caatcccagc 25320
cgcctaaggc cgagctgtcg gcctgcgtca tcacccaggg ggccatcctg gcccaattgc 25380

```
aagccatcca gaaatcccgc caagaattct tgctgaaaaa gggccgcggg gtctacctcg    25440

acccccagac cggtgaggag ctcaaccccg gcttccccca gg atg ccc cga gga       25494
                                               Met Pro Arg Gly
                                               1

aac aag aag ctg aaa gtg gag ctg ccg ccc gtg gag gat ttg gag gaa      25542
Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val Glu Asp Leu Glu Glu
5                   10                  15                  20

gac tgg gag aac agc agt cag gca gag gag gag atg gag gaa gac tgg      25590
Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Glu Met Glu Glu Asp Trp
                25                  30                  35

gac agc act cag gca gag gag gac agc ctg caa gac agt ctg gag gaa      25638
Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu Glu Glu
            40                  45                  50

gac gag gag gag gca gag gtg gaa gaa gca gcc gcc gcc aga ccg tcg      25686
Asp Glu Glu Glu Ala Glu Val Glu Glu Ala Ala Ala Ala Arg Pro Ser
        55                  60                  65

tcc tcg gcg ggg gag aaa gca agc agc acg gat acc atc tcc gct ccg      25734
Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr Asp Thr Ile Ser Ala Pro
    70                  75                  80

ggt cgg ggt ccc gct cgg ccc cac agt aga tgg gac gag acc ggg cga      25782
Gly Arg Gly Pro Ala Arg Pro His Ser Arg Trp Asp Glu Thr Gly Arg
85                  90                  95                  100

ttc ccg aac ccc acc atc cag acc ggt aag aag gag cgg cag gga tac      25830
Phe Pro Asn Pro Thr Ile Gln Thr Gly Lys Lys Glu Arg Gln Gly Tyr
                105                 110                 115

aag tcc tgg cgg ggg cac aaa aac gcc atc gtc tcc tgc ttg cag gcc      25878
Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser Cys Leu Gln Ala
            120                 125                 130

tgc ggg ggc aac atc tcc ttc acc agg cgc tac ctg ctc ttc cac cgc      25926
Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu Leu Phe His Arg
        135                 140                 145

ggg gtg aac ttc ccc cgc aac atc ttg cat tac tac cgt cac ctc cac      25974
Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr Arg His Leu His
    150                 155                 160

agc ccc tac tac ttc caa gaa gag gca gca gca gaa aaa gac cag cag      26022
Ser Pro Tyr Tyr Phe Gln Glu Glu Ala Ala Ala Glu Lys Asp Gln Gln
165                 170                 175                 180

aaa acc agc agc tagaaaatcc acagcggcag caggtggact gaggatcgcg          26074
Lys Thr Ser Ser


gcgaacgagc cggcgcagac ccgggagctg aggaaccgga tctttcccac cctctatgcc    26134

atcttccagc agagtcgggg gcaggagcag gaactgaaag tcaagaaccg ttctctgcgc    26194

tcgctcaccc gcagttgtct gtatcacaag agcgaagacc aacttcagcg cactctcgag    26254

gacgccgagg ctctcttcaa caagtactgc gcgctcactc ttaaagagta gcccgcgccc    26314

gcccagtcgc agaaaaaggc gggaattacg tcacctgtgc ccttcgccct agccgcctcc    26374

acccatcatg agcaaagaga ttcccacgcc ttacatgtgg agctaccagc cccagatggg    26434

cctggccgcc ggcgccgccc aggactactc cacccgcatg aattggctca gcgccgggcc    26494
```

```
cgcgatgatc tcacgggtga atgacatccg cgcccaccga aaccagatac tcctagaaca    26554

gtcagcgctc accgccacgc cccgcaatca cctcaatccg cgtaattggc ccgccgccct    26614

ggtgtaccag gaaattcccc agcccacgac cgtactactt ccgcgagacg cccaggccga    26674

agtccagctg actaactcag gtgtccagct ggcgggcggc gccaccctgt gtcgtcaccg    26734

ccccgctcag ggtataaagc ggctggtgat ccggggcaga ggcacacagc tcaacgacga    26794

ggtggtgagc tcttcgctgg gtctgcgacc tgacggagtc ttccaaatcg ccggatcggg    26854

gagatcttcc ttcacgcctc gtcaggcggt cctgactttg gagagttcgt cctcgcagcc    26914

ccgctcgggc ggcatcggca ctctccagtt cgtggaggag ttcactccct cggtctactt    26974

caaccccttc tccggctccc ccggccacta cccggacgag ttcatcccga actttgacgc    27034

catcagcgag tcggtggacg gctacgattg aatgtcccat ggtggcgcgg ctgacctagc    27094

tcggcttcga cacctggacc actgccgccg ctttcgctgc ttcgctcggg acctcgccga    27154

gttcacctac ttcgagctgc ccgaggagca tcctcagggc ccggcccacg gagtgcggat    27214

cgtcgtcgaa gggggcctag actcccacct gcttcggatc ttcagccagc gcccgatcct    27274

ggtcgagcgc caacagggca acaccctcct gaccctctac tgcatctgcg accaccccgg    27334

cctgc atg aaa gtc ttt gtt gtc tgc tgt gta ctg agt ata ata aaa gct    27384
      Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala
      185                 190                 195

gag atc agc gac tac tcc gga ctc aac tgt ggt gtt tct gca tcc atc      27432
Glu Ile Ser Asp Tyr Ser Gly Leu Asn Cys Gly Val Ser Ala Ser Ile
200                 205                 210                 215

aac cag tct ctg acc ttc acc ggg aac gag acc gag ctc cag ctc cag      27480
Asn Gln Ser Leu Thr Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln
                220                 225                 230

tgt aag ccc cac aag aag tac ctc acc tgg ctg tac cag ggc tcc ccg      27528
Cys Lys Pro His Lys Lys Tyr Leu Thr Trp Leu Tyr Gln Gly Ser Pro
            235                 240                 245

atc gcc gtt gtt aac cac tgc gac gac gac gga gtc ctg ctg aac ggc      27576
Ile Ala Val Val Asn His Cys Asp Asp Asp Gly Val Leu Leu Asn Gly
        250                 255                 260

ccc gcc aac ctt act ttt tcc acc cgc aga agc aag cta ctg ctc ttc      27624
Pro Ala Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Leu Leu Phe
    265                 270                 275

aga ccc ttc ctc ccc ggg atc tat cag tgc atc tcg gga ccc tgc cat      27672
Arg Pro Phe Leu Pro Gly Ile Tyr Gln Cys Ile Ser Gly Pro Cys His
280                 285                 290                 295

cac acc ttc cac ctg atc ccg aat acc acc tct tcc cca gca ccg ctc      27720
His Thr Phe His Leu Ile Pro Asn Thr Thr Ser Ser Pro Ala Pro Leu
                300                 305                 310

ccc act aac aac caa act aac cac caa cgc cac cgt cga gac ctt tcc      27768
Pro Thr Asn Asn Gln Thr Asn His Gln Arg His Arg Arg Asp Leu Ser
            315                 320                 325

tct gat tct aat acc act acc gga ggt gag ctc cga ggt act aag aag      27816
Ser Asp Ser Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Thr Lys Lys
        330                 335                 340

tcc tca cct ggg att tat tac ggc ccc tgg gag gtg gtg ggg tta ata      27864
```

```
Ser Ser Pro Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile
    345                 350                 355

gct tta ggc tta gta gcg ggt ggg ctt ttg gct ctc tgc tac cta tac      27912
Ala Leu Gly Leu Val Ala Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr
360                 365                 370                 375

ctc cct tgc tgt tcc tac tta gtg gtg ctt tgt tgc tgg ttt aag aaa      27960
Leu Pro Cys Cys Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys
                380                 385                 390

tgg gga aga tca ccc tagtgtgcgg tgtgctggtg acggtggtgc tttcgattct      28015
Trp Gly Arg Ser Pro
            395

gggaggggga agcgcggctg tagtgacgga gaagaaggcc gatccctgct tgactttcaa    28075

tcccgataaa tgccggctga gttttcagcc agatggcaat cggtgcacgg tgctgatcaa    28135

gtgcggatgg gaatgcgaga gcgtggcgat ccagtataaa aacaagacgc ggaacaatac    28195

tctcgcgtcc acatggcagc ccggggaccc cgagtggtac accgtctctg tccctggtgc    28255

tgacggctcc ctccacacgg tgaacaacac tttcattttt gagcacatgt gcgaaaccgc    28315

catgttcatg agcaagcagt acggtatgtg gcccccacga aaagagaata tcgtggtctt    28375

ctccatcgct tacagcgcgt gcacggtgct aatcaccgcg atcgtgtgcc tgagcattca    28435

catgctcatc gctattcgcc ccagaaataa tgccgagaaa gagaaacagc cataacacac    28495

ttttttcaca caccttgttt tttacagaca atgcgtctgt taatttttgt tatcattaca    28555

ctcagcttta actatgccca tggctatgca aatatacaaa aaaccctcta tgtaggctct    28615

gactctacat tagaaggtac tcaatctcaa gccagggttt catggtattt ttataaaggc    28675

tctgatgacc caattactct ttgcaaaggt gatcaggggc gcataacaaa gccacctatc    28735

acatttagct gcaccagaac aaacctcacg cttttatcca ttacaaaaga atatgctggc    28795

acttattaca gcacaaattt tcatcgtggg caagataaat attatactgt taaggtagaa    28855

aaccctacca cccctagaac aactacaaag cccaccacaa ctaagaagcc cactacacct    28915

aagaagccta ccacacccaa aaccactaag acaacaactg ctaagaccac taccacaaag    28975

ccaaccacaa ccagcaccac acttgctata actacacaca cacacactga gctgacctca    29035

caggcaacta ctgaaaatga tttggttgcc ctgttgcaaa agggggagaa cagtagcagc    29095

agtcctctgc ctactacccc cagtgaggaa atacccaagt ccatggttgg cattatcgct    29155

gctgtagtgg tgtgtatgct gattatcatc ttgtgcatga tgtactatgc ctgctactac    29215

agaaaacaca ggctgaacaa caaactggac cccttactga gtgttgattt ttaatttttt    29275

agaaccatga agatcctaag ccttttttgtt ttttctataa ttattacctc tgctatttgt    29335

gaatcagtgg ataaggacgt tactgtcacc actggctcta attatacact aaaagggcct    29395

tcctcaggta tgctttcgtg gtattgttat tttggaaatg atgataaaca gacagagcta    29455

tgtaactttc agaacggcaa aaccaaaaat tctaaaatag ataactatca atgccagggt    29515

actaatttag tactgatgaa tatcacgaaa gcatatgctg gcagttattc ctgtcctgga    29575

caaaacaccg aggaaatgat tttttacaaa ttaattgtag ttgaccctac tactccagca    29635
```

ccacccacca caaccaaggc acataccaca gacacacagg aaaccactcc agaggcagaa 29695

gtagcagagt tagcaaagca gattcatgaa gattcatttg ttgccaatac ccccacacac 29755

cccggaccgc aatgtccagg gccattagtc agcggcattg tcggtgtgct ttgcgggtta 29815

gcagttataa tcatctgcat gttcattttt gcttgctgct acagaaggct tcaccgacaa 29875

aaatcagacc cactgctgaa cctctatgtt taatttttga ttttccagag ccatgaaggc 29935

acttagcact ttagtatttt tgtccttgat tggcattgtt ttcagtgctg ggtttttgaa 29995

aaatcttacc attattgaag gtgataatgc aacactggta ggaatcagcg gtcagaatgt 30055

tagttggcta aaatatcatc tagatgggtg gaaacctatt tgcacctgga atgtcagtgt 30115

gtacacatgc catggtgtta acctcaccat taccaatgcc acccaagatc agaatggcag 30175

gtttaagggt cagagtttca ctagcaacaa tgggtatgaa acccataaca tgttcatcta 30235

tgatgtcact gtcatatcaa ataagactac acctaccaca cagacaccca ctacacatag 30295

ctcaactcat gccatgcaga ccactcagac aaccacatac actacatcta ctgagtccac 30355

caccaccact acagcagagg tatccagcac agcgcctcag ccccaggcat tggctttgat 30415

ggctcagcct agcagcatga ctgctaaaac caatgagcag actactgaat ttttgtccac 30475

tattcagagc agcaccacag ctacctcgag tgccttctct agcaccgcca atctcacctc 30535

gctttcctct acgccaatca gtaacgctac tacctccccc gctcctcttc ccactcctct 30595

gaagcaatcc gagtctagca cgcagctgca gatcaccctg ctcattgtga tcggggtggt 30655

catcctggca gtgctgctct actttatctt ctgccgccgc atccccaacg cgaaaccggc 30715

ctacaagccc attgttatcg ggacgccgga gccgcttcag gtggagggag gtctaaggaa 30775

tcttctcttc tcttttacag tatggtgatt tgaactatga ttcctagaca tttcattatc 30835

acttctctaa tctgtgtgct ccaagtctgt gccaccctcg ctctcgtggc taacgcgagt 30895

ccagactgca ttggagcgtt cgcctcctac gtgctctttg ccttcatcac ctgcatctgc 30955

tgctgtagca tagtctgcct gcttatcacc ttcttccagt tcgttgactg ggtctttgtg 31015

cgcatcgcct acctgcgcca ccacccccag taccgcgacc agagagtggc gcaactgttg 31075

agactcatct gatgataagc atgcgggctc tgctactact tctcgcgctt ctgctagctc 31135

ccctcgccgc ccccctatcc ctcaaatccc ccacccagtc ccctgaagag gttcgaaaat 31195

gtaaattcca agaaccctgg aaattccttt catgctacaa actcaaatca gaaatgcacc 31255

ccagctggat catgatcgtt ggaatcgtaa acatccttgc ctgtaccctc ttctcctttg 31315

tgatttaccc ccgctttgac tttgggtgga acgcacccga ggcgctctgg ctcccgcctg 31375

atcccgacac accaccacag cagcagcaaa atcaggcaca ggcacatgca ccaccacagc 31435

ctaggccaca atacatgccc atcttagact atgaggccga gccacagcga gccatgcttc 31495

ctgctattag ttacttcaat ctaaccggcg gag atg act gac ccc atg gcc aac 31549
Met Thr Asp Pro Met Ala Asn
400

aac acc gtc aac gac ctc ctg gac atg gac ggc cgc gcc tcg gag cag 31597
Asn Thr Val Asn Asp Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln
405 410 415

```
cga ctc gcc caa ctc cgc atc cgc cag cag cag gag aga gcc gtc aag      31645
Arg Leu Ala Gln Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys
420                 425                 430                 435

gag ctg cag gac gcg gtg gcc atc cac cag tgc aag aga ggc atc ttc      31693
Glu Leu Gln Asp Ala Val Ala Ile His Gln Cys Lys Arg Gly Ile Phe
                440                 445                 450

tgc ctg gtg aag cag gcc aag atc tcc ttc gag gtc acg tcc acc gac      31741
Cys Leu Val Lys Gln Ala Lys Ile Ser Phe Glu Val Thr Ser Thr Asp
            455                 460                 465

cat cgc ctc tcc tac gag ctc ctg cag cag cgc cag aag ttc acc tgc      31789
His Arg Leu Ser Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe Thr Cys
        470                 475                 480

ctg gtc gga gtc aac ccc atc gtc atc acc cag cag tct ggc gat acc      31837
Leu Val Gly Val Asn Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr
    485                 490                 495

aag ggt tgc atc cac tgc tcc tgc gac tcc ccc gag tgc gtt cac acc      31885
Lys Gly Cys Ile His Cys Ser Cys Asp Ser Pro Glu Cys Val His Thr
500                 505                 510                 515

ctg atc aag acc ctc tgc ggc ctc cgc gac ctc ctc ccc atg aac          31930
Leu Ile Lys Thr Leu Cys Gly Leu Arg Asp Leu Leu Pro Met Asn
                520                 525                 530

taatcaacta acccccctacc cctttaccct ccagtaaaaa taaagattaa              31980
```

<210> 195
<211> 184
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 195

```
Met Pro Arg Gly Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val Glu
1               5                   10                  15

Asp Leu Glu Glu Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Glu Met
            20                  25                  30

Glu Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp
        35                  40                  45

Ser Leu Glu Glu Asp Glu Glu Glu Ala Glu Val Glu Glu Ala Ala Ala
    50                  55                  60

Ala Arg Pro Ser Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr Asp Thr
65                  70                  75                  80

Ile Ser Ala Pro Gly Arg Gly Pro Ala Arg Pro His Ser Arg Trp Asp
                85                  90                  95

Glu Thr Gly Arg Phe Pro Asn Pro Thr Ile Gln Thr Gly Lys Lys Glu
            100                 105                 110
```

```
Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser
        115                 120                 125

Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu
    130                 135                 140

Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr
145                 150                 155                 160

Arg His Leu His Ser Pro Tyr Tyr Phe Gln Glu Glu Ala Ala Ala Glu
                165                 170                 175

Lys Asp Gln Gln Lys Thr Ser Ser
            180
```

<210> 196
<211> 212
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 196

```
Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1               5                   10                  15

Ile Ser Asp Tyr Ser Gly Leu Asn Cys Gly Val Ser Ala Ser Ile Asn
            20                  25                  30

Gln Ser Leu Thr Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys
        35                  40                  45

Lys Pro His Lys Lys Tyr Leu Thr Trp Leu Tyr Gln Gly Ser Pro Ile
    50                  55                  60

Ala Val Val Asn His Cys Asp Asp Asp Gly Val Leu Leu Asn Gly Pro
65                  70                  75                  80

Ala Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Leu Leu Phe Arg
                85                  90                  95

Pro Phe Leu Pro Gly Ile Tyr Gln Cys Ile Ser Gly Pro Cys His His
            100                 105                 110

Thr Phe His Leu Ile Pro Asn Thr Thr Ser Ser Pro Ala Pro Leu Pro
        115                 120                 125

Thr Asn Asn Gln Thr Asn His Gln Arg His Arg Arg Asp Leu Ser Ser
    130                 135                 140

Asp Ser Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Thr Lys Lys Ser
145                 150                 155                 160
```

Ser Pro Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala
165 170 175

Leu Gly Leu Val Ala Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu
180 185 190

Pro Cys Cys Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp
195 200 205

Gly Arg Ser Pro
210

<210> 197
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 197

Met Thr Asp Pro Met Ala Asn Asn Thr Val Asn Asp Leu Leu Asp Met
1 5 10 15

Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg Gln
20 25 30

Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Ala Val Ala Ile His
35 40 45

Gln Cys Lys Arg Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile Ser
50 55 60

Phe Glu Val Thr Ser Thr Asp His Arg Leu Ser Tyr Glu Leu Leu Gln
65 70 75 80

Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val Ile
85 90 95

Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys Asp
100 105 110

Ser Pro Glu Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu Arg
115 120 125

Asp Leu Leu Pro Met Asn
130

<210> 198
<211> 5315
<212> DNA
<213> Artificial Sequence

<220>
<223> pSh-HIV-short-gag - based on HIV

<220>
<221> enhancer
<222> (350)..(610)
<223> Enhancer

<220>
<221> misc_feature
<222> (611)..(838)
<223> CMV\promoter

<220>
<221> TATA_signal
<222> (812)..(815)
<223> TATA

<220>
<221> CDS
<222> (934)..(2025)
<223> Gag\short

<220>
<221> polyA_signal
<222> (2178)..(2380)
<223> BGH-PolyA

<220>
<221> misc_feature
<222> (2453)..(2491)
<223> PI-Sce\I\recognition\site

<220>
<221> misc_feature
<222> (2713)..(3356)
<223> ColE1-Ori

<220>
<221> misc_feature
<222> (4030)..(4845)
<223> Kanamycin-r   complement (4030..4845)

<400> 198
ggtagcgaaa gctcagatct ggatctcccg atcccctatg gcgactctca gtacaatctg 60

ctctgatgcc gcatagttaa gccagtatct gctccctgct tgtgtgttgg aggtcgctga 120

gtagtgcgcg agcaaaattt aagctacaac aaggcaaggc ttgaccgaca attgcatgaa 180

gaatctgctt agggttaggc gttttgcgct gcttcgcgat gtacgggcca gatatacgcg 240

ttgacattga ttattgacta gttattaata gtaatcaatt acggggtcat tagttcatag 300

cccatatatg gagttccgcg ttacataact tacggtaaat ggcccgcctg gctgaccgcc 360

caacgacccc cgcccattga cgtcaataat gacgtatgtt cccatagtaa cgccaatagg 420

gactttccat tgacgtcaat gggtggacta tttacggtaa actgcccact tggcagtaca 480

tcaagtgtat catatgccaa gtacgccccc tattgacgtc aatgacggta aatggcccgc 540

ctggcattat gcccagtaca tgaccttatg ggactttcct acttggcagt acatctacgt 600

attagtcatc gctattacca tggtgatgcg gttttggcag tacatcaatg ggcgtggata 660

gcggtttgac tcacggggat ttccaagtct ccaccccatt gacgtcaatg ggagtttgtt 720

```
ttggcaccaa aatcaacggg actttccaaa atgtcgtaac aactccgccc cattgacgca      780

aatgggcggt aggcgtgtac ggtgggaggt ctatataagc agagctcgtt tagtgaaccg      840

tcagatcgcc tggagacgcc atccacgctg ttttgacctc catagaagac accgggaccg      900

atccagcctc cgcgggcgcg cgtcgacaga gag atg ggt gcg aga gcg tca gta       954
                                      Met Gly Ala Arg Ala Ser Val
                                      1               5

tta agc ggg gga gaa tta gat cga tgg gaa aaa att cgg tta agg cca       1002
Leu Ser Gly Gly Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro
        10                  15                  20

ggg gga aag aag aag tac aag cta aag cac atc gta tgg gca agc agg       1050
Gly Gly Lys Lys Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg
    25                  30                  35

gag cta gaa cga ttc gca gtt aat cct ggc ctg tta gaa aca tca gaa       1098
Glu Leu Glu Arg Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu
40                  45                  50                  55

ggc tgt aga caa ata ctg gga cag cta caa cca tcc ctt cag aca gga       1146
Gly Cys Arg Gln Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly
                60                  65                  70

tca gag gag ctt cga tca cta tac aac aca gta gca acc ctc tat tgt       1194
Ser Glu Glu Leu Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys
            75                  80                  85

gtg cac cag cgg atc gag atc aag gac acc aag gaa gct tta gac aag       1242
Val His Gln Arg Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys
        90                  95                  100

ata gag gaa gag caa aac aag tcc aag aag aag gcc cag cag gca gca       1290
Ile Glu Glu Glu Gln Asn Lys Ser Lys Lys Lys Ala Gln Gln Ala Ala
    105                 110                 115

gct gac aca gga cac agc aat cag gtc agc caa aat tac cct ata gtg       1338
Ala Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile Val
120                 125                 130                 135

cag aac atc cag ggg caa atg gta cat cag gcc ata tca cct aga act       1386
Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr
                140                 145                 150

tta aat gca tgg gta aaa gta gta gaa gag aag gct ttc agc cca gaa       1434
Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro Glu
            155                 160                 165

gtg ata ccc atg ttt tca gca tta tca gaa gga gcc acc cca cag gac       1482
Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp
        170                 175                 180

ctg aac acg atg ttg aac acc gtg ggg gga cat caa gca gcc atg caa       1530
Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met Gln
    185                 190                 195

atg tta aaa gag acc atc aat gag gaa gct gca gat tgg gat aga gtg       1578
Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Asp Trp Asp Arg Val
200                 205                 210                 215

cat cca gtg cat gca ggg cct att gca cca ggc cag atg aga gaa cca       1626
His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu Pro
                220                 225                 230

agg gga agt gac ata gca gga act act agt acc ctt cag gaa caa ata       1674
Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile
            235                 240                 245
```

```
gga tgg atg aca aat aat cca cct atc cca gta gga gag atc tac aag       1722
Gly Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr Lys
        250                 255                 260

agg tgg ata atc ctg gga ttg aac aag atc gtg agg atg tat agc cct       1770
Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr Ser Pro
    265                 270                 275

acc agc att ctg gac ata aga caa gga cca aag gaa ccc ttt aga gac       1818
Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp
280                 285                 290                 295

tat gta gac cgg ttc tat aaa act cta aga gct gag caa gct tca cag       1866
Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala Ser Gln
                300                 305                 310

gag gta aaa aat tgg atg aca gaa acc ttg ttg gtc caa aat gcg aac       1914
Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn Ala Asn
            315                 320                 325

cca gat tgt aag acc atc ctg aag gct ctc ggc cca gcg gct aca cta       1962
Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Ala Ala Thr Leu
        330                 335                 340

gaa gaa atg atg aca gca tgt cag gga gta gga gga ccc ggc cat aag       2010
Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro Gly His Lys
    345                 350                 355

gca aga gtt ttg tag ggatccacta gttctagact cgaggggggg cccggtacct       2065
Ala Arg Val Leu
360

ttaagaccaa tgacttacaa ggcagctgta gatcttagcc acttttaaa agaaaagggg      2125

ggactggaag ggctaattca ctcccaaaga agacaagata aaccgctgat cagcctcgac     2185

tgtgccttct agttgccagc catctgttgt ttgcccctcc cccgtgcctt ccttgaccct     2245

ggaaggtgcc actcccactg tcctttccta ataaaatgag gaaattgcat cgcattgtct     2305

gagtaggtgt cattctattc tgggggggtgg ggtggggcag gacagcaagg gggaggattg    2365

ggaagacaat agcaggcatg ctggggatgc ggtgggctct atggcttctg aggcggaaag     2425

aaccagcaga tctgcagatc tgaattcatc tatgtcgggt gcggagaaag aggtaatgaa     2485

atggcattat gggtattatg ggtctgcatt aatgaatcgg ccaacgcgcg gggagaggcg     2545

gtttgcgtat tgggcgctct tccgcttcct cgctcactga ctcgctgcgc tcggtcgttc     2605

ggctgcggcg agcggtatca gctcactcaa aggcggtaat acggttatcc acagaatcag     2665

gggataacgc aggaaagaac atgtgagcaa aaggccagca aaaggccagg aaccgtaaaa     2725

aggccgcgtt gctggcgttt ttccataggc tccgcccccc tgacgagcat cacaaaaatc     2785

gacgctcaag tcagaggtgg cgaaacccga caggactata aagataccag gcgtttcccc     2845

ctggaagctc cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga tacctgtccg     2905

cctttctccc ttcgggaagc gtggcgcttt ctcaatgctc acgctgtagg tatctcagtt     2965

cggtgtaggt cgttcgctcc aagctgggct gtgtgcacga acccccgtt cagcccgacc      3025

gctgcgcctt atccggtaac tatcgtcttg agtccaaccc ggtaagacac gacttatcgc     3085

cactggcagc agccactggt aacaggatta gcagagcgag gtatgtaggc ggtgctacag     3145
```

agttcttgaa gtggtggcct aactacggct acactagaag gacagtattt ggtatctgcg 3205

ctctgctgaa gccagttacc ttcggaaaaa gagttggtag ctcttgatcc ggcaaacaaa 3265

ccaccgctgg tagcggtggt ttttttgttt gcaagcagca gattacgcgc agaaaaaaag 3325

gatctcaaga agatcctttg atcttttcta cggggtctga cgctcagtgg aacgaaaact 3385

cacgttaagg gattttggtc atgagattat caaaaaggat cttcacctag atccttttga 3445

tcctccggcg ttcagcctgt gccacagccg acaggatggt gaccaccatt tgccccatat 3505

caccgtcggt actgatcccg tcgtcaataa accgaaccgc tacaccctga gcatcaaact 3565

cttttatcag ttggatcatg tcggcggtgt cgcggccaag acggtcgagc ttcttcacca 3625

gaatgacatc accttcctcc accttcatcc tcagcaaatc cagcccttcc cgatctgttg 3685

aactgccgga tgccttgtcg gtaaagatgc ggttagcttt tacccctgca tctttgagcg 3745

ctgaggtctg cctcgtgaag aaggtgttgc tgactcatac caggcctgaa tcgccccatc 3805

atccagccag aaagtgaggg agccacggtt gatgagagct ttgttgtagg tggaccagtt 3865

ggtgattttg aacttttgct ttgccacgga acggtctgcg ttgtcgggaa gatgcgtgat 3925

ctgatccttc aactcagcaa aagttcgatt tattcaacaa agccgccgtc ccgtcaagtc 3985

agcgtaatgc tctgccagtg ttacaaccaa ttaaccaatt ctgattagaa aaactcatcg 4045

agcatcaaat gaaactgcaa tttattcata tcaggattat caataccata tttttgaaaa 4105

agccgtttct gtaatgaagg agaaaactca ccgaggcagt tccataggat ggcaagatcc 4165

tggtatcggt ctgcgattcc gactcgtcca acatcaatac aacctattaa tttcccctcg 4225

tcaaaaataa ggttatcaag tgagaaatca ccatgagtga cgactgaatc cggtgagaat 4285

ggcaaaagct tatgcatttc tttccagact tgttcaacag gccagccatt acgctcgtca 4345

tcaaaatcac tcgcatcaac caaaccgtta ttcattcgtg attgcgcctg agcgagacga 4405

aatacgcgat cgctgttaaa aggacaatta caaacaggaa tcgaatgcaa ccggcgcagg 4465

aacactgcca gcgcatcaac aatattttca cctgaatcag gatattcttc taatacctgg 4525

aatgctgttt tcccggggat cgcagtggtg agtaaccatg catcatcagg agtacggata 4585

aaatgcttga tggtcggaag aggcataaat tccgtcagcc agtttagtct gaccatctca 4645

tctgtaacat cattggcaac gctacctttg ccatgtttca gaaacaactc tggcgcatcg 4705

ggcttcccat acaatcgata gattgtcgca cctgattgcc cgacattatc gcgagcccat 4765

ttatacccat ataaatcagc atccatgttg gaatttaatc gcggcctcga gcaagacgtt 4825

tcccgttgaa tatggctcat aacacccctt gtattactgt ttatgtaagc agacagtttt 4885

attgttcatg atgatatatt tttatcttgt gcaatgtaac atcagagatt ttgagacaca 4945

acgtggcttt gttgaataaa tcgaactttt gctgagttga aggatcagat cacgcatctt 5005

cccgacaacg cagaccgttc cgtggcaaag caaaagttca aaatcaccaa ctggtccacc 5065

tacaacaaag ctctcatcaa ccgtggctcc ctcactttct ggctggatga tggggcgatt 5125

caggcctggt atgagtcagc aacaccttct tcacgaggca gacctcagcg ctagattatt 5185

gaagcattta tcagggttat tgtctcatga gcggatacat atttgaatgt atttagaaaa 5245

ataaacaaat aggggttccg cgcacatttc cccgaaaagt gccacctgac gttaactata 5305

acggtcctaa 5315

<210> 199
<211> 363
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 199

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

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
20 25 30

His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
35 40 45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
50 55 60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65 70 75 80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
100 105 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val
115 120 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His
130 135 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
145 150 155 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
165 170 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
180 185 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
195 200 205

Ala Ala Asp Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala

```
    210                 215                 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225                 230                 235                 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
                245                 250                 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
            260                 265                 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
        275                 280                 285

Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
    290                 295                 300

Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr
305                 310                 315                 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
                325                 330                 335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
            340                 345                 350

Val Gly Gly Pro Gly His Lys Ala Arg Val Leu
        355                 360


<210>  200
<211>  26
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  pSh-HIV-short-gag -  based on HIV


<220>
<221>  misc_feature
<222>  (1)..(26)
<223>  I-Ceu\I\Recognition\Sequence  (5298...8)

<400>  200
taactataac ggtcctaagg tagcga                                          26


<210>  201
<211>  2128
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  pSR5 - based on E. coli


<220>
<221>  misc_feature
<222>  (303)..(891)
```

<223> pMB origin of replication

<220>
<221> rep_origin
<222> (304)..(304)
<223> ORI

<220>
<221> misc_feature
<222> (1062)..(1925)
<223> AP(R) complement (1062..1925)

<400> 201
aattatttaa atcccgggga tcatcgatga tctctagaga tcactagtct aggatatcat 60

ttaaatatgc ggtgtgaaat accgcacaga tgcgtaagga gaaaataccg catcaggcgc 120

tcttccgctt cctcgctcac tgactcgctg cgctcggtcg ttcggctgcg gcgagcggta 180

tcagctcact caaaggcggt aatacggtta tccacagaat caggggataa cgcaggaaag 240

aacatgtgag caaaaggcca gcaaaaggcc aggaaccgta aaaaggccgc gttgctggcg 300

tttttccata ggctccgccc ccctgacgag catcacaaaa atcgacgctc aagtcagagg 360

tggcgaaacc cgacaggact ataaagatac caggcgtttc cccctggaag ctccctcgtg 420

cgctctcctg ttccgaccct gccgcttacc ggatacctgt ccgcctttct cccttcggga 480

agcgtggcgc tttctcatag ctcacgctgt aggtatctca gttcggtgta ggtcgttcgc 540

tccaagctgg gctgtgtgca cgaaccccc gttcagcccg accgctgcgc cttatccggt 600

aactatcgtc ttgagtccaa cccggtaaga cacgacttat cgccactggc agcagccact 660

ggtaacagga ttagcagagc gaggtatgta ggcggtgcta cagagttctt gaagtggtgg 720

cctaactacg gctacactag aaggacagta tttggtatct gcgctctgct gaagccagtt 780

accttcggaa aaagagttgg tagctcttga tccggcaaac aaaccaccgc tggtagcggt 840

ggtttttttg tttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct 900

ttgatctttt ctacggggtc tgacgctcag tggaacgaaa actcacgtta agggattttg 960

gtcatgagat tatcaaaaag gatcttcacc tagatccttt taaattaaaa atgaagtttt 1020

aaatcaatct aaagtatata tgagtaaact tggtctgaca gttaccaatg cttaatcagt 1080

gaggcaccta tctcagcgat ctgtctattt cgttcatcca tagttgcctg actccccgtc 1140

gtgtagataa ctacgatacg ggagggctta ccatctggcc ccagtgctgc aatgataccg 1200

cgagacccac gctcaccggc tccagattta tcagcaataa accagccagc cggaagggcc 1260

gagcgcagaa gtggtcctgc aactttatcc gcctccatcc agtctattaa ttgttgccgg 1320

gaagctagag taagtagttc gccagttaat agtttgcgca acgttgttgc cattgctgca 1380

ggcatcgtgg tgtcacgctc gtcgtttggt atggcttcat tcagctccgg ttcccaacga 1440

tcaaggcgag ttacatgatc ccccatgttg tgcaaaaaag cggttagctc cttcggtcct 1500

ccgatcgttg tcagaagtaa gttggccgca gtgttatcac tcatggttat ggcagcactg 1560

cataattctc ttactgtcat gccatccgta agatgctttt ctgtgactgg tgagtactca 1620

accaagtcat tctgagaata gtgtatgcgg cgaccgagtt gctcttgccc ggcgtcaaca 1680

cgggataata ccgcgccaca tagcagaact ttaaaagtgc tcatcattgg aaaacgttct 1740

tcggggcgaa aactctcaag gatcttaccg ctgttgagat ccagttcgat gtaacccact 1800

cgtgcaccca actgatcttc agcatctttt actttcacca gcgtttctgg gtgagcaaaa 1860

acaggaaggc aaaatgccgc aaaaaaggga ataagggcga cacggaaatg ttgaatactc 1920

atactcttcc tttttcaata ttattgaagc atttatcagg gttattgtct catgagcgga 1980

tacatatttg aatgtattta gaaaaataaa caaatagggg ttccgcgcac atttccccga 2040

aaagtgccac ctgacgtcta agaaaccatt attatcatga cattaaccta taaaaatagg 2100

cgtatcacga ggccctttcg tcttcaag 2128

<210> 202
<211> 2171
<212> DNA
<213> Artificial Sequence

<220>
<223> pSR7 - based on E. coli

<220>
<221> misc_feature
<222> (346)..(934)
<223> pMB1\ori

<220>
<221> rep_origin
<222> (347)..(347)
<223> ORI

<220>
<221> misc_feature
<222> (1105)..(1968)
<223> AP(R) complement (1105..1968)

<400> 202
aattgtttaa actacgtaat taggccggcc gcgcacgcgc atatggatcg atcgctagcg 60

atcgatcgaa ttccgcgtgt cattaattaa gctagatatc gtttaaacta tgcggtgtga 120

aataccgcac agatgcgtaa ggagaaaata ccgcatcagg cgctcttccg cttcctcgct 180

cactgactcg ctgcgctcgg tcgttcggct gcggcgagcg gtatcagctc actcaaaggc 240

ggtaatacgg ttatccacag aatcagggga taacgcagga aagaacatgt gagcaaaagg 300

ccagcaaaag gccaggaacc gtaaaaaggc cgcgttgctg gcgttttcc ataggctccg 360

ccccccctgac gagcatcaca aaaatcgacg ctcaagtcag aggtggcgaa acccgacagg 420

actataaaga taccaggcgt ttcccccctgg aagctccctc gtgcgctctc ctgttccgac 480

cctgccgctt accggatacc tgtccgcctt tctcccttcg ggaagcgtgg cgctttctca 540

tagctcacgc tgtaggtatc tcagttcggt gtaggtcgtt cgctccaagc tgggctgtgt 600

gcacgaaccc cccgttcagc ccgaccgctg cgccttatcc ggtaactatc gtcttgagtc 660

caacccggta agacacgact tatcgccact ggcagcagcc actggtaaca ggattagcag 720

agcgaggtat gtaggcggtg ctacagagtt cttgaagtgg tggcctaact acggctacac 780

tagaaggaca gtatttggta tctgcgctct gctgaagcca gttaccttcg gaaaaagagt 840

tggtagctct tgatccggca aacaaaccac cgctggtagc ggtggttttt ttgtttgcaa 900

gcagcagatt acgcgcagaa aaaaaggatc tcaagaagat cctttgatct tttctacggg 960

gtctgacgct cagtggaacg aaaactcacg ttaagggatt ttggtcatga gattatcaaa 1020

aaggatcttc acctagatcc ttttaaatta aaaatgaagt tttaaatcaa tctaaagtat 1080

atatgagtaa acttggtctg acagttacca atgcttaatc agtgaggcac ctatctcagc 1140

gatctgtcta tttcgttcat ccatagttgc ctgactcccc gtcgtgtaga taactacgat 1200

acgggagggc ttaccatctg gccccagtgc tgcaatgata ccgcgagacc cacgctcacc 1260

ggctccagat ttatcagcaa taaaccagcc agccggaagg gccgagcgca gaagtggtcc 1320

tgcaacttta tccgcctcca tccagtctat taattgttgc cgggaagcta gagtaagtag 1380

ttcgccagtt aatagtttgc gcaacgttgt tgccattgct gcaggcatcg tggtgtcacg 1440

ctcgtcgttt ggtatggctt cattcagctc cggttcccaa cgatcaaggc gagttacatg 1500

atcccccatg ttgtgcaaaa aagcggttag ctccttcggt cctccgatcg ttgtcagaag 1560

taagttggcc gcagtgttat cactcatggt tatggcagca ctgcataatt ctcttactgt 1620

catgccatcc gtaagatgct tttctgtgac tggtgagtac tcaaccaagt cattctgaga 1680

atagtgtatg cggcgaccga gttgctcttg cccggcgtca acacgggata ataccgcgcc 1740

acatagcaga actttaaaag tgctcatcat tggaaaacgt tcttcggggc gaaaactctc 1800

aaggatctta ccgctgttga gatccagttc gatgtaaccc actcgtgcac ccaactgatc 1860

ttcagcatct tttactttca ccagcgtttc tgggtgagca aaaacaggaa ggcaaaatgc 1920

cgcaaaaaag ggaataaggg cgacacggaa atgttgaata ctcatactct tccttttca 1980

atattattga agcatttatc agggttattg tctcatgagc ggatacatat ttgaatgtat 2040

ttagaaaaat aaacaaatag gggttccgcg cacatttccc cgaaaagtgc cacctgacgt 2100

ctaagaaacc attattatca tgacattaac ctataaaaat aggcgtatca cgaggccctt 2160

tcgtcttcaa g 2171

<210> 203
<211> 3615
<212> DNA
<213> Artificial Sequence

<220>
<223> pBleuSK I-PI cassette - based on E. coli

<220>
<221> CDS
<222> (818)..(1678)
<223> Amp-R

<220>
<221> polyA_signal
<222> (3254)..(3456)
<223> BGH-polyA

<400> 203
tatcgatacc gtcgacctcg agggggggcc cggtacccaa ttcgccctat agtgagtcgt 60

```
attacgcgcg ctcactggcc gtcgttttac aacgtcgtga ctgggaaaac cctggcgtta      120

cccaacttaa tcgccttgca gcacatcccc ctttcgccag ctggcgtaat agcgaagagg      180

cccgcaccga tcgcccttcc caacagttgc gcagcctgaa tggcgaatgg gacgcgccct      240

gtagcggcgc attaagcgcg gcgggtgtgg tggttacgcg cagcgtgacc gctacacttg      300

ccagcgccct agcgcccgct cctttcgctt tcttcccttc ctttctcgcc acgttcgccg      360

gctttccccg tcaagctcta aatcgggggc tccctttagg gttccgattt agtgctttac      420

ggcacctcga ccccaaaaaa cttgattagg gtgatggttc acgtagtggg ccatcgccct      480

gatagacggt ttttcgccct ttgacgttgg agtccacgtt ctttaatagt ggactcttgt      540

tccaaactgg aacaacactc aaccctatct cggtctattc ttttgattta taagggattt      600

tgccgatttc ggcctattgg ttaaaaaatg agctgattta acaaaaattt aacgcgaatt      660

ttaacaaaat attaacgctt acaatttagg tggcactttt cggggaaatg tgcgcggaac      720

ccctatttgt ttatttttct aaatacattc aaatatgtat ccgctcatga gacaataacc      780

ctgataaatg cttcaataat attgaaaaag gaagagt atg agt att caa cat ttc       835
                                          Met Ser Ile Gln His Phe
                                          1               5

cgt gtc gcc ctt att ccc ttt ttt gcg gca ttt tgc ctt cct gtt ttt       883
Arg Val Ala Leu Ile Pro Phe Phe Ala Ala Phe Cys Leu Pro Val Phe
            10                  15                  20

gct cac cca gaa acg ctg gtg aaa gta aaa gat gct gaa gat cag ttg       931
Ala His Pro Glu Thr Leu Val Lys Val Lys Asp Ala Glu Asp Gln Leu
        25                  30                  35

ggt gca cga gtg ggt tac atc gaa ctg gat ctc aac agc ggt aag atc       979
Gly Ala Arg Val Gly Tyr Ile Glu Leu Asp Leu Asn Ser Gly Lys Ile
    40                  45                  50

ctt gag agt ttt cgc ccc gaa gaa cgt ttt cca atg atg agc act ttt      1027
Leu Glu Ser Phe Arg Pro Glu Glu Arg Phe Pro Met Met Ser Thr Phe
55                  60                  65                  70

aaa gtt ctg cta tgt ggc gcg gta tta tcc cgt att gac gcc ggg caa      1075
Lys Val Leu Leu Cys Gly Ala Val Leu Ser Arg Ile Asp Ala Gly Gln
                75                  80                  85

gag caa ctc ggt cgc cgc ata cac tat tct cag aat gac ttg gtt gag      1123
Glu Gln Leu Gly Arg Arg Ile His Tyr Ser Gln Asn Asp Leu Val Glu
            90                  95                  100

tac tca cca gtc aca gaa aag cat ctt acg gat ggc atg aca gta aga      1171
Tyr Ser Pro Val Thr Glu Lys His Leu Thr Asp Gly Met Thr Val Arg
        105                 110                 115

gaa tta tgc agt gct gcc ata acc atg agt gat aac act gcg gcc aac      1219
Glu Leu Cys Ser Ala Ala Ile Thr Met Ser Asp Asn Thr Ala Ala Asn
    120                 125                 130

tta ctt ctg aca acg atc gga gga ccg aag gag cta acc gct ttt ttg      1267
Leu Leu Leu Thr Thr Ile Gly Gly Pro Lys Glu Leu Thr Ala Phe Leu
135                 140                 145                 150

cac aac atg ggg gat cat gta act cgc ctt gat cgt tgg gaa ccg gag      1315
His Asn Met Gly Asp His Val Thr Arg Leu Asp Arg Trp Glu Pro Glu
                155                 160                 165
```

```
ctg aat gaa gcc ata cca aac gac gag cgt gac acc acg atg cct gta       1363
Leu Asn Glu Ala Ile Pro Asn Asp Glu Arg Asp Thr Thr Met Pro Val
            170                 175                 180

gca atg gca aca acg ttg cgc aaa cta tta act ggc gaa cta ctt act       1411
Ala Met Ala Thr Thr Leu Arg Lys Leu Leu Thr Gly Glu Leu Leu Thr
        185                 190                 195

cta gct tcc cgg caa caa tta ata gac tgg atg gag gcg gat aaa gtt       1459
Leu Ala Ser Arg Gln Gln Leu Ile Asp Trp Met Glu Ala Asp Lys Val
    200                 205                 210

gca gga cca ctt ctg cgc tcg gcc ctt ccg gct ggc tgg ttt att gct       1507
Ala Gly Pro Leu Leu Arg Ser Ala Leu Pro Ala Gly Trp Phe Ile Ala
215                 220                 225                 230

gat aaa tct gga gcc ggt gag cgt ggg tct cgc ggt atc att gca gca       1555
Asp Lys Ser Gly Ala Gly Glu Arg Gly Ser Arg Gly Ile Ile Ala Ala
                235                 240                 245

ctg ggg cca gat ggt aag ccc tcc cgt atc gta gtt atc tac acg acg       1603
Leu Gly Pro Asp Gly Lys Pro Ser Arg Ile Val Val Ile Tyr Thr Thr
            250                 255                 260

ggg agt cag gca act atg gat gaa cga aat aga cag atc gct gag ata       1651
Gly Ser Gln Ala Thr Met Asp Glu Arg Asn Arg Gln Ile Ala Glu Ile
        265                 270                 275

ggt gcc tca ctg att aag cat tgg taa ctgtcagacc aagtttactc             1698
Gly Ala Ser Leu Ile Lys His Trp
    280                 285

atatatactt tagattgatt taaaacttca tttttaattt aaaaggatct aggtgaagat     1758

ccttttttgat aatctcatga ccaaaatccc ttaacgtgag ttttcgttcc actgagcgtc     1818

agaccccgta gaaaagatca aaggatcttc ttgagatcct ttttttctgc gcgtaatctg     1878

ctgcttgcaa acaaaaaaac caccgctacc agcggtggtt tgtttgccgg atcaagagct     1938

accaactctt tttccgaagg taactggctt cagcagagcg cagataccaa atactgtcct     1998

tctagtgtag ccgtagttag gccaccactt caagaactct gtagcaccgc ctacatacct     2058

cgctctgcta atcctgttac cagtggctgc tgccagtggc gataagtcgt gtcttaccgg     2118

gttggactca agacgatagt taccggataa ggcgcagcgg tcgggctgaa cgggggttc      2178

gtgcacacag cccagcttgg agcgaacgac ctacaccgaa ctgagatacc tacagcgtga     2238

gctatgagaa agcgccacgc ttcccgaagg gagaaaggcg gacaggtatc cggtaagcgg     2298

cagggtcgga acaggagagc gcacgaggga gcttccaggg ggaaacgcct ggtatcttta     2358

tagtcctgtc gggtttcgcc acctctgact tgagcgtcga tttttgtgat gctcgtcagg     2418

ggggcggagc ctatggaaaa acgccagcaa cgcggccttt ttacggttcc tggccttttg     2478

ctggcctttt gctcacatgt tctttcctgc gttatcccct gattctgtgg ataaccgtat     2538

taccgccttt gagtgagctg ataccgctcg ccgcagccga acgaccgagc gcagcgagtc     2598

agtgagcgag gaagcggaag agcgcccaat acgcaaaccg cctctccccg cgcgttggcc     2658

gattcattaa tgcagctggc acgacaggtt tcccgactgg aaagcgggca gtgagcgcaa     2718

cgcaattaat gtgagttagc tcactcatta ggcaccccag gctttacact ttatgcttcc     2778

ggctcgtatg ttgtgtggaa ttgtgagcgg ataacaattt cacacaggaa acagctatga     2838
```

ccatgattac gccaagcgcg caattaaccc tcactaaagg gaacaaaagc tggagctcca 2898

ccgcggtggc ggccgctcta gaactagtgg atcccccggg ctgcaggaat tcgatatcat 2958

ttccccgaaa agtgccacct gacgtaacta taacggtcct aaggtagcga aagctcagat 3018

ctcccgatcc cctatggtgc actctcagta caatctgctc tgatgccgca tagttaagcc 3078

agtatctgct ccctgcttgt gtgttggagg tcgctgagta gtgcgcgagc aaaatttaag 3138

ctacaacaag gcaaggcttg accgacaatt gcatgaagaa tctgcttagg gttaggcgtt 3198

ttgcgctgct tcgcgatgta cgggccagat atacgcggta cgaaaccgct gatcagcctc 3258

gactgtgcct tctagttgcc agccatctgt tgtttgcccc tcccccgtgc cttccttgac 3318

cctggaaggt gccactccca ctgtcctttc ctaataaaat gaggaaattg catcgcattg 3378

tctgagtagg tgtcattcta ttctgggggg tggggtgggg caggacagca agggggagga 3438

ttgggaagac aatagcaggc atgctgggga tgcggtgggc tctatggctt ctgaggcgga 3498

aagaaccagc agatctgcag atctgaattc atctatgtcg ggtgcggaga aagaggtaat 3558

gaaatggcat tatgggtatt atgggtctgc attaatgaat cggccagata tcaagct 3615

<210> 204
<211> 286
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 204

Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro Phe Phe Ala Ala
1 5 10 15

Phe Cys Leu Pro Val Phe Ala His Pro Glu Thr Leu Val Lys Val Lys
20 25 30

Asp Ala Glu Asp Gln Leu Gly Ala Arg Val Gly Tyr Ile Glu Leu Asp
35 40 45

Leu Asn Ser Gly Lys Ile Leu Glu Ser Phe Arg Pro Glu Glu Arg Phe
50 55 60

Pro Met Met Ser Thr Phe Lys Val Leu Leu Cys Gly Ala Val Leu Ser
65 70 75 80

Arg Ile Asp Ala Gly Gln Glu Gln Leu Gly Arg Arg Ile His Tyr Ser
85 90 95

Gln Asn Asp Leu Val Glu Tyr Ser Pro Val Thr Glu Lys His Leu Thr
100 105 110

Asp Gly Met Thr Val Arg Glu Leu Cys Ser Ala Ala Ile Thr Met Ser
115 120 125

```
Asp Asn Thr Ala Ala Asn Leu Leu Leu Thr Thr Ile Gly Gly Pro Lys
    130                 135                 140

Glu Leu Thr Ala Phe Leu His Asn Met Gly Asp His Val Thr Arg Leu
145                 150                 155                 160

Asp Arg Trp Glu Pro Glu Leu Asn Glu Ala Ile Pro Asn Asp Glu Arg
                165                 170                 175

Asp Thr Thr Met Pro Val Ala Met Ala Thr Thr Leu Arg Lys Leu Leu
            180                 185                 190

Thr Gly Glu Leu Leu Thr Leu Ala Ser Arg Gln Gln Leu Ile Asp Trp
        195                 200                 205

Met Glu Ala Asp Lys Val Ala Gly Pro Leu Leu Arg Ser Ala Leu Pro
    210                 215                 220

Ala Gly Trp Phe Ile Ala Asp Lys Ser Gly Ala Gly Glu Arg Gly Ser
225                 230                 235                 240

Arg Gly Ile Ile Ala Ala Leu Gly Pro Asp Gly Lys Pro Ser Arg Ile
                245                 250                 255

Val Val Ile Tyr Thr Thr Gly Ser Gln Ala Thr Met Asp Glu Arg Asn
            260                 265                 270

Arg Gln Ile Ala Glu Ile Gly Ala Ser Leu Ile Lys His Trp
        275                 280                 285


<210>  205
<211>  89
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  ICeuPISceI cassette based on Saccharomyces cerevisiae


<220>
<221>  misc_feature
<222>  (13)..(38)
<223>  I-Ceu recognition site

<220>
<221>  misc_feature
<222>  (26)..(27)
<223>  cleavage point for bottom strand

<220>
<221>  misc_feature
<222>  (30)..(31)
<223>  cleavage point for top strand

<220>
<221>  misc_feature
<222>  (39)..(77)
<223>  PI-SceI recognition sequence
```

<220>
<221> misc_feature
<222> (49)..(50)
<223> cleavage point on bottom strand

<220>
<221> misc_feature
<222> (53)..(54)
<223> cleavage point on top strand

<400> 205
gatcatcgta cgtaactata acggtcctaa ggtagcgaat ctatgtcggg tgcggagaaa 60

gaggtaatga aatggcacat atggatcta 89

<210> 206
<211> 36773
<212> DNA
<213> Artificial Sequence

<220>
<223> p2870 - E1 deleted molecular clone, based on Simian Adenovirus A1320

<220>
<221> repeat_region
<222> (1)..(129)
<223> ITR

<220>
<221> polyA_signal
<222> (755)..(957)
<223> BGH-PolyA (bovine growth hormone (bGH) polyadenylation signal)

<220>
<221> misc_feature
<222> (1111)..(1496)
<223> E1b\del

<220>
<221> misc_feature
<222> (2070)..(3691)
<223> IVa2 complement (2070..3691)

<220>
<221> misc_feature
<222> (3680)..(11945)
<223> pol complement (3680..11945)

<220>
<221> misc_feature
<222> (6550)..(11945)
<223> pTP complement (6550..11945)

<220>
<221> CDS
<222> (10142)..(11902)
<223> pIIIa

<220>
<221> CDS
<222> (11985)..(13610)
<223> penton

<220>
<221> CDS

<222> (13617)..(14198)
<223> pVIII

<220>
<221> CDS
<222> (14246)..(15289)
<223> V

<220>
<221> CDS
<222> (15317)..(15547)
<223> pX

<220>
<221> CDS
<222> (15620)..(16351)
<223> pVI

<220>
<221> CDS
<222> (16458)..(19286)
<223> hexon

<220>
<221> CDS
<222> (19308)..(19931)
<223> protease

<220>
<221> CDS
<222> (20016)..(21551)
<223> DBP complement (20016..21551)

<220>
<221> CDS
<222> (21580)..(23973)
<223> 100K

<220>
<221> CDS
<222> (24599)..(25279)
<223> pVIII

<220>
<221> CDS
<222> (25283)..(25600)
<223> E3 12.5K

<220>
<221> CDS
<222> (26162)..(26689)
<223> E3 gp19K

<220>
<221> CDS
<222> (26722)..(27321)
<223> E3 CR1-beta

<220>
<221> CDS
<222> (27338)..(27949)
<223> E3 CR1-gamma

<220>
<221> CDS
<222> (29134)..(29562)
<223> E3 RID-beta

<220>

<221> CDS
<222> (30259)..(31593)
<223> fiber

<220>
<221> misc_feature
<222> (31686)..(33019)
<223> E4 orf 6/7 complement (31686..31936, 32669..33019)

<220>
<221> misc_feature
<222> (32669)..(32692)
<223> middle\right

<220>
<221> CDS
<222> (32748)..(33110)
<223> E4 orf4 complement (32748..33110)

<220>
<221> repeat_region
<222> (34556)..(34684)
<223> ITR complement (34556..34684)

<220>
<221> misc_feature
<222> (34924)..(34930)
<223> pMB1\ORI: low copy number

<220>
<221> misc_feature
<222> (34933)..(35521)
<223> pMB1\ori

<220>
<221> rep_origin
<222> (34934)..(34934)
<223> ORI

<220>
<221> CDS
<222> (35692)..(36555)
<223> AP(R) [Note: E-286] Complement (35692..36555)

<400> 206
catcatcaat aatatacctc aaacttttg tgcgcgttaa tatgcaaatg aggcgtttga 60

atttggggat gcggggcggt gattggctgt gggaaaggcg accgttaggg gcggggcggg 120

tgacgttttg atgacgtgtt tgtgaggcgg agccggtttg caagttctcg tgggaaaagt 180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca 240

ggaaatgagg tgtttctggg cggatgcaag tgaaaacggg ccattttcgc gcgaaaactg 300

aatgaggaag tgaaaatctg agtaatttcg cgtttatggc agggaggagt atttgccgag 360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtgtttt tcacctaaat 420

ttccgcgtac ggtgtcaaag tccggtgttt ttacatcatt tccccgaaaa gtgccacctg 480

acgtaactat aacggtccta aggtagcgaa agctcagatc tcccgatccc ctatggtgca 540

ctctcagtac aatctgctct gatgccgcat agttaagcca gtatctgctc cctgcttgtg 600

tgttggaggt cgctgagtag tgcgcgagca aaatttaagc tacaacaagg caaggcttga 660

ccgacaattg catgaagaat ctgcttaggg ttaggcgttt tgcgctgctt cgcgatgtac 720

gggccagata tacgcggtac gaaaccgctg atcagcctcg actgtgcctt ctagttgcca 780

gccatctgtt gtttgcccct cccccgtgcc ttccttgacc ctggaaggtg ccactcccac 840

tgtcctttcc taataaaatg aggaaattgc atcgcattgt ctgagtaggt gtcattctat 900

tctgggggt ggggtggggc aggacagcaa gggggaggat tgggaagaca atagcaggca 960

tgctggggat gcggtgggct ctatggcttc tgaggcggaa agaaccagca gatctgcaga 1020

tctgaattca tctatgtcgg gtgcggagaa agaggtaatg aaatggcatt atgggtatta 1080

tgggtctgca ttaatgaatc ggccagatta tgctggccac cgtgcatgtg gcctcgcacc 1140

cccgcaagac atggcccgag ttcgagcaca acgtcatgac ccgctgcaat gtgcacctgg 1200

gctcccgccg aggcatgttc atgccatacc agtgcaacat gcaatttgtg aaggtgctgc 1260

tggagcccga tgccatgtcc agagtgagcc tgacgggggt gtttgacatg aatgtggagc 1320

tgtggaaaat tctgagatat gatgaatcca agaccaggtg ccgggcctgc gaatgcggag 1380

gcaagcacgc caggcttcag cccgtgtgtg tggaggtgac ggaggacctg cgacccgatc 1440

atttggtgtt gtcctgcaac gggacggagt tcggctccag cggggaagaa tctgactaga 1500

gtgagtagtg tttgggggtg ggtgggagcc tgcatgatgg gcagaatgac taaaatctgt 1560

gtttttctgc gcagcagcat gagcggaagc gcctcctttg agggaggggt attcagccct 1620

tatctgacgg ggcgtctccc ctcctgggct ggagtgcgtc agaatgtgat gggatccacg 1680

gtggacggcc ggcccgtgca gcccgcgaac tcttcaaccc tgacctacgc gaccctgagc 1740

tcctcgtccg tggacgcagc tgccgccgca gctgctgctt ccgccgccag cgccgtgcgc 1800

ggaatggccc tgggtgccgg ctactacagc tctctggtgg ccaactcgag ttccgccaat 1860

aatcccgcca gcctgaacga ggagaagctg ctgctgctga tggcccagct cgaggccctg 1920

acccagcgcc tgggcgagct gacccagcag gtggctcagc tgcaggcgga gacgcgggcc 1980

gcggttgcca cggtgaaaac caaataaaaa atgaatcaat aaataaacgg aaacggttgt 2040

tgattttaac acagagtctt gaatctttat ttgatttttc gcgcgcggta ggccctggac 2100

caccggtctc gatcattgag cacccggtgg atcttttcca ggacccggta gaggtgggct 2160

tggatgttga ggtacatggg catgagcccg tcccgggggt ggaggtagct ccactgcagg 2220

gcctcgtgct cgggggtggt gttgtaaatc acccagtcat agcaggggcg cagggcgtgg 2280

tgctgcacga tgtccttgag gaggagactg atggccacgg gcagtccctt ggtgtaggtg 2340

ttgacgaacc tgttgagctg ggagggatgc atgcgggggg agatgagatg catcttggcc 2400

tggatcttga gattggcgat gttcccaccc agatcccgcc gggggttcat gttgtgcagg 2460

accaccagca cggtgtatcc ggtgcacttg gggaatttgt catgcaactt ggaagggaag 2520

gcgtgaaaga atttggagac gcccttgtga ccgcccaggt tttccatgca ctcatccatg 2580

atgatggcga tgggcccgtg ggcggcggcc tgggcaaaga cgtttcgggg gtcggacaca 2640

tcgtagttgt ggtcctgggt gagctcgtca taggccattt taatgaattt ggggcggagg 2700

gtgcccgact gggggacaaa ggtgccctcg atcccggggg cgtagttgcc ctcgcagatc 2760

tgcatctccc aggccttgag ctcggagggg gggatcatgt ccacctgcgg ggcgatgaaa 2820

aaaacggttt ccggggcggg ggagatgagc tgggccgaaa gcaggttccg gagcagctgg 2880
gacttgccgc agccggtggg gccgtagatg accccgatga ccggctgcag gtggtagttg 2940
agggagagac agctgccgtc ctcgcggagg agggggggcca cctcgttcat catctcgcgc 3000
acatgcatgt tctcgcgcac gagttccgcc aggaggcgct cgccccccag cgagaggagc 3060
tcttgcagcg aggcgaagtt tttcagcggc ttgagtccgt cggccatggg cattttggag 3120
agggtctgtt gcaagagttc cagacggtcc cagagctcgg tgatgtgctc tagggcatct 3180
cgatccagca gacctcctcg tttcgcgggt tggggcggct gcgggagtag ggcaccaggc 3240
gatgggcgtc cagcgaggcc agggtccggt ccttccaggg tcgcagggtc cgcgtcagcg 3300
tggtctccgt cacggtgaag gggtgcgcgc cgggctgggc gcttgcgagg gtgcgcttca 3360
ggctcatccg gctggtcgag aaccgctccc ggtcggtgcc ctgcgcgtcg gccaggtagc 3420
aattgagcat gagttcgtag ttgagcgcct cggccgcgtg gcccttggcg cggagcttac 3480
ctttggaagt gtgtccgcag acgggacaga ggagggactt gagggcgtag agcttggggg 3540
cgaggaagac ggactcgggg gcgtaggcgt ccgcgccgca gctggcgcag acggtctcgc 3600
actccacgag ccaggtgagg tcggggcggt cggggtcaaa aacgaggttt cctccgtgct 3660
ttttgatgcg tttcttacct ctggtctcca tgagctcgtg tccccgctgg gtgacaaaga 3720
ggctgtccgt gtccccgtag accgacttta tgggccggtc ctcgagcggg gtgccgcggt 3780
cctcgtcgta gaggaacccc gcccactccg agacgaaggc ccgggtccag gccagcacga 3840
aggaggccac gtgggagggg tagcggtcgt tgtccaccag cgggtccacc ttctccaggg 3900
tatgcaagca catgtccccc tcgtccacat ccaggaaggt gattggcttg taagtgtagg 3960
ccacgtgacc gggggtcccg gccggggggg tataaaaggg ggcgggcccc tgctcgtcct 4020
cactgtcttc cggatcgctg tccaggagcg ccagctgttg gggtaggtat tccctctcga 4080
aggcgggcat gacctcggca ctcaggttgt cagtttctag aaacgaggag gatttgatat 4140
tgacggtgcc gttggagacg cctttcatga gcccctcgtc catctggtca gaaaagacga 4200
tctttttgtt gtcgagcttg gtggcgaagg agccgtagag ggcattggag aggagcttgg 4260
cgatggagcg catggtctgg ttcttttcct tgtcggcgcg ctccttggcg gcgatgttga 4320
gctgcacgta ctcgcgcgcc acgcacttcc attcggggaa gacggtggtg agctcgtcgg 4380
gcacgattct gacccgccag ccgcggttgt gcagggtgat gaggtccacg ctggtggcca 4440
cctcgccgcg caggggctcg ttggtccagc agaggcgccc gcccttgcgc gagcagaagg 4500
ggggcagcgg gtccagcatg agctcgtcgg gggggtcggc gtccacggtg aagatgccgg 4560
gcaggagctc ggggtcgaag tagctgatgc aggtgcccag atcgtccagc gccgcttgcc 4620
agtcgcgcac ggccagcgcg cgctcgtagg ggctgagggg cgtgccccag ggcatggggt 4680
gcgtgagcgc ggaggcgtac atgccgcaga tgtcgtagac gtagaggggc tcctcgagga 4740
cgccgatgta ggtggggtag cagcgccccc cgcggatgct ggcgcgcacg tagtcgtaca 4800
gctcgtgcga gggcgcgagg agccccgcgc cgaggttgga gcgctgcggc ttttcggcgc 4860

ggtagacgat ctggcggaag atggcgtggg agttggagga gatggtgggc ctctggaaga 4920
tgttgaagtg ggcgtggggc aggccgaccg agtccctgat gaagtgggcg taggagtcct 4980
gcagcttggc gacgagctcg gcggtgacga ggacgtccag ggcgcagtag tcgagggtct 5040
cttggatgat gtcgtacttg agctggccct tctgcttcca cagctcgcgg ttgagaagga 5100
actcttcgcg gtccttccag tactcttcga gggggaaccc gtcctgatcg gcacggtaag 5160
agcccaccat gtagaactgg ttgacggcct tgtaggcgca gcagcccttc tccacgggga 5220
gggcataagc ttgcgcggcc ttgcgcaggg aggtgtgggt gagggcgaag gtgtcgcgca 5280
ccatgacctt gaggaactgg tgcttgaagt cgaggtcgtc gcagccgccc tgctcccaga 5340
gttggaagtc cgtgcgcttc ttgtaggcgg ggttgggcaa agcgaaagta acatcgttga 5400
agaggatctt gcccgcgcgg ggcatgaagt tgcgagtgat gcggaaaggc tggggcacct 5460
cggcccggtt gttgatgacc tgggcggcga ggacgatctc gtcgaagccg ttgatgttgt 5520
gcccgacgat gtagagttcc acgaatcgcg ggcggccctt gacgtggggc agcttcttga 5580
gctcgtcgta ggtgagctcg gcggggtcgc tgagtccgtg ctgctcaagg gcccagtcgg 5640
cgacgtgggg gttggcgctg aggaaggaag tccagagatc cacggccagg gcggtttgca 5700
agcggtcccg gtactgacgg aactgctggc ccacggccat tttttcgggg gtgatgcagt 5760
agaaggtgcg ggggtcgccg tgccagcggt cccacttgag ctggagggcg aggtcgtggg 5820
cgagctcgac aagcggcggg tccccggaga gtttcatgac cagcatgaag gggacgagct 5880
gcttgccgaa ggaccccatc caggtgtagg tttccacatc gtaggtgagg aagagccttt 5940
cggtgcgagg atgcgagccg atggggaaga actggatctc ctgccaccag ttggaggaat 6000
ggctgttgat gtgatggaag tagaaatgcc gacggcgcgc cgagcactcg tgcttgtgtt 6060
tatacaagcg tccgcagtgc tcgcaacgct gcacgggatg cacgtgctgc acgagctgta 6120
cctgagttcc tttgacgagg aatttcagtg ggcagtggag cgctggcggc tgcatctggt 6180
gctgtactac gtcctggcca tcggcgtggc catcgtctgc ctcgatggtg gtcatgctga 6240
cgagcccgcg cgggaggcag gtccagacct cggctcggac gggtcggaga gcgaggacga 6300
gggcgcgcag gccggagctg tccagggtcc tgagacgctg cggagtcagg tcagtgggca 6360
gcggcggcgc gcggttgact tgcaggagct tttccagggc gcgcgggagg tccagatggt 6420
acttgatctc cacggcgccg ttggtggcga cgtccacggc ttgcagggtc ccgtgcccct 6480
ggggcgccac caccgtgccc cgtttcttct tgggcgctgg cggcgttggc gctggttcca 6540
tgtcggtcag aagcggcggc gaggacgcgc gccgggcggc aggggcggct cggggcccgg 6600
aggcaggggc ggcaggggca cgtcggcgcc gcgcgcgggc aggttctggt actgcgcccg 6660
gagaagactg gcgtgagcga cgacgcgacg gttgacgtcc tggatctgac gcctctgggt 6720
gaaggccacg ggacccgtga gtttgaacct gaaagagagt tcgacagaat caatctcggt 6780
atcgttgacg gcggcctgcc gcaggatctc ttgcacgtcg cccgagttgt cctggtaggc 6840
gatctcggtc atgaactgct cgatctcctc ctcctgaagg tctccgcggc cggcgcgctc 6900
gacggtggcc gcgaggtcgt tggagatgcg ggccatgagc tgcgagaagg cgttcatgcc 6960

ggcctcgttc cagacgcggc tgtagaccac ggctccgtcg gggtcgcgcg cgcgcatgac 7020
cacctgggca aggttgagct cgacgtggcg cgtgaagacc gcgtagttgc agaggcgctg 7080
gtagaggtag ttgagcgtgg tggcgatgtg ctcggtgacg aagaagtaca tgatccagcg 7140
gcggagcggc atctcgctga cgtcgcccag ggcttccaag cgctccatgg cctcgtagaa 7200
gtccacggcg aagttgaaaa actgggagtt gcgcgccgag acggtcaact cctcctccag 7260
aagacggatg agctctgcga tggtggcgcg cacctcgcgc tcgaaggccc cgggggctc 7320
ctcttcttcc atctcctcct cctcttcctc ctccactaac atctcttcta cttcctcctc 7380
aggcggtggt ggcgggggag ggggcctgcg tcgccggcgg cgcacgggca gacggtcgat 7440
gaagcgctcg atggtctcgc cgcgccggcg tcgcatggtc tcggtgacgg cgcgcccgtc 7500
ctcgcggggc cgcagcgtga agacgccgcc gcgcatctcc aggtggccgg gggggtcccc 7560
gttgggcagg gagagggcgc tgacgatgca tcttatcaat tgccccgtag ggactccgcg 7620
caaggacctg agcgtctcga gatccacggg atctgaaaac cgttgaacga aggcttcgag 7680
ccagtcgcag tcgcaaggta ggctgagcac ggtttcttct ggcgggtcat gttggttgga 7740
gggagcgggg cgggcgatgc tgctggtgat gaagttgaaa taggcggttc tgagacggcg 7800
gatggtggcg aggagcacca ggtctttggg cccggcttgc tggatgcgca gacggtcggc 7860
catgccccag gcgtggtcct gacacctggc caggtccttg tagtagtcct gcatgagccg 7920
ctccacgggc acctcctcct cgcccgcgcg gccgtgcatg cgcgtgagcc cgaagccgcg 7980
ctggggctgg acgagcgcca ggtcggcgac gacgcgctcg gcgaggatgg cctgctggac 8040
ctgggtgagg gtggtctgga agtcgtcgaa gtcgacgaag cggtggtagg ctccggtgtt 8100
gatggtgtag gagcagttgg ccatgacgga ccagttgacg gtctggtggc cggggcgcac 8160
gagctcgtgg tacttgaggc gcgagtaggc gcgcgtgtcg aagatgtagt cgttgcaggt 8220
gcgcacgagg tactggtatc cgacgaggaa gtgcggcggc ggctggcggt agagcggcca 8280
tcgctcggtg gcgggggcgc cgggcgcgag gtcctcgagc atgaggcggt ggtagccgta 8340
gatgtacctg gacatccagg tgatgccggc ggcggtggtg gaggcgcgcg ggaactcgcg 8400
gacgcggttc cagatgttgc gcagcggcag gaagtagttc atggtggccg cggtctggcc 8460
cgtgaggcgc gcgcagtcgt ggatgctcta gacatacggg caaaaacgaa agcggtcagc 8520
ggctcgactc cgtggcctgg aggctaagcg aacgggttgg gctgcgcgtg taccccggtt 8580
cgagtctctg ctcgaatcag gctggagccg cagctaacgt ggtactggca ctcccgtctc 8640
gacccaagcc tgctaacgaa acctccagga tacggaggcg ggtcgttttt tggccttggt 8700
cactggtcat gaaaaactag taagcgcgga aagcggccgc ccgcgatggc tcgctgccgt 8760
agtctggaga aagaatcgcc agggttgcgt tgcggtgtgc cccggttcga gactcagcgc 8820
tcggcgccgg ccggattccg cggctaacgt gggcgtggct gccccgtcgt ttccaagacc 8880
ccttagccag ccgacttctc cagttacgga gcgagcccct ctttttcttg tgtttttgcc 8940
agatgcatcc cgtactgcgg cagatgcgcc cccaccctcc accacaaccg cccctaccgc 9000

```
cgcagcagca gcaacagccg gcgcttctgc ccccgcccca gcagcagcca gccactaccg     9060

cggcggccgc cgtgagcgga gccggcgttc agtatgacct ggccttggaa gagggcgagg     9120

ggctggcgcg gctgggggcg tcgtcgccgg agcggcaccc gcgcgtgcag atgaaaaggg     9180

acgctcgcga ggcctacgtg cccaagcaga acctgttcag agacaggagc ggcgaggagc     9240

ccgaggagat gcgcgcctcc cgcttccacg cggggcggga gctgcggcgc ggcctggacc     9300

gaaagcgggt gctgagggac gaggatttcg aggcggacga gctgacgggg atcagccccg     9360

cgcgcgcgca cgtggccgcg gccaacctgg tcacggcgta cgagcagacc gtgaaggagg     9420

agagcaactt ccaaaaatcc ttcaacaacc acgtgcgcac gctgatcgcg cgcgaggagg     9480

tgaccctggg cctgatgcat ctgtgggacc tgttggaggc catcgtgcag aaccccacga     9540

gcaagccgct gacggcgcag ctgtttctgg tggtgcagca cagtcgggac aacgagacgt     9600

tcagggaggc gctgctgaat atcaccgagc ccgagggccg ctggctcctg gacctggtga     9660

acattctgca gagcatcgtg gtgcaggagc gcgggctgcc gctgtccgag aagctggcgg     9720

ccatcaactt ctcggtgctg agcctgggca agtactacgc taggaagatc tacaagaccc     9780

cgtacgtgcc catagacaag gaggtgaaga tcgacgggtt ttacatgcgc atgaccctga     9840

aagtgctgac cctgagcgac gatctggggg tgtaccgcaa cgacaggatg caccgcgcgg     9900

tgagcgccag ccgccggcgc gagctgagcg accaggagct gatgcacagc ctgcagcggg     9960

ccctgaccgg ggccgggacc gaggggggaga gctactttga catgggcgcg gacctgcgct    10020

ggcagcccag ccgccgggct ttagaggcag ccggcggcgt gccctacgtg gaggaggtgg    10080

acgatgatga ggaggagggc gagtacctgg aagactgatg gcgcgaccgt atttttgcta    10140

g atg cag caa cag cca ccg cct cct gat ccc gcg atg cgg gcg gcg ctg    10189
  Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu
  1               5                  10                  15

cag agc cag ccg tcc ggc att aac tcc tcg gac gat tgg acc cag gcc      10237
Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala
            20                  25                  30

atg caa cgc atc atg gcg ctg acg acc cgc aat ccc gaa gcc ttt aga      10285
Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg
        35                  40                  45

cag cag cct cag gcc aac cgg ctc tcg gcc atc ctg gag gcc gtg gtg      10333
Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val
    50                  55                  60

ccc tcg cgc tcg aac ccc acg cac gag aag gtg ctg gcc atc gtg aac      10381
Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn
65                  70                  75                  80

gcg ctg gtg gag aac aag gcc atc cgc ggc gac gag gcc ggg ctg gtg      10429
Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val
                85                  90                  95

tac aac gcg ctg ctg gag cgc gtg gcc cgc tac aac agc acc aac gtg      10477
Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val
            100                 105                 110

cag acg aac ctg gac cgc atg gtg acc gac gtg cgc gag gcg gtg tcg      10525
Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser
        115                 120                 125
```

```
cag cgc gag cgg ttc cac cgc gag tcg aac ctg ggc tcc atg gtg gcg      10573
Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala
    130                 135                 140

ctg aac gcc ttc ctg agc acg cag ccc gcc aac gtg ccc cgg ggc cag      10621
Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln
145                 150                 155                 160

gag gac tac acc aac ttt atc agc gcg ctg cgg ctg atg gtg gcc gag      10669
Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu
                165                 170                 175

gtg ccc cag agc gag gtg tac cag tcg ggg ccg gac tac ttc ttc cag      10717
Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln
            180                 185                 190

acc agt cgc cag ggc ttg cag acc gtg aac ctg agc cag gct ttc aag      10765
Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys
        195                 200                 205

aac ttg cag gga ctg tgg ggc gtg cag gcc ccg gtc ggg gac cgc gcg      10813
Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala
    210                 215                 220

acg gtg tcg agc ctg ctg acg ccg aac tcg cgc ctg ctg ctg ctg ctg      10861
Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu
225                 230                 235                 240

gtg gcg ccc ttc acg gac agc ggc agc gtg agc cgc gac tcg tac ctg      10909
Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu
                245                 250                 255

ggc tac ctg ctt aac ctg tac cgc gag gcc atc ggg cag gcg cac gtg      10957
Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val
            260                 265                 270

gac gag cag acc tac cag gag atc acc cac gtg agc cgc gcg ctg ggc      11005
Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly
        275                 280                 285

cag gag gac ccg ggc aac ctg gag gcc acc ctg aac ttc ctg ctg acc      11053
Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr
    290                 295                 300

aac cgg tcg cag aag atc ccg ccc cag tac gcg ctg agc acc gag gag      11101
Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu
305                 310                 315                 320

gag cgc atc ctg cgc tac gtg cag cag agc gtg ggg ctg ttc ctg atg      11149
Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met
                325                 330                 335

cag gag ggg gcc acg ccc agc gcc gcg ctc gac atg acc gcg cgc aac      11197
Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn
            340                 345                 350

atg gag ccc agc atg tac gcc cgc aac cgc ccg ttc atc aat aag ctg      11245
Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu
        355                 360                 365

atg gac tac ttg cat cgg gcg gcc gcc atg aac tcg gac tac ttt acc      11293
Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr
    370                 375                 380

aac gcc atc ttg aac ccg cac tgg ctc ccg ccg ccc ggg ttc tac acg      11341
Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr
385                 390                 395                 400
```

```
ggc gag tac gac atg ccc gac ccc aac gac ggg ttc ctg tgg gac gac      11389
Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp
                405                 410                 415

gtg gac agc agc gtg ttc tcg ccg cgc ccc acc acc acc gtg tgg aag      11437
Val Asp Ser Ser Val Phe Ser Pro Arg Pro Thr Thr Thr Val Trp Lys
            420                 425                 430

aaa gag ggc ggg gac cgg cgg ccg tcc tcg gcg ctg tcc ggt cgc gcg      11485
Lys Glu Gly Gly Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly Arg Ala
        435                 440                 445

ggt gct gcc gcg gcg gtg ccc gag gcc gcc agc ccc ttc ccg agc ctg      11533
Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro Ser Leu
    450                 455                 460

ccc ttt tcg ctg aac agc gtg cgc agc agc gag ctg ggt cgg ctg acg      11581
Pro Phe Ser Leu Asn Ser Val Arg Ser Ser Glu Leu Gly Arg Leu Thr
465                 470                 475                 480

cgg ccg cgc ctg ctg ggc gag gag gag tac ctg aac gac tcc ttg ttg      11629
Arg Pro Arg Leu Leu Gly Glu Glu Glu Tyr Leu Asn Asp Ser Leu Leu
                485                 490                 495

agg ccc gag cgc gag aaa aac ttc ccc aat aac ggg ata gag agc ctg      11677
Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu Ser Leu
            500                 505                 510

gtg gac aag atg agc cgc tgg aag acg tac gcg cac gag cac agg gac      11725
Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala His Glu His Arg Asp
        515                 520                 525

gag ccc cga gct agc agc agc gcc ggc gcc acc cgt aga cgc cag cgg      11773
Glu Pro Arg Ala Ser Ser Ser Ala Gly Ala Thr Arg Arg Arg Gln Arg
    530                 535                 540

cac gac agg cag cgg gga ctg gtg tgg gac gat gag gat tcc gcc gac      11821
His Asp Arg Gln Arg Gly Leu Val Trp Asp Asp Glu Asp Ser Ala Asp
545                 550                 555                 560

gac agc agc gtg ttg gac ttg ggt ggg agt ggt ggt ggt aac ccg ttc      11869
Asp Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe
                565                 570                 575

gct cac ttg cgc ccc cgt atc ggg cgc ctg atg taagaatctg aaaaaataaa    11922
Ala His Leu Arg Pro Arg Ile Gly Arg Leu Met
            580                 585

aaaacggtac tcaccaaggc catggcgacc agcgtgcgtt cttctctgtt gtttgtagta    11982

gt atg atg agg cgc gtg tac ccg gag ggt cct cct ccc tcg tac gag       12029
   Met Met Arg Arg Val Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu
          590                 595                 600

agc gtg atg cag cag gcg gtg gcg gcg gcg atg cag ccc ccg ctg gag      12077
Ser Val Met Gln Gln Ala Val Ala Ala Ala Met Gln Pro Pro Leu Glu
        605                 610                 615

gcg cct tac gtg ccc ccg cgg tac ctg gcg cct acg gag ggg cgg aac      12125
Ala Pro Tyr Val Pro Pro Arg Tyr Leu Ala Pro Thr Glu Gly Arg Asn
    620                 625                 630

agc att cgt tac tcg gag ctg gca ccc ttg tac gat acc acc cgg ttg      12173
Ser Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg Leu
635                 640                 645                 650

tac ctg gtg gac aac aag tcg gcg gac atc gcc tcg ctg aac tac cag      12221
Tyr Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr Gln
                655                 660                 665
```

```
aac gac cac agc aac ttc ctg acc acc gtg gtg cag aac aac gat ttc      12269
Asn Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp Phe
            670                 675                 680

acc ccc acg gag gcc agc acc cag acc atc aac ttt gac gag cgc tcg      12317
Thr Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg Ser
        685                 690                 695

cgg tgg ggc ggc cag ctg aaa acc atc atg cac acc aac atg ccc aac      12365
Arg Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro Asn
    700                 705                 710

gtg aac gag ttc atg tac agc aac aag ttc aag gcg cgg gtg atg gtc      12413
Val Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met Val
715                 720                 725                 730

tcg cgc aag acc ccc aac ggg gtg acg gtg gat gag aat tat gat ggt      12461
Ser Arg Lys Thr Pro Asn Gly Val Thr Val Asp Glu Asn Tyr Asp Gly
                735                 740                 745

agt cag gac gag ctg acc tac gag tgg gtg gag ttt gag ctg ccc gag      12509
Ser Gln Asp Glu Leu Thr Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu
            750                 755                 760

ggc aac ttc tcg gtg acc atg acc atc gat ctg atg aac aac gcc atc      12557
Gly Asn Phe Ser Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile
        765                 770                 775

atc gac aac tac ttg gcg gtg gga cgg cag aac ggg gtg ctg gag agc      12605
Ile Asp Asn Tyr Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser
    780                 785                 790

gac atc ggc gtg aag ttc gac acg cgc aac ttc cgg ctg ggc tgg gac      12653
Asp Ile Gly Val Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp
795                 800                 805                 810

ccc gtg acc gag ctg gtg atg ccg ggc gtg tac acc aac gag gcc ttc      12701
Pro Val Thr Glu Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe
                815                 820                 825

cac ccc gac atc gtc ctg ctg ccc ggc tgc ggc gtg gac ttc acc gag      12749
His Pro Asp Ile Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu
            830                 835                 840

agc cgc ctc agc aac ctg ctg ggc atc cgc aag cgg cag ccc ttc cag      12797
Ser Arg Leu Ser Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln
        845                 850                 855

gag ggc ttc cag atc ctg tac gag gac ctg gag ggg ggc aac atc ccc      12845
Glu Gly Phe Gln Ile Leu Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro
    860                 865                 870

gcg ctg ctg gac gtc gaa gcc tac gag aaa agc aag gag gag gcc gcc      12893
Ala Leu Leu Asp Val Glu Ala Tyr Glu Lys Ser Lys Glu Glu Ala Ala
875                 880                 885                 890

gca gcg gcg acc gcg gcc gtg gct acc gct gcg acc acc gat gca gat      12941
Ala Ala Ala Thr Ala Ala Val Ala Thr Ala Ala Thr Thr Asp Ala Asp
                895                 900                 905

gca gct act act acc agg ggc gat aca ttc gcc acc cag gcg gag gaa      12989
Ala Ala Thr Thr Thr Arg Gly Asp Thr Phe Ala Thr Gln Ala Glu Glu
            910                 915                 920

gca gcc gcc cta gcg gcg acc gat gat agt gaa agt aag ata gtc atc      13037
Ala Ala Ala Leu Ala Ala Thr Asp Asp Ser Glu Ser Lys Ile Val Ile
        925                 930                 935
```

```
aag ccg gtg gag aag gac agc aag gac agg agc tac aac gtt cta tcg      13085
Lys Pro Val Glu Lys Asp Ser Lys Asp Arg Ser Tyr Asn Val Leu Ser
    940                 945                 950

gat gga aag aac acc gcc tac cgc agc tgg tac ctg gcc tac aac tac      13133
Asp Gly Lys Asn Thr Ala Tyr Arg Ser Trp Tyr Leu Ala Tyr Asn Tyr
955                 960                 965                 970

ggc gac cct gag aag ggc gtg cgc tcc tgg acg ctg ctc acc acc tcg      13181
Gly Asp Pro Glu Lys Gly Val Arg Ser Trp Thr Leu Leu Thr Thr Ser
                975                 980                 985

gac gtc acc tgc ggc gtg gag caa gtc tac tgg tcg ctg ccc  gac atg     13229
Asp Val Thr Cys Gly Val Glu Gln Val Tyr Trp Ser Leu Pro  Asp Met
            990                 995                 1000

atg caa gac  ccg gtc acc ttc cgc  tcc acg cgt caa gtt  agc aac       13274
Met Gln Asp  Pro Val Thr Phe Arg  Ser Thr Arg Gln Val  Ser Asn
        1005                1010                1015

tac ccg gtg  gtg ggc gcc gag ctc  ctg ccc gtc tac tcc  aag agc       13319
Tyr Pro Val  Val Gly Ala Glu Leu  Leu Pro Val Tyr Ser  Lys Ser
        1020                1025                1030

ttc ttc aac  gag cag gcc gtc tac  tcg cag cag ctg cgc  gcc ttc       13364
Phe Phe Asn  Glu Gln Ala Val Tyr  Ser Gln Gln Leu Arg  Ala Phe
        1035                1040                1045

acc tcg ctc  acg cac gtc ttc aac  cgc ttc ccc gag aac  cag atc       13409
Thr Ser Leu  Thr His Val Phe Asn  Arg Phe Pro Glu Asn  Gln Ile
        1050                1055                1060

ctc gtc cgc  ccg ccc gcg ccc acc  att acc acc gtc agt  gaa aac       13454
Leu Val Arg  Pro Pro Ala Pro Thr  Ile Thr Thr Val Ser  Glu Asn
        1065                1070                1075

gtt cct gct  ctc aca gat cac ggg  acc ctg ccg ctg cgc  agc agt       13499
Val Pro Ala  Leu Thr Asp His Gly  Thr Leu Pro Leu Arg  Ser Ser
        1080                1085                1090

atc cgg gga  gtc cag cgc gtg acc  gtc act gac gcc aga  cgc cgc       13544
Ile Arg Gly  Val Gln Arg Val Thr  Val Thr Asp Ala Arg  Arg Arg
        1095                1100                1105

acc tgc ccc  tac gtc tac aag gcc  ctg ggc gta gtc gcg  ccg cgc       13589
Thr Cys Pro  Tyr Val Tyr Lys Ala  Leu Gly Val Val Ala  Pro Arg
        1110                1115                1120

gtc ctc tcg  agc cgc acc ttc taaaaa atg  tcc att ctc atc tcg  ccc    13637
Val Leu Ser  Ser Arg Thr Phe        Met  Ser Ile Leu Ile Ser  Pro
        1125                        1130                1135

agt aat aac acc  ggt tgg ggc ctg cgc  gcg ccc agc aag atg  tac       13682
Ser Asn Asn Thr  Gly Trp Gly Leu Arg  Ala Pro Ser Lys Met  Tyr
            1140                1145                1150

gga ggc gct cgc  caa cgc tcc acg caa  cac ccc gtg cgc gtg  cgc       13727
Gly Gly Ala Arg  Gln Arg Ser Thr Gln  His Pro Val Arg Val  Arg
            1155                1160                1165

ggg cac ttc cgc  gct ccc tgg ggc gcc  ctc aag ggc cgc gtg  cgc       13772
Gly His Phe Arg  Ala Pro Trp Gly Ala  Leu Lys Gly Arg Val  Arg
            1170                1175                1180

tcg cgc acc acc  gtc gac gac gtg atc  gac cag gtg gtg gcc  gac       13817
Ser Arg Thr Thr  Val Asp Asp Val Ile  Asp Gln Val Val Ala  Asp
            1185                1190                1195

gcg cgc aac tac  acg ccc gcc gcc gcg  ccc gcc tcc acc gtg  gac       13862
```

```
Ala Arg Asn Tyr  Thr Pro Ala Ala Ala  Pro Ala Ser Thr Val  Asp
            1200                 1205                 1210

gcc gtc atc gac  agc gtg gtg gcc gac  gcg cgc cgg tac gcc  cgc       13907
Ala Val Ile Asp  Ser Val Val Ala Asp  Ala Arg Arg Tyr Ala  Arg
            1215                 1220                 1225

gcc aag agc cgg  cgg cgg cgc atc gcc  cgg cgg cac cgg agc  acc       13952
Ala Lys Ser Arg  Arg Arg Arg Ile Ala  Arg Arg His Arg Ser  Thr
            1230                 1235                 1240

ccc gcc atg cgc  gcg gcg cga gcc ttg  ctg cgc agg gcc agg  cgc       13997
Pro Ala Met Arg  Ala Ala Arg Ala Leu  Leu Arg Arg Ala Arg  Arg
            1245                 1250                 1255

acg gga cgc agg  gcc atg ctc agg gcg  gcc aga cgc gcg gcc  tcc       14042
Thr Gly Arg Arg  Ala Met Leu Arg Ala  Ala Arg Arg Ala Ala  Ser
            1260                 1265                 1270

ggc agc agc agc  gcc ggc agg acc cgc  aga cgc gcg gcc acg  gcg       14087
Gly Ser Ser Ser  Ala Gly Arg Thr Arg  Arg Arg Ala Ala Thr  Ala
            1275                 1280                 1285

gcg gcg gcg gcc  atc gcc agc atg tcc  cgc ccg cgg cgc ggc  aac       14132
Ala Ala Ala Ala  Ile Ala Ser Met Ser  Arg Pro Arg Arg Gly  Asn
            1290                 1295                 1300

gtg tac tgg gtg  cgc gac gcc gcc acc  ggt gtg cgc gtg ccc  gtg       14177
Val Tyr Trp Val  Arg Asp Ala Ala Thr  Gly Val Arg Val Pro  Val
            1305                 1310                 1315

cgc acc cgc ccc  cct cgc act tgaagatgct gacttcgcga tgttgatgtg       14228
Arg Thr Arg Pro  Pro Arg Thr
            1320

tcccagcggc gaggagg atg tcc  aag cgc aaa ttc aag  gaa gag atg ctc     14278
                    Met Ser  Lys Arg Lys Phe Lys  Glu Glu Met Leu
                        1325                 1330

cag  gtc atc gcg cct gag  atc tac ggc ccc gcg  gcg gcg gtg aag       14323
Gln  Val Ile Ala Pro Glu  Ile Tyr Gly Pro Ala  Ala Ala Val Lys
1335                 1340                 1345

gag  gaa aga aag ccc cgc  aaa ctg aag cgg gtc  aaa aag gac aaa       14368
Glu  Glu Arg Lys Pro Arg  Lys Leu Lys Arg Val  Lys Lys Asp Lys
1350                 1355                 1360

aag  gag gag gaa gat gac  gga ctg gtg gag ttt  gtg cgc gag ttc       14413
Lys  Glu Glu Glu Asp Asp  Gly Leu Val Glu Phe  Val Arg Glu Phe
1365                 1370                 1375

gcc  ccc cgg cgg cgc gtg  cag tgg cgc ggg cgg  aaa gtg aaa ccg       14458
Ala  Pro Arg Arg Arg Val  Gln Trp Arg Gly Arg  Lys Val Lys Pro
1380                 1385                 1390

gtg  ctg cgg ccc ggc acc  acg gtg gtc ttc acg  ccc ggc gag cgt       14503
Val  Leu Arg Pro Gly Thr  Thr Val Val Phe Thr  Pro Gly Glu Arg
1395                 1400                 1405

tcc  ggc tcc gcc tcc aag  cgc tcc tac gac gag  gtg tac ggg gac       14548
Ser  Gly Ser Ala Ser Lys  Arg Ser Tyr Asp Glu  Val Tyr Gly Asp
1410                 1415                 1420

gag  gac atc ctc gag cag  gcg gcc gag cgt ctg  ggc gag ttt gct       14593
Glu  Asp Ile Leu Glu Gln  Ala Ala Glu Arg Leu  Gly Glu Phe Ala
1425                 1430                 1435

tac  ggc aag cgc agc cgc  ccc gcg ccc ttg aaa  gag gag gcg gtg       14638
Tyr  Gly Lys Arg Ser Arg  Pro Ala Pro Leu Lys  Glu Glu Ala Val
```

```
1440                1445                1450

tcc  atc ccg ctg gac cac  ggc aac ccc acg ccg  agc ctg aag ccg       14683
Ser  Ile Pro Leu Asp His  Gly Asn Pro Thr Pro  Ser Leu Lys Pro
1455                1460                1465

gtg  acc ctg cag cag gtg  ctg ccg agc gcg gcg  ccg cgc cgg ggc       14728
Val  Thr Leu Gln Gln Val  Leu Pro Ser Ala Ala  Pro Arg Arg Gly
1470                1475                1480

ttc  aag cgc gag ggc ggc  gag gat ctg tac ccg  acc atg cag ctg       14773
Phe  Lys Arg Glu Gly Gly  Glu Asp Leu Tyr Pro  Thr Met Gln Leu
1485                1490                1495

atg  gtg ccc aag cgc cag  aag ctg gag gac gtg  ctg gag cac atg       14818
Met  Val Pro Lys Arg Gln  Lys Leu Glu Asp Val  Leu Glu His Met
1500                1505                1510

aag  gtg gac ccc gag gtg  cag ccc gag gtc aag  gtg cgg ccc atc       14863
Lys  Val Asp Pro Glu Val  Gln Pro Glu Val Lys  Val Arg Pro Ile
1515                1520                1525

aag  cag gtg gcc ccg ggc  ctg ggc gtg cag acc  gtg gac atc aag       14908
Lys  Gln Val Ala Pro Gly  Leu Gly Val Gln Thr  Val Asp Ile Lys
1530                1535                1540

atc  ccc acg gag ccc atg  gaa acg cag acc gag  ccc gtg aag ccc       14953
Ile  Pro Thr Glu Pro Met  Glu Thr Gln Thr Glu  Pro Val Lys Pro
1545                1550                1555

agc  acc agc acc atg gag  gtg cag acg gat ccc  tgg atg ccg gcg       14998
Ser  Thr Ser Thr Met Glu  Val Gln Thr Asp Pro  Trp Met Pro Ala
1560                1565                1570

ccg  gct tcc acc acc acc  acc acc cgc cga aga  cgc aag tac ggc       15043
Pro  Ala Ser Thr Thr Thr  Thr Thr Arg Arg Arg  Arg Lys Tyr Gly
1575                1580                1585

gcg  gcc agc ctg ctg atg  ccc aac tac gcg ctg  cat cct tcc atc       15088
Ala  Ala Ser Leu Leu Met  Pro Asn Tyr Ala Leu  His Pro Ser Ile
1590                1595                1600

atc  ccc acg ccg ggc tac  cgc ggc acg cgc ttc  tac cgc ggc tac       15133
Ile  Pro Thr Pro Gly Tyr  Arg Gly Thr Arg Phe  Tyr Arg Gly Tyr
1605                1610                1615

agc  agc cgc cgc aag acc  acc acc cgc cgc cgc  cgt cgc cgc acc       15178
Ser  Ser Arg Arg Lys Thr  Thr Thr Arg Arg Arg  Arg Arg Arg Thr
1620                1625                1630

cgc  cgc agc acc acc gcg  act tcc gcc gcc gcc  ttg gtg cgg aga       15223
Arg  Arg Ser Thr Thr Ala  Thr Ser Ala Ala Ala  Leu Val Arg Arg
1635                1640                1645

gtg  tac cgc agc ggg cgt  gag cct ctg acc ctg  ccg cgc gcg cgc       15268
Val  Tyr Arg Ser Gly Arg  Glu Pro Leu Thr Leu  Pro Arg Ala Arg
1650                1655                1660

tac  cac ccg agc atc gcc  att taactctgcc gtcgcctcct tgcagat atg      15319
Tyr  His Pro Ser Ile Ala  Ile                              Met
1665                1670

gcc ctc aca  tgc cgc ctc cgc gtc  ccc att acg ggc tac  cga gga       15364
Ala Leu Thr  Cys Arg Leu Arg Val  Pro Ile Thr Gly Tyr  Arg Gly
       1675                1680                1685

aga aag ccg  cgc cgt aga agg ctg  acg ggg aac ggg ctg  cgt cgc       15409
Arg Lys Pro  Arg Arg Arg Arg Leu  Thr Gly Asn Gly Leu  Arg Arg
       1690                1695                1700
```

```
cat cac cac  cgg cgg cgg cgc gcc  atc agc aag cgg ttg  ggg gga       15454
His His His  Arg Arg Arg Arg Ala  Ile Ser Lys Arg Leu  Gly Gly
        1705                 1710                 1715

ggc ttc ctg  ccc gcg ctg atc ccc  atc atc gcc gcg gcg  atc ggg       15499
Gly Phe Leu  Pro Ala Leu Ile Pro  Ile Ile Ala Ala Ala  Ile Gly
        1720                 1725                 1730

gcg atc ccc  ggc ata gct tcc gtg  gcg gtg cag gcc tct  cag cgc       15544
Ala Ile Pro  Gly Ile Ala Ser Val  Ala Val Gln Ala Ser  Gln Arg
        1735                 1740                 1745

cac tgagacacag cttggaaaat ttgtaataaa aaaatggact gacgctcctg          15597
His


gtcctgtgat gtgtgttttt ag atg gaa  gac atc aat ttt tcg  tcc ctg       15646
                         Met Glu  Asp Ile Asn Phe Ser  Ser Leu
                             1750                 1755

gca ccg cga  cac ggc acg cgg ccg  ttt atg ggc acc tgg  agc gac       15691
Ala Pro Arg  His Gly Thr Arg Pro  Phe Met Gly Thr Trp  Ser Asp
        1760                 1765                 1770

atc ggc aac  agc caa ctg aac ggg  ggc gcc ttc aat tgg  agc agt       15736
Ile Gly Asn  Ser Gln Leu Asn Gly  Gly Ala Phe Asn Trp  Ser Ser
        1775                 1780                 1785

ctc tgg agc  ggg ctt aag aat ttc  ggg tcc acg ctc aaa  acc tat       15781
Leu Trp Ser  Gly Leu Lys Asn Phe  Gly Ser Thr Leu Lys  Thr Tyr
        1790                 1795                 1800

ggc agc aag  gcg tgg aac agc acc  aca ggg cag gcg ctg  agg gat       15826
Gly Ser Lys  Ala Trp Asn Ser Thr  Thr Gly Gln Ala Leu  Arg Asp
        1805                 1810                 1815

aag ctg aaa  gag cag aac ttc cag  cag aag gtg gtc gat  ggg ctc       15871
Lys Leu Lys  Glu Gln Asn Phe Gln  Gln Lys Val Val Asp  Gly Leu
        1820                 1825                 1830

gct tcg ggc  atc aac ggg gtg gtg  gac ctg gcc aac cag  gcc gtg       15916
Ala Ser Gly  Ile Asn Gly Val Val  Asp Leu Ala Asn Gln  Ala Val
        1835                 1840                 1845

cag cgg cag  atc aac agc cgc ctg  gac ccg gtg ccg ccc  gcc ggc       15961
Gln Arg Gln  Ile Asn Ser Arg Leu  Asp Pro Val Pro Pro  Ala Gly
        1850                 1855                 1860

tcc gtg gag  atg ccg cag gtg gag  gag gag ctg cct ccc  ctg gac       16006
Ser Val Glu  Met Pro Gln Val Glu  Glu Glu Leu Pro Pro  Leu Asp
        1865                 1870                 1875

aag cgg ggc  gag aag cga ccc cgc  ccc gac gcg gag gag  acg ctg       16051
Lys Arg Gly  Glu Lys Arg Pro Arg  Pro Asp Ala Glu Glu  Thr Leu
        1880                 1885                 1890

ctg acg cac  acg gac gag ccg ccc  ccg tac gag gag gcg  gtg aaa       16096
Leu Thr His  Thr Asp Glu Pro Pro  Pro Tyr Glu Glu Ala  Val Lys
        1895                 1900                 1905

ctg ggt ctg  ccc acc acg cgg ccc  att gcg ccc cta gcc  acc ggg       16141
Leu Gly Leu  Pro Thr Thr Arg Pro  Ile Ala Pro Leu Ala  Thr Gly
        1910                 1915                 1920

gtg ctg aaa  ccc gag agt aat aag  ccc gcg acc ctg gac  ttg cct       16186
Val Leu Lys  Pro Glu Ser Asn Lys  Pro Ala Thr Leu Asp  Leu Pro
        1925                 1930                 1935
```

```
cct ccc cag  cct tcc cgc ccc tcc  aca gtg gct aag ccc  ctg ccg       16231
Pro Pro Gln  Pro Ser Arg Pro Ser  Thr Val Ala Lys Pro  Leu Pro
        1940                 1945                 1950

ccg gtg gcc  gtg gcc cgc gcg cga  ccc ggg ggc tcc gcc  cgc cct       16276
Pro Val Ala  Val Ala Arg Ala Arg  Pro Gly Gly Ser Ala  Arg Pro
        1955                 1960                 1965

cat gcg aac  tgg cag agc act ctg  aac agc atc gtg ggt  ctg gga       16321
His Ala Asn  Trp Gln Ser Thr Leu  Asn Ser Ile Val Gly  Leu Gly
        1970                 1975                 1980

gtg cag agt  gtg aag cgc cgc cgc  tgc tat taaacctacc gtagcgctta      16371
Val Gln Ser  Val Lys Arg Arg Arg  Cys Tyr
        1985                 1990

acttgcttgt ctgtgtgtgt atgtattatg tcgccgccgc tgtccgccag aaggaggagt    16431

gaagaggcgc gtcgccgagt tgcaag atg gcc acc  cca tcg atg ctg ccc        16481
                             Met Ala Thr  Pro Ser Met Leu Pro
                                     1995                 2000

cag tgg gcg tac atg  cac atc gcc gga cag  gac gct tcg gag tac        16526
Gln Trp Ala Tyr Met  His Ile Ala Gly Gln  Asp Ala Ser Glu Tyr
                2005                 2010                 2015

ctg agt ccg ggt ctg  gtg cag ttc gcc cgc  gcc aca gac acc tac        16571
Leu Ser Pro Gly Leu  Val Gln Phe Ala Arg  Ala Thr Asp Thr Tyr
                2020                 2025                 2030

ttc agt ctg ggg aac  aag ttt agg aac ccc  acg gtg gcg ccc acg        16616
Phe Ser Leu Gly Asn  Lys Phe Arg Asn Pro  Thr Val Ala Pro Thr
                2035                 2040                 2045

cac gat gtg acc acc  gac cgc agc cag cgg  ctg acg ctg cgc ttc        16661
His Asp Val Thr Thr  Asp Arg Ser Gln Arg  Leu Thr Leu Arg Phe
                2050                 2055                 2060

gtg ccc gtg gac cgc  gag gac aac acc tac  tcg tac aaa gtg cgc        16706
Val Pro Val Asp Arg  Glu Asp Asn Thr Tyr  Ser Tyr Lys Val Arg
                2065                 2070                 2075

tac acg ctg gcc gtg  ggc gac aac cgc gtg  ctg gac atg gcc agc        16751
Tyr Thr Leu Ala Val  Gly Asp Asn Arg Val  Leu Asp Met Ala Ser
                2080                 2085                 2090

acc tac ttt gac atc  cgc ggc gtg ctg gac  cgg ggc cct agc ttc        16796
Thr Tyr Phe Asp Ile  Arg Gly Val Leu Asp  Arg Gly Pro Ser Phe
                2095                 2100                 2105

aaa ccc tac tcc ggc  acc gcc tac aac agc  ctg gct ccc aag gga        16841
Lys Pro Tyr Ser Gly  Thr Ala Tyr Asn Ser  Leu Ala Pro Lys Gly
                2110                 2115                 2120

gcg ccc aat tcc agc  cag tgg gag cga gct  aag aca aac aat aac        16886
Ala Pro Asn Ser Ser  Gln Trp Glu Arg Ala  Lys Thr Asn Asn Asn
                2125                 2130                 2135

gga gcc acg gaa tct  gtt acc ttt ggt gtg  gct gcc atg ggg ggt        16931
Gly Ala Thr Glu Ser  Val Thr Phe Gly Val  Ala Ala Met Gly Gly
                2140                 2145                 2150

ata gat att aca aaa  gag ggt ctc cag att  gga act gat gaa act        16976
Ile Asp Ile Thr Lys  Glu Gly Leu Gln Ile  Gly Thr Asp Glu Thr
                2155                 2160                 2165

aaa gct gat agt aaa  gaa att tat gca gac  aaa acc tac caa cct        17021
Lys Ala Asp Ser Lys  Glu Ile Tyr Ala Asp  Lys Thr Tyr Gln Pro
                2170                 2175                 2180
```

```
gaa cct cag ata gga  gag gag aac tgg caa  gaa aca ttc tcc tat        17066
Glu Pro Gln Ile Gly  Glu Glu Asn Trp Gln  Glu Thr Phe Ser Tyr
                2185                2190                2195

tat ggc ggc aga gct  ctt aaa aaa gat acc  aag atg aag cca tgc        17111
Tyr Gly Gly Arg Ala  Leu Lys Lys Asp Thr  Lys Met Lys Pro Cys
                2200                2205                2210

tac ggc tcc ttt gct  aaa cca acg aat gtc  aaa gga ggt cag gcc        17156
Tyr Gly Ser Phe Ala  Lys Pro Thr Asn Val  Lys Gly Gly Gln Ala
                2215                2220                2225

aaa ttt aaa gtt cag  gac ggt caa caa act  aca gaa tat gat atc        17201
Lys Phe Lys Val Gln  Asp Gly Gln Gln Thr  Thr Glu Tyr Asp Ile
                2230                2235                2240

gac tta gct ttc ttt  gat att cca aac tct  gga aca gga ggg aat        17246
Asp Leu Ala Phe Phe  Asp Ile Pro Asn Ser  Gly Thr Gly Gly Asn
                2245                2250                2255

ggc acg aat gtt aat  tat gat cca gat atg  gtc atg tac act gaa        17291
Gly Thr Asn Val Asn  Tyr Asp Pro Asp Met  Val Met Tyr Thr Glu
                2260                2265                2270

aat gtg gat ttg gag  acc cct gat acc cac  att gtt tac aaa cca        17336
Asn Val Asp Leu Glu  Thr Pro Asp Thr His  Ile Val Tyr Lys Pro
                2275                2280                2285

ggg act tcc gat gac  agt tct gaa gca aac  ttg ctt cag cag tcc        17381
Gly Thr Ser Asp Asp  Ser Ser Glu Ala Asn  Leu Leu Gln Gln Ser
                2290                2295                2300

atg cct aac aga ccc  aac tat att ggg ttt  aga gac aac ttt atc        17426
Met Pro Asn Arg Pro  Asn Tyr Ile Gly Phe  Arg Asp Asn Phe Ile
                2305                2310                2315

ggt ctc atg tac tac  aac agt act ggc aat  atg ggt gtg ctg gct        17471
Gly Leu Met Tyr Tyr  Asn Ser Thr Gly Asn  Met Gly Val Leu Ala
                2320                2325                2330

ggt cag gcc tcc cag  ctg aat gct gtg gtc  gac ttg caa gac aga        17516
Gly Gln Ala Ser Gln  Leu Asn Ala Val Val  Asp Leu Gln Asp Arg
                2335                2340                2345

aac acc gag cta tcc  tac cag ctc ttg ctt  gac tct ctg ggc gat        17561
Asn Thr Glu Leu Ser  Tyr Gln Leu Leu Leu  Asp Ser Leu Gly Asp
                2350                2355                2360

aga acc cgg tat ttc  agt atg tgg aac cag  gcg gtg gac agt tat        17606
Arg Thr Arg Tyr Phe  Ser Met Trp Asn Gln  Ala Val Asp Ser Tyr
                2365                2370                2375

gac cct gat gtg cgc  att att gaa aac cat  ggt gtg gaa gat gaa        17651
Asp Pro Asp Val Arg  Ile Ile Glu Asn His  Gly Val Glu Asp Glu
                2380                2385                2390

ctt ccc aac tat tgc  ttc cca ttg gat gga  gct ggt act aat gct        17696
Leu Pro Asn Tyr Cys  Phe Pro Leu Asp Gly  Ala Gly Thr Asn Ala
                2395                2400                2405

gtc tat cag ggt gtt  aaa gca aaa act aat  gga ggc gca gcc aat        17741
Val Tyr Gln Gly Val  Lys Ala Lys Thr Asn  Gly Gly Ala Ala Asn
                2410                2415                2420

gga gat tgg gag caa  gat aca gac gtg tca  aac att aac cag ata        17786
Gly Asp Trp Glu Gln  Asp Thr Asp Val Ser  Asn Ile Asn Gln Ile
                2425                2430                2435
```

```
tgc aag ggg aac atc  tat gcc atg gaa atc  aac ctc caa gcc aac        17831
Cys Lys Gly Asn Ile  Tyr Ala Met Glu Ile  Asn Leu Gln Ala Asn
                2440                2445                2450

ctg tgg aga agt ttc  ctc tac tcg aac gtg  gcc ctg tac ctg ccc        17876
Leu Trp Arg Ser Phe  Leu Tyr Ser Asn Val  Ala Leu Tyr Leu Pro
                2455                2460                2465

gat tct tac aag tac  acg ccg gcc aac atc  acc ttg ccc acg aat        17921
Asp Ser Tyr Lys Tyr  Thr Pro Ala Asn Ile  Thr Leu Pro Thr Asn
                2470                2475                2480

acc aac acc tat gat  tac atg aat ggg aga  gtg gcg cct ccc tcg        17966
Thr Asn Thr Tyr Asp  Tyr Met Asn Gly Arg  Val Ala Pro Pro Ser
                2485                2490                2495

ttg gtg gat gcc tac  atc aac atc ggg gcg  cgc tgg tcg ctg gac        18011
Leu Val Asp Ala Tyr  Ile Asn Ile Gly Ala  Arg Trp Ser Leu Asp
                2500                2505                2510

ccc atg gac aac gtc  aat ccc ttc aac cac  cac cgc aac gcg ggg        18056
Pro Met Asp Asn Val  Asn Pro Phe Asn His  His Arg Asn Ala Gly
                2515                2520                2525

ctg cgc tac cgc tcc  atg ctt ctg ggc aac  ggg cgc ttc gtg ccc        18101
Leu Arg Tyr Arg Ser  Met Leu Leu Gly Asn  Gly Arg Phe Val Pro
                2530                2535                2540

ttc cac atc cag gtg  ccc cag aaa ttt ttc  gcc atc aag agc ctc        18146
Phe His Ile Gln Val  Pro Gln Lys Phe Phe  Ala Ile Lys Ser Leu
                2545                2550                2555

ctg ctc ctg ccc ggg  tcc tac acc tac gag  tgg aac ttc cgc aag        18191
Leu Leu Leu Pro Gly  Ser Tyr Thr Tyr Glu  Trp Asn Phe Arg Lys
                2560                2565                2570

gac gtc aac atg atc  ctg cag agc tcc ctc  ggc aac gac ctg cgc        18236
Asp Val Asn Met Ile  Leu Gln Ser Ser Leu  Gly Asn Asp Leu Arg
                2575                2580                2585

acg gac ggg gcc tcc  atc tcc ttc acc agc  atc aac ctc tac gcc        18281
Thr Asp Gly Ala Ser  Ile Ser Phe Thr Ser  Ile Asn Leu Tyr Ala
                2590                2595                2600

acc ttc ttc ccc atg  gcg cac aac acg gcc  tcc acg ctc gag gcc        18326
Thr Phe Phe Pro Met  Ala His Asn Thr Ala  Ser Thr Leu Glu Ala
                2605                2610                2615

atg ctg cgc aac gac  acc aac gac cag tcc  ttc aac gac tac ctc        18371
Met Leu Arg Asn Asp  Thr Asn Asp Gln Ser  Phe Asn Asp Tyr Leu
                2620                2625                2630

tcg gcg gcc aac atg  ctc tac ccc atc cca  gcc aac gcc acc aac        18416
Ser Ala Ala Asn Met  Leu Tyr Pro Ile Pro  Ala Asn Ala Thr Asn
                2635                2640                2645

gtg ccc atc tcc atc  ccc tcg cgc aac tgg  gcc gcc ttc cgc ggc        18461
Val Pro Ile Ser Ile  Pro Ser Arg Asn Trp  Ala Ala Phe Arg Gly
                2650                2655                2660

tgg tcc ttc acg cgt  ctc aag acc aag gag  acg ccc tcg ctg ggc        18506
Trp Ser Phe Thr Arg  Leu Lys Thr Lys Glu  Thr Pro Ser Leu Gly
                2665                2670                2675

tcc ggg ttc gac ccc  tac ttc gtc tac tcg  ggc tcc atc ccc tac        18551
Ser Gly Phe Asp Pro  Tyr Phe Val Tyr Ser  Gly Ser Ile Pro Tyr
                2680                2685                2690

ctc gac ggc acc ttc  tac ctc aac cac acc  ttc aag aag gtc tcc        18596
```

```
Leu Asp Gly Thr Phe  Tyr Leu Asn His Thr  Phe Lys Lys Val Ser
                2695                2700                2705

atc acc ttc gac tcc  tcc gtc agc tgg ccc  ggc aac gac cgg ctc        18641
Ile Thr Phe Asp Ser  Ser Val Ser Trp Pro  Gly Asn Asp Arg Leu
                2710                2715                2720

ctg acg ccc aac gag  ttc gaa atc aag cgc  acc gtc gac ggc gag        18686
Leu Thr Pro Asn Glu  Phe Glu Ile Lys Arg  Thr Val Asp Gly Glu
                2725                2730                2735

ggc tac aac gtg gcc  cag tgc aac atg acc  aag gac tgg ttc ctg        18731
Gly Tyr Asn Val Ala  Gln Cys Asn Met Thr  Lys Asp Trp Phe Leu
                2740                2745                2750

gtc cag atg ctg gcc  cac tac aac atc ggc  tac cag ggc ttc tac        18776
Val Gln Met Leu Ala  His Tyr Asn Ile Gly  Tyr Gln Gly Phe Tyr
                2755                2760                2765

gtg ccc gag ggc tac  aag gac cgc atg tac  tcc ttc ttc cgc aac        18821
Val Pro Glu Gly Tyr  Lys Asp Arg Met Tyr  Ser Phe Phe Arg Asn
                2770                2775                2780

ttc cag ccc atg agc  cgc cag gtg gtg gac  gag gtc aac tac aag        18866
Phe Gln Pro Met Ser  Arg Gln Val Val Asp  Glu Val Asn Tyr Lys
                2785                2790                2795

gac tac cag gcc gtc  acc ctg gcc tac cag  cac aac aac tcg ggc        18911
Asp Tyr Gln Ala Val  Thr Leu Ala Tyr Gln  His Asn Asn Ser Gly
                2800                2805                2810

ttc gtc ggc tac ctc  gcg ccc acc atg cgc  cag ggc cag ccc tac        18956
Phe Val Gly Tyr Leu  Ala Pro Thr Met Arg  Gln Gly Gln Pro Tyr
                2815                2820                2825

ccc gcc aac tac ccg  tac ccg ctc atc ggc  aag agc gcc gtc acc        19001
Pro Ala Asn Tyr Pro  Tyr Pro Leu Ile Gly  Lys Ser Ala Val Thr
                2830                2835                2840

agc gtc acc cag aaa  aag ttc ctc tgc gac  agg gtc atg tgg cgc        19046
Ser Val Thr Gln Lys  Lys Phe Leu Cys Asp  Arg Val Met Trp Arg
                2845                2850                2855

atc ccc ttc tcc agc  aac ttc atg tcc atg  ggc gcg ctc acc gac        19091
Ile Pro Phe Ser Ser  Asn Phe Met Ser Met  Gly Ala Leu Thr Asp
                2860                2865                2870

ctc ggc cag aac atg  ctc tat gcc aac tcc  gcc cac gcg cta gac        19136
Leu Gly Gln Asn Met  Leu Tyr Ala Asn Ser  Ala His Ala Leu Asp
                2875                2880                2885

atg aat ttc gaa gtc  gac ccc atg gat gag  tcc acc ctt ctc tat        19181
Met Asn Phe Glu Val  Asp Pro Met Asp Glu  Ser Thr Leu Leu Tyr
                2890                2895                2900

gtt gtc ttc gaa gtc  ttc gac gtc gtc cga  gtg cac cag ccc cac        19226
Val Val Phe Glu Val  Phe Asp Val Val Arg  Val His Gln Pro His
                2905                2910                2915

cgc ggc gtc atc gag  gcc gtc tac ctg cgc  acc ccc ttc tcg gcc        19271
Arg Gly Val Ile Glu  Ala Val Tyr Leu Arg  Thr Pro Phe Ser Ala
                2920                2925                2930

ggt aac gcc acc acc  taagctcttg cttcttgcaa g atg gct gag ccc acg     19322
Gly Asn Ala Thr Thr                          Met Ala Glu Pro Thr
                2935                                        2940

ggc tcc ggc gag cag  gag ctc agg gcc atc  atc cgc gac ctg ggc        19367
Gly Ser Gly Glu Gln  Glu Leu Arg Ala Ile  Ile Arg Asp Leu Gly
```

```
                2945                2950                2955

tgc ggg ccc tac ttc  ctg ggc acc ttc gat  aag cgc ttc ccg gga        19412
Cys Gly Pro Tyr Phe  Leu Gly Thr Phe Asp  Lys Arg Phe Pro Gly
                2960                2965                2970

ttc atg gcc ccg cac  aag ctg gcc tgc gcc  atc gtc aac acg gcc        19457
Phe Met Ala Pro His  Lys Leu Ala Cys Ala  Ile Val Asn Thr Ala
                2975                2980                2985

ggc cgc gag acc ggg  ggc gag cac tgg ctg  gcc ttc gcc tgg aac        19502
Gly Arg Glu Thr Gly  Gly Glu His Trp Leu  Ala Phe Ala Trp Asn
                2990                2995                3000

ccg cgc tcg aac acc  tgc tac ctc ttc gac  ccc ttc ggg ttc tcg        19547
Pro Arg Ser Asn Thr  Cys Tyr Leu Phe Asp  Pro Phe Gly Phe Ser
                3005                3010                3015

gac gag cgc ctc aag  cag atc tac cag ttc  gag tac gag ggc ctg        19592
Asp Glu Arg Leu Lys  Gln Ile Tyr Gln Phe  Glu Tyr Glu Gly Leu
                3020                3025                3030

ctg cgc cgc agc gcc  ctg gcc acc gag gac  cgc tgc gtc acc ctg        19637
Leu Arg Arg Ser Ala  Leu Ala Thr Glu Asp  Arg Cys Val Thr Leu
                3035                3040                3045

gaa aag tcc acc cag  acc gtg cag ggt ccg  cgc tcg gcc gcc tgc        19682
Glu Lys Ser Thr Gln  Thr Val Gln Gly Pro  Arg Ser Ala Ala Cys
                3050                3055                3060

ggg ctc ttt tgc tgc  atg ttc ctg cac gcc  ttc gtg cac tgg ccc        19727
Gly Leu Phe Cys Cys  Met Phe Leu His Ala  Phe Val His Trp Pro
                3065                3070                3075

gac cgc ccc atg gac  aag aac ccc acc atg  aac ttg ctg acg ggg        19772
Asp Arg Pro Met Asp  Lys Asn Pro Thr Met  Asn Leu Leu Thr Gly
                3080                3085                3090

gtg ccc aac ggc atg  ctc cag tcg ccc cag  gtg gaa ccc acc ctg        19817
Val Pro Asn Gly Met  Leu Gln Ser Pro Gln  Val Glu Pro Thr Leu
                3095                3100                3105

cgc cgc aac cag gag  gcg ctc tac cgc ttc  ctc aac gcc cac tcc        19862
Arg Arg Asn Gln Glu  Ala Leu Tyr Arg Phe  Leu Asn Ala His Ser
                3110                3115                3120

gcc tac ttt cgc tcc  cac cgc gcg cgc atc  gag aag gcc acc gcc        19907
Ala Tyr Phe Arg Ser  His Arg Ala Arg Ile  Glu Lys Ala Thr Ala
                3125                3130                3135

ttc gac cgc atg aat  caa gac atg taaaccgtgt gtgtatgtga atgctttatt    19961
Phe Asp Arg Met Asn  Gln Asp Met
                3140

cataataaac agcacatgtt tatgccacct tctctgaggc tctgacttta ttta gaa      20018
                                                              Glu


atc  gaa ggg gtt ctg ccg  gct ctc ggc gtg ccc  cgc ggg cag gga       20063
Ile  Glu Gly Val Leu Pro  Ala Leu Gly Val Pro  Arg Gly Gln Gly
3145                3150                3155

tac  gtt gcg gaa ctg gta  ctt ggg cag cca ctt  gaa ctc ggg gat       20108
Tyr  Val Ala Glu Leu Val  Leu Gly Gln Pro Leu  Glu Leu Gly Asp
3160                3165                3170

cag  cag ctt cgg cac ggg  gag gtc ggg gaa cga  gtc gct cca cag       20153
Gln  Gln Leu Arg His Gly  Glu Val Gly Glu Arg  Val Ala Pro Gln
3175                3180                3185
```

```
ctt  gcg cgt gag ttg cag  ggc gcc cag cag gtc  ggg cgc gga gat       20198
Leu  Ala Arg Glu Leu Gln  Gly Ala Gln Gln Val  Gly Arg Gly Asp
3190                 3195                 3200

ctt  gaa atc gca gtt ggg  acc cgc gtt ctg cgc  gcg aga gtt gcg       20243
Leu  Glu Ile Ala Val Gly  Thr Arg Val Leu Arg  Ala Arg Val Ala
3205                 3210                 3215

gta  cac ggg gtt gca gca  ctg gaa cac cat cag  ggc cgg gtg ctt       20288
Val  His Gly Val Ala Ala  Leu Glu His His Gln  Gly Arg Val Leu
3220                 3225                 3230

cac  gct cgc cag cac cgt  cgc gtc ggt gat gcc  ctc cac gtc cag       20333
His  Ala Arg Gln His Arg  Arg Val Gly Asp Ala  Leu His Val Gln
3235                 3240                 3245

atc  ctc ggc gtt ggc cat  ccc gaa ggg ggt cat  ctt gca ggt ctg       20378
Ile  Leu Gly Val Gly His  Pro Glu Gly Gly His  Leu Ala Gly Leu
3250                 3255                 3260

ccg  ccc cat gct ggg cac  gca gcc ggg ctt gtg  gtt gca atc gca       20423
Pro  Pro His Ala Gly His  Ala Ala Gly Leu Val  Val Ala Ile Ala
3265                 3270                 3275

gtg  cag ggg gat cag cat  cat ctg ggc ctg ctc  gga gct cat gcc       20468
Val  Gln Gly Asp Gln His  His Leu Gly Leu Leu  Gly Ala His Ala
3280                 3285                 3290

cgg  gta cat ggc ctt cat  gaa agc ctc cag ctg  gcg gaa ggc ctg       20513
Arg  Val His Gly Leu His  Glu Ser Leu Gln Leu  Ala Glu Gly Leu
3295                 3300                 3305

ctg  cgc ctt gcc gcc ctc  ggt gaa gaa gac ccc  gca gga ctt gct       20558
Leu  Arg Leu Ala Ala Leu  Gly Glu Glu Asp Pro  Ala Gly Leu Ala
3310                 3315                 3320

aga  gaa ctg gtt ggt agc  gca gcc cgc gtc gtg  cac gca gca gcg       20603
Arg  Glu Leu Val Gly Ser  Ala Ala Arg Val Val  His Ala Ala Ala
3325                 3330                 3335

cgc  gtc gtt gtt ggc cag  ctg cac cac gct gcg  ccc cca gcg gtt       20648
Arg  Val Val Val Gly Gln  Leu His His Ala Ala  Pro Pro Ala Val
3340                 3345                 3350

ctg  ggt gat ctt ggc ccg  gtc ggg gtt ctc ctt  cag cgc gcg ctg       20693
Leu  Gly Asp Leu Gly Pro  Val Gly Val Leu Leu  Gln Arg Ala Leu
3355                 3360                 3365

ccc  gtt ctc gct cgc cac  atc cat ctc gat cgt  gtg ctc ctt ctg       20738
Pro  Val Leu Ala Arg His  Ile His Leu Asp Arg  Val Leu Leu Leu
3370                 3375                 3380

gat  cat cac ggt ccc gtg  cag gca ccg cag ctt  gcc ctc ggc ctc       20783
Asp  His His Gly Pro Val  Gln Ala Pro Gln Leu  Ala Leu Gly Leu
3385                 3390                 3395

ggt  gca gcc gtg cag cca  cag cgc gca gcc ggt  gct ctc cca gtt       20828
Gly  Ala Ala Val Gln Pro  Gln Arg Ala Ala Gly  Ala Leu Pro Val
3400                 3405                 3410

ctt  gtg ggc gat ctg gga  gtg cga gtg cac gaa  gcc ctg cag gaa       20873
Leu  Val Gly Asp Leu Gly  Val Arg Val His Glu  Ala Leu Gln Glu
3415                 3420                 3425

gcg  gcc cat cat cgc ggt  cag ggt ctt gtt gct  ggt gaa ggt cag       20918
Ala  Ala His His Arg Gly  Gln Gly Leu Val Ala  Gly Glu Gly Gln
3430                 3435                 3440
```

```
cgg  gat gcc gcg gtg ctc  ctc gtt cac ata cag  gtg gca gat gcg       20963
Arg  Asp Ala Ala Val Leu  Leu Val His Ile Gln  Val Ala Asp Ala
3445                 3450                 3455

gcg  gta cac ctc gcc ctg  ctc ggg cat cag ctg  gaa ggc gga ctt       21008
Ala  Val His Leu Ala Leu  Leu Gly His Gln Leu  Glu Gly Gly Leu
3460                 3465                 3470

cag  gtc gct ctc cac gcg  gta ccg gtc cat cag  cag cgt cat cac       21053
Gln  Val Ala Leu His Ala  Val Pro Val His Gln  Gln Arg His His
3475                 3480                 3485

ttc  cat gcc ctt ctc cca  ggc cga aac gat cgg  cag gct cag ggg       21098
Phe  His Ala Leu Leu Pro  Gly Arg Asn Asp Arg  Gln Ala Gln Gly
3490                 3495                 3500

gtt  ctt cac cgt cat ctt  agt cgc cgc cgc cga  agt cag ggg gtc       21143
Val  Leu His Arg His Leu  Ser Arg Arg Arg Arg  Ser Gln Gly Val
3505                 3510                 3515

gtt  ctc gtc cag ggt ctc  aaa cac tcg ctt gcc  gtc ctt ctc ggt       21188
Val  Leu Val Gln Gly Leu  Lys His Ser Leu Ala  Val Leu Leu Gly
3520                 3525                 3530

gat  gcg cac ggg ggg gaa  ggc gaa gcc cac ggc  cgc cag ctc ctc       21233
Asp  Ala His Gly Gly Glu  Gly Glu Ala His Gly  Arg Gln Leu Leu
3535                 3540                 3545

ctc  ggc ctg cct ttc gtc  ctc gct gtc ctg gct  gat gtc ttg caa       21278
Leu  Gly Leu Pro Phe Val  Leu Ala Val Leu Ala  Asp Val Leu Gln
3550                 3555                 3560

agg  cac atg ctt ggt ctt  gcg ggg ttt ctt ttt  ggg cgg cag agg       21323
Arg  His Met Leu Gly Leu  Ala Gly Phe Leu Phe  Gly Arg Gln Arg
3565                 3570                 3575

cgg  cgg cgg cgg aga cgt  gct ggg cga gcg cga  gtt ctc gct cac       21368
Arg  Arg Arg Arg Arg Arg  Ala Gly Arg Ala Arg  Val Leu Ala His
3580                 3585                 3590

cac  gac tat ttc ttc ttc  ttg gcc gtc gtc cga  gac cac gcg gcg       21413
His  Asp Tyr Phe Phe Phe  Leu Ala Val Val Arg  Asp His Ala Ala
3595                 3600                 3605

gta  ggc atg cct ctt ctg  ggg cag agg cgg agg  cga cgg gct ctc       21458
Val  Gly Met Pro Leu Leu  Gly Gln Arg Arg Arg  Arg Arg Ala Leu
3610                 3615                 3620

gcg  gtt cgg cgg gcg gct  ggc aga gcc cct tcc  gcg ttc ggg ggt       21503
Ala  Val Arg Arg Ala Ala  Gly Arg Ala Pro Ser  Ala Phe Gly Gly
3625                 3630                 3635

gcg  ctc ctg gcg gcg ctg  ctc tga ctg act tcc tcc  gcg gcc ggc       21548
Ala  Leu Leu Ala Ala Leu  Leu     Leu Thr Ser Ser  Ala Ala Gly
3640                 3645                     3650

cat tgtgttctcc tagggagcaa caacaagc atg  gag act cag cca tcg  tcg     21600
His                              Met  Glu Thr Gln Pro Ser  Ser
                                 3655                 3660

cca aca tcg cca  tct gcc ccc gcc gcc  gcc gac gag aac cag  cag       21645
Pro Thr Ser Pro  Ser Ala Pro Ala Ala  Ala Asp Glu Asn Gln  Gln
           3665                 3670                 3675

cag cag aat gaa  agc tta acc gcc ccg  ccg ccc agc ccc acc  tcc       21690
Gln Gln Asn Glu  Ser Leu Thr Ala Pro  Pro Pro Ser Pro Thr  Ser
           3680                 3685                 3690

gac gcc gcg gcc  cca gac atg caa gag  atg gag gaa tcc atc  gag       21735
```

```
Asp Ala Ala Ala  Pro Asp Met Gln Glu  Met Glu Glu Ser Ile  Glu
            3695                 3700                 3705

att gac ctg ggc  tac gtg acg ccc gcg  gag cac gag gag gag  ctg       21780
Ile Asp Leu Gly  Tyr Val Thr Pro Ala  Glu His Glu Glu Glu  Leu
            3710                 3715                 3720

gca gcg cgc ttt  tca gcc ccg gaa gag  aac cac caa gag cag  cca       21825
Ala Ala Arg Phe  Ser Ala Pro Glu Glu  Asn His Gln Glu Gln  Pro
            3725                 3730                 3735

gag cag gaa gca  gag agc gag cag agc  cag gct ggg ctc gag  cat       21870
Glu Gln Glu Ala  Glu Ser Glu Gln Ser  Gln Ala Gly Leu Glu  His
            3740                 3745                 3750

ggc gac tac ctg  agc ggg gca gag gac  gtg ctc atc aag cat  ctg       21915
Gly Asp Tyr Leu  Ser Gly Ala Glu Asp  Val Leu Ile Lys His  Leu
            3755                 3760                 3765

gcc cgc caa tgc  atc atc gtc aag gac  gcg ctg ctc gac cgc  gcc       21960
Ala Arg Gln Cys  Ile Ile Val Lys Asp  Ala Leu Leu Asp Arg  Ala
            3770                 3775                 3780

gag gtg ccc ctc  agc gtg gcg gag ctc  agc cgc gcc tac gag  cgc       22005
Glu Val Pro Leu  Ser Val Ala Glu Leu  Ser Arg Ala Tyr Glu  Arg
            3785                 3790                 3795

aac ctc ttc tcg  ccg cgc gtg ccc ccc  aag cgc cag ccc aac  ggc       22050
Asn Leu Phe Ser  Pro Arg Val Pro Pro  Lys Arg Gln Pro Asn  Gly
            3800                 3805                 3810

acc tgc gag ccc  aac ccg cgc ctc aac  ttc tac ccg gtc ttc  gcg       22095
Thr Cys Glu Pro  Asn Pro Arg Leu Asn  Phe Tyr Pro Val Phe  Ala
            3815                 3820                 3825

gtg ccc gag gcc  ctg gcc acc tac cac  ctc ttt ttc aag aac  caa       22140
Val Pro Glu Ala  Leu Ala Thr Tyr His  Leu Phe Phe Lys Asn  Gln
            3830                 3835                 3840

agg atc ccc gtc  tcc tgc cgc gcc aac  cgc acc cgc gcc gac  gcc       22185
Arg Ile Pro Val  Ser Cys Arg Ala Asn  Arg Thr Arg Ala Asp  Ala
            3845                 3850                 3855

ctg ctc aac ctg  ggc ccc ggc gcc cgc  cta cct gat atc gcc  tcc       22230
Leu Leu Asn Leu  Gly Pro Gly Ala Arg  Leu Pro Asp Ile Ala  Ser
            3860                 3865                 3870

ttg gaa gag gtt  ccc aag atc ttc gag  ggt ctg ggc agc gac  gag       22275
Leu Glu Glu Val  Pro Lys Ile Phe Glu  Gly Leu Gly Ser Asp  Glu
            3875                 3880                 3885

act cgg gcc gcg  aac gct ctg caa gga  agc gga gag gag cat  gag       22320
Thr Arg Ala Ala  Asn Ala Leu Gln Gly  Ser Gly Glu Glu His  Glu
            3890                 3895                 3900

cac cac agc gcc  ctg gtg gag ttg gaa  ggc gac aac gcg cgc  ctg       22365
His His Ser Ala  Leu Val Glu Leu Glu  Gly Asp Asn Ala Arg  Leu
            3905                 3910                 3915

gcg gtc ctc aag  cgc acg gtc gag ctg  acc cac ttc gcc tac  ccg       22410
Ala Val Leu Lys  Arg Thr Val Glu Leu  Thr His Phe Ala Tyr  Pro
            3920                 3925                 3930

gcg ctc aac ctg  ccc ccc aag gtc atg  agc gcc gtc atg gac  cag       22455
Ala Leu Asn Leu  Pro Pro Lys Val Met  Ser Ala Val Met Asp  Gln
            3935                 3940                 3945

gtg ctc atc aag  cgc gcc tcg ccc ctc  tcg gag gag gag atg  cag       22500
Val Leu Ile Lys  Arg Ala Ser Pro Leu  Ser Glu Glu Glu Met  Gln
```

```
            3950                3955                3960

gac ccc gag agc  tcg gac gag ggc aag  ccc gtg gtc agc gac  gag       22545
Asp Pro Glu Ser  Ser Asp Glu Gly Lys  Pro Val Val Ser Asp  Glu
            3965                3970                3975

cag ctg gcg cgc  tgg ctg gga acg agt  agc acc ccc cag agt  ctg       22590
Gln Leu Ala Arg  Trp Leu Gly Thr Ser  Ser Thr Pro Gln Ser  Leu
            3980                3985                3990

gaa gag cgg cgc  aag ctc atg atg gcc  gtg gtc ctg gtg acc  gtg       22635
Glu Glu Arg Arg  Lys Leu Met Met Ala  Val Val Leu Val Thr  Val
            3995                4000                4005

gag ctt gag tgt  ctg cgc cgc ttc ttc  gcc gac gcg gag acc  ctg       22680
Glu Leu Glu Cys  Leu Arg Arg Phe Phe  Ala Asp Ala Glu Thr  Leu
            4010                4015                4020

cgc aag gtc gag  gag aac ctg cac tac  ctc ttc agg cac ggg  ttc       22725
Arg Lys Val Glu  Glu Asn Leu His Tyr  Leu Phe Arg His Gly  Phe
            4025                4030                4035

gtg cgc cag gcc  tgc aag atc tcc aac  gtg gag ctg acc aac  ctg       22770
Val Arg Gln Ala  Cys Lys Ile Ser Asn  Val Glu Leu Thr Asn  Leu
            4040                4045                4050

gtc tcc tac atg  ggc atc ctg cac gag  aac cgc ctg ggg cag  aac       22815
Val Ser Tyr Met  Gly Ile Leu His Glu  Asn Arg Leu Gly Gln  Asn
            4055                4060                4065

gtg ctg cac acc  acc ctg cgc ggg gag  gcc cgc cgc gac tac  atc       22860
Val Leu His Thr  Thr Leu Arg Gly Glu  Ala Arg Arg Asp Tyr  Ile
            4070                4075                4080

cgc gac tgc gtc  tac ctg tac ctc tgc  cac acc tgg cag acg  ggc       22905
Arg Asp Cys Val  Tyr Leu Tyr Leu Cys  His Thr Trp Gln Thr  Gly
            4085                4090                4095

atg ggc gtg tgg  cag cag tgc ctg gag  gag cag aac ctg aaa  gag       22950
Met Gly Val Trp  Gln Gln Cys Leu Glu  Glu Gln Asn Leu Lys  Glu
            4100                4105                4110

ctc tgc aag ctc  ctg cag aag aac ctg  aag gcc ctg tgg acc  ggg       22995
Leu Cys Lys Leu  Leu Gln Lys Asn Leu  Lys Ala Leu Trp Thr  Gly
            4115                4120                4125

ttc gac gag cgt  acc acc gcc tcg gac  ctg gcc gac ctc atc  ttc       23040
Phe Asp Glu Arg  Thr Thr Ala Ser Asp  Leu Ala Asp Leu Ile  Phe
            4130                4135                4140

ccc gag cgc ctg  cgg ctg acg ctg cgc  aac ggg ctg ccc gac  ttt       23085
Pro Glu Arg Leu  Arg Leu Thr Leu Arg  Asn Gly Leu Pro Asp  Phe
            4145                4150                4155

atg agc caa agc  atg ttg caa aac ttt  cgc tct ttc atc ctc  gaa       23130
Met Ser Gln Ser  Met Leu Gln Asn Phe  Arg Ser Phe Ile Leu  Glu
            4160                4165                4170

cgc tcc ggg atc  ctg ccc gcc acc tgc  tcc gcg ctg ccc tcg  gac       23175
Arg Ser Gly Ile  Leu Pro Ala Thr Cys  Ser Ala Leu Pro Ser  Asp
            4175                4180                4185

ttc gtg ccg ctg  acc ttc cgc gag tgc  ccc ccg ccg ctc tgg  agc       23220
Phe Val Pro Leu  Thr Phe Arg Glu Cys  Pro Pro Pro Leu Trp  Ser
            4190                4195                4200

cac tgc tac ttg  ctg cgc ctg gcc aac  tac ctg gcc tac cac  tcg       23265
His Cys Tyr Leu  Leu Arg Leu Ala Asn  Tyr Leu Ala Tyr His  Ser
            4205                4210                4215
```

```
gac gtg atc gag  gac gtc agc ggc gag  ggt ctg ctc gag tgc  cac       23310
Asp Val Ile Glu  Asp Val Ser Gly Glu  Gly Leu Leu Glu Cys  His
            4220                 4225                 4230

tgc cgc tgc aac  ctc tgc acg ccg cac  cgc tcc ctg gcc tgc  aac       23355
Cys Arg Cys Asn  Leu Cys Thr Pro His  Arg Ser Leu Ala Cys  Asn
            4235                 4240                 4245

ccc cag ctg ctg  agc gag acc cag atc  atc ggc acc ttc gag  ttg       23400
Pro Gln Leu Leu  Ser Glu Thr Gln Ile  Ile Gly Thr Phe Glu  Leu
            4250                 4255                 4260

caa ggc ccc ggc  gag gag ggc aag ggg  ggt ctg aaa ctc acc  ccg       23445
Gln Gly Pro Gly  Glu Glu Gly Lys Gly  Gly Leu Lys Leu Thr  Pro
            4265                 4270                 4275

ggg ctg tgg acc  tcg gcc tac ttg cgc  aag ttc gtg ccc gag  gac       23490
Gly Leu Trp Thr  Ser Ala Tyr Leu Arg  Lys Phe Val Pro Glu  Asp
            4280                 4285                 4290

tac cat ccc ttc  gag atc agg ttc tac  gag gac caa tcc cag  ccg       23535
Tyr His Pro Phe  Glu Ile Arg Phe Tyr  Glu Asp Gln Ser Gln  Pro
            4295                 4300                 4305

ccc aag gcc gag  ctg tcg gcc tgc gtc  atc acc cag ggg gcc  atc       23580
Pro Lys Ala Glu  Leu Ser Ala Cys Val  Ile Thr Gln Gly Ala  Ile
            4310                 4315                 4320

ctg gcc caa ttg  caa gcc atc cag aaa  tcc cgc caa gaa ttt  ctg       23625
Leu Ala Gln Leu  Gln Ala Ile Gln Lys  Ser Arg Gln Glu Phe  Leu
            4325                 4330                 4335

ctg aaa aag ggc  cac ggg gtc tac ttg  gac ccc cag acc gga  gag       23670
Leu Lys Lys Gly  His Gly Val Tyr Leu  Asp Pro Gln Thr Gly  Glu
            4340                 4345                 4350

gag ctc aac ccc  agc ttc ccc cag gat  gcc cag agg aag cag  caa       23715
Glu Leu Asn Pro  Ser Phe Pro Gln Asp  Ala Gln Arg Lys Gln  Gln
            4355                 4360                 4365

gaa gct gaa agt  gga gct gcc gct gcc  gcc gga gga ttt gga  gga       23760
Glu Ala Glu Ser  Gly Ala Ala Ala Ala  Ala Gly Gly Phe Gly  Gly
            4370                 4375                 4380

aga ctg gga gag  cag tca ggc aga gga  gga gga gat gga aga  ctg       23805
Arg Leu Gly Glu  Gln Ser Gly Arg Gly  Gly Gly Asp Gly Arg  Leu
            4385                 4390                 4395

gga cag cac tca  ggc aga gga gga cag  cct gca aga cag tct  gga       23850
Gly Gln His Ser  Gly Arg Gly Gly Gln  Pro Ala Arg Gln Ser  Gly
            4400                 4405                 4410

aga cga ggt gga  gga ggc aga gga aga  agc agc cgc cgc cag  acc       23895
Arg Arg Gly Gly  Gly Gly Arg Gly Arg  Ser Ser Arg Arg Gln  Thr
            4415                 4420                 4425

gtc gtc ctc ggc  gga gaa agc aag cag  cac gga tac cat ctc  cgc       23940
Val Val Leu Gly  Gly Glu Ser Lys Gln  His Gly Tyr His Leu  Arg
            4430                 4435                 4440

tcc ggg tcg ggg  tct cgg cgg ccg ggc  cca cag tagatgggac            23983
Ser Gly Ser Gly  Ser Arg Arg Pro Gly  Pro Gln
            4445                 4450

gagaccgggc gcttcccgaa ccccaccacc cagaccggta agaaggagcg gcagggatac    24043

aagtcctggc gggggcacaa aaacgccatc gtctcctgct tgcaagcctg cgggggcaac    24103
```

```
atctccttca cccggcgcta cctgctcttc caccgcgggg tgaacttccc ccgcaacatc    24163

ttgcattact accgtcacct ccacagcccc tactactgtt tccaagaaga ggcagaaacc    24223

cagcagcagc agaaaaccag cagcagctag aaaatccaca gcggcggcgg cggcaggtgg    24283

actgaggatc gcggcgaacg agccggcgca gacccgggag ctgaggaacc ggatctttcc    24343

caccctctat gccatcttcc agcagagtcg ggggcaggag caggaactga aagtcaagaa    24403

ccgttctctg cgctcgctca cccgcagttg tctgtatcac aagagcgaag accaacttca    24463

gcgcactctc gaggacgccg aggctctctt caacaagtac tgcgcgctca ctcttaaaga    24523

gtagcccgcg cccgcccaca cacggaaaaa ggcgggaatt acgtcaccac ctgcgccctt    24583

cgcccgacca tcatc atg agc aaa  gag att ccc acg cct  tac atg tgg       24631
                Met Ser Lys  Glu Ile Pro Thr Pro  Tyr Met Trp
                         4455                 4460

agc tac  cag ccc cag atg ggc  ctg gcc gcc ggc gcc  gcc cag gac       24676
Ser Tyr  Gln Pro Gln Met Gly  Leu Ala Ala Gly Ala  Ala Gln Asp
    4465                 4470                 4475

tac tcc  acc cgc atg aac tgg  ctc agt gcc ggg ccc  gcg atg atc       24721
Tyr Ser  Thr Arg Met Asn Trp  Leu Ser Ala Gly Pro  Ala Met Ile
    4480                 4485                 4490

tca cgg  gtg aat gac atc cgc  gcc cac cga aac cag  ata ctc cta       24766
Ser Arg  Val Asn Asp Ile Arg  Ala His Arg Asn Gln  Ile Leu Leu
    4495                 4500                 4505

gaa cag  tca gcg atc acc gcc  acg ccc cgc cat cac  ctt aat ccg       24811
Glu Gln  Ser Ala Ile Thr Ala  Thr Pro Arg His His  Leu Asn Pro
    4510                 4515                 4520

cgt aat  tgg ccc gcc gcc ctg  gtg tac cag gaa att  ccc cag ccc       24856
Arg Asn  Trp Pro Ala Ala Leu  Val Tyr Gln Glu Ile  Pro Gln Pro
    4525                 4530                 4535

acg acc  gta cta ctt ccg cga  gac gcc cag gcc gaa  gtc cag ctg       24901
Thr Thr  Val Leu Leu Pro Arg  Asp Ala Gln Ala Glu  Val Gln Leu
    4540                 4545                 4550

act aac  tca ggt gtc cag ctg  gcc ggc ggc gcc gcc  ctg tgt cgt       24946
Thr Asn  Ser Gly Val Gln Leu  Ala Gly Gly Ala Ala  Leu Cys Arg
    4555                 4560                 4565

cac cgc  ccc gct cag ggt ata  aag cgg ctg gtg atc  cga ggc aga       24991
His Arg  Pro Ala Gln Gly Ile  Lys Arg Leu Val Ile  Arg Gly Arg
    4570                 4575                 4580

ggc aca  cag ctc aac gac gag  gtg gtg agc tct tcg  ctg ggt ctg       25036
Gly Thr  Gln Leu Asn Asp Glu  Val Val Ser Ser Ser  Leu Gly Leu
    4585                 4590                 4595

cga cct  gac gga gtc ttc caa  ctc gcc gga tcg ggg  aga tct tcc       25081
Arg Pro  Asp Gly Val Phe Gln  Leu Ala Gly Ser Gly  Arg Ser Ser
    4600                 4605                 4610

ttc acg  cct cgt cag gcc gtc  ctg act ttg gag agt  tcg tcc tcg       25126
Phe Thr  Pro Arg Gln Ala Val  Leu Thr Leu Glu Ser  Ser Ser Ser
    4615                 4620                 4625

cag ccc  cgc tcg ggt ggc atc  ggc act ctc cag ttc  gtg gag gag       25171
Gln Pro  Arg Ser Gly Gly Ile  Gly Thr Leu Gln Phe  Val Glu Glu
    4630                 4635                 4640

ttc act  ccc tcg gtc tac ttc  aac ccc ttc tcc ggc  tcc ccc ggc       25216
```

```
Phe Thr  Pro Ser Val Tyr Phe  Asn Pro Phe Ser Gly  Ser Pro Gly
    4645                4650                4655

cac tac  ccg gac gag ttc atc  ccg aac ttc gac gcc  atc agc gag       25261
His Tyr  Pro Asp Glu Phe Ile  Pro Asn Phe Asp Ala  Ile Ser Glu
    4660                4665                4670

tcg gtg  gac ggc tac gat tga atg  tcc cat ggt ggc gcg  gct gac       25306
Ser Val  Asp Gly Tyr Asp     Met  Ser His Gly Gly Ala  Ala Asp
    4675                    4680                4685

cta gct cgg  ctt cga cac ctg gac  cac tgc cgc cgc ttc  cgc tgc       25351
Leu Ala Arg  Leu Arg His Leu Asp  His Cys Arg Arg Phe  Arg Cys
        4690                4695                4700

ttc gct cgg  gat ctc gcc gag ttt  gcc tac ttt gag ctg  ccc gag       25396
Phe Ala Arg  Asp Leu Ala Glu Phe  Ala Tyr Phe Glu Leu  Pro Glu
        4705                4710                4715

gag cac cct  cag ggc ccg gcc cac  gga gtg cgg atc atc  gtc gaa       25441
Glu His Pro  Gln Gly Pro Ala His  Gly Val Arg Ile Ile  Val Glu
        4720                4725                4730

ggg ggc ctc  gac tcc cac ctg ctt  cgg atc ttc agc cag  cgt ccg       25486
Gly Gly Leu  Asp Ser His Leu Leu  Arg Ile Phe Ser Gln  Arg Pro
        4735                4740                4745

atc ctg gtc  gag cgc gag caa gga  cag acc cgt ctg acc  ctg tac       25531
Ile Leu Val  Glu Arg Glu Gln Gly  Gln Thr Arg Leu Thr  Leu Tyr
        4750                4755                4760

tgc atc tgc  aac cac ccc ggc ctg  cat gaa agt ctt tgt  tgt ctg       25576
Cys Ile Cys  Asn His Pro Gly Leu  His Glu Ser Leu Cys  Cys Leu
        4765                4770                4775

ctg tgt act  gag tat aat aaa agc  tgagatcagc gactactccg             25620
Leu Cys Thr  Glu Tyr Asn Lys Ser
        4780                4785

gacttccgtg tgttcctgaa tccatcaacc agtccctgtt cttcaccggg aacgagaccg    25680

agctccagct ccagtgtaag ccccacaaga agtacctcac ctggctgttc cagggctccc    25740

cgatcgccgt tgtcaaccac tgcgacaacg acggagtcct gctgagcggc cctgccaacc    25800

ttacttttc cacccgcaga agcaagctcc agctcttcca acccttcctc cccgggacct    25860

atcagtgcgt ctcgggaccc tgccatcaca ccttccacct gatcccgaat accacagcgt    25920

cgctccccgc tactaacaac caaactaccc accaacgcca ccgtcgcgac ctttcctctg    25980

aatctaatac cactaccgga ggtgagctcc gaggtcgacc aacctctggg atttactacg    26040

gcccctggga ggtggtgggg ttaatagcgc taggcctagt tgtgggtggg cttttggctc    26100

tctgctacct atacctccct tgctgttcgt acttagtggt gctgtgttgc tggtttaaga    26160

a atg ggg cag atc acc  cta gtg agc tgc ggt  gtg ctg gtg gcg gtg       26206
  Met Gly Gln Ile Thr  Leu Val Ser Cys Gly  Val Leu Val Ala Val
                  4790                4795                4800

gtg ctt tcg att gtg  gga ctg ggc ggc gcg  gct gta gtg aag gag       26251
Val Leu Ser Ile Val  Gly Leu Gly Gly Ala  Ala Val Val Lys Glu
                4805                4810                4815

aag gcc gat ccc tgc  ttg cat ttc aat ccc  gat aaa tgc cag ctg       26296
Lys Ala Asp Pro Cys  Leu His Phe Asn Pro  Asp Lys Cys Gln Leu
                4820                4825                4830
```

```
agt ttt cag ccc gat  ggc aat cgg tgc gcg  gtg ctg atc aag tgc        26341
Ser Phe Gln Pro Asp  Gly Asn Arg Cys Ala  Val Leu Ile Lys Cys
                4835                4840                4845

gga tgg gaa tgc gag  aac gtg aga atc gag  tac aat aac aag act        26386
Gly Trp Glu Cys Glu  Asn Val Arg Ile Glu  Tyr Asn Asn Lys Thr
                4850                4855                4860

cgg aac aat act ctc  gcg tcc acg tgg cag  ccc ggg gac ccc gag        26431
Arg Asn Asn Thr Leu  Ala Ser Thr Trp Gln  Pro Gly Asp Pro Glu
                4865                4870                4875

tgg tac acc gtc tct  gtc ccc ggt gct gac  ggc tcc ccg cgc acc        26476
Trp Tyr Thr Val Ser  Val Pro Gly Ala Asp  Gly Ser Pro Arg Thr
                4880                4885                4890

gtg aat aat act ttc  att ttt gcg cac atg  tgc gac acg gtc atg        26521
Val Asn Asn Thr Phe  Ile Phe Ala His Met  Cys Asp Thr Val Met
                4895                4900                4905

tgg atg agc aag cag  tac gat atg tgg ccc  ccc acg aag gag aac        26566
Trp Met Ser Lys Gln  Tyr Asp Met Trp Pro  Pro Thr Lys Glu Asn
                4910                4915                4920

atc gtg gtc ttc tcc  atc gct tac agc ctg  tgc acg gtg cta atc        26611
Ile Val Val Phe Ser  Ile Ala Tyr Ser Leu  Cys Thr Val Leu Ile
                4925                4930                4935

acc gct atc gtg tgc  ctg agc att cac atg  ctc atc gct att cgc        26656
Thr Ala Ile Val Cys  Leu Ser Ile His Met  Leu Ile Ala Ile Arg
                4940                4945                4950

ccc aga aat aat gcc  gaa aaa gaa aaa cag  cca taacacgttt             26699
Pro Arg Asn Asn Ala  Glu Lys Glu Lys Gln  Pro
                4955                4960

tttcacacac ctttttcaga cc atg gcc tct gtt  aaa ttt ttg ctt tta        26748
                        Met Ala Ser Val  Lys Phe Leu Leu Leu
                                    4965                4970

ttt gcc agt ctc att  act gtt ata agt aat  gag aaa ctc act att        26793
Phe Ala Ser Leu Ile  Thr Val Ile Ser Asn  Glu Lys Leu Thr Ile
                4975                4980                4985

tac att ggc act aac  cac act cta gaa gga  att cca aaa tcc tca        26838
Tyr Ile Gly Thr Asn  His Thr Leu Glu Gly  Ile Pro Lys Ser Ser
                4990                4995                5000

tgg tat tgc tat ttt  gat caa gat cca gac  tta act ata gaa ctg        26883
Trp Tyr Cys Tyr Phe  Asp Gln Asp Pro Asp  Leu Thr Ile Glu Leu
                5005                5010                5015

tgt ggt aac aag gga  caa aat aca agc att  cat tta att aac ttt        26928
Cys Gly Asn Lys Gly  Gln Asn Thr Ser Ile  His Leu Ile Asn Phe
                5020                5025                5030

aaa tgc gga gac gat  ttg aaa tta att aat  atc act aaa gag tat        26973
Lys Cys Gly Asp Asp  Leu Lys Leu Ile Asn  Ile Thr Lys Glu Tyr
                5035                5040                5045

gga ggt atg tat tac  tat gtt aca gaa aat  aac aac atg cag ttt        27018
Gly Gly Met Tyr Tyr  Tyr Val Thr Glu Asn  Asn Asn Met Gln Phe
                5050                5055                5060

tat gaa gtt act gta  act aat ccc acc acg  cct aga aca aca aca        27063
Tyr Glu Val Thr Val  Thr Asn Pro Thr Thr  Pro Arg Thr Thr Thr
                5065                5070                5075

acc acc aca aag act  aca cct gtt acc act  atg cag ctc act acc        27108
```

```
Thr Thr Thr Lys Thr  Thr Pro Val Thr Thr  Met Gln Leu Thr Thr
                5080                5085                5090

aat aac att ttt gcc  atg cgt cag aag gcc  aac aat agc acc agc        27153
Asn Asn Ile Phe Ala  Met Arg Gln Lys Ala  Asn Asn Ser Thr Ser
                5095                5100                5105

att caa ccc ccc cca  ccc agt gag gaa att  ccc aaa tcc atg att        27198
Ile Gln Pro Pro Pro  Pro Ser Glu Glu Ile  Pro Lys Ser Met Ile
                5110                5115                5120

ggc att att gtt gct  gta gtg gtg tgc atg  ttg atc atc gcc ttg        27243
Gly Ile Ile Val Ala  Val Val Val Cys Met  Leu Ile Ile Ala Leu
                5125                5130                5135

tgc atg gtg tac tat  gcc ttc tgc tac aga  aag cac aga ctg aac        27288
Cys Met Val Tyr Tyr  Ala Phe Cys Tyr Arg  Lys His Arg Leu Asn
                5140                5145                5150

gac aag cta gaa cac  tta cta agt gtt gaa  ttt taatttttt agaacc       27337
Asp Lys Leu Glu His  Leu Leu Ser Val Glu  Phe
                5155                5160

atg aag atc cta  ggc ctt tta att ttt  tct atc att acc tct  gct       27382
Met Lys Ile Leu  Gly Leu Leu Ile Phe  Ser Ile Ile Thr Ser  Ala
            5165                5170                5175

cta tgc aat tct  gac aat gag gac gtt  act gtc gtt gtc gga  tca       27427
Leu Cys Asn Ser  Asp Asn Glu Asp Val  Thr Val Val Val Gly  Ser
            5180                5185                5190

aat tat aca ctg  aaa ggt cca gcg aag  ggt atg ctt tcg tgg  tat       27472
Asn Tyr Thr Leu  Lys Gly Pro Ala Lys  Gly Met Leu Ser Trp  Tyr
            5195                5200                5205

tgc tgg ttt gga  act gac act gaa caa  acc gaa tta tgc aat  ctt       27517
Cys Trp Phe Gly  Thr Asp Thr Glu Gln  Thr Glu Leu Cys Asn  Leu
            5210                5215                5220

caa aat ggc aaa  gtt cat aat tct aaa  att tac aat tat ata  tgc       27562
Gln Asn Gly Lys  Val His Asn Ser Lys  Ile Tyr Asn Tyr Ile  Cys
            5225                5230                5235

aat ggc act gat  ttg ata ctc ctc aat  atc acg aaa tca tat  gct       27607
Asn Gly Thr Asp  Leu Ile Leu Leu Asn  Ile Thr Lys Ser Tyr  Ala
            5240                5245                5250

ggc agt tat tca  tgc cct gga gat gat  gct gac aat atg att  ttt       27652
Gly Ser Tyr Ser  Cys Pro Gly Asp Asp  Ala Asp Asn Met Ile  Phe
            5255                5260                5265

tat aaa ttg caa  gtg gtt gat ccc act  act cca cct cca ccc  acc       27697
Tyr Lys Leu Gln  Val Val Asp Pro Thr  Thr Pro Pro Pro Pro  Thr
            5270                5275                5280

aca act act cac  acc aca cac aca gaa  caa acc aca gca gag  gag       27742
Thr Thr Thr His  Thr Thr His Thr Glu  Gln Thr Thr Ala Glu  Glu
            5285                5290                5295

gcg gca aag tta  gct ttg cag gtc caa  gac agt tca ttt gtt  ggc       27787
Ala Ala Lys Leu  Ala Leu Gln Val Gln  Asp Ser Ser Phe Val  Gly
            5300                5305                5310

att acc cct aca  ccc gat cag cgg tgt  ccg ggg ctg ctc gtc  agc       27832
Ile Thr Pro Thr  Pro Asp Gln Arg Cys  Pro Gly Leu Leu Val  Ser
            5315                5320                5325

ggc att gtc ggt  gtg ctt tcg gga tta  gca gtt ata atc atc  tgc       27877
Gly Ile Val Gly  Val Leu Ser Gly Leu  Ala Val Ile Ile Ile  Cys
```

```
            5330                5335                5340

atg ttc att ttt  gct tgc tgc tat aga  agg ctt tac cga caa  aaa       27922
Met Phe Ile Phe  Ala Cys Cys Tyr Arg  Arg Leu Tyr Arg Gln  Lys
            5345                5350                5355

tca gac cca ctg  ctg aac ctc tat gtt  taatttttc cagagccatg          27969
Ser Asp Pro Leu  Leu Asn Leu Tyr Val
            5360                5365

aaggcagtta gcgctctagt tttttgttct ttgattggca ctgtttttag tgttagcttt    28029

ttaaaacaaa ttaatgttac tgaggggggaa aatgtgacac tggtaggcgt agaaggtgct    28089

caaaatacca cctggacaaa ataccacctc gatgggtgga aagatatttg caattggagt    28149

gtcattactt acacatgtga gggagttaat ttgaccatag tcaatgccag ccaaaatcag    28209

aagggttgga ttaaagggca atctgttagt gttaccagtg aggggtacta tacccagcat    28269

actcttatct atgacattat agtcataccg ctgcctacgc ctagcccacc tagcactacc    28329

acacagacaa cccacactac acaaacaacc acatacagta catcaaatca gcctaccacc    28389

actacaacag cagaggttgc cagctcgtct ggggtccgag cggcattttt gatgttggcc    28449

ccatctagca gtcccactgc tagtaccaat gagcagacta ctgaattttt gtccactgtc    28509

gagagccaca ccacagctac ctcgagtgcc ttctctagca ccgccaatct ctcctcgctt    28569

tcctctacac caatcagtcc cgctactact actacccccg ctattcttcc cactcccctg    28629

aagcaaactg aggacagcgg catgcaatgg cagatcaccc tgctcattgt gatcgggttg    28689

gtcatcctag ccgtgttgct ctactacatc ttccgccgcc gcattcccaa cgcgcaccgc    28749

aagccggtct acaagcccat cattgtcggg cagccggagc cgcttcaggt ggaagggggt    28809

ctaaggaatc ttctcttctc ttttacagta tggtgattga actatgattc ctagacaatt    28869

cttgatcact attcttatct gcctcctcca agtctgtgcc accctcgctc tggtggccaa    28929

cgccagtcca gactgtattg ggcccttcgc ctcctacgtg ctctttgcct tcatcacctg    28989

catctgctgc tgtagcatag tctgcctgct tatcaccttc ttccagttca ttgactggat    29049

ctttgtgcgc atcgcctacc tgcgccacca cccccagtac cgcgaccagc gagtggcgca    29109

gctgctcagg ctcctctgat aagc atg cgg gct ctg cta  ctt ctc gcg ctt      29160
                           Met Arg Ala Leu Leu  Leu Leu Ala Leu
                                               5370

ctg  ctg tta gtg ctc ccc  cgt ccc gtt gac ccc  cgg ccc ccc act      29205
Leu  Leu Leu Val Leu Pro  Arg Pro Val Asp Pro  Arg Pro Pro Thr
5375                5380                5385

cag  tcc ccc gag gag gtc  cgc aaa tgc aaa ttc  caa gaa ccc tgg      29250
Gln  Ser Pro Glu Glu Val  Arg Lys Cys Lys Phe  Gln Glu Pro Trp
5390                5395                5400

aaa  ttc ctc aaa tgc tac  cgc caa aaa tca gac  atg cat ccc agc      29295
Lys  Phe Leu Lys Cys Tyr  Arg Gln Lys Ser Asp  Met His Pro Ser
5405                5410                5415

tgg  atc atg atc att ggg  atc gtg aac att ctg  gcc tgc acc ctc      29340
Trp  Ile Met Ile Ile Gly  Ile Val Asn Ile Leu  Ala Cys Thr Leu
5420                5425                5430

atc  tcc ttt gtg att tac  ccc tgc ttt gac ttt  ggt tgg aac tcg      29385
```

```
Ile  Ser Phe Val Ile Tyr  Pro Cys Phe Asp Phe  Gly Trp Asn Ser
5435                 5440                 5445

cca  gag gcg ctc tat ctc  ccg cct gaa cct gac  aca cca cca cag       29430
Pro  Glu Ala Leu Tyr Leu  Pro Pro Glu Pro Asp  Thr Pro Pro Gln
5450                 5455                 5460

caa  cct cag gca cac gca  cta cca cca cca cag  cct agg cca caa       29475
Gln  Pro Gln Ala His Ala  Leu Pro Pro Pro Gln  Pro Arg Pro Gln
5465                 5470                 5475

tac  atg ccc ata tta gac  tat gag gcc gag cca  cag cga ccc atg       29520
Tyr  Met Pro Ile Leu Asp  Tyr Glu Ala Glu Pro  Gln Arg Pro Met
5480                 5485                 5490

ctc  ccc gct att agt tac  ttc aat cta acc ggc  gga gat gac           29562
Leu  Pro Ala Ile Ser Tyr  Phe Asn Leu Thr Gly  Gly Asp Asp
5495                 5500                 5505

tgacccactg gccaacaaca acgtcaacga ccttctcctg gacatggacg gccgcgcctc    29622

ggagcagcga ctcgcccaac ttcgcattcg ccagcagcag gagagagccg tcaaggagct    29682

gcaggacggc atagccatcc accagtgcaa gaaaggcatc ttctgcctgg tgaaacaggc    29742

caagatctcc tacgaggtca cccagaccga ccatcgcctc tcctacgagc tcctgcagca    29802

gcgccagaag ttcacctgcc tggtcggagt caaccccatc gtcatcaccc agcagtcggg    29862

cgataccaag gggtgcatcc actgctcctg cgactccccc gactgcgtcc acactctgat    29922

caagaccctc tgcggcctcc gcgacctcct ccccatgaac taatcacccc cttatccagt    29982

gaaataaaga tcatattgat gattaaataa aaaaaataat catttgattt gaaataaaga    30042

tacaatcata ttgatgattt gagtttaata aaaataaaga atcacttact tgaaatctga    30102

taccaggtct ctgtccatgt tttctgccaa caccacttca ctcccctctt cccagctctg    30162

gtactgcagg ccccggcggg ctgcaaactt cctccacacc ctgaagggga tgtcaaattc    30222

ctcctgtccc tcaatcttca ttttatcttc tatcag atg tcc  aaa aag cgc gtc     30276
                                        Met Ser  Lys Lys Arg Val
                                            5510

cgg  gtg gat gat gac ttc  gac ccc gtc tac ccc  tac gat gca gac       30321
Arg  Val Asp Asp Asp Phe  Asp Pro Val Tyr Pro  Tyr Asp Ala Asp
5515                 5520                 5525

aac  gca ccg acc gtg ccc  ttc atc aac ccc ccc  ttc gtc tct tca       30366
Asn  Ala Pro Thr Val Pro  Phe Ile Asn Pro Pro  Phe Val Ser Ser
5530                 5535                 5540

gat  gga ttc caa gag aag  ccc ctg ggg gtg ctg  tcc ctg cgt ctg       30411
Asp  Gly Phe Gln Glu Lys  Pro Leu Gly Val Leu  Ser Leu Arg Leu
5545                 5550                 5555

gcc  gat ccc gtc acc acc  aag aac ggg gaa atc  acc ctc aag ctg       30456
Ala  Asp Pro Val Thr Thr  Lys Asn Gly Glu Ile  Thr Leu Lys Leu
5560                 5565                 5570

gga  gat ggg gtg gac ctc  gac tcc tcg gga aaa  ctc atc tcc aac       30501
Gly  Asp Gly Val Asp Leu  Asp Ser Ser Gly Lys  Leu Ile Ser Asn
5575                 5580                 5585

acg  gcc acc aag gcc gcc  gcc cct ctc agt ttt  tcc aac aac acc       30546
Thr  Ala Thr Lys Ala Ala  Ala Pro Leu Ser Phe  Ser Asn Asn Thr
5590                 5595                 5600
```

```
att  tcc ctt aac atg gat  acc cct ttt tac aac  aac aat gga aag       30591
Ile  Ser Leu Asn Met Asp  Thr Pro Phe Tyr Asn  Asn Asn Gly Lys
5605                 5610                 5615

tta  ggc atg aaa gtc act  gct cca ctg aag ata  cta gac aca gac       30636
Leu  Gly Met Lys Val Thr  Ala Pro Leu Lys Ile  Leu Asp Thr Asp
5620                 5625                 5630

ttg  cta aaa aca ctt gtt  gta gct tat gga caa  ggt tta gga aca       30681
Leu  Leu Lys Thr Leu Val  Val Ala Tyr Gly Gln  Gly Leu Gly Thr
5635                 5640                 5645

aac  acc act ggt gcc ctt  gtt gcc caa cta gca  tcc cca ctt gct       30726
Asn  Thr Thr Gly Ala Leu  Val Ala Gln Leu Ala  Ser Pro Leu Ala
5650                 5655                 5660

ttt  gat agc aat agc aaa  att gcc ctt aat tta  ggc aat gga cca       30771
Phe  Asp Ser Asn Ser Lys  Ile Ala Leu Asn Leu  Gly Asn Gly Pro
5665                 5670                 5675

ttg  aaa gtg gat gca aat  aga ctg aac atc aat  tgc aat aga gga       30816
Leu  Lys Val Asp Ala Asn  Arg Leu Asn Ile Asn  Cys Asn Arg Gly
5680                 5685                 5690

ctc  tat gtt act acc aca  aaa gat gca ctg gaa  gcc aat ata agt       30861
Leu  Tyr Val Thr Thr Thr  Lys Asp Ala Leu Glu  Ala Asn Ile Ser
5695                 5700                 5705

tgg  gct aat gct atg aca  ttt ata gga aat gcc  atg ggt gtc aat       30906
Trp  Ala Asn Ala Met Thr  Phe Ile Gly Asn Ala  Met Gly Val Asn
5710                 5715                 5720

att  gat aca caa aaa ggc  ttg caa ttt ggc acc  act agt acc gtc       30951
Ile  Asp Thr Gln Lys Gly  Leu Gln Phe Gly Thr  Thr Ser Thr Val
5725                 5730                 5735

gca  gat gtt aaa aac gct  tac ccc ata caa atc  aaa ctt gga gct       30996
Ala  Asp Val Lys Asn Ala  Tyr Pro Ile Gln Ile  Lys Leu Gly Ala
5740                 5745                 5750

ggt  ctc aca ttt gac agc  aca ggt gca att gtt  gca tgg aac aaa       31041
Gly  Leu Thr Phe Asp Ser  Thr Gly Ala Ile Val  Ala Trp Asn Lys
5755                 5760                 5765

gat  gat gac aag ctt aca  cta tgg acc aca gcc  gac ccc tct cca       31086
Asp  Asp Asp Lys Leu Thr  Leu Trp Thr Thr Ala  Asp Pro Ser Pro
5770                 5775                 5780

aat  tgt cac ata tat tct  gaa aag gat gct aag  ctt aca ctt tgc       31131
Asn  Cys His Ile Tyr Ser  Glu Lys Asp Ala Lys  Leu Thr Leu Cys
5785                 5790                 5795

ttg  aca aag tgt ggc agt  cag att ctg ggc act  gtt tcc ctc ata       31176
Leu  Thr Lys Cys Gly Ser  Gln Ile Leu Gly Thr  Val Ser Leu Ile
5800                 5805                 5810

gct  gtt gat act ggc agt  tta aat ccc ata aca  gga aca gta acc       31221
Ala  Val Asp Thr Gly Ser  Leu Asn Pro Ile Thr  Gly Thr Val Thr
5815                 5820                 5825

act  gct ctt gtc tca ctt  aaa ttc gat gca aat  gga gtt ttg caa       31266
Thr  Ala Leu Val Ser Leu  Lys Phe Asp Ala Asn  Gly Val Leu Gln
5830                 5835                 5840

agc  agc tca aca cta gac  tca gac tat tgg aat  ttc aga cag gga       31311
Ser  Ser Ser Thr Leu Asp  Ser Asp Tyr Trp Asn  Phe Arg Gln Gly
5845                 5850                 5855

gat  gtt aca cct gct gaa  gcc tat act aat gct  ata ggt ttc atg       31356
```

```
Asp  Val Thr Pro Ala Glu  Ala Tyr Thr Asn Ala  Ile Gly Phe Met
5860                5865                5870

ccc  aat cta aaa gca tac  cct aaa aac aca agt  gga gct gca aaa       31401
Pro  Asn Leu Lys Ala Tyr  Pro Lys Asn Thr Ser  Gly Ala Ala Lys
5875                5880                5885

agt  cac att gtt ggg aaa  gtg tac cta cat ggg  gat aca gac aaa       31446
Ser  His Ile Val Gly Lys  Val Tyr Leu His Gly  Asp Thr Asp Lys
5890                5895                5900

cca  ctg gac ctc att att  act ttc aat gaa aca  agt gat gaa tct       31491
Pro  Leu Asp Leu Ile Ile  Thr Phe Asn Glu Thr  Ser Asp Glu Ser
5905                5910                5915

tgc  act tac tgt att aac  ttt caa tgg cag tgg  ggg gct gat caa       31536
Cys  Thr Tyr Cys Ile Asn  Phe Gln Trp Gln Trp  Gly Ala Asp Gln
5920                5925                5930

tat  aaa aat gaa aca ctt  gcc gtc agt tca ttc  acc ttt tcc tat       31581
Tyr  Lys Asn Glu Thr Leu  Ala Val Ser Ser Phe  Thr Phe Ser Tyr
5935                5940                5945

att  gct aaa gaa taaaccccac tctgtacccc atctctgtct atggaaaaaa         31633
Ile  Ala Lys Glu
5950

ctctgaaaca caaaataaaa taaagttcaa gtgttttatt gattcaacag ttttacagga    31693

ttcgagcagt tatttttcct ccaccctccc aggacatgga atacaccacc ctctcccccc    31753

gcacagcctt gaacatctga atgccattgg tgatggacat gcttttggtc tccacgttcc    31813

acacagtttc agagcgagcc agtctcgggt cggtcaggga gatgaaaccc tccgggcact    31873

cccgcatctg cacctcacag ctcaacagct gaggattgtc ctcggtggtc gggatcacgg    31933

ttatctggaa gaagcagaag agcggcggtg ggaatcatag tccgcgaacg ggatcggccg    31993

gtggtgtcgc atcaggcccc gcagcagtcg ctgtcgccgc cgctccgtca agctgctgct    32053

caggggggtcc gggtccaggg actccctcag catgatgccc acggccctca gcatcagtcg    32113

tctggtgcgg cgggcgcagc agcgcatgcg gatctcgctc aggtcgctgc agtacgtgca    32173

acacaggacc accaggttgt tcaacagtcc atagttcaac acgctccagc cgaaactcat    32233

cgcgggaagg atgctaccca cgtggccgtc gtaccagatc ctcaggtaaa tcaagtggcg    32293

ccccctccag aacacgctgc ccatgtacat gatctccttg ggcatgtggc ggttcaccac    32353

ctcccggtac cacatcaccc tctggttgaa catgcagccc cggatgatcc tgcggaacca    32413

cagggccagc accgccccgc ccgccatgca gcgaagagac cccgggtccc gacaatggca    32473

atggaggacc caccgctcgt acccgtggat catctgggag ctgaacaagt ctatgttggc    32533

acagcacagg catatgctca tgcatctctt cagcactctc agctcctcgg gggtcaaaac    32593

catatcccag ggcacgggga actcttgcag gacagcgaac cccgcagaac agggcaatcc    32653

tcgcacataa cttacattgt gcatggacag ggtatcgcaa tcaggcagca ccgggtgatc    32713

ctccaccaga gaagcgcggg tctcggtctc ctca cag cgt  ggt aag ggg gcc       32765
                                     Gln Arg  Gly Lys Gly Ala
                                     5955

ggc  cga tac ggg tga tgg cgg  gac gcg gct gat cgt  gtt cgc gac       32810
Gly  Arg Tyr Gly     Trp Arg  Asp Ala Ala Asp Arg  Val Arg Asp
```

```
5960                    5965                    5970

cgt gtc  atg atg cag ttg ctt  tcg gac att ttc gta  ctt gct gta       32855
Arg Val  Met Met Gln Leu Leu  Ser Asp Ile Phe Val  Leu Ala Val
    5975                    5980                    5985

gca gaa  cct ggt ccg ggc gct  gca cac cga tcg ccg  gcg gcg gtc       32900
Ala Glu  Pro Gly Pro Gly Ala  Ala His Arg Ser Pro  Ala Ala Val
    5990                    5995                    6000

ccg gcg  ctt gga acg ctc ggt  gtt gaa gtt gta aaa  cag cca ctc       32945
Pro Ala  Leu Gly Thr Leu Gly  Val Glu Val Val Lys  Gln Pro Leu
    6005                    6010                    6015

tct cag  acc gtg cag cag atc  tag ggc ctc agg agt gat  gaa gat       32990
Ser Gln  Thr Val Gln Gln Ile      Gly Leu Arg Ser Asp  Glu Asp
    6020                    6025                        6030

ccc atc atg  cct gat ggc tct aat  cac atc gac cac cgt  gga atg       33035
Pro Ile Met  Pro Asp Gly Ser Asn  His Ile Asp His Arg  Gly Met
        6035                    6040                    6045

ggc cag acc  cag cca gat gat gca  att ttg ttg ggt ttc  ggt gac       33080
Gly Gln Thr  Gln Pro Asp Asp Ala  Ile Leu Leu Gly Phe  Gly Asp
        6050                    6055                    6060

ggc ggg gga  ggg aag aac agg aag  aac cat gattaacttt taatccaaac      33130
Gly Gly Gly  Gly Lys Asn Arg Lys  Asn His
        6065                    6070

ggtctcggag cacttcaaaa tgaagatcgc ggagatggca cctctcgccc ccgctgtgtt    33190

ggtggaaaat aacagccagg tcaaaggtga tacggttctc gagatgttcc acggtggctt    33250

ccagcaaagc ctccacgcgc acatccagaa acaagacaat agcgaaagcg ggagggttct    33310

ctaattcctc aatcatcatg ttacactcct gcaccatccc cagataattt tcatttttcc    33370

agccttgaat gattcgaact agttcctgag gtaaatccaa gccagccatg ataaagagct    33430

cgcgcagagc gccctccacc ggcattctta agcacaccct cataattcca agatattctg    33490

ctcctggttc acctgcagca gattgacaag cggaatatca aaatctctgc cgcgatccct    33550

aagctcctcc ctcagcaata actgtaagta ctctttcata tcctctccga aatttttagc    33610

cataggaccg ccaggaatga gattaggaca agccacatta cagataaacc gaagtccccc    33670

ccagtgagca ttgccaaatg taagattgaa ataagcatgc tggctagacc cggtgatatc    33730

ttccagataa ctggacagaa aatcgcccag gcaattttta agaaaatcaa caaaagaaaa    33790

atcttccagg tgcacgttta gggcctcggg aacaacgatg gagtaagtgc aaggggtgcg    33850

ttccagcatg gttagttagc tgatctgtaa aaaaacaaaa aataaaacat taaaccatgc    33910

tagcctggcg aacaggtggg taaatcgttc tctccagcac caggcaggcc acggggtctc    33970

cggcgcgacc ctcgtaaaaa ttgtcgctat gattgaaaac catcacagag agacgttccc    34030

ggtggccggc gtgaatgatt cgacaagatg aatacacccc cggaacattg gcgtccgcga    34090

gtgaaaaaaa gcggccgagg aagcaataag gcactacaat gctcagtctc aagtccagca    34150

aagcgatgcc atgcggatga agcacaaaat tctcaggtgc gtacaaaatg taattactcc    34210

cctcctgcac aggcagcaaa gccccagatc cctccagata cacatacaaa gcctcagcgt    34270

ccatagctta ccgagcagca gcacacaaca ggcgcaagag tcagagaaag gctgagctct    34330
```

```
aacctgtccc ccgctctctg ctcaatatat agcccagatc tacactgacg taaaggccaa    34390

agtctaaaaa tacccgccaa ataatcacac acgcccagca cacgcccaga aaccggtgac    34450

acactcaaaa aaatacgcgc acttcctcaa acgcccaaac tgccgtcatt tccgggttcc    34510

cacgctacgt catcagaatt cgactttcaa atccgtcgac cgttaaacac gtcactcgcc    34570

ccgcccctaa cggtcgccct cctctcggcc aatcacagcc ccgcatcccc aaattcaaac    34630

gcctcatttg catattaacg cgcacaaaaa gtttgaggta tattattgat gatgatcgtt    34690

taaactatgc ggtgtgaaat accgcacaga tgcgtaagga gaaaataccg catcaggcgc    34750

tcttccgctt cctcgctcac tgactcgctg cgctcggtcg ttcggctgcg gcgagcggta    34810

tcagctcact caaaggcggt aatacggtta tccacagaat caggggataa cgcaggaaag    34870

aacatgtgag caaaaggcca gcaaaaggcc aggaaccgta aaaaggccgc gttgctggcg    34930

tttttccata ggctccgccc ccctgacgag catcacaaaa atcgacgctc aagtcagagg    34990

tggcgaaacc cgacaggact ataaagatac caggcgtttc cccctggaag ctccctcgtg    35050

cgctctcctg ttccgaccct gccgcttacc ggatacctgt ccgcctttct cccttcggga    35110

agcgtggcgc tttctcatag ctcacgctgt aggtatctca gttcggtgta ggtcgttcgc    35170

tccaagctgg gctgtgtgca cgaacccccc gttcagcccg accgctgcgc cttatccggt    35230

aactatcgtc ttgagtccaa cccggtaaga cacgacttat cgccactggc agcagccact    35290

ggtaacagga ttagcagagc gaggtatgta ggcggtgcta cagagttctt gaagtggtgg    35350

cctaactacg gctacactag aaggacagta tttggtatct gcgctctgct gaagccagtt    35410

accttcggaa aaagagttgg tagctcttga tccggcaaac aaaccaccgc tggtagcggt    35470

ggtttttttg tttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct    35530

ttgatctttt ctacggggtc tgacgctcag tggaacgaaa actcacgtta agggattttg    35590

gtcatgagat tatcaaaaag gatcttcacc tagatccttt taaattaaaa atgaagtttt    35650

aaatcaatct aaagtatata tgagtaaact tggtctgaca g tta cca atg  ctt       35703
                                                Leu Pro Met  Leu
                                                        6075

aat cag tga ggc acc  tat ctc agc gat ctg  tct att tcg ttc atc       35748
Asn Gln     Gly Thr  Tyr Leu Ser Asp Leu  Ser Ile Ser Phe Ile
                6080                6085                6090

cat agt tgc ctg act  ccc cgt cgt gta gat  aac tac gat acg gga       35793
His Ser Cys Leu Thr  Pro Arg Arg Val Asp  Asn Tyr Asp Thr Gly
                6095                6100                6105

ggg ctt acc atc tgg  ccc cag tgc tgc aat  gat acc gcg aga ccc       35838
Gly Leu Thr Ile Trp  Pro Gln Cys Cys Asn  Asp Thr Ala Arg Pro
                6110                6115                6120

acg ctc acc ggc tcc  aga ttt atc agc aat  aaa cca gcc agc cgg       35883
Thr Leu Thr Gly Ser  Arg Phe Ile Ser Asn  Lys Pro Ala Ser Arg
                6125                6130                6135

aag ggc cga gcg cag  aag tgg tcc tgc aac  ttt atc cgc ctc cat       35928
Lys Gly Arg Ala Gln  Lys Trp Ser Cys Asn  Phe Ile Arg Leu His
                6140                6145                6150
```

```
cca gtc tat taa ttg ttg  ccg gga agc tag agt aag  tag ttc gcc agt    35976
Pro Val Tyr     Leu Leu  Pro Gly Ser     Ser Lys      Phe Ala Ser
                    6155                    6160

taa tag ttt gcg  caa cgt tgt tgc cat  tgc tgc agg cat cgt  ggt       36021
        Phe Ala  Gln Arg Cys Cys His  Cys Cys Arg His Arg  Gly
            6165                6170                6175

gtc acg ctc gtc  gtt tgg tat ggc ttc  att cag ctc cgg ttc  cca       36066
Val Thr Leu Val  Val Trp Tyr Gly Phe  Ile Gln Leu Arg Phe  Pro
            6180                6185                6190

acg atc aag gcg  agt tac atg atc ccc  cat gtt gtg caa aaa  agc       36111
Thr Ile Lys Ala  Ser Tyr Met Ile Pro  His Val Val Gln Lys  Ser
            6195                6200                6205

ggt tag ctc ctt cgg  tcc tcc gat cgt tgt  cag aag taa gtt ggc        36156
Gly     Leu Leu Arg  Ser Ser Asp Arg Cys  Gln Lys     Val Gly
                6210                6215

cgc  agt gtt atc act cat  ggt tat ggc agc act  gca taa ttc tct       36201
Arg  Ser Val Ile Thr His  Gly Tyr Gly Ser Thr  Ala     Phe Ser
6220                6225                6230

tac tgt  cat gcc atc cgt aag  atg ctt ttc tgt gac  tgg tga gta       36246
Tyr Cys  His Ala Ile Arg Lys  Met Leu Phe Cys Asp  Trp     Val
    6235                6240                6245

ctc aac caa  gtc att ctg aga ata  gtg tat gcg gcg acc  gag ttg       36291
Leu Asn Gln  Val Ile Leu Arg Ile  Val Tyr Ala Ala Thr  Glu Leu
        6250                6255                6260

ctc ttg ccc  ggc gtc aac acg gga  taa tac cgc gcc aca tag cag       36336
Leu Leu Pro  Gly Val Asn Thr Gly      Tyr Arg Ala Thr     Gln
        6265                6270                        6275

aac ttt aaa agt gct  cat cat tgg aaa acg  ttc ttc ggg gcg aaa       36381
Asn Phe Lys Ser Ala  His His Trp Lys Thr  Phe Phe Gly Ala Lys
                6280                6285                6290

act ctc aag gat ctt  acc gct gtt gag atc  cag ttc gat gta acc       36426
Thr Leu Lys Asp Leu  Thr Ala Val Glu Ile  Gln Phe Asp Val Thr
                6295                6300                6305

cac tcg tgc acc caa  ctg atc ttc agc atc  ttt tac ttt cac cag       36471
His Ser Cys Thr Gln  Leu Ile Phe Ser Ile  Phe Tyr Phe His Gln
                6310                6315                6320

cgt ttc tgg gtg agc  aaa aac agg aag gca  aaa tgc cgc aaa aaa       36516
Arg Phe Trp Val Ser  Lys Asn Arg Lys Ala  Lys Cys Arg Lys Lys
                6325                6330                6335

ggg aat aag ggc gac  acg gaa atg ttg aat  act cat act cttccttttt    36565
Gly Asn Lys Gly Asp  Thr Glu Met Leu Asn  Thr His Thr
                6340                6345

caatattatt gaagcattta tcagggttat tgtctcatga gcggatacat atttgaatgt   36625

atttagaaaa ataaacaaat aggggttccg cgcacatttc cccgaaaagt gccacctgac   36685

gtctaagaaa ccattattat catgacatta acctataaaa ataggcgtat cacgaggccc   36745

tttcgtcttc aagaattgtt taaactac                                      36773
```

<210> 207
<211> 587
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 207

Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu
1 5 10 15

Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala
20 25 30

Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg
35 40 45

Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val
50 55 60

Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn
65 70 75 80

Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val
85 90 95

Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val
100 105 110

Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser
115 120 125

Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala
130 135 140

Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln
145 150 155 160

Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu
165 170 175

Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln
180 185 190

Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys
195 200 205

Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala
210 215 220

Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu
225 230 235 240

Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu
245 250 255

```
Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val
            260                 265                 270

Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly
        275                 280                 285

Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr
    290                 295                 300

Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu
305                 310                 315                 320

Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met
                325                 330                 335

Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn
            340                 345                 350

Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu
        355                 360                 365

Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr
    370                 375                 380

Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr
385                 390                 395                 400

Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp
                405                 410                 415

Val Asp Ser Ser Val Phe Ser Pro Arg Pro Thr Thr Thr Val Trp Lys
            420                 425                 430

Lys Glu Gly Gly Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly Arg Ala
        435                 440                 445

Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro Ser Leu
    450                 455                 460

Pro Phe Ser Leu Asn Ser Val Arg Ser Ser Glu Leu Gly Arg Leu Thr
465                 470                 475                 480

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

Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu Ser Leu
            500                 505                 510

Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala His Glu His Arg Asp
        515                 520                 525
```

```
Glu Pro Arg Ala Ser Ser Ser Ala Gly Ala Thr Arg Arg Arg Gln Arg
    530                 535                 540

His Asp Arg Gln Arg Gly Leu Val Trp Asp Asp Glu Asp Ser Ala Asp
545                 550                 555                 560

Asp Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe
                565                 570                 575

Ala His Leu Arg Pro Arg Ile Gly Arg Leu Met
            580                 585
```

<210> 208
<211> 542
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 208

```
Met Met Arg Arg Val Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1               5                   10                  15

Val Met Gln Gln Ala Val Ala Ala Ala Met Gln Pro Pro Leu Glu Ala
            20                  25                  30

Pro Tyr Val Pro Pro Arg Tyr Leu Ala Pro Thr Glu Gly Arg Asn Ser
        35                  40                  45

Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg Leu Tyr
    50                  55                  60

Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr Gln Asn
65                  70                  75                  80

Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp Phe Thr
                85                  90                  95

Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg Ser Arg
            100                 105                 110

Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro Asn Val
        115                 120                 125

Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met Val Ser
    130                 135                 140

Arg Lys Thr Pro Asn Gly Val Thr Val Asp Glu Asn Tyr Asp Gly Ser
145                 150                 155                 160

Gln Asp Glu Leu Thr Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly
                165                 170                 175
```

```
Asn Phe Ser Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile
            180                 185                 190

Asp Asn Tyr Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp
        195                 200                 205

Ile Gly Val Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro
    210                 215                 220

Val Thr Glu Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His
225                 230                 235                 240

Pro Asp Ile Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser
                245                 250                 255

Arg Leu Ser Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu
            260                 265                 270

Gly Phe Gln Ile Leu Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala
        275                 280                 285

Leu Leu Asp Val Glu Ala Tyr Glu Lys Ser Lys Glu Glu Ala Ala Ala
    290                 295                 300

Ala Ala Thr Ala Ala Val Ala Thr Ala Ala Thr Thr Asp Ala Asp Ala
305                 310                 315                 320

Ala Thr Thr Thr Arg Gly Asp Thr Phe Ala Thr Gln Ala Glu Glu Ala
                325                 330                 335

Ala Ala Leu Ala Ala Thr Asp Asp Ser Glu Ser Lys Ile Val Ile Lys
            340                 345                 350

Pro Val Glu Lys Asp Ser Lys Asp Arg Ser Tyr Asn Val Leu Ser Asp
        355                 360                 365

Gly Lys Asn Thr Ala Tyr Arg Ser Trp Tyr Leu Ala Tyr Asn Tyr Gly
    370                 375                 380

Asp Pro Glu Lys Gly Val Arg Ser Trp Thr Leu Leu Thr Thr Ser Asp
385                 390                 395                 400

Val Thr Cys Gly Val Glu Gln Val Tyr Trp Ser Leu Pro Asp Met Met
                405                 410                 415

Gln Asp Pro Val Thr Phe Arg Ser Thr Arg Gln Val Ser Asn Tyr Pro
            420                 425                 430

Val Val Gly Ala Glu Leu Leu Pro Val Tyr Ser Lys Ser Phe Phe Asn
        435                 440                 445
```

Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg Ala Phe Thr Ser Leu Thr
450 455 460

His Val Phe Asn Arg Phe Pro Glu Asn Gln Ile Leu Val Arg Pro Pro
465 470 475 480

Ala Pro Thr Ile Thr Thr Val Ser Glu Asn Val Pro Ala Leu Thr Asp
485 490 495

His Gly Thr Leu Pro Leu Arg Ser Ser Ile Arg Gly Val Gln Arg Val
500 505 510

Thr Val Thr Asp Ala Arg Arg Arg Thr Cys Pro Tyr Val Tyr Lys Ala
515 520 525

Leu Gly Val Val Ala Pro Arg Val Leu Ser Ser Arg Thr Phe
530 535 540

<210> 209
<211> 194
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 209

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1 5 10 15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
20 25 30

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
35 40 45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
50 55 60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Ala Ser Thr
65 70 75 80

Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
85 90 95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
100 105 110

Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
115 120 125

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ser
130 135 140

Ser Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala
145 150 155 160

Ala Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val
165 170 175

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

Arg Thr

<210> 210
<211> 348
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 210

Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1 5 10 15

Glu Ile Tyr Gly Pro Ala Ala Ala Val Lys Glu Glu Arg Lys Pro Arg
20 25 30

Lys Leu Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Glu Asp Asp Gly
35 40 45

Leu Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln Trp
50 55 60

Arg Gly Arg Lys Val Lys Pro Val Leu Arg Pro Gly Thr Thr Val Val
65 70 75 80

Phe Thr Pro Gly Glu Arg Ser Gly Ser Ala Ser Lys Arg Ser Tyr Asp
85 90 95

Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu Gln Ala Ala Glu Arg Leu
100 105 110

Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Pro Ala Pro Leu Lys Glu
115 120 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
130 135 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Ser Ala Ala Pro Arg Arg
145 150 155 160

Gly Phe Lys Arg Glu Gly Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu
165 170 175

```
Met Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu His Met Lys
            180                 185                 190

Val Asp Pro Glu Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln
        195                 200                 205

Val Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr
    210                 215                 220

Glu Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr
225                 230                 235                 240

Met Glu Val Gln Thr Asp Pro Trp Met Pro Ala Pro Ala Ser Thr Thr
                245                 250                 255

Thr Thr Thr Arg Arg Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met
            260                 265                 270

Pro Asn Tyr Ala Leu His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg
        275                 280                 285

Gly Thr Arg Phe Tyr Arg Gly Tyr Ser Ser Arg Arg Lys Thr Thr Thr
    290                 295                 300

Arg Arg Arg Arg Arg Arg Thr Arg Arg Ser Thr Thr Ala Thr Ser Ala
305                 310                 315                 320

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

Leu Pro Arg Ala Arg Tyr His Pro Ser Ile Ala Ile
            340                 345
```

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

<220>
<223> Synthetic Construct

<400> 211

```
Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1               5                   10                  15

Arg Lys Pro Arg Arg Arg Arg Leu Thr Gly Asn Gly Leu Arg Arg His
            20                  25                  30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
        35                  40                  45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
```

50 55 60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65 70 75

<210> 212
<211> 244
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 212

Met Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg
1 5 10 15

Pro Phe Met Gly Thr Trp Ser Asp Ile Gly Asn Ser Gln Leu Asn Gly
20 25 30

Gly Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly
35 40 45

Ser Thr Leu Lys Thr Tyr Gly Ser Lys Ala Trp Asn Ser Thr Thr Gly
50 55 60

Gln Ala Leu Arg Asp Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val
65 70 75 80

Val Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn
85 90 95

Gln Ala Val Gln Arg Gln Ile Asn Ser Arg Leu Asp Pro Val Pro Pro
100 105 110

Ala Gly Ser Val Glu Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu
115 120 125

Asp Lys Arg Gly Glu Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu
130 135 140

Leu Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu
145 150 155 160

Gly Leu Pro Thr Thr Arg Pro Ile Ala Pro Leu Ala Thr Gly Val Leu
165 170 175

Lys Pro Glu Ser Asn Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Gln
180 185 190

Pro Ser Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val
195 200 205

```
Ala Arg Ala Arg Pro Gly Gly Ser Ala Arg Pro His Ala Asn Trp Gln
    210                 215                 220

Ser Thr Leu Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg
225                 230                 235                 240

Arg Arg Cys Tyr
```

<210> 213
<211> 943
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 213

```
Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1               5                   10                  15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
            20                  25                  30

Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
        35                  40                  45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
    50                  55                  60

Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65                  70                  75                  80

Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
                85                  90                  95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
        115                 120                 125

Ala Pro Asn Ser Ser Gln Trp Glu Arg Ala Lys Thr Asn Asn Asn Gly
    130                 135                 140

Ala Thr Glu Ser Val Thr Phe Gly Val Ala Ala Met Gly Gly Ile Asp
145                 150                 155                 160

Ile Thr Lys Glu Gly Leu Gln Ile Gly Thr Asp Glu Thr Lys Ala Asp
                165                 170                 175

Ser Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro Gln Ile
            180                 185                 190
```

```
Gly Glu Glu Asn Trp Gln Glu Thr Phe Ser Tyr Tyr Gly Gly Arg Ala
        195                 200                 205

Leu Lys Lys Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys
    210                 215                 220

Pro Thr Asn Val Lys Gly Gly Gln Ala Lys Phe Lys Val Gln Asp Gly
225                 230                 235                 240

Gln Gln Thr Thr Glu Tyr Asp Ile Asp Leu Ala Phe Phe Asp Ile Pro
                245                 250                 255

Asn Ser Gly Thr Gly Gly Asn Gly Thr Asn Val Asn Tyr Asp Pro Asp
            260                 265                 270

Met Val Met Tyr Thr Glu Asn Val Asp Leu Glu Thr Pro Asp Thr His
        275                 280                 285

Ile Val Tyr Lys Pro Gly Thr Ser Asp Asp Ser Ser Glu Ala Asn Leu
    290                 295                 300

Leu Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Gly Phe Arg Asp
305                 310                 315                 320

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
                325                 330                 335

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
            340                 345                 350

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Leu Gly Asp
        355                 360                 365

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp
    370                 375                 380

Pro Asp Val Arg Ile Ile Glu Asn His Gly Val Glu Asp Glu Leu Pro
385                 390                 395                 400

Asn Tyr Cys Phe Pro Leu Asp Gly Ala Gly Thr Asn Ala Val Tyr Gln
                405                 410                 415

Gly Val Lys Ala Lys Thr Asn Gly Gly Ala Ala Asn Gly Asp Trp Glu
            420                 425                 430

Gln Asp Thr Asp Val Ser Asn Ile Asn Gln Ile Cys Lys Gly Asn Ile
        435                 440                 445

Tyr Ala Met Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe Leu
    450                 455                 460
```

```
Tyr Ser Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Pro
465                 470                 475                 480

Ala Asn Ile Thr Leu Pro Thr Asn Thr Asn Thr Tyr Asp Tyr Met Asn
                485                 490                 495

Gly Arg Val Ala Pro Pro Ser Leu Val Asp Ala Tyr Ile Asn Ile Gly
            500                 505                 510

Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn Pro Phe Asn His
        515                 520                 525

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
    530                 535                 540

Arg Phe Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
545                 550                 555                 560

Lys Ser Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
                565                 570                 575

Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu
            580                 585                 590

Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala
        595                 600                 605

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
    610                 615                 620

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
625                 630                 635                 640

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
                645                 650                 655

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr
            660                 665                 670

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro
        675                 680                 685

Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
    690                 695                 700

Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser Val
705                 710                 715                 720

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
                725                 730                 735

Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
```

```
            740                 745                 750

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly
        755                 760                 765

Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser
    770                 775                 780

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val
785                 790                 795                 800

Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn
                805                 810                 815

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln Pro
            820                 825                 830

Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr
        835                 840                 845

Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile
    850                 855                 860

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
865                 870                 875                 880

Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe
                885                 890                 895

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

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
        915                 920                 925

Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
    930                 935                 940


<210>  214
<211>  208
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  214

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

Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys Arg
            20                  25                  30
```

Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val Asn
35 40 45

Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala Trp
50 55 60

Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe Ser
65 70 75 80

Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu Leu
85 90 95

Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu Lys
100 105 110

Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu Phe
115 120 125

Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro Met
130 135 140

Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly Met
145 150 155 160

Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu Ala
165 170 175

Leu Tyr Arg Phe Leu Asn Ala His Ser Ala Tyr Phe Arg Ser His Arg
180 185 190

Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Gln Asp Met
195 200 205

<210> 215
<211> 503
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 215

Glu Ile Glu Gly Val Leu Pro Ala Leu Gly Val Pro Arg Gly Gln Gly
1 5 10 15

Tyr Val Ala Glu Leu Val Leu Gly Gln Pro Leu Glu Leu Gly Asp Gln
20 25 30

Gln Leu Arg His Gly Glu Val Gly Glu Arg Val Ala Pro Gln Leu Ala
35 40 45

Arg Glu Leu Gln Gly Ala Gln Gln Val Gly Arg Gly Asp Leu Glu Ile
50 55 60

```
Ala Val Gly Thr Arg Val Leu Arg Ala Arg Val Ala Val His Gly Val
65                  70                  75                  80

Ala Ala Leu Glu His His Gln Gly Arg Val Leu His Ala Arg Gln His
                85                  90                  95

Arg Arg Val Gly Asp Ala Leu His Val Gln Ile Leu Gly Val Gly His
            100                 105                 110

Pro Glu Gly Gly His Leu Ala Gly Leu Pro Pro His Ala Gly His Ala
        115                 120                 125

Ala Gly Leu Val Val Ala Ile Ala Val Gln Gly Asp Gln His His Leu
    130                 135                 140

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

Gln Leu Ala Glu Gly Leu Leu Arg Leu Ala Ala Leu Gly Glu Glu Asp
                165                 170                 175

Pro Ala Gly Leu Ala Arg Glu Leu Val Gly Ser Ala Ala Arg Val Val
            180                 185                 190

His Ala Ala Ala Arg Val Val Val Gly Gln Leu His His Ala Ala Pro
        195                 200                 205

Pro Ala Val Leu Gly Asp Leu Gly Pro Val Gly Val Leu Leu Gln Arg
    210                 215                 220

Ala Leu Pro Val Leu Ala Arg His Ile His Leu Asp Arg Val Leu Leu
225                 230                 235                 240

Leu Asp His His Gly Pro Val Gln Ala Pro Gln Leu Ala Leu Gly Leu
                245                 250                 255

Gly Ala Ala Val Gln Pro Gln Arg Ala Ala Gly Ala Leu Pro Val Leu
            260                 265                 270

Val Gly Asp Leu Gly Val Arg Val His Glu Ala Leu Gln Glu Ala Ala
        275                 280                 285

His His Arg Gly Gln Gly Leu Val Ala Gly Glu Gly Gln Arg Asp Ala
    290                 295                 300

Ala Val Leu Leu Val His Ile Gln Val Ala Asp Ala Ala Val His Leu
305                 310                 315                 320

Ala Leu Leu Gly His Gln Leu Glu Gly Gly Leu Gln Val Ala Leu His
                325                 330                 335
```

```
Ala Val Pro Val His Gln Gln Arg His His Phe His Ala Leu Leu Pro
            340                 345                 350

Gly Arg Asn Asp Arg Gln Ala Gln Gly Val Leu His Arg His Leu Ser
        355                 360                 365

Arg Arg Arg Arg Ser Gln Gly Val Val Leu Val Gln Gly Leu Lys His
    370                 375                 380

Ser Leu Ala Val Leu Leu Gly Asp Ala His Gly Gly Glu Gly Glu Ala
385                 390                 395                 400

His Gly Arg Gln Leu Leu Leu Gly Leu Pro Phe Val Leu Ala Val Leu
                405                 410                 415

Ala Asp Val Leu Gln Arg His Met Leu Gly Leu Ala Gly Phe Leu Phe
            420                 425                 430

Gly Arg Gln Arg Arg Arg Arg Arg Arg Arg Ala Gly Arg Ala Arg Val
        435                 440                 445

Leu Ala His His Asp Tyr Phe Phe Phe Leu Ala Val Val Arg Asp His
    450                 455                 460

Ala Ala Val Gly Met Pro Leu Leu Gly Gln Arg Arg Arg Arg Arg Ala
465                 470                 475                 480

Leu Ala Val Arg Arg Ala Ala Gly Arg Ala Pro Ser Ala Phe Gly Gly
                485                 490                 495

Ala Leu Leu Ala Ala Leu Leu
            500
```

<210> 216
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 216

```
Leu Thr Ser Ser Ala Ala Gly His
1               5
```

<210> 217
<211> 798
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 217

```
Met Glu Thr Gln Pro Ser Ser Pro Thr Ser Pro Ser Ala Pro Ala Ala
```

1 5 10 15

Ala Asp Glu Asn Gln Gln Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro
20 25 30

Pro Ser Pro Thr Ser Asp Ala Ala Ala Pro Asp Met Gln Glu Met Glu
35 40 45

Glu Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His Glu
50 55 60

Glu Glu Leu Ala Ala Arg Phe Ser Ala Pro Glu Glu Asn His Gln Glu
65 70 75 80

Gln Pro Glu Gln Glu Ala Glu Ser Glu Gln Ser Gln Ala Gly Leu Glu
85 90 95

His Gly Asp Tyr Leu Ser Gly Ala Glu Asp Val Leu Ile Lys His Leu
100 105 110

Ala Arg Gln Cys Ile Ile Val Lys Asp Ala Leu Leu Asp Arg Ala Glu
115 120 125

Val Pro Leu Ser Val Ala Glu Leu Ser Arg Ala Tyr Glu Arg Asn Leu
130 135 140

Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr Cys Glu
145 150 155 160

Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro Glu Ala
165 170 175

Leu Ala Thr Tyr His Leu Phe Phe Lys Asn Gln Arg Ile Pro Val Ser
180 185 190

Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Leu Asn Leu Gly Pro
195 200 205

Gly Ala Arg Leu Pro Asp Ile Ala Ser Leu Glu Glu Val Pro Lys Ile
210 215 220

Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala Leu Gln
225 230 235 240

Gly Ser Gly Glu Glu His Glu His His Ser Ala Leu Val Glu Leu Glu
245 250 255

Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu Leu Thr
260 265 270

His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met Ser Ala
275 280 285

```
Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Leu Ser Glu Glu
    290                 295                 300

Glu Met Gln Asp Pro Glu Ser Ser Asp Glu Gly Lys Pro Val Val Ser
305                 310                 315                 320

Asp Glu Gln Leu Ala Arg Trp Leu Gly Thr Ser Ser Thr Pro Gln Ser
                325                 330                 335

Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr Val
            340                 345                 350

Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu Arg
        355                 360                 365

Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val Arg
    370                 375                 380

Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr
385                 390                 395                 400

Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His Thr
                405                 410                 415

Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val Tyr
            420                 425                 430

Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln Gln
        435                 440                 445

Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln Lys
    450                 455                 460

Asn Leu Lys Ala Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala Ser
465                 470                 475                 480

Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu Arg
                485                 490                 495

Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe Arg
            500                 505                 510

Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser Ala
        515                 520                 525

Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro Pro
    530                 535                 540

Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala Tyr
545                 550                 555                 560
```

```
His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu Cys
                565                 570                 575

His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys Asn
            580                 585                 590

Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu Gln
        595                 600                 605

Gly Pro Gly Glu Glu Gly Lys Gly Gly Leu Lys Leu Thr Pro Gly Leu
    610                 615                 620

Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp Tyr His Pro
625                 630                 635                 640

Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro Pro Lys Ala Glu
                645                 650                 655

Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu Ala Gln Leu Gln
            660                 665                 670

Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys Gly His Gly
        675                 680                 685

Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn Pro Ser Phe Pro
    690                 695                 700

Gln Asp Ala Gln Arg Lys Gln Gln Glu Ala Glu Ser Gly Ala Ala Ala
705                 710                 715                 720

Ala Ala Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Ser Gly Arg Gly
                725                 730                 735

Gly Gly Asp Gly Arg Leu Gly Gln His Ser Gly Arg Gly Gly Gln Pro
            740                 745                 750

Ala Arg Gln Ser Gly Arg Arg Gly Gly Gly Gly Arg Gly Arg Ser Ser
        755                 760                 765

Arg Arg Gln Thr Val Val Leu Gly Gly Glu Ser Lys Gln His Gly Tyr
    770                 775                 780

His Leu Arg Ser Gly Ser Gly Ser Arg Arg Pro Gly Pro Gln
785                 790                 795
```

<210> 218
<211> 227
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 218

Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1 5 10 15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
20 25 30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala His Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Ile Thr Ala Thr
50 55 60

Pro Arg His His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
100 105 110

Ala Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
115 120 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
130 135 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Leu Ala Gly Ser Gly Arg Ser
145 150 155 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
165 170 175

Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
180 185 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
195 200 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
210 215 220

Gly Tyr Asp
225

<210> 219
<211> 106
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 219

Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1 5 10 15

His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Ala
20 25 30

Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
35 40 45

Arg Ile Ile Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
50 55 60

Ser Gln Arg Pro Ile Leu Val Glu Arg Glu Gln Gly Gln Thr Arg Leu
65 70 75 80

Thr Leu Tyr Cys Ile Cys Asn His Pro Gly Leu His Glu Ser Leu Cys
85 90 95

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
100 105

<210> 220
<211> 176
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 220

Met Gly Gln Ile Thr Leu Val Ser Cys Gly Val Leu Val Ala Val Val
1 5 10 15

Leu Ser Ile Val Gly Leu Gly Gly Ala Ala Val Val Lys Glu Lys Ala
20 25 30

Asp Pro Cys Leu His Phe Asn Pro Asp Lys Cys Gln Leu Ser Phe Gln
35 40 45

Pro Asp Gly Asn Arg Cys Ala Val Leu Ile Lys Cys Gly Trp Glu Cys
50 55 60

Glu Asn Val Arg Ile Glu Tyr Asn Asn Lys Thr Arg Asn Asn Thr Leu
65 70 75 80

Ala Ser Thr Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
85 90 95

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

```
Ala His Met Cys Asp Thr Val Met Trp Met Ser Lys Gln Tyr Asp Met
        115                 120                 125

Trp Pro Pro Thr Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
    130                 135                 140

Leu Cys Thr Val Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145                 150                 155                 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
                165                 170                 175
```

<210> 221
<211> 200
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 221

```
Met Ala Ser Val Lys Phe Leu Leu Leu Phe Ala Ser Leu Ile Thr Val
1               5                   10                  15

Ile Ser Asn Glu Lys Leu Thr Ile Tyr Ile Gly Thr Asn His Thr Leu
            20                  25                  30

Glu Gly Ile Pro Lys Ser Ser Trp Tyr Cys Tyr Phe Asp Gln Asp Pro
        35                  40                  45

Asp Leu Thr Ile Glu Leu Cys Gly Asn Lys Gly Gln Asn Thr Ser Ile
    50                  55                  60

His Leu Ile Asn Phe Lys Cys Gly Asp Asp Leu Lys Leu Ile Asn Ile
65                  70                  75                  80

Thr Lys Glu Tyr Gly Gly Met Tyr Tyr Tyr Val Thr Glu Asn Asn Asn
                85                  90                  95

Met Gln Phe Tyr Glu Val Thr Val Thr Asn Pro Thr Thr Pro Arg Thr
            100                 105                 110

Thr Thr Thr Thr Thr Lys Thr Thr Pro Val Thr Thr Met Gln Leu Thr
        115                 120                 125

Thr Asn Asn Ile Phe Ala Met Arg Gln Lys Ala Asn Asn Ser Thr Ser
    130                 135                 140

Ile Gln Pro Pro Pro Pro Ser Glu Glu Ile Pro Lys Ser Met Ile Gly
145                 150                 155                 160

Ile Ile Val Ala Val Val Val Cys Met Leu Ile Ile Ala Leu Cys Met
                165                 170                 175
```

Val Tyr Tyr Ala Phe Cys Tyr Arg Lys His Arg Leu Asn Asp Lys Leu
180 185 190

Glu His Leu Leu Ser Val Glu Phe
195 200

<210> 222
<211> 204
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 222

Met Lys Ile Leu Gly Leu Leu Ile Phe Ser Ile Ile Thr Ser Ala Leu
1 5 10 15

Cys Asn Ser Asp Asn Glu Asp Val Thr Val Val Val Gly Ser Asn Tyr
20 25 30

Thr Leu Lys Gly Pro Ala Lys Gly Met Leu Ser Trp Tyr Cys Trp Phe
35 40 45

Gly Thr Asp Thr Glu Gln Thr Glu Leu Cys Asn Leu Gln Asn Gly Lys
50 55 60

Val His Asn Ser Lys Ile Tyr Asn Tyr Ile Cys Asn Gly Thr Asp Leu
65 70 75 80

Ile Leu Leu Asn Ile Thr Lys Ser Tyr Ala Gly Ser Tyr Ser Cys Pro
85 90 95

Gly Asp Asp Ala Asp Asn Met Ile Phe Tyr Lys Leu Gln Val Val Asp
100 105 110

Pro Thr Thr Pro Pro Pro Pro Thr Thr Thr Thr His Thr Thr His Thr
115 120 125

Glu Gln Thr Thr Ala Glu Glu Ala Ala Lys Leu Ala Leu Gln Val Gln
130 135 140

Asp Ser Ser Phe Val Gly Ile Thr Pro Thr Pro Asp Gln Arg Cys Pro
145 150 155 160

Gly Leu Leu Val Ser Gly Ile Val Gly Val Leu Ser Gly Leu Ala Val
165 170 175

Ile Ile Ile Cys Met Phe Ile Phe Ala Cys Cys Tyr Arg Arg Leu Tyr
180 185 190

Arg Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
195 200

<210> 223
<211> 143
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 223

Met Arg Ala Leu Leu Leu Leu Ala Leu Leu Leu Leu Val Leu Pro Arg
1 5 10 15

Pro Val Asp Pro Arg Pro Pro Thr Gln Ser Pro Glu Glu Val Arg Lys
20 25 30

Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Lys Cys Tyr Arg Gln Lys
35 40 45

Ser Asp Met His Pro Ser Trp Ile Met Ile Ile Gly Ile Val Asn Ile
50 55 60

Leu Ala Cys Thr Leu Ile Ser Phe Val Ile Tyr Pro Cys Phe Asp Phe
65 70 75 80

Gly Trp Asn Ser Pro Glu Ala Leu Tyr Leu Pro Pro Glu Pro Asp Thr
85 90 95

Pro Pro Gln Gln Pro Gln Ala His Ala Leu Pro Pro Pro Gln Pro Arg
100 105 110

Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala Glu Pro Gln Arg Pro
115 120 125

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

<210> 224
<211> 445
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 224

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
1 5 10 15

Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
20 25 30

Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
35 40 45

```
Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
    50                  55                  60

Lys Leu Gly Asp Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
65                  70                  75                  80

Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
                85                  90                  95

Ile Ser Leu Asn Met Asp Thr Pro Phe Tyr Asn Asn Asn Gly Lys Leu
            100                 105                 110

Gly Met Lys Val Thr Ala Pro Leu Lys Ile Leu Asp Thr Asp Leu Leu
        115                 120                 125

Lys Thr Leu Val Val Ala Tyr Gly Gln Gly Leu Gly Thr Asn Thr Thr
    130                 135                 140

Gly Ala Leu Val Ala Gln Leu Ala Ser Pro Leu Ala Phe Asp Ser Asn
145                 150                 155                 160

Ser Lys Ile Ala Leu Asn Leu Gly Asn Gly Pro Leu Lys Val Asp Ala
                165                 170                 175

Asn Arg Leu Asn Ile Asn Cys Asn Arg Gly Leu Tyr Val Thr Thr Thr
            180                 185                 190

Lys Asp Ala Leu Glu Ala Asn Ile Ser Trp Ala Asn Ala Met Thr Phe
        195                 200                 205

Ile Gly Asn Ala Met Gly Val Asn Ile Asp Thr Gln Lys Gly Leu Gln
    210                 215                 220

Phe Gly Thr Thr Ser Thr Val Ala Asp Val Lys Asn Ala Tyr Pro Ile
225                 230                 235                 240

Gln Ile Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile
                245                 250                 255

Val Ala Trp Asn Lys Asp Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala
            260                 265                 270

Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Glu Lys Asp Ala Lys Leu
        275                 280                 285

Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser
    290                 295                 300

Leu Ile Ala Val Asp Thr Gly Ser Leu Asn Pro Ile Thr Gly Thr Val
305                 310                 315                 320
```

```
Thr Thr Ala Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Val Leu Gln
                325                 330                 335

Ser Ser Ser Thr Leu Asp Ser Asp Tyr Trp Asn Phe Arg Gln Gly Asp
            340                 345                 350

Val Thr Pro Ala Glu Ala Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn
        355                 360                 365

Leu Lys Ala Tyr Pro Lys Asn Thr Ser Gly Ala Ala Lys Ser His Ile
    370                 375                 380

Val Gly Lys Val Tyr Leu His Gly Asp Thr Asp Lys Pro Leu Asp Leu
385                 390                 395                 400

Ile Ile Thr Phe Asn Glu Thr Ser Asp Glu Ser Cys Thr Tyr Cys Ile
                405                 410                 415

Asn Phe Gln Trp Gln Trp Gly Ala Asp Gln Tyr Lys Asn Glu Thr Leu
            420                 425                 430

Ala Val Ser Ser Phe Thr Phe Ser Tyr Ile Ala Lys Glu
        435                 440                 445


<210>  225
<211>  10
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  225

Gln Arg Gly Lys Gly Ala Gly Arg Tyr Gly
1               5                   10


<210>  226
<211>  62
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  226

Trp Arg Asp Ala Ala Asp Arg Val Arg Asp Arg Val Met Met Gln Leu
1               5                   10                  15

Leu Ser Asp Ile Phe Val Leu Ala Val Ala Glu Pro Gly Pro Gly Ala
            20                  25                  30

Ala His Arg Ser Pro Ala Ala Val Pro Ala Leu Gly Thr Leu Gly Val
        35                  40                  45

Glu Val Val Lys Gln Pro Leu Ser Gln Thr Val Gln Gln Ile
```

50 55 60

<210> 227
<211> 47
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 227

Gly Leu Arg Ser Asp Glu Asp Pro Ile Met Pro Asp Gly Ser Asn His
1 5 10 15

Ile Asp His Arg Gly Met Gly Gln Thr Gln Pro Asp Asp Ala Ile Leu
20 25 30

Leu Gly Phe Gly Asp Gly Gly Gly Gly Lys Asn Arg Lys Asn His
35 40 45

<210> 228
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 228

Leu Pro Met Leu Asn Gln
1 5

<210> 229
<211> 75
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 229

Gly Thr Tyr Leu Ser Asp Leu Ser Ile Ser Phe Ile His Ser Cys Leu
1 5 10 15

Thr Pro Arg Arg Val Asp Asn Tyr Asp Thr Gly Gly Leu Thr Ile Trp
20 25 30

Pro Gln Cys Cys Asn Asp Thr Ala Arg Pro Thr Leu Thr Gly Ser Arg
35 40 45

Phe Ile Ser Asn Lys Pro Ala Ser Arg Lys Gly Arg Ala Gln Lys Trp
50 55 60

Ser Cys Asn Phe Ile Arg Leu His Pro Val Tyr
65 70 75

<210> 230
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 230

Leu Leu Pro Gly Ser
1 5

<210> 231
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 231

Phe Ala Gln Arg Cys Cys His Cys Cys Arg His Arg Gly Val Thr Leu
1 5 10 15

Val Val Trp Tyr Gly Phe Ile Gln Leu Arg Phe Pro Thr Ile Lys Ala
20 25 30

Ser Tyr Met Ile Pro His Val Val Gln Lys Ser Gly
35 40

<210> 232
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 232

Leu Leu Arg Ser Ser Asp Arg Cys Gln Lys
1 5 10

<210> 233
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 233

Val Gly Arg Ser Val Ile Thr His Gly Tyr Gly Ser Thr Ala
1 5 10

<210> 234
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 234

Phe Ser Tyr Cys His Ala Ile Arg Lys Met Leu Phe Cys Asp Trp
1   5   10   15

<210> 235
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 235

Val Leu Asn Gln Val Ile Leu Arg Ile Val Tyr Ala Ala Thr Glu Leu
1   5   10   15

Leu Leu Pro Gly Val Asn Thr Gly
            20

<210> 236
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 236

Tyr Arg Ala Thr
1

<210> 237
<211> 74
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 237

Gln Asn Phe Lys Ser Ala His His Trp Lys Thr Phe Phe Gly Ala Lys
1   5   10   15

Thr Leu Lys Asp Leu Thr Ala Val Glu Ile Gln Phe Asp Val Thr His
            20   25   30

Ser Cys Thr Gln Leu Ile Phe Ser Ile Phe Tyr Phe His Gln Arg Phe
        35   40   45

Trp Val Ser Lys Asn Arg Lys Ala Lys Cys Arg Lys Lys Gly Asn Lys
    50   55   60

Gly Asp Thr Glu Met Leu Asn Thr His Thr
65   70

<210> 238
<211> 36773
<212> DNA
<213> Artificial Sequence

<220>
<223> p2870 - E1 deleted molecular clone, based on Simian Adenovirus A1320

<220>
<221> CDS
<222> (23696)..(24250)
<223> 22K

<220>
<221> CDS
<222> (25557)..(26177)
<223> E3 CR1-alpha

<220>
<221> CDS
<222> (27967)..(28842)
<223> E3 CR1-delta

<220>
<221> CDS
<222> (29558)..(29962)
<223> E3 14.7K

<220>
<221> CDS
<222> (31937)..(32839)
<223> E4 orf6 complement (31937..32839)

<400> 238
catcatcaat aatatacctc aaacttttg tgcgcgttaa tatgcaaatg aggcgtttga 60

atttggggat gcggggcggt gattggctgt gggaaaggcg accgttaggg gcggggcggg 120

tgacgttttg atgacgtgtt tgtgaggcgg agccggtttg caagttctcg tgggaaaagt 180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca 240

ggaaatgagg tgtttctggg cggatgcaag tgaaaacggg ccattttcgc gcgaaaactg 300

aatgaggaag tgaaaatctg agtaatttcg cgtttatggc agggaggagt atttgccgag 360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtgtttt tcacctaaat 420

ttccgcgtac ggtgtcaaag tccggtgttt ttacatcatt tccccgaaaa gtgccacctg 480

acgtaactat aacggtccta aggtagcgaa agctcagatc tcccgatccc ctatggtgca 540

ctctcagtac aatctgctct gatgccgcat agttaagcca gtatctgctc cctgcttgtg 600

tgttggaggt cgctgagtag tgcgcgagca aaatttaagc tacaacaagg caaggcttga 660

ccgacaattg catgaagaat ctgcttaggg ttaggcgttt tgcgctgctt cgcgatgtac 720

gggccagata tacgcggtac gaaaccgctg atcagcctcg actgtgcctt ctagttgcca 780

gccatctgtt gtttgcccct cccccgtgcc ttccttgacc ctggaaggtg ccactcccac 840

tgtcctttcc taataaaatg aggaaattgc atcgcattgt ctgagtaggt gtcattctat 900

tctgggggt ggggtggggc aggacagcaa gggggaggat tgggaagaca atagcaggca 960

tgctggggat gcggtgggct ctatggcttc tgaggcggaa agaaccagca gatctgcaga 1020
tctgaattca tctatgtcgg gtgcggagaa agaggtaatg aaatggcatt atgggtatta 1080
tgggtctgca ttaatgaatc ggccagatta tgctggccac cgtgcatgtg gcctcgcacc 1140
cccgcaagac atggcccgag ttcgagcaca acgtcatgac ccgctgcaat gtgcacctgg 1200
gctcccgccg aggcatgttc atgccatacc agtgcaacat gcaatttgtg aaggtgctgc 1260
tggagcccga tgccatgtcc agagtgagcc tgacgggggt gtttgacatg aatgtggagc 1320
tgtggaaaat tctgagatat gatgaatcca agaccaggtg ccgggcctgc gaatgcggag 1380
gcaagcacgc caggcttcag cccgtgtgtg tggaggtgac ggaggacctg cgacccgatc 1440
atttggtgtt gtcctgcaac gggacggagt tcggctccag cggggaagaa tctgactaga 1500
gtgagtagtg tttgggggtg ggtgggagcc tgcatgatgg gcagaatgac taaaatctgt 1560
gtttttctgc gcagcagcat gagcggaagc gcctcctttg agggaggggt attcagccct 1620
tatctgacgg ggcgtctccc ctcctgggct ggagtgcgtc agaatgtgat gggatccacg 1680
gtggacggcc ggcccgtgca gcccgcgaac tcttcaaccc tgacctacgc gaccctgagc 1740
tcctcgtccg tggacgcagc tgccgccgca gctgctgctt ccgccgccag cgccgtgcgc 1800
ggaatggccc tgggtgccgg ctactacagc tctctggtgg ccaactcgag ttccgccaat 1860
aatcccgcca gcctgaacga ggagaagctg ctgctgctga tggcccagct cgaggccctg 1920
acccagcgcc tgggcgagct gacccagcag gtggctcagc tgcaggcgga gacgcgggcc 1980
gcggttgcca cggtgaaaac caaataaaaa atgaatcaat aaataaacgg aaacggttgt 2040
tgattttaac acagagtctt gaatctttat ttgatttttc gcgcgcggta ggccctggac 2100
caccggtctc gatcattgag cacccggtgg atcttttcca ggacccggta gaggtgggct 2160
tggatgttga ggtacatggg catgagcccg tcccgggggt ggaggtagct ccactgcagg 2220
gcctcgtgct cgggggtggt gttgtaaatc acccagtcat agcaggggcg cagggcgtgg 2280
tgctgcacga tgtccttgag gaggagactg atggccacgg gcagtccctt ggtgtaggtg 2340
ttgacgaacc tgttgagctg ggagggatgc atgcgggggg agatgagatg catcttggcc 2400
tggatcttga gattggcgat gttcccaccc agatcccgcc gggggttcat gttgtgcagg 2460
accaccagca cggtgtatcc ggtgcacttg gggaatttgt catgcaactt ggaagggaag 2520
gcgtgaaaga atttggagac gcccttgtga ccgcccaggt tttccatgca ctcatccatg 2580
atgatggcga tgggcccgtg ggcggcggcc tgggcaaaga cgtttcgggg gtcggacaca 2640
tcgtagttgt ggtcctgggt gagctcgtca taggccattt taatgaattt ggggcggagg 2700
gtgcccgact gggggacaaa ggtgccctcg atcccggggg cgtagttgcc ctcgcagatc 2760
tgcatctccc aggccttgag ctcggagggg gggatcatgt ccacctgcgg ggcgatgaaa 2820
aaaacggttt ccggggcggg ggagatgagc tgggccgaaa gcaggttccg gagcagctgg 2880
gacttgccgc agccggtggg gccgtagatg accccgatga ccggctgcag gtggtagttg 2940
agggagagac agctgccgtc ctcgcggagg agggggggca cctcgttcat catctcgcgc 3000

acatgcatgt tctcgcgcac gagttccgcc aggaggcgct cgccccccag cgagaggagc 3060

tcttgcagcg aggcgaagtt tttcagcggc ttgagtccgt cggccatggg cattttggag 3120

agggtctgtt gcaagagttc cagacggtcc cagagctcgg tgatgtgctc tagggcatct 3180

cgatccagca gacctcctcg tttcgcgggt tggggcggct gcgggagtag ggcaccaggc 3240

gatgggcgtc cagcgaggcc agggtccggt ccttccaggg tcgcagggtc cgcgtcagcg 3300

tggtctccgt cacggtgaag gggtgcgcgc cgggctgggc gcttgcgagg gtgcgcttca 3360

ggctcatccg gctggtcgag aaccgctccc ggtcggtgcc ctgcgcgtcg gccaggtagc 3420

aattgagcat gagttcgtag ttgagcgcct cggccgcgtg gcccttggcg cggagcttac 3480

ctttggaagt gtgtccgcag acgggacaga ggagggactt gagggcgtag agcttggggg 3540

cgaggaagac ggactcgggg gcgtaggcgt ccgcgccgca gctggcgcag acggtctcgc 3600

actccacgag ccaggtgagg tcggggcggt cggggtcaaa aacgaggttt cctccgtgct 3660

ttttgatgcg tttcttacct ctggtctcca tgagctcgtg tccccgctgg gtgacaaaga 3720

ggctgtccgt gtccccgtag accgacttta tgggccggtc ctcgagcggg gtgccgcggt 3780

cctcgtcgta gaggaacccc gcccactccg agacgaaggc ccgggtccag gccagcacga 3840

aggaggccac gtgggagggg tagcggtcgt tgtccaccag cgggtccacc ttctccaggg 3900

tatgcaagca catgtccccc tcgtccacat ccaggaaggt gattggcttg taagtgtagg 3960

ccacgtgacc gggggtcccg gccgggggggg tataaaaggg ggcgggcccc tgctcgtcct 4020

cactgtcttc cggatcgctg tccaggagcg ccagctgttg gggtaggtat tccctctcga 4080

aggcgggcat gacctcggca ctcaggttgt cagtttctag aaacgaggag gatttgatat 4140

tgacggtgcc gttggagacg cctttcatga gcccctcgtc catctggtca gaaaagacga 4200

tctttttgtt gtcgagcttg gtggcgaagg agccgtagag ggcattggag aggagcttgg 4260

cgatggagcg catggtctgg ttcttttcct tgtcggcgcg ctccttggcg gcgatgttga 4320

gctgcacgta ctcgcgcgcc acgcacttcc attcggggaa gacggtggtg agctcgtcgg 4380

gcacgattct gacccgccag ccgcggttgt gcagggtgat gaggtccacg ctggtggcca 4440

cctcgccgcg caggggctcg ttggtccagc agaggcgccc gcccttgcgc gagcagaagg 4500

ggggcagcgg gtccagcatg agctcgtcgg gggggtcggc gtccacggtg aagatgccgg 4560

gcaggagctc ggggtcgaag tagctgatgc aggtgcccag atcgtccagc gccgcttgcc 4620

agtcgcgcac ggccagcgcg cgctcgtagg ggctgagggg cgtgccccag ggcatggggt 4680

gcgtgagcgc ggaggcgtac atgccgcaga tgtcgtagac gtagaggggc tcctcgagga 4740

cgccgatgta ggtggggtag cagcgccccc cgcggatgct ggcgcgcacg tagtcgtaca 4800

gctcgtgcga gggcgcgagg agccccgcgc cgaggttgga gcgctgcggc ttttcggcgc 4860

ggtagacgat ctggcggaag atggcgtggg agttggagga gatggtgggc ctctggaaga 4920

tgttgaagtg ggcgtggggc aggccgaccg agtccctgat gaagtgggcg taggagtcct 4980

gcagcttggc gacgagctcg gcggtgacga ggacgtccag ggcgcagtag tcgagggtct 5040

cttggatgat gtcgtacttg agctggccct tctgcttcca cagctcgcgg ttgagaagga 5100

actcttcgcg gtccttccag tactcttcga gggggaaccc gtcctgatcg gcacggtaag 5160

agcccaccat gtagaactgg ttgacggcct tgtaggcgca gcagcccttc tccacgggga 5220

gggcataagc ttgcgcggcc ttgcgcaggg aggtgtgggt gagggcgaag gtgtcgcgca 5280

ccatgacctt gaggaactgg tgcttgaagt cgaggtcgtc gcagccgccc tgctcccaga 5340

gttggaagtc cgtgcgcttc ttgtaggcgg ggttgggcaa agcgaaagta acatcgttga 5400

agaggatctt gcccgcgcgg ggcatgaagt tgcgagtgat gcggaaaggc tggggcacct 5460

cggcccggtt gttgatgacc tgggcggcga ggacgatctc gtcgaagccg ttgatgttgt 5520

gcccgacgat gtagagttcc acgaatcgcg ggcggccctt gacgtggggc agcttcttga 5580

gctcgtcgta ggtgagctcg gcggggtcgc tgagtccgtg ctgctcaagg gcccagtcgg 5640

cgacgtgggg gttggcgctg aggaaggaag tccagagatc cacggccagg gcggtttgca 5700

agcggtcccg gtactgacgg aactgctggc ccacggccat tttttcgggg gtgatgcagt 5760

agaaggtgcg ggggtcgccg tgccagcggt cccacttgag ctggagggcg aggtcgtggg 5820

cgagctcgac aagcggcggg tccccggaga gtttcatgac cagcatgaag gggacgagct 5880

gcttgccgaa ggaccccatc caggtgtagg tttccacatc gtaggtgagg aagagccttt 5940

cggtgcgagg atgcgagccg atggggaaga actggatctc ctgccaccag ttggaggaat 6000

ggctgttgat gtgatggaag tagaaatgcc gacggcgcgc cgagcactcg tgcttgtgtt 6060

tatacaagcg tccgcagtgc tcgcaacgct gcacgggatg cacgtgctgc acgagctgta 6120

cctgagttcc tttgacgagg aatttcagtg ggcagtggag cgctggcggc tgcatctggt 6180

gctgtactac gtcctggcca tcggcgtggc catcgtctgc ctcgatggtg gtcatgctga 6240

cgagcccgcg cgggaggcag gtccagacct cggctcggac gggtcggaga gcgaggacga 6300

gggcgcgcag gccggagctg tccagggtcc tgagacgctg cggagtcagg tcagtgggca 6360

gcggcggcgc gcggttgact tgcaggagct tttccagggc gcgcgggagg tccagatggt 6420

acttgatctc cacggcgccg ttggtggcga cgtccacggc ttgcagggtc ccgtgcccct 6480

ggggcgccac caccgtgccc cgtttcttct tgggcgctgg cggcgttggc gctggttcca 6540

tgtcggtcag aagcggcggc gaggacgcgc gccgggcggc aggggcggct cggggcccgg 6600

aggcaggggc ggcaggggca cgtcggcgcc gcgcgcgggc aggttctggt actgcgcccg 6660

gagaagactg gcgtgagcga cgacgcgacg gttgacgtcc tggatctgac gcctctgggt 6720

gaaggccacg ggacccgtga gtttgaacct gaaagagagt tcgacagaat caatctcggt 6780

atcgttgacg gcggcctgcc gcaggatctc ttgcacgtcg cccgagttgt cctggtaggc 6840

gatctcggtc atgaactgct cgatctcctc ctcctgaagg tctccgcggc cggcgcgctc 6900

gacggtggcc gcgaggtcgt tggagatgcg ggccatgagc tgcgagaagg cgttcatgcc 6960

ggcctcgttc cagacgcggc tgtagaccac ggctccgtcg gggtcgcgcg cgcgcatgac 7020

cacctgggca aggttgagct cgacgtggcg cgtgaagacc gcgtagttgc agaggcgctg 7080

gtagaggtag ttgagcgtgg tggcgatgtg ctcggtgacg aagaagtaca tgatccagcg 7140

gcggagcggc atctcgctga cgtcgcccag ggcttccaag cgctccatgg cctcgtagaa 7200

gtccacggcg aagttgaaaa actgggagtt gcgcgccgag acggtcaact cctcctccag 7260

aagacggatg agctctgcga tggtggcgcg cacctcgcgc tcgaaggccc cgggggctc 7320

ctcttcttcc atctcctcct cctcttcctc ctccactaac atctcttcta cttcctcctc 7380

aggcggtggt ggcgggggag ggggcctgcg tcgccggcgg cgcacgggca gacggtcgat 7440

gaagcgctcg atggtctcgc cgcgccggcg tcgcatggtc tcggtgacgg cgcgcccgtc 7500

ctcgcggggc cgcagcgtga agacgccgcc gcgcatctcc aggtggccgg gggggtcccc 7560

gttgggcagg gagagggcgc tgacgatgca tcttatcaat tgccccgtag ggactccgcg 7620

caaggacctg agcgtctcga gatccacggg atctgaaaac cgttgaacga aggcttcgag 7680

ccagtcgcag tcgcaaggta ggctgagcac ggtttcttct ggcgggtcat gttggttgga 7740

gggagcgggg cgggcgatgc tgctggtgat gaagttgaaa taggcggttc tgagacggcg 7800

gatggtggcg aggagcacca ggtctttggg cccggcttgc tggatgcgca gacggtcggc 7860

catgccccag gcgtggtcct gacacctggc caggtccttg tagtagtcct gcatgagccg 7920

ctccacgggc acctcctcct cgcccgcgcg gccgtgcatg cgcgtgagcc cgaagccgcg 7980

ctggggctgg acgagcgcca ggtcggcgac gacgcgctcg gcgaggatgg cctgctggac 8040

ctgggtgagg gtggtctgga agtcgtcgaa gtcgacgaag cggtggtagg ctccggtgtt 8100

gatggtgtag gagcagttgg ccatgacgga ccagttgacg gtctggtggc cggggcgcac 8160

gagctcgtgg tacttgaggc gcgagtaggc gcgcgtgtcg aagatgtagt cgttgcaggt 8220

gcgcacgagg tactggtatc cgacgaggaa gtgcggcggc ggctggcggt agagcggcca 8280

tcgctcggtg gcgggggcgc cgggcgcgag gtcctcgagc atgaggcggt ggtagccgta 8340

gatgtacctg gacatccagg tgatgccggc ggcggtggtg gaggcgcgcg ggaactcgcg 8400

gacgcggttc cagatgttgc gcagcggcag gaagtagttc atggtggccg cggtctggcc 8460

cgtgaggcgc gcgcagtcgt ggatgctcta gacatacggg caaaaacgaa agcggtcagc 8520

ggctcgactc cgtggcctgg aggctaagcg aacgggttgg gctgcgcgtg taccccggtt 8580

cgagtctctg ctcgaatcag gctggagccg cagctaacgt ggtactggca ctcccgtctc 8640

gacccaagcc tgctaacgaa acctccagga tacggaggcg ggtcgttttt tggccttggt 8700

cactggtcat gaaaaactag taagcgcgga aagcggccgc ccgcgatggc tcgctgccgt 8760

agtctggaga aagaatcgcc agggttgcgt tgcggtgtgc cccggttcga gactcagcgc 8820

tcggcgccgg ccggattccg cggctaacgt gggcgtggct gccccgtcgt ttccaagacc 8880

ccttagccag ccgacttctc cagttacgga gcgagcccct ctttttcttg tgtttttgcc 8940

agatgcatcc cgtactgcgg cagatgcgcc cccaccctcc accacaaccg cccctaccgc 9000

cgcagcagca gcaacagccg gcgcttctgc ccccgcccca gcagcagcca gccactaccg 9060

cggcggccgc cgtgagcgga gccggcgttc agtatgacct ggccttggaa gagggcgagg 9120

ggctggcgcg gctgggggcg tcgtcgccgg agcggcaccc gcgcgtgcag atgaaaaggg 9180

acgctcgcga ggcctacgtg cccaagcaga acctgttcag agacaggagc ggcgaggagc 9240

ccgaggagat gcgcgcctcc cgcttccacg cggggcggga gctgcggcgc ggcctggacc 9300
gaaagcgggt gctgagggac gaggatttcg aggcggacga gctgacgggg atcagccccg 9360
cgcgcgcgca cgtggccgcg gccaacctgg tcacggcgta cgagcagacc gtgaaggagg 9420
agagcaactt ccaaaaatcc ttcaacaacc acgtgcgcac gctgatcgcg cgcgaggagg 9480
tgaccctggg cctgatgcat ctgtgggacc tgttggaggc catcgtgcag aaccccacga 9540
gcaagccgct gacggcgcag ctgtttctgg tggtgcagca cagtcgggac aacgagacgt 9600
tcagggaggc gctgctgaat atcaccgagc ccgagggccg ctggctcctg gacctggtga 9660
acattctgca gagcatcgtg gtgcaggagc gcgggctgcc gctgtccgag aagctggcgg 9720
ccatcaactt ctcggtgctg agcctgggca agtactacgc taggaagatc tacaagaccc 9780
cgtacgtgcc catagacaag gaggtgaaga tcgacgggtt ttacatgcgc atgaccctga 9840
aagtgctgac cctgagcgac gatctggggg tgtaccgcaa cgacaggatg caccgcgcgg 9900
tgagcgccag ccgccggcgc gagctgagcg accaggagct gatgcacagc ctgcagcggg 9960
ccctgaccgg ggccgggacc gaggggggaga gctactttga catgggcgcg gacctgcgct 10020
ggcagcccag ccgccgggct ttagaggcag ccggcggcgt gccctacgtg gaggaggtgg 10080
acgatgatga ggaggagggc gagtacctgg aagactgatg gcgcgaccgt atttttgcta 10140
gatgcagcaa cagccaccgc ctcctgatcc cgcgatgcgg gcggcgctgc agagccagcc 10200
gtccggcatt aactcctcgg acgattggac ccaggccatg caacgcatca tggcgctgac 10260
gacccgcaat cccgaagcct ttagacagca gcctcaggcc aaccggctct cggccatcct 10320
ggaggccgtg gtgccctcgc gctcgaaccc cacgcacgag aaggtgctgg ccatcgtgaa 10380
cgcgctggtg gagaacaagg ccatccgcgg cgacgaggcc gggctggtgt acaacgcgct 10440
gctggagcgc gtggcccgct acaacagcac caacgtgcag acgaacctgg accgcatggt 10500
gaccgacgtg cgcgaggcgg tgtcgcagcg cgagcggttc caccgcgagt cgaacctggg 10560
ctccatggtg gcgctgaacg ccttcctgag cacgcagccc gccaacgtgc cccggggcca 10620
ggaggactac accaacttta tcagcgcgct gcggctgatg gtggccgagg tgccccagag 10680
cgaggtgtac cagtcggggc cggactactt cttccagacc agtcgccagg gcttgcagac 10740
cgtgaacctg agccaggctt tcaagaactt gcagggactg tggggcgtgc aggccccggt 10800
cggggaccgc gcgacggtgt cgagcctgct gacgccgaac tcgcgcctgc tgctgctgct 10860
ggtggcgccc ttcacggaca gcggcagcgt gagccgcgac tcgtacctgg gctacctgct 10920
taacctgtac cgcgaggcca tcgggcaggc gcacgtggac gagcagacct accaggagat 10980
cacccacgtg agccgcgcgc tgggccagga ggacccgggc aacctggagg ccaccctgaa 11040
cttcctgctg accaaccggt cgcagaagat cccgccccag tacgcgctga gcaccgagga 11100
ggagcgcatc ctgcgctacg tgcagcagag cgtggggctg ttcctgatgc aggaggggc 11160
cacgcccagc gccgcgctcg acatgaccgc gcgcaacatg gagcccagca tgtacgcccg 11220
caaccgcccg ttcatcaata agctgatgga ctacttgcat cgggcggccg ccatgaactc 11280

ggactacttt accaacgcca tcttgaaccc gcactggctc ccgccgcccg ggttctacac 11340

gggcgagtac gacatgcccg accccaacga cgggttcctg tgggacgacg tggacagcag 11400

cgtgttctcg ccgcgcccca ccaccaccgt gtggaagaaa gagggcgggg accggcggcc 11460

gtcctcggcg ctgtccggtc gcgcgggtgc tgccgcggcg gtgcccgagg ccgccagccc 11520

cttcccgagc ctgccctttt cgctgaacag cgtgcgcagc agcgagctgg gtcggctgac 11580

gcggccgcgc ctgctgggcg aggaggagta cctgaacgac tccttgttga ggcccgagcg 11640

cgagaaaaac ttccccaata acgggataga gagcctggtg gacaagatga gccgctggaa 11700

gacgtacgcg cacgagcaca gggacgagcc ccgagctagc agcagcgccg gcgccacccg 11760

tagacgccag cggcacgaca ggcagcgggg actggtgtgg gacgatgagg attccgccga 11820

cgacagcagc gtgttggact tgggtgggag tggtggtggt aacccgttcg ctcacttgcg 11880

cccccgtatc gggcgcctga tgtaagaatc tgaaaaaata aaaaaacggt actcaccaag 11940

gccatggcga ccagcgtgcg ttcttctctg ttgtttgtag tagtatgatg aggcgcgtgt 12000

acccggaggg tcctcctccc tcgtacgaga gcgtgatgca gcaggcggtg gcggcggcga 12060

tgcagccccc gctggaggcg ccttacgtgc ccccgcggta cctggcgcct acggaggggc 12120

ggaacagcat tcgttactcg gagctggcac ccttgtacga taccacccgg ttgtacctgg 12180

tggacaacaa gtcggcggac atcgcctcgc tgaactacca gaacgaccac agcaacttcc 12240

tgaccaccgt ggtgcagaac aacgatttca cccccacgga ggccagcacc cagaccatca 12300

actttgacga gcgctcgcgg tggggcggcc agctgaaaac catcatgcac accaacatgc 12360

ccaacgtgaa cgagttcatg tacagcaaca agttcaaggc gcgggtgatg gtctcgcgca 12420

agacccccaa cggggtgacg gtggatgaga attatgatgg tagtcaggac gagctgacct 12480

acgagtgggt ggagtttgag ctgcccgagg gcaacttctc ggtgaccatg accatcgatc 12540

tgatgaacaa cgccatcatc gacaactact tggcggtggg acggcagaac ggggtgctgg 12600

agagcgacat cggcgtgaag ttcgacacgc gcaacttccg gctgggctgg gaccccgtga 12660

ccgagctggt gatgccgggc gtgtacacca acgaggcctt ccaccccgac atcgtcctgc 12720

tgcccggctg cggcgtggac ttcaccgaga gccgcctcag caacctgctg ggcatccgca 12780

agcggcagcc cttccaggag ggcttccaga tcctgtacga ggacctggag gggggcaaca 12840

tccccgcgct gctggacgtc gaagcctacg agaaaagcaa ggaggaggcc gccgcagcgg 12900

cgaccgcggc cgtggctacc gctgcgacca ccgatgcaga tgcagctact actaccaggg 12960

gcgatacatt cgccacccag gcggaggaag cagccgccct agcggcgacc gatgatagtg 13020

aaagtaagat agtcatcaag ccggtggaga aggacagcaa ggacaggagc tacaacgttc 13080

tatcggatgg aaagaacacc gcctaccgca gctggtacct ggcctacaac tacggcgacc 13140

ctgagaaggg cgtgcgctcc tggacgctgc tcaccacctc ggacgtcacc tgcggcgtgg 13200

agcaagtcta ctggtcgctg cccgacatga tgcaagaccc ggtcaccttc cgctccacgc 13260

gtcaagttag caactacccg gtggtgggcg ccgagctcct gcccgtctac tccaagagct 13320

tcttcaacga gcaggccgtc tactcgcagc agctgcgcgc cttcacctcg ctcacgcacg 13380

tcttcaaccg cttccccgag aaccagatcc tcgtccgccc gcccgcgccc accattacca 13440
ccgtcagtga aaacgttcct gctctcacag atcacgggac cctgccgctg cgcagcagta 13500
tccggggagt ccagcgcgtg accgtcactg acgccagacg ccgcacctgc ccctacgtct 13560
acaaggccct gggcgtagtc gcgccgcgcg tcctctcgag ccgcaccttc taaaaaatgt 13620
ccattctcat ctcgcccagt aataacaccg gttggggcct gcgcgcgccc agcaagatgt 13680
acggaggcgc tcgccaacgc tccacgcaac accccgtgcg cgtgcgcggg cacttccgcg 13740
ctccctgggg cgccctcaag ggccgcgtgc gctcgcgcac caccgtcgac gacgtgatcg 13800
accaggtggt ggccgacgcg cgcaactaca cgcccgccgc cgcgcccgcc tccaccgtgg 13860
acgccgtcat cgacagcgtg gtggccgacg cgcgccggta cgcccgcgcc aagagccggc 13920
ggcggcgcat cgcccggcgg caccggagca cccccgccat gcgcgcggcg cgagccttgc 13980
tgcgcagggc caggcgcacg ggacgcaggg ccatgctcag ggcggccaga cgcgcggcct 14040
ccggcagcag cagcgccggc aggacccgca gacgcgcggc cacggcggcg gcggcggcca 14100
tcgccagcat gtcccgcccg cggcgcggca acgtgtactg ggtgcgcgac gccgccaccg 14160
gtgtgcgcgt gcccgtgcgc acccgccccc ctcgcacttg aagatgctga cttcgcgatg 14220
ttgatgtgtc ccagcggcga ggaggatgtc caagcgcaaa ttcaaggaag agatgctcca 14280
ggtcatcgcg cctgagatct acggccccgc ggcggcggtg aaggaggaaa gaaagccccg 14340
caaactgaag cgggtcaaaa aggacaaaaa ggaggaggaa gatgacggac tggtggagtt 14400
tgtgcgcgag ttcgcccccc ggcggcgcgt gcagtggcgc gggcggaaag tgaaaccggt 14460
gctgcggccc ggcaccacgg tggtcttcac gcccggcgag cgttccggct ccgcctccaa 14520
gcgctcctac gacgaggtgt acggggacga ggacatcctc gagcaggcgg ccgagcgtct 14580
gggcgagttt gcttacggca agcgcagccg ccccgcgccc ttgaaagagg aggcggtgtc 14640
catcccgctg gaccacggca accccacgcc gagcctgaag ccggtgaccc tgcagcaggt 14700
gctgccgagc gcggcgccgc gccggggctt caagcgcgag ggcggcgagg atctgtaccc 14760
gaccatgcag ctgatggtgc ccaagcgcca gaagctggag gacgtgctgg agcacatgaa 14820
ggtggacccc gaggtgcagc ccgaggtcaa ggtgcggccc atcaagcagg tggccccggg 14880
cctgggcgtg cagaccgtgg acatcaagat ccccacggag cccatggaaa cgcagaccga 14940
gcccgtgaag cccagcacca gcaccatgga ggtgcagacg gatccctgga tgccggcgcc 15000
ggcttccacc accaccacca cccgccgaag acgcaagtac ggcgcggcca gcctgctgat 15060
gcccaactac gcgctgcatc cttccatcat ccccacgccg ggctaccgcg gcacgcgctt 15120
ctaccgcggc tacagcagcc gccgcaagac caccacccgc cgccgccgtc gccgcacccg 15180
ccgcagcacc accgcgactt ccgccgccgc cttggtgcgg agagtgtacc gcagcgggcg 15240
tgagcctctg accctgccgc gcgcgcgcta ccacccgagc atcgccattt aactctgccg 15300
tcgcctcctt gcagatatgg ccctcacatg ccgcctccgc gtccccatta cgggctaccg 15360
aggaagaaag ccgcgccgta gaaggctgac ggggaacggg ctgcgtcgcc atcaccaccg 15420

gcggcggcgc gccatcagca agcggttggg gggaggcttc ctgcccgcgc tgatccccat 15480
catcgccgcg gcgatcgggg cgatccccgg catagcttcc gtggcggtgc aggcctctca 15540
gcgccactga gacacagctt ggaaaatttg taataaaaaa atggactgac gctcctggtc 15600
ctgtgatgtg tgtttttaga tggaagacat caatttttcg tccctggcac cgcgacacgg 15660
cacgcggccg tttatgggca cctggagcga catcggcaac agccaactga acgggggcgc 15720
cttcaattgg agcagtctct ggagcgggct taagaatttc gggtccacgc tcaaaaccta 15780
tggcagcaag gcgtggaaca gcaccacagg gcaggcgctg agggataagc tgaaagagca 15840
gaacttccag cagaaggtgg tcgatgggct cgcttcgggc atcaacgggg tggtggacct 15900
ggccaaccag gccgtgcagc ggcagatcaa cagccgcctg gacccggtgc cgcccgccgg 15960
ctccgtggag atgccgcagg tggaggagga gctgcctccc ctggacaagc ggggcgagaa 16020
gcgaccccgc cccgacgcgg aggagacgct gctgacgcac acggacgagc cgcccccgta 16080
cgaggaggcg gtgaaactgg gtctgcccac cacgcggccc attgcgcccc tagccaccgg 16140
ggtgctgaaa cccgagagta ataagcccgc gaccctggac ttgcctcctc cccagccttc 16200
ccgcccctcc acagtggcta agcccctgcc gccggtggcc gtggcccgcg cgcgacccgg 16260
gggctccgcc cgccctcatg cgaactggca gagcactctg aacagcatcg tgggtctggg 16320
agtgcagagt gtgaagcgcc gccgctgcta ttaaacctac cgtagcgctt aacttgcttg 16380
tctgtgtgtg tatgtattat gtcgccgccg ctgtccgcca gaaggaggag tgaagaggcg 16440
cgtcgccgag ttgcaagatg gccaccccat cgatgctgcc ccagtgggcg tacatgcaca 16500
tcgccggaca ggacgcttcg gagtacctga gtccgggtct ggtgcagttc gcccgcgcca 16560
cagacaccta cttcagtctg gggaacaagt ttaggaaccc cacggtggcg cccacgcacg 16620
atgtgaccac cgaccgcagc cagcggctga cgctgcgctt cgtgcccgtg gaccgcgagg 16680
acaacaccta ctcgtacaaa gtgcgctaca cgctggccgt gggcgacaac cgcgtgctgg 16740
acatggccag cacctacttt gacatccgcg gcgtgctgga ccggggccct agcttcaaac 16800
cctactccgg caccgcctac aacagcctgg ctcccaaggg agcgcccaat tccagccagt 16860
gggagcgagc taagacaaac aataacggag ccacggaatc tgttaccttt ggtgtggctg 16920
ccatgggggg tatagatatt acaaaagagg gtctccagat tggaactgat gaaactaaag 16980
ctgatagtaa agaaatttat gcagacaaaa cctaccaacc tgaacctcag ataggagagg 17040
agaactggca agaaacattc tcctattatg gcggcagagc tcttaaaaaa gataccaaga 17100
tgaagccatg ctacggctcc tttgctaaac caacgaatgt caaaggaggt caggccaaat 17160
ttaaagttca ggacggtcaa caaactacag aatatgatat cgacttagct ttctttgata 17220
ttccaaactc tggaacagga gggaatggca cgaatgttaa ttatgatcca gatatggtca 17280
tgtacactga aaatgtggat ttggagaccc ctgataccca cattgtttac aaaccaggga 17340
cttccgatga cagttctgaa gcaaacttgc ttcagcagtc catgcctaac agacccaact 17400
atattgggtt tagagacaac tttatcggtc tcatgtacta caacagtact ggcaatatgg 17460
gtgtgctggc tggtcaggcc tcccagctga atgctgtggt cgacttgcaa gacagaaaca 17520

ccgagctatc ctaccagctc ttgcttgact ctctgggcga tagaacccgg tatttcagta 17580
tgtggaacca ggcggtggac agttatgacc ctgatgtgcg cattattgaa aaccatggtg 17640
tggaagatga acttcccaac tattgcttcc cattggatgg agctggtact aatgctgtct 17700
atcagggtgt taaagcaaaa actaatggag gcgcagccaa tggagattgg gagcaagata 17760
cagacgtgtc aaacattaac cagatatgca aggggaacat ctatgccatg gaaatcaacc 17820
tccaagccaa cctgtggaga agtttcctct actcgaacgt ggccctgtac ctgcccgatt 17880
cttacaagta cacgccggcc aacatcacct tgcccacgaa taccaacacc tatgattaca 17940
tgaatgggag agtggcgcct ccctcgttgg tggatgccta catcaacatc ggggcgcgct 18000
ggtcgctgga ccccatggac aacgtcaatc ccttcaacca ccaccgcaac gcggggctgc 18060
gctaccgctc catgcttctg ggcaacgggc gcttcgtgcc cttccacatc caggtgcccc 18120
agaaattttt cgccatcaag agcctcctgc tcctgcccgg gtcctacacc tacgagtgga 18180
acttccgcaa ggacgtcaac atgatcctgc agagctccct cggcaacgac ctgcgcacgg 18240
acggggcctc catctccttc accagcatca acctctacgc caccttcttc cccatggcgc 18300
acaacacggc ctccacgctc gaggccatgc tgcgcaacga caccaacgac cagtccttca 18360
acgactacct ctcggcggcc aacatgctct accccatccc agccaacgcc accaacgtgc 18420
ccatctccat cccctcgcgc aactgggccg ccttccgcgg ctggtccttc acgcgtctca 18480
agaccaagga gacgccctcg ctgggctccg ggttcgaccc ctacttcgtc tactcgggct 18540
ccatccccta cctcgacggc accttctacc tcaaccacac cttcaagaag gtctccatca 18600
ccttcgactc ctccgtcagc tggcccggca acgaccggct cctgacgccc aacgagttcg 18660
aaatcaagcg caccgtcgac ggcgagggct acaacgtggc ccagtgcaac atgaccaagg 18720
actggttcct ggtccagatg ctggcccact acaacatcgg ctaccagggc ttctacgtgc 18780
ccgagggcta caaggaccgc atgtactcct tcttccgcaa cttccagccc atgagccgcc 18840
aggtggtgga cgaggtcaac tacaaggact accaggccgt caccctggcc taccagcaca 18900
acaactcggg cttcgtcggc tacctcgcgc ccaccatgcg ccagggccag ccctaccccg 18960
ccaactaccc gtacccgctc atcggcaaga gcgccgtcac cagcgtcacc cagaaaaagt 19020
tcctctgcga cagggtcatg tggcgcatcc ccttctccag caacttcatg tccatgggcg 19080
cgctcaccga cctcggccag aacatgctct atgccaactc cgcccacgcg ctagacatga 19140
atttcgaagt cgaccccatg gatgagtcca cccttctcta tgttgtcttc gaagtcttcg 19200
acgtcgtccg agtgcaccag ccccaccgcg gcgtcatcga ggccgtctac ctgcgcaccc 19260
ccttctcggc cggtaacgcc accacctaag ctcttgcttc ttgcaagatg gctgagccca 19320
cgggctccgg cgagcaggag ctcagggcca tcatccgcga cctgggctgc gggccctact 19380
tcctgggcac cttcgataag cgcttcccgg gattcatggc cccgcacaag ctggcctgcg 19440
ccatcgtcaa cacggccggc cgcgagaccg ggggcgagca ctggctggcc ttcgcctgga 19500
acccgcgctc gaacacctgc tacctcttcg acccccttcgg gttctcggac gagcgcctca 19560

agcagatcta ccagttcgag tacgagggcc tgctgcgccg cagcgccctg gccaccgagg 19620
accgctgcgt caccctggaa aagtccaccc agaccgtgca gggtccgcgc tcggccgcct 19680
gcgggctctt ttgctgcatg ttcctgcacg ccttcgtgca ctggcccgac cgccccatgg 19740
acaagaaccc caccatgaac ttgctgacgg gggtgcccaa cggcatgctc cagtcgcccc 19800
aggtggaacc caccctgcgc cgcaaccagg aggcgctcta ccgcttcctc aacgcccact 19860
ccgcctactt tcgctcccac cgcgcgcgca tcgagaaggc caccgccttc gaccgcatga 19920
atcaagacat gtaaaccgtg tgtgtatgtg aatgctttat tcataataaa cagcacatgt 19980
ttatgccacc ttctctgagg ctctgacttt atttagaaat cgaaggggtt ctgccggctc 20040
tcggcgtgcc ccgcgggcag ggatacgttg cggaactggt acttgggcag ccacttgaac 20100
tcggggatca gcagcttcgg cacggggagg tcggggaacg agtcgctcca cagcttgcgc 20160
gtgagttgca gggcgcccag caggtcgggc gcggagatct tgaaatcgca gttgggaccc 20220
gcgttctgcg cgcgagagtt gcggtacacg gggttgcagc actggaacac catcagggcc 20280
gggtgcttca cgctcgccag caccgtcgcg tcggtgatgc cctccacgtc cagatcctcg 20340
gcgttggcca tcccgaaggg ggtcatcttg caggtctgcc gccccatgct gggcacgcag 20400
ccgggcttgt ggttgcaatc gcagtgcagg gggatcagca tcatctgggc ctgctcggag 20460
ctcatgcccg ggtacatggc cttcatgaaa gcctccagct ggcggaaggc ctgctgcgcc 20520
ttgccgccct cggtgaagaa gaccccgcag gacttgctag agaactggtt ggtagcgcag 20580
cccgcgtcgt gcacgcagca gcgcgcgtcg ttgttggcca gctgcaccac gctgcgcccc 20640
cagcggttct gggtgatctt ggcccggtcg gggttctcct tcagcgcgcg ctgcccgttc 20700
tcgctcgcca catccatctc gatcgtgtgc tccttctgga tcatcacggt cccgtgcagg 20760
caccgcagct tgccctcggc ctcggtgcag ccgtgcagcc acagcgcgca gccggtgctc 20820
tcccagttct tgtgggcgat ctgggagtgc gagtgcacga agccctgcag gaagcggccc 20880
atcatcgcgg tcagggtctt gttgctggtg aaggtcagcg ggatgccgcg gtgctcctcg 20940
ttcacataca ggtggcagat gcggcggtac acctcgccct gctcgggcat cagctggaag 21000
gcggacttca ggtcgctctc cacgcggtac cggtccatca gcagcgtcat cacttccatg 21060
cccttctccc aggccgaaac gatcggcagg ctcaggggggt tcttcaccgt catcttagtc 21120
gccgccgccg aagtcagggg gtcgttctcg tccagggtct caaacactcg cttgccgtcc 21180
ttctcggtga tgcgcacggg ggggaaggcg aagcccacgg ccgccagctc ctcctcggcc 21240
tgcctttcgt cctcgctgtc ctggctgatg tcttgcaaag gcacatgctt ggtcttgcgg 21300
ggtttctttt tgggcggcag aggcggcggc ggcggagacg tgctgggcga gcgcgagttc 21360
tcgctcacca cgactatttc ttcttcttgg ccgtcgtccg agaccacgcg gcggtaggca 21420
tgcctcttct ggggcagagg cggaggcgac gggctctcgc ggttcggcgg gcggctggca 21480
gagccccttc cgcgttcggg ggtgcgctcc tggcggcgct gctctgactg acttcctccg 21540
cggccggcca ttgtgttctc ctagggagca acaacaagca tggagactca gccatcgtcg 21600
ccaacatcgc catctgcccc cgccgccgcc gacgagaacc agcagcagca gaatgaaagc 21660

ttaaccgccc cgccgcccag ccccacctcc gacgccgcgg ccccagacat gcaagagatg 21720

gaggaatcca tcgagattga cctgggctac gtgacgcccg cggagcacga ggaggagctg 21780

gcagcgcgct tttcagcccc ggaagagaac caccaagagc agccagagca ggaagcagag 21840

agcgagcaga gccaggctgg gctcgagcat ggcgactacc tgagcggggc agaggacgtg 21900

ctcatcaagc atctggcccg ccaatgcatc atcgtcaagg acgcgctgct cgaccgcgcc 21960

gaggtgcccc tcagcgtggc ggagctcagc cgcgcctacg agcgcaacct cttctcgccg 22020

cgcgtgcccc ccaagcgcca gcccaacggc acctgcgagc ccaacccgcg cctcaacttc 22080

tacccggtct tcgcggtgcc cgaggccctg gccacctacc acctcttttt caagaaccaa 22140

aggatccccg tctcctgccg cgccaaccgc acccgcgccg acgccctgct caacctgggc 22200

cccggcgccc gcctacctga tatcgcctcc ttggaagagg ttcccaagat cttcgagggt 22260

ctgggcagcg acgagactcg ggccgcgaac gctctgcaag gaagcggaga ggagcatgag 22320

caccacagcg ccctggtgga gttggaaggc gacaacgcgc gcctggcggt cctcaagcgc 22380

acggtcgagc tgacccactt cgcctacccg gcgctcaacc tgccccccaa ggtcatgagc 22440

gccgtcatgg accaggtgct catcaagcgc gcctcgcccc tctcggagga ggagatgcag 22500

gaccccgaga gctcggacga gggcaagccc gtggtcagcg acgagcagct ggcgcgctgg 22560

ctgggaacga gtagcacccc ccagagtctg gaagagcggc gcaagctcat gatggccgtg 22620

gtcctggtga ccgtggagct tgagtgtctg cgccgcttct tcgccgacgc ggagaccctg 22680

cgcaaggtcg aggagaacct gcactacctc ttcaggcacg ggttcgtgcg ccaggcctgc 22740

aagatctcca acgtggagct gaccaacctg gtctcctaca tgggcatcct gcacgagaac 22800

cgcctggggc agaacgtgct gcacaccacc ctgcgcgggg aggcccgccg cgactacatc 22860

cgcgactgcg tctacctgta cctctgccac acctggcaga cgggcatggg cgtgtggcag 22920

cagtgcctgg aggagcagaa cctgaaagag ctctgcaagc tcctgcagaa gaacctgaag 22980

gccctgtgga ccgggttcga cgagcgtacc accgcctcgg acctggccga cctcatcttc 23040

cccgagcgcc tgcggctgac gctgcgcaac gggctgcccg actttatgag ccaaagcatg 23100

ttgcaaaact ttcgctcttt catcctcgaa cgctccggga tcctgcccgc cacctgctcc 23160

gcgctgccct cggacttcgt gccgctgacc ttccgcgagt gccccccgcc gctctggagc 23220

cactgctact tgctgcgcct ggccaactac ctggcctacc actcggacgt gatcgaggac 23280

gtcagcggcg agggtctgct cgagtgccac tgccgctgca acctctgcac gccgcaccgc 23340

tccctggcct gcaaccccca gctgctgagc gagacccaga tcatcggcac cttcgagttg 23400

caaggccccg gcgaggaggg caaggggggt ctgaaactca ccccggggct gtggacctcg 23460

gcctacttgc gcaagttcgt gcccgaggac taccatccct tcgagatcag gttctacgag 23520

gaccaatccc agccgcccaa ggccgagctg tcggcctgcg tcatcaccca gggggccatc 23580

ctggcccaat tgcaagccat ccagaaatcc cgccaagaat ttctgctgaa aaagggccac 23640

ggggtctact tggaccccca gaccggagag gagctcaacc ccagcttccc ccagg atg 23698
Met

```
ccc aga gga agc agc aag aag ctg aaa gtg gag ctg ccg ctg ccg ccg      23746
Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Leu Pro Pro
            5                  10                  15

gag gat ttg gag gaa gac tgg gag agc agt cag gca gag gag gag gag      23794
Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu Glu
        20                  25                  30

atg gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa gac      23842
Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp
    35                  40                  45

agt ctg gaa gac gag gtg gag gag gca gag gaa gaa gca gcc gcc gcc      23890
Ser Leu Glu Asp Glu Val Glu Glu Ala Glu Glu Glu Ala Ala Ala Ala
50                  55                  60                  65

aga ccg tcg tcc tcg gcg gag aaa gca agc agc acg gat acc atc tcc      23938
Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr Asp Thr Ile Ser
                70                  75                  80

gct ccg ggt cgg ggt ctc ggc ggc cgg gcc cac agt aga tgg gac gag      23986
Ala Pro Gly Arg Gly Leu Gly Gly Arg Ala His Ser Arg Trp Asp Glu
            85                  90                  95

acc ggg cgc ttc ccg aac ccc acc acc cag acc ggt aag aag gag cgg      24034
Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu Arg
        100                 105                 110

cag gga tac aag tcc tgg cgg ggg cac aaa aac gcc atc gtc tcc tgc      24082
Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser Cys
    115                 120                 125

ttg caa gcc tgc ggg ggc aac atc tcc ttc acc cgg cgc tac ctg ctc      24130
Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu Leu
130                 135                 140                 145

ttc cac cgc ggg gtg aac ttc ccc cgc aac atc ttg cat tac tac cgt      24178
Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr Arg
                150                 155                 160

cac ctc cac agc ccc tac tac tgt ttc caa gaa gag gca gaa acc cag      24226
His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala Glu Thr Gln
            165                 170                 175

cag cag cag aaa acc agc agc agc tagaaaatcc acagcggcgg cggcggcagg     24280
Gln Gln Gln Lys Thr Ser Ser Ser
        180                 185

tggactgagg atcgcggcga acgagccggc gcagacccgg gagctgagga accggatctt    24340

tcccaccctc tatgccatct tccagcagag tcgggggcag gagcaggaac tgaaagtcaa    24400

gaaccgttct ctgcgctcgc tcacccgcag ttgtctgtat cacaagagcg aagaccaact    24460

tcagcgcact ctcgaggacg ccgaggctct cttcaacaag tactgcgcgc tcactcttaa    24520

agagtagccc gcgcccgccc acacacggaa aaaggcggga attacgtcac cacctgcgcc    24580

cttcgcccga ccatcatcat gagcaaagag attcccacgc cttacatgtg gagctaccag    24640

ccccagatgg gcctggccgc cggcgccgcc caggactact ccacccgcat gaactggctc    24700

agtgccgggc ccgcgatgat ctcacgggtg aatgacatcc gcgcccaccg aaaccagata    24760

ctcctagaac agtcagcgat caccgccacg ccccgccatc accttaatcc gcgtaattgg    24820

cccgccgccc tggtgtacca ggaaattccc cagcccacga ccgtactact tccgcgagac    24880
```

```
gcccaggccg aagtccagct gactaactca ggtgtccagc tggccggcgg cgccgccctg    24940

tgtcgtcacc gccccgctca gggtataaag cggctggtga tccgaggcag aggcacacag    25000

ctcaacgacg aggtggtgag ctcttcgctg ggtctgcgac ctgacggagt cttccaactc    25060

gccggatcgg ggagatcttc cttcacgcct cgtcaggccg tcctgacttt ggagagttcg    25120

tcctcgcagc cccgctcggg tggcatcggc actctccagt tcgtggagga gttcactccc    25180

tcggtctact tcaacccctt ctccggctcc cccggccact acccggacga gttcatcccg    25240

aacttcgacg ccatcagcga gtcggtggac ggctacgatt gaatgtccca tggtggcgcg    25300

gctgacctag ctcggcttcg acacctggac cactgccgcc gcttccgctg cttcgctcgg    25360

gatctcgccg agtttgccta ctttgagctg cccgaggagc accctcaggg cccggcccac    25420

ggagtgcgga tcatcgtcga aggggggcctc gactcccacc tgcttcggat cttcagccag    25480

cgtccgatcc tggtcgagcg cgagcaagga cagacccgtc tgaccctgta ctgcatctgc    25540

aaccaccccg gcctgc atg aaa gtc ttt gtt gtc tgc tgt gta ctg agt ata    25592
                 Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile
                                 190                 195

ata aaa gct gag atc agc gac tac tcc gga ctt ccg tgt gtt cct gaa      25640
Ile Lys Ala Glu Ile Ser Asp Tyr Ser Gly Leu Pro Cys Val Pro Glu
        200                 205                 210

tcc atc aac cag tcc ctg ttc ttc acc ggg aac gag acc gag ctc cag      25688
Ser Ile Asn Gln Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln
    215                 220                 225

ctc cag tgt aag ccc cac aag aag tac ctc acc tgg ctg ttc cag ggc      25736
Leu Gln Cys Lys Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly
230                 235                 240                 245

tcc ccg atc gcc gtt gtc aac cac tgc gac aac gac gga gtc ctg ctg      25784
Ser Pro Ile Ala Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu
                250                 255                 260

agc ggc cct gcc aac ctt act ttt tcc acc cgc aga agc aag ctc cag      25832
Ser Gly Pro Ala Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln
            265                 270                 275

ctc ttc caa ccc ttc ctc ccc ggg acc tat cag tgc gtc tcg gga ccc      25880
Leu Phe Gln Pro Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro
        280                 285                 290

tgc cat cac acc ttc cac ctg atc ccg aat acc aca gcg tcg ctc ccc      25928
Cys His His Thr Phe His Leu Ile Pro Asn Thr Thr Ala Ser Leu Pro
    295                 300                 305

gct act aac aac caa act acc cac caa cgc cac cgt cgc gac ctt tcc      25976
Ala Thr Asn Asn Gln Thr Thr His Gln Arg His Arg Arg Asp Leu Ser
310                 315                 320                 325

tct gaa tct aat acc act acc gga ggt gag ctc cga ggt cga cca acc      26024
Ser Glu Ser Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr
                330                 335                 340

tct ggg att tac tac ggc ccc tgg gag gtg gtg ggg tta ata gcg cta      26072
Ser Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu
            345                 350                 355

ggc cta gtt gtg ggt ggg ctt ttg gct ctc tgc tac cta tac ctc cct      26120
Gly Leu Val Val Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro
```

360 365 370

tgc tgt tcg tac tta gtg gtg ctg tgt tgc tgg ttt aag aaa tgg ggc 26168
Cys Cys Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly
375 380 385

aga tca ccc tagtgagctg cggtgtgctg gtggcggtgg tgctttcgat 26217
Arg Ser Pro
390

tgtgggactg ggcggcgcgg ctgtagtgaa ggagaaggcc gatccctgct tgcatttcaa 26277

tcccgataaa tgccagctga gttttcagcc cgatggcaat cggtgcgcgg tgctgatcaa 26337

gtgcggatgg gaatgcgaga acgtgagaat cgagtacaat aacaagactc ggaacaatac 26397

tctcgcgtcc acgtggcagc ccggggaccc cgagtggtac accgtctctg tccccggtgc 26457

tgacggctcc ccgcgcaccg tgaataatac tttcattttt gcgcacatgt gcgacacggt 26517

catgtggatg agcaagcagt acgatatgtg gccccccacg aaggagaaca tcgtggtctt 26577

ctccatcgct tacagcctgt gcacggtgct aatcaccgct atcgtgtgcc tgagcattca 26637

catgctcatc gctattcgcc ccagaaataa tgccgaaaaa gaaaaacagc cataacacgt 26697

ttttcacac acctttttca gaccatggcc tctgttaaat ttttgctttt atttgccagt 26757

ctcattactg ttataagtaa tgagaaactc actatttaca ttggcactaa ccacactcta 26817

gaaggaattc caaaatcctc atggtattgc tattttgatc aagatccaga cttaactata 26877

gaactgtgtg gtaacaaggg acaaaataca agcattcatt taattaactt taaatgcgga 26937

gacgatttga aattaattaa tatcactaaa gagtatggag gtatgtatta ctatgttaca 26997

gaaaataaca acatgcagtt ttatgaagtt actgtaacta atcccaccac gcctagaaca 27057

acaacaacca ccacaaagac tacacctgtt accactatgc agctcactac caataacatt 27117

tttgccatgc gtcagaaggc caacaatagc accagcattc aacccccccc acccagtgag 27177

gaaattccca aatccatgat tggcattatt gttgctgtag tggtgtgcat gttgatcatc 27237

gccttgtgca tggtgtacta tgccttctgc tacagaaagc acagactgaa cgacaagcta 27297

gaacacttac taagtgttga attttaattt ttttagaacc atgaagatcc taggcctttt 27357

aatttttct atcattacct ctgctctatg caattctgac aatgaggacg ttactgtcgt 27417

tgtcggatca aattatacac tgaaaggtcc agcgaagggt atgctttcgt ggtattgctg 27477

gtttggaact gacactgaac aaaccgaatt atgcaatctt caaaatggca aagttcataa 27537

ttctaaaatt tacaattata tatgcaatgg cactgatttg atactcctca atatcacgaa 27597

atcatatgct ggcagttatt catgccctgg agatgatgct gacaatatga ttttttataa 27657

attgcaagtg gttgatccca ctactccacc tccacccacc acaactactc acaccacaca 27717

cacagaacaa accacagcag aggaggcggc aaagttagct ttgcaggtcc aagacagttc 27777

atttgttggc attaccccta cacccgatca gcggtgtccg gggctgctcg tcagcggcat 27837

tgtcggtgtg ctttcgggat tagcagttat aatcatctgc atgttcattt ttgcttgctg 27897

ctatagaagg ctttaccgac aaaaatcaga cccactgctg aacctctatg tttaattttt 27957

tccagagcc atg aag gca gtt agc gct cta gtt ttt tgt tct ttg att ggc 28008

```
          Met Lys Ala Val Ser Ala Leu Val Phe Cys Ser Leu Ile Gly
                  395                 400                 405

act gtt ttt agt gtt agc ttt tta aaa caa att aat gtt act gag ggg      28056
Thr Val Phe Ser Val Ser Phe Leu Lys Gln Ile Asn Val Thr Glu Gly
            410                 415                 420

gaa aat gtg aca ctg gta ggc gta gaa ggt gct caa aat acc acc tgg      28104
Glu Asn Val Thr Leu Val Gly Val Glu Gly Ala Gln Asn Thr Thr Trp
        425                 430                 435

aca aaa tac cac ctc gat ggg tgg aaa gat att tgc aat tgg agt gtc      28152
Thr Lys Tyr His Leu Asp Gly Trp Lys Asp Ile Cys Asn Trp Ser Val
    440                 445                 450

att act tac aca tgt gag gga gtt aat ttg acc ata gtc aat gcc agc      28200
Ile Thr Tyr Thr Cys Glu Gly Val Asn Leu Thr Ile Val Asn Ala Ser
455                 460                 465                 470

caa aat cag aag ggt tgg att aaa ggg caa tct gtt agt gtt acc agt      28248
Gln Asn Gln Lys Gly Trp Ile Lys Gly Gln Ser Val Ser Val Thr Ser
                475                 480                 485

gag ggg tac tat acc cag cat act ctt atc tat gac att ata gtc ata      28296
Glu Gly Tyr Tyr Thr Gln His Thr Leu Ile Tyr Asp Ile Ile Val Ile
            490                 495                 500

ccg ctg cct acg cct agc cca cct agc act acc aca cag aca acc cac      28344
Pro Leu Pro Thr Pro Ser Pro Pro Ser Thr Thr Thr Gln Thr Thr His
        505                 510                 515

act aca caa aca acc aca tac agt aca tca aat cag cct acc acc act      28392
Thr Thr Gln Thr Thr Thr Tyr Ser Thr Ser Asn Gln Pro Thr Thr Thr
    520                 525                 530

aca aca gca gag gtt gcc agc tcg tct ggg gtc cga gcg gca ttt ttg      28440
Thr Thr Ala Glu Val Ala Ser Ser Ser Gly Val Arg Ala Ala Phe Leu
535                 540                 545                 550

atg ttg gcc cca tct agc agt ccc act gct agt acc aat gag cag act      28488
Met Leu Ala Pro Ser Ser Ser Pro Thr Ala Ser Thr Asn Glu Gln Thr
                555                 560                 565

act gaa ttt ttg tcc act gtc gag agc cac acc aca gct acc tcg agt      28536
Thr Glu Phe Leu Ser Thr Val Glu Ser His Thr Thr Ala Thr Ser Ser
            570                 575                 580

gcc ttc tct agc acc gcc aat ctc tcc tcg ctt tcc tct aca cca atc      28584
Ala Phe Ser Ser Thr Ala Asn Leu Ser Ser Leu Ser Ser Thr Pro Ile
        585                 590                 595

agt ccc gct act act act acc ccc gct att ctt ccc act ccc ctg aag      28632
Ser Pro Ala Thr Thr Thr Thr Pro Ala Ile Leu Pro Thr Pro Leu Lys
    600                 605                 610

caa act gag gac agc ggc atg caa tgg cag atc acc ctg ctc att gtg      28680
Gln Thr Glu Asp Ser Gly Met Gln Trp Gln Ile Thr Leu Leu Ile Val
615                 620                 625                 630

atc ggg ttg gtc atc cta gcc gtg ttg ctc tac tac atc ttc cgc cgc      28728
Ile Gly Leu Val Ile Leu Ala Val Leu Leu Tyr Tyr Ile Phe Arg Arg
                635                 640                 645

cgc att ccc aac gcg cac cgc aag ccg gtc tac aag ccc atc att gtc      28776
Arg Ile Pro Asn Ala His Arg Lys Pro Val Tyr Lys Pro Ile Ile Val
            650                 655                 660

ggg cag ccg gag ccg ctt cag gtg gaa ggg ggt cta agg aat ctt ctc      28824
Gly Gln Pro Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu
```

```
        665                 670                 675

ttc tct ttt aca gta tgg tgattgaact atgattccta gacaattctt            28872
Phe Ser Phe Thr Val Trp
    680

gatcactatt cttatctgcc tcctccaagt ctgtgccacc ctcgctctgg tggccaacgc    28932

cagtccagac tgtattgggc ccttcgcctc ctacgtgctc tttgccttca tcacctgcat    28992

ctgctgctgt agcatagtct gcctgcttat caccttcttc cagttcattg actggatctt    29052

tgtgcgcatc gcctacctgc gccaccaccc ccagtaccgc gaccagcgag tggcgcagct    29112

gctcaggctc ctctgataag catgcgggct ctgctacttc tcgcgcttct gctgttagtg    29172

ctcccccgtc ccgttgaccc ccggcccccc actcagtccc ccgaggaggt ccgcaaatgc    29232

aaattccaag aaccctggaa attcctcaaa tgctaccgcc aaaaatcaga catgcatccc    29292

agctggatca tgatcattgg gatcgtgaac attctggcct gcaccctcat ctcctttgtg    29352

atttacccct gctttgactt tggttggaac tcgccagagg cgctctatct cccgcctgaa    29412

cctgacacac caccacagca acctcaggca cacgcactac caccaccaca gcctaggcca    29472

caatacatgc ccatattaga ctatgaggcc gagccacagc gacccatgct ccccgctatt    29532

agttacttca atctaaccgg cggag atg act gac cca ctg gcc aac aac aac      29584
                           Met Thr Asp Pro Leu Ala Asn Asn Asn
                           685                 690

gtc aac gac ctt ctc ctg gac atg gac ggc cgc gcc tcg gag cag cga      29632
Val Asn Asp Leu Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln Arg
    695                 700                 705

ctc gcc caa ctt cgc att cgc cag cag cag gag aga gcc gtc aag gag      29680
Leu Ala Gln Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys Glu
710                 715                 720                 725

ctg cag gac ggc ata gcc atc cac cag tgc aag aaa ggc atc ttc tgc      29728
Leu Gln Asp Gly Ile Ala Ile His Gln Cys Lys Lys Gly Ile Phe Cys
                730                 735                 740

ctg gtg aaa cag gcc aag atc tcc tac gag gtc acc cag acc gac cat      29776
Leu Val Lys Gln Ala Lys Ile Ser Tyr Glu Val Thr Gln Thr Asp His
            745                 750                 755

cgc ctc tcc tac gag ctc ctg cag cag cgc cag aag ttc acc tgc ctg      29824
Arg Leu Ser Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe Thr Cys Leu
        760                 765                 770

gtc gga gtc aac ccc atc gtc atc acc cag cag tcg ggc gat acc aag      29872
Val Gly Val Asn Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr Lys
    775                 780                 785

ggg tgc atc cac tgc tcc tgc gac tcc ccc gac tgc gtc cac act ctg      29920
Gly Cys Ile His Cys Ser Cys Asp Ser Pro Asp Cys Val His Thr Leu
790                 795                 800                 805

atc aag acc ctc tgc ggc ctc cgc gac ctc ctc ccc atg aac              29962
Ile Lys Thr Leu Cys Gly Leu Arg Asp Leu Leu Pro Met Asn
                810                 815

taatcacccc cttatccagt gaaataaaga tcatattgat gattaaataa aaaaaataat    30022

catttgattt gaaataaaga tacaatcata ttgatgattt gagtttaata aaaataaaga    30082

atcacttact tgaaatctga taccaggtct ctgtccatgt tttctgccaa caccacttca    30142
```

```
ctcccctctt cccagctctg gtactgcagg ccccggcggg ctgcaaactt cctccacacc    30202

ctgaagggga tgtcaaattc ctcctgtccc tcaatcttca ttttatcttc tatcagatgt    30262

ccaaaaagcg cgtccgggtg gatgatgact tcgaccccgt ctacccctac gatgcagaca    30322

acgcaccgac cgtgcccttc atcaaccccc ccttcgtctc ttcagatgga ttccaagaga    30382

agcccctggg ggtgctgtcc ctgcgtctgg ccgatcccgt caccaccaag aacggggaaa    30442

tcaccctcaa gctgggagat ggggtggacc tcgactcctc gggaaaactc atctccaaca    30502

cggccaccaa ggccgccgcc cctctcagtt tttccaacaa caccatttcc cttaacatgg    30562

ataccccttt ttacaacaac aatggaaagt taggcatgaa agtcactgct ccactgaaga    30622

tactagacac agacttgcta aaaacacttg ttgtagctta tggacaaggt ttaggaacaa    30682

acaccactgg tgcccttgtt gcccaactag catccccact tgcttttgat agcaatagca    30742

aaattgccct taatttaggc aatggaccat tgaaagtgga tgcaaataga ctgaacatca    30802

attgcaatag aggactctat gttactacca caaaagatgc actggaagcc aatataagtt    30862

gggctaatgc tatgacattt ataggaaatg ccatgggtgt caatattgat acacaaaaag    30922

gcttgcaatt tggcaccact agtaccgtcg cagatgttaa aaacgcttac cccatacaaa    30982

tcaaacttgg agctggtctc acatttgaca gcacaggtgc aattgttgca tggaacaaag    31042

atgatgacaa gcttacacta tggaccacag ccgacccctc tccaaattgt cacatatatt    31102

ctgaaaagga tgctaagctt acactttgct tgacaaagtg tggcagtcag attctgggca    31162

ctgtttccct catagctgtt gatactggca gtttaaatcc cataacagga acagtaacca    31222

ctgctcttgt ctcacttaaa ttcgatgcaa atggagtttt gcaaagcagc tcaacactag    31282

actcagacta ttggaatttc agacagggag atgttacacc tgctgaagcc tatactaatg    31342

ctataggttt catgcccaat ctaaaagcat accctaaaaa cacaagtgga gctgcaaaaa    31402

gtcacattgt tgggaaagtg tacctacatg gggatacaga caaaccactg gacctcatta    31462

ttactttcaa tgaaacaagt gatgaatctt gcacttactg tattaacttt caatggcagt    31522

gggggggctga tcaatataaa aatgaaacac ttgccgtcag ttcattcacc ttttcctata    31582

ttgctaaaga ataaacccca ctctgtaccc catctctgtc tatggaaaaa actctgaaac    31642

acaaaataaa ataaagttca agtgttttat tgattcaaca gttttacagg attcgagcag    31702

ttatttttcc tccaccctcc caggacatgg aatacaccac cctctccccc cgcacagcct    31762

tgaacatctg aatgccattg gtgatggaca tgcttttggt ctccacgttc cacacagttt    31822

cagagcgagc cagtctcggg tcggtcaggg agatgaaacc ctccgggcac tcccgcatct    31882

gcacctcaca gctcaacagc tgaggattgt cctcggtggt cgggatcacg gtta tct      31939
                                                              Ser
                                                              820

gga aga agc aga aga gcg gcg gtg gga atc ata gtc cgc gaa cgg gat      31987
Gly Arg Ser Arg Arg Ala Ala Val Gly Ile Ile Val Arg Glu Arg Asp
                825                 830                 835

cgg ccg gtg gtg tcg cat cag gcc ccg cag cag tcg ctg tcg ccg ccg      32035
Arg Pro Val Val Ser His Gln Ala Pro Gln Gln Ser Leu Ser Pro Pro
```

```
            840                 845                 850

ctc cgt caa gct gct gct cag ggg gtc cgg gtc cag gga ctc cct cag      32083
Leu Arg Gln Ala Ala Ala Gln Gly Val Arg Val Gln Gly Leu Pro Gln
        855                 860                 865

cat gat gcc cac ggc cct cag cat cag tcg tct ggt gcg gcg ggc gca      32131
His Asp Ala His Gly Pro Gln His Gln Ser Ser Gly Ala Ala Gly Ala
    870                 875                 880

gca gcg cat gcg gat ctc gct cag gtc gct gca gta cgt gca aca cag      32179
Ala Ala His Ala Asp Leu Ala Gln Val Ala Ala Val Arg Ala Thr Gln
885                 890                 895                 900

gac cac cag gtt gtt caa cag tcc ata gtt caa cac gct cca gcc gaa      32227
Asp His Gln Val Val Gln Gln Ser Ile Val Gln His Ala Pro Ala Glu
                905                 910                 915

act cat cgc ggg aag gat gct acc cac gtg gcc gtc gta cca gat cct      32275
Thr His Arg Gly Lys Asp Ala Thr His Val Ala Val Val Pro Asp Pro
            920                 925                 930

cag gta aat caa gtg gcg ccc cct cca gaa cac gct gcc cat gta cat      32323
Gln Val Asn Gln Val Ala Pro Pro Pro Glu His Ala Ala His Val His
        935                 940                 945

gat ctc ctt ggg cat gtg gcg gtt cac cac ctc ccg gta cca cat cac      32371
Asp Leu Leu Gly His Val Ala Val His His Leu Pro Val Pro His His
    950                 955                 960

cct ctg gtt gaa cat gca gcc ccg gat gat cct gcg gaa cca cag ggc      32419
Pro Leu Val Glu His Ala Ala Pro Asp Asp Pro Ala Glu Pro Gln Gly
965                 970                 975                 980

cag cac cgc ccc gcc cgc cat gca gcg aag aga ccc cgg gtc ccg aca      32467
Gln His Arg Pro Ala Arg His Ala Ala Lys Arg Pro Arg Val Pro Thr
                985                 990                 995

atg gca atg gag  gac cca ccg ctc gta  ccc gtg gat cat ctg  gga      32512
Met Ala Met Glu  Asp Pro Pro Leu Val  Pro Val Asp His Leu  Gly
            1000                1005                1010

gct gaa caa gtc  tat gtt ggc aca gca  cag gca tat gct cat  gca      32557
Ala Glu Gln Val  Tyr Val Gly Thr Ala  Gln Ala Tyr Ala His  Ala
            1015                1020                1025

tct ctt cag cac  tct cag ctc ctc ggg  ggt caa aac cat atc  cca      32602
Ser Leu Gln His  Ser Gln Leu Leu Gly  Gly Gln Asn His Ile  Pro
            1030                1035                1040

ggg cac ggg gaa  ctc ttg cag gac agc  gaa ccc cgc aga aca  ggg      32647
Gly His Gly Glu  Leu Leu Gln Asp Ser  Glu Pro Arg Arg Thr  Gly
            1045                1050                1055

caa tcc tcg cac  ata act tac att gtg  cat gga cag ggt atc  gca      32692
Gln Ser Ser His  Ile Thr Tyr Ile Val  His Gly Gln Gly Ile  Ala
            1060                1065                1070

atc agg cag cac  cgg gtg atc ctc cac  cag aga agc gcg ggt  ctc      32737
Ile Arg Gln His  Arg Val Ile Leu His  Gln Arg Ser Ala Gly  Leu
            1075                1080                1085

ggt ctc ctc aca  gcg tgg taa ggg ggc cgg  ccg ata cgg gtg atg      32782
Gly Leu Leu Thr  Ala Trp     Gly Gly Arg  Pro Ile Arg Val Met
            1090                    1095                1100

gcg gga cgc ggc tga tcg  tgt tcg cga ccg tgt  cat gat gca gtt      32827
Ala Gly Arg Gly     Ser  Cys Ser Arg Pro Cys  His Asp Ala Val
                    1105                1110
```

gct ttc gga cat tttcgtactt gctgtagcag aacctggtcc gggcgctgca 32879
Ala Phe Gly His
1115

caccgatcgc cggcggcggt cccggcgctt ggaacgctcg gtgttgaagt tgtaaaacag 32939

ccactctctc agaccgtgca gcagatctag ggcctcagga gtgatgaaga tcccatcatg 32999

cctgatggct ctaatcacat cgaccaccgt ggaatgggcc agacccagcc agatgatgca 33059

attttgttgg gtttcggtga cggcggggga gggaagaaca ggaagaacca tgattaactt 33119

ttaatccaaa cggtctcgga gcacttcaaa atgaagatcg cggagatggc acctctcgcc 33179

cccgctgtgt tggtggaaaa taacagccag gtcaaaggtg atacggttct cgagatgttc 33239

cacggtggct tccagcaaag cctccacgcg cacatccaga aacaagacaa tagcgaaagc 33299

gggagggttc tctaattcct caatcatcat gttacactcc tgcaccatcc ccagataatt 33359

ttcatttttc cagccttgaa tgattcgaac tagttcctga ggtaaatcca agccagccat 33419

gataaagagc tcgcgcagag cgccctccac cggcattctt aagcacaccc tcataattcc 33479

aagatattct gctcctggtt cacctgcagc agattgacaa gcggaatatc aaaatctctg 33539

ccgcgatccc taagctcctc cctcagcaat aactgtaagt actctttcat atcctctccg 33599

aaatttttag ccataggacc gccaggaatg agattaggac aagccacatt acagataaac 33659

cgaagtcccc cccagtgagc attgccaaat gtaagattga aataagcatg ctggctagac 33719

ccggtgatat cttccagata actggacaga aaatcgccca ggcaattttt aagaaaatca 33779

acaaaagaaa aatcttccag gtgcacgttt agggcctcgg gaacaacgat ggagtaagtg 33839

caaggggtgc gttccagcat ggttagttag ctgatctgta aaaaaacaaa aaataaaaca 33899

ttaaaccatg ctagcctggc gaacaggtgg gtaaatcgtt ctctccagca ccaggcaggc 33959

cacggggtct ccggcgcgac cctcgtaaaa attgtcgcta tgattgaaaa ccatcacaga 34019

gagacgttcc cggtggccgg cgtgaatgat tcgacaagat gaatacaccc ccggaacatt 34079

ggcgtccgcg agtgaaaaaa agcggccgag gaagcaataa ggcactacaa tgctcagtct 34139

caagtccagc aaagcgatgc catgcggatg aagcacaaaa ttctcaggtg cgtacaaaat 34199

gtaattactc ccctcctgca caggcagcaa agccccagat ccctccagat acacatacaa 34259

agcctcagcg tccatagctt accgagcagc agcacacaac aggcgcaaga gtcagagaaa 34319

ggctgagctc taacctgtcc cccgctctct gctcaatata tagcccagat ctacactgac 34379

gtaaaggcca aagtctaaaa atacccgcca aataatcaca cacgcccagc acacgcccag 34439

aaaccggtga cacactcaaa aaaatacgcg cacttcctca aacgcccaaa ctgccgtcat 34499

ttccgggttc ccacgctacg tcatcagaat tcgactttca aatccgtcga ccgttaaaca 34559

cgtcactcgc cccgccccta acggtcgccc tcctctcggc caatcacagc cccgcatccc 34619

caaattcaaa cgcctcattt gcatattaac gcgcacaaaa agtttgaggt atattattga 34679

tgatgatcgt ttaaactatg cggtgtgaaa taccgcacag atgcgtaagg agaaaatacc 34739

gcatcaggcg ctcttccgct tcctcgctca ctgactcgct gcgctcggtc gttcggctgc 34799

ggcgagcggt atcagctcac tcaaaggcgg taatacggtt atccacagaa tcaggggata 34859

acgcaggaaa gaacatgtga gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg 34919

cgttgctggc gtttttccat aggctccgcc cccctgacga gcatcacaaa aatcgacgct 34979

caagtcagag gtggcgaaac ccgacaggac tataaagata ccaggcgttt cccccctggaa 35039

gctccctcgt gcgctctcct gttccgaccc tgccgcttac cggatacctg tccgcctttc 35099

tcccttcggg aagcgtggcg ctttctcata gctcacgctg taggtatctc agttcggtgt 35159

aggtcgttcg ctccaagctg ggctgtgtgc acgaaccccc cgttcagccc gaccgctgcg 35219

ccttatccgg taactatcgt cttgagtcca acccggtaag acacgactta tcgccactgg 35279

cagcagccac tggtaacagg attagcagag cgaggtatgt aggcggtgct acagagttct 35339

tgaagtggtg gcctaactac ggctacacta gaaggacagt atttggtatc tgcgctctgc 35399

tgaagccagt taccttcgga aaaagagttg gtagctcttg atccggcaaa caaaccaccg 35459

ctggtagcgg tggtttttt gtttgcaagc agcagattac gcgcagaaaa aaaggatctc 35519

aagaagatcc tttgatcttt tctacggggt ctgacgctca gtggaacgaa aactcacgtt 35579

aagggatttt ggtcatgaga ttatcaaaaa ggatcttcac ctagatcctt ttaaattaaa 35639

aatgaagttt taaatcaatc taaagtatat atgagtaaac ttggtctgac agttaccaat 35699

gcttaatcag tgaggcacct atctcagcga tctgtctatt tcgttcatcc atagttgcct 35759

gactccccgt cgtgtagata actacgatac gggagggctt accatctggc cccagtgctg 35819

caatgatacc gcgagaccca cgctcaccgg ctccagattt atcagcaata aaccagccag 35879

ccggaagggc cgagcgcaga agtggtcctg caactttatc cgcctccatc cagtctatta 35939

attgttgccg ggaagctaga gtaagtagtt cgccagttaa tagtttgcgc aacgttgttg 35999

ccattgctgc aggcatcgtg gtgtcacgct cgtcgtttgg tatggcttca ttcagctccg 36059

gttcccaacg atcaaggcga gttacatgat cccccatgtt gtgcaaaaaa gcggttagct 36119

ccttcggtcc tccgatcgtt gtcagaagta agttggccgc agtgttatca ctcatggtta 36179

tggcagcact gcataattct cttactgtca tgccatccgt aagatgcttt tctgtgactg 36239

gtgagtactc aaccaagtca ttctgagaat agtgtatgcg gcgaccgagt tgctcttgcc 36299

cggcgtcaac acgggataat accgcgccac atagcagaac tttaaaagtg ctcatcattg 36359

gaaaacgttc ttcggggcga aaactctcaa ggatcttacc gctgttgaga tccagttcga 36419

tgtaacccac tcgtgcaccc aactgatctt cagcatcttt tactttcacc agcgtttctg 36479

ggtgagcaaa aacaggaagg caaaatgccg caaaaaaggg aataagggcg acacggaaat 36539

gttgaatact catactcttc ctttttcaat attattgaag catttatcag ggttattgtc 36599

tcatgagcgg atacatattt gaatgtattt agaaaaataa acaaataggg gttccgcgca 36659

catttccccg aaaagtgcca cctgacgtct aagaaaccat tattatcatg acattaacct 36719

ataaaaatag gcgtatcacg aggccctttc gtcttcaaga attgtttaaa ctac 36773

<210> 239
<211> 185

<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 239

Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Leu Pro
1 5 10 15

Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu
20 25 30

Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
35 40 45

Asp Ser Leu Glu Asp Glu Val Glu Glu Ala Glu Glu Glu Ala Ala Ala
50 55 60

Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr Asp Thr Ile
65 70 75 80

Ser Ala Pro Gly Arg Gly Leu Gly Gly Arg Ala His Ser Arg Trp Asp
85 90 95

Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu
100 105 110

Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser
115 120 125

Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu
130 135 140

Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr
145 150 155 160

Arg His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala Glu Thr
165 170 175

Gln Gln Gln Gln Lys Thr Ser Ser Ser
180 185

<210> 240
<211> 207
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 240

Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1 5 10 15

Ile Ser Asp Tyr Ser Gly Leu Pro Cys Val Pro Glu Ser Ile Asn Gln
            20   25   30

Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys
        35   40   45

Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala
    50   55   60

Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala
65   70   75   80

Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro
                85   90   95

Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr
            100   105   110

Phe His Leu Ile Pro Asn Thr Thr Ala Ser Leu Pro Ala Thr Asn Asn
        115   120   125

Gln Thr Thr His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn
    130   135   140

Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr
145   150   155   160

Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Val
                165   170   175

Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr
            180   185   190

Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
        195   200   205

<210> 241
<211> 292
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 241

Met Lys Ala Val Ser Ala Leu Val Phe Cys Ser Leu Ile Gly Thr Val
1   5   10   15

Phe Ser Val Ser Phe Leu Lys Gln Ile Asn Val Thr Glu Gly Glu Asn
            20   25   30

Val Thr Leu Val Gly Val Glu Gly Ala Gln Asn Thr Thr Trp Thr Lys
        35   40   45

```
Tyr His Leu Asp Gly Trp Lys Asp Ile Cys Asn Trp Ser Val Ile Thr
    50                  55                  60

Tyr Thr Cys Glu Gly Val Asn Leu Thr Ile Val Asn Ala Ser Gln Asn
65                  70                  75                  80

Gln Lys Gly Trp Ile Lys Gly Gln Ser Val Ser Val Thr Ser Glu Gly
                85                  90                  95

Tyr Tyr Thr Gln His Thr Leu Ile Tyr Asp Ile Ile Val Ile Pro Leu
            100                 105                 110

Pro Thr Pro Ser Pro Pro Ser Thr Thr Thr Gln Thr Thr His Thr Thr
        115                 120                 125

Gln Thr Thr Thr Tyr Ser Thr Ser Asn Gln Pro Thr Thr Thr Thr Thr
    130                 135                 140

Ala Glu Val Ala Ser Ser Ser Gly Val Arg Ala Ala Phe Leu Met Leu
145                 150                 155                 160

Ala Pro Ser Ser Ser Pro Thr Ala Ser Thr Asn Glu Gln Thr Thr Glu
                165                 170                 175

Phe Leu Ser Thr Val Glu Ser His Thr Thr Ala Thr Ser Ser Ala Phe
            180                 185                 190

Ser Ser Thr Ala Asn Leu Ser Ser Leu Ser Ser Thr Pro Ile Ser Pro
        195                 200                 205

Ala Thr Thr Thr Thr Pro Ala Ile Leu Pro Thr Pro Leu Lys Gln Thr
    210                 215                 220

Glu Asp Ser Gly Met Gln Trp Gln Ile Thr Leu Leu Ile Val Ile Gly
225                 230                 235                 240

Leu Val Ile Leu Ala Val Leu Leu Tyr Tyr Ile Phe Arg Arg Arg Ile
                245                 250                 255

Pro Asn Ala His Arg Lys Pro Val Tyr Lys Pro Ile Ile Val Gly Gln
            260                 265                 270

Pro Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser
        275                 280                 285

Phe Thr Val Trp
    290


<210>  242
<211>  135
<212>  PRT
```

<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 242

Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp Leu Leu Leu Asp
1 5 10 15

Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg
20 25 30

Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Gly Ile Ala Ile
35 40 45

His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile
50 55 60

Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser Tyr Glu Leu Leu
65 70 75 80

Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val
85 90 95

Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys
100 105 110

Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu
115 120 125

Arg Asp Leu Leu Pro Met Asn
130 135

<210> 243
<211> 273
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 243

Ser Gly Arg Ser Arg Arg Ala Ala Val Gly Ile Ile Val Arg Glu Arg
1 5 10 15

Asp Arg Pro Val Val Ser His Gln Ala Pro Gln Gln Ser Leu Ser Pro
20 25 30

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

Gln His Asp Ala His Gly Pro Gln His Gln Ser Ser Gly Ala Ala Gly
50 55 60

```
Ala Ala Ala His Ala Asp Leu Ala Gln Val Ala Ala Val Arg Ala Thr
65                  70                  75                  80

Gln Asp His Gln Val Val Gln Gln Ser Ile Val Gln His Ala Pro Ala
                85                  90                  95

Glu Thr His Arg Gly Lys Asp Ala Thr His Val Ala Val Val Pro Asp
            100                 105                 110

Pro Gln Val Asn Gln Val Ala Pro Pro Pro Glu His Ala Ala His Val
        115                 120                 125

His Asp Leu Leu Gly His Val Ala Val His His Leu Pro Val Pro His
    130                 135                 140

His Pro Leu Val Glu His Ala Ala Pro Asp Asp Pro Ala Glu Pro Gln
145                 150                 155                 160

Gly Gln His Arg Pro Ala Arg His Ala Ala Lys Arg Pro Arg Val Pro
                165                 170                 175

Thr Met Ala Met Glu Asp Pro Pro Leu Val Pro Val Asp His Leu Gly
            180                 185                 190

Ala Glu Gln Val Tyr Val Gly Thr Ala Gln Ala Tyr Ala His Ala Ser
        195                 200                 205

Leu Gln His Ser Gln Leu Leu Gly Gly Gln Asn His Ile Pro Gly His
    210                 215                 220

Gly Glu Leu Leu Gln Asp Ser Glu Pro Arg Arg Thr Gly Gln Ser Ser
225                 230                 235                 240

His Ile Thr Tyr Ile Val His Gly Gln Gly Ile Ala Ile Arg Gln His
                245                 250                 255

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

Trp
```

<210> 244
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 244

```
Gly Gly Arg Pro Ile Arg Val Met Ala Gly Arg Gly
1               5                   10
```

<210> 245
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 245

Ser Cys Ser Arg Pro Cys His Asp Ala Val Ala Phe Gly His
1 5 10

<210> 246
<211> 38692
<212> DNA
<213> Artificial Sequence

<220>
<223> p2876 - E1 deleted molecular clone with HIVgagshort insertion, based on Simian Adenovirus A1320

<220>
<221> repeat_region
<222> (1)..(129)
<223> ITR

<220>
<221> mutation
<222> (517)..(517)
<223> GATCTG\deleted

<220>
<221> mutation
<222> (539)..(539)
<223> C\insertion

<220>
<221> enhancer
<222> (846)..(1106)
<223> enhancer

<220>
<221> misc_feature
<222> (1107)..(1334)
<223> CMV\promoter

<220>
<221> primer_bind
<222> (1254)..(1275)
<223> Primer\Ad\CMV-F

<220>
<221> TATA_signal
<222> (1308)..(1311)
<223> TATA

<220>
<221> CDS
<222> (1430)..(2521)
<223> HIV gag\short

<220>
<221> primer_bind
<222> (1704)..(1728)
<223> Primer HIVgag-5F

<220>
<221> primer_bind
<222> (2423)..(2442)
<223> Primer HIVgag-F

<220>
<221> polyA_signal
<222> (2674)..(2876)
<223> BGH-PolyA (bovine growth hormone (bGH) polyadenylation signal)

<220>
<221> misc_feature
<222> (3030)..(3415)
<223> E1b\del

<220>
<221> misc_feature
<222> (3989)..(5610)
<223> IVa2 complement (3989..5610)

<220>
<221> misc_feature
<222> (5599)..(13864)
<223> pol complement (5599..13864)

<220>
<221> misc_feature
<222> (8469)..(13864)
<223> pTP complement (8469..13864)

<220>
<221> CDS
<222> (12061)..(13821)
<223> pIIIa

<220>
<221> CDS
<222> (13904)..(15529)
<223> penton

<220>
<221> CDS
<222> (15536)..(16117)
<223> pVII

<220>
<221> CDS
<222> (16165)..(17208)
<223> V

<220>
<221> CDS
<222> (17236)..(17466)
<223> pX

<220>
<221> CDS
<222> (17539)..(18270)
<223> pVI

<220>
<221> CDS
<222> (18377)..(21205)
<223> hexon

<220>
<221> CDS
<222> (21227)..(21850)

<223> protease

<220>
<221> CDS
<222> (21935)..(23470)
<223> DBP complement (21935..23470)

<220>
<221> CDS
<222> (25615)..(26169)
<223> 22K

<220>
<221> CDS
<222> (26518)..(27198)
<223> pVIII

<220>
<221> CDS
<222> (27202)..(27519)
<223> E3 12.5K

<220>
<221> CDS
<222> (28081)..(28608)
<223> E3 gp19K

<220>
<221> CDS
<222> (28641)..(29240)
<223> E3 CR1-beta

<220>
<221> CDS
<222> (29886)..(30761)
<223> E3 CR1-delta

<220>
<221> CDS
<222> (31477)..(31881)
<223> E3 14.7K

<220>
<221> CDS
<222> (32178)..(33512)
<223> fiber

<220>
<221> misc_feature
<222> (33605)..(34938)
<223> E4 orf 6/7 complement (33605..33855, 34588..34938)

<220>
<221> CDS
<222> (33856)..(34758)
<223> E4\orf6 complement (33856..34758)

<220>
<221> misc_feature
<222> (34588)..(34611)
<223> middle\right

<220>
<221> misc_feature
<222> (34919)..(34938)
<223> end of E4 orf 6/7

<220>
<221> repeat_region

<222> (36475)..(36603)
<223> ITR complement (36475..36603)

<220>
<221> misc_feature
<222> (36843)..(36849)
<223> pMB1\ori low copy number

<220>
<221> misc_feature
<222> (36852)..(37440)
<223> pMB1\ori

<220>
<221> rep_origin
<222> (36853)..(36853)
<223> ORI

<220>
<221> CDS
<222> (37611)..(38474)
<223> AP(R) [note: E-286] complement (37611..38474)

<400> 246
catcatcaat aatatacctc aaacttttg tgcgcgttaa tatgcaaatg aggcgtttga 60

atttggggat gcggggcggt gattggctgt gggaaaggcg accgttaggg gcggggcggg 120

tgacgttttg atgacgtgtt tgtgaggcgg agccggtttg caagttctcg tgggaaaagt 180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca 240

ggaaatgagg tgtttctggg cggatgcaag tgaaaacggg ccattttcgc gcgaaaactg 300

aatgaggaag tgaaaatctg agtaatttcg cgtttatggc agggaggagt atttgccgag 360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtgtttt tcacctaaat 420

ttccgcgtac ggtgtcaaag tccggtgttt ttacatcatt tccccgaaaa gtgccacctg 480

acgtaactat aacggtccta aggtagcgaa agctcagatc tcccgatccc ctatggtgca 540

ctctcagtac aatctgctct gatgccgcat agttaagcca gtatctgctc cctgcttgtg 600

tgttggaggt cgctgagtag tgcgcgagca aaatttaagc tacaacaagg caaggcttga 660

ccgacaattg catgaagaat ctgcttaggg ttaggcgttt tgcgctgctt cgcgatgtac 720

gggccagata tacgcgttga cattgattat tgactagtta ttaatagtaa tcaattacgg 780

ggtcattagt tcatagccca tatatggagt tccgcgttac ataacttacg gtaaatggcc 840

cgcctggctg accgcccaac gacccccgcc cattgacgtc aataatgacg tatgttccca 900

tagtaacgcc aatagggact ttccattgac gtcaatgggt ggagtattta cggtaaactg 960

cccacttggc agtacatcaa gtgtatcata tgccaagtac gccccctatt gacgtcaatg 1020

acggtaaatg gcccgcctgg cattatgccc agtacatgac cttatgggac tttcctactt 1080

ggcagtacat ctacgtatta gtcatcgcta ttaccatggt gatgcggttt tggcagtaca 1140

tcaatgggcg tggatagcgg tttgactcac ggggatttcc aagtctccac cccattgacg 1200

tcaatgggag tttgttttgg caccaaaatc aacgggactt tccaaaatgt cgtaacaact 1260

ccgccccatt gacgcaaatg ggcggtaggc gtgtacggtg ggaggtctat ataagcagag 1320

ctcgtttagt gaaccgtcag atcgcctgga gacgccatcc acgctgtttt gacctccata 1380

```
gaagacaccg ggaccgatcc agcctccgcg ggcgcgcgtc gacagagag atg ggt gcg     1438
                                                          Met Gly Ala
                                                          1

aga gcg tca gta tta agc ggg gga gaa tta gat cga tgg gaa aaa att       1486
Arg Ala Ser Val Leu Ser Gly Gly Glu Leu Asp Arg Trp Glu Lys Ile
    5                   10                  15

cgg tta agg cca ggg gga aag aag aag tac aag cta aag cac atc gta       1534
Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys His Ile Val
20                  25                  30                  35

tgg gca agc agg gag cta gaa cga ttc gca gtt aat cct ggc ctg tta       1582
Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro Gly Leu Leu
                40                  45                  50

gaa aca tca gaa ggc tgt aga caa ata ctg gga cag cta caa cca tcc       1630
Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu Gln Pro Ser
            55                  60                  65

ctt cag aca gga tca gag gag ctt cga tca cta tac aac aca gta gca       1678
Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn Thr Val Ala
        70                  75                  80

acc ctc tat tgt gtg cac cag cgg atc gag atc aag gac acc aag gaa       1726
Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp Thr Lys Glu
    85                  90                  95

gct tta gac aag ata gag gaa gag caa aac aag tcc aag aag aag gcc       1774
Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys Lys Lys Ala
100                 105                 110                 115

cag cag gca gca gct gac aca gga cac agc aat cag gtc agc caa aat       1822
Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn
                120                 125                 130

tac cct ata gtg cag aac atc cag ggg caa atg gta cat cag gcc ata       1870
Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile
            135                 140                 145

tca cct aga act tta aat gca tgg gta aaa gta gta gaa gag aag gct       1918
Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala
        150                 155                 160

ttc agc cca gaa gtg ata ccc atg ttt tca gca tta tca gaa gga gcc       1966
Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala
    165                 170                 175

acc cca cag gac ctg aac acg atg ttg aac acc gtg ggg gga cat caa       2014
Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln
180                 185                 190                 195

gca gcc atg caa atg tta aaa gag acc atc aat gag gaa gct gca gaa       2062
Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu
                200                 205                 210

tgg gat aga gtg cat cca gtg cat gca ggg cct att gca cca ggc cag       2110
Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln
            215                 220                 225

atg aga gaa cca agg gga agt gac ata gca gga act act agt acc ctt       2158
Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu
        230                 235                 240

cag gaa caa ata gga tgg atg aca aat aat cca cct atc cca gta gga       2206
Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly
    245                 250                 255
```

```
gag atc tac aag agg tgg ata atc ctg gga ttg aac aag atc gtg agg       2254
Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg
260                 265                 270                 275

atg tat agc cct acc agc att ctg gac ata aga caa gga cca aaa gaa       2302
Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu
                280                 285                 290

ccc ttt aga gac tat gta gac cgg ttc tat aaa act cta aga gct gag       2350
Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu
            295                 300                 305

caa gct tca cag gag gta aaa aat tgg atg aca gaa acc ttg ttg gtc       2398
Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val
        310                 315                 320

caa aat gcg aac cca gat tgt aag acc atc ctg aag gct ctc ggc cca       2446
Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro
    325                 330                 335

gcg gct aca cta gaa gaa atg atg aca gca tgt cag gga gta gga gga       2494
Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly
340                 345                 350                 355

ccc ggc cat aag gca aga gtt ttg tag ggatccacta gttctagact             2541
Pro Gly His Lys Ala Arg Val Leu
                360

cgaggggggg cccggtacct ttaagaccaa tgacttacaa ggcagctgta gatcttagcc     2601

acttttaaa agaaaagggg ggactggaag ggctaattca ctcccaaaga agacaagata     2661

aaccgctgat cagcctcgac tgtgccttct agttgccagc catctgttgt ttgcccctcc     2721

cccgtgcctt ccttgaccct ggaaggtgcc actcccactg tcctttccta ataaaatgag     2781

gaaattgcat cgcattgtct gagtaggtgt cattctattc tgggggggtgg ggtggggcag     2841

gacagcaagg gggaggattg ggaagacaat agcaggcatg ctggggatgc ggtgggctct     2901

atggcttctg aggcggaaag aaccagcaga tctgcagatc tgaattcatc tatgtcgggt     2961

gcggagaaag aggtaatgaa atggcattat gggtattatg ggtctgcatt aatgaatcgg     3021

ccagattatg ctggccaccg tgcatgtggc ctcgcacccc cgcaagacat ggcccgagtt     3081

cgagcacaac gtcatgaccc gctgcaatgt gcacctgggc tcccgccgag gcatgttcat     3141

gccataccag tgcaacatgc aatttgtgaa ggtgctgctg gagcccgatg ccatgtccag     3201

agtgagcctg acgggggtgt ttgacatgaa tgtggagctg tggaaaattc tgagatatga     3261

tgaatccaag accaggtgcc gggcctgcga atgcggaggc aagcacgcca ggcttcagcc     3321

cgtgtgtgtg gaggtgacgg aggacctgcg acccgatcat ttggtgttgt cctgcaacgg     3381

gacggagttc ggctccagcg gggaagaatc tgactagagt gagtagtgtt tgggggtggg     3441

tgggagcctg catgatgggc agaatgacta aaatctgtgt ttttctgcgc agcagcatga     3501

gcggaagcgc ctcctttgag ggaggggtat tcagccctta tctgacgggg cgtctcccct     3561

cctgggctgg agtgcgtcag aatgtgatgg gatccacggt ggacggccgg cccgtgcagc     3621

ccgcgaactc ttcaaccctg acctacgcga ccctgagctc ctcgtccgtg gacgcagctg     3681

ccgccgcagc tgctgcttcc gccgccagcg ccgtgcgcgg aatggccctg ggtgccggct     3741

actacagctc tctggtggcc aactcgagtt ccgccaataa tcccgccagc ctgaacgagg     3801
```

agaagctgct gctgctgatg gcccagctcg aggccctgac ccagcgcctg ggcgagctga 3861
cccagcaggt ggctcagctg caggcggaga cgcgggccgc ggttgccacg gtgaaaacca 3921
aataaaaaat gaatcaataa ataaacggaa acggttgttg attttaacac agagtcttga 3981
atctttattt gatttttcgc gcgcggtagg ccctggacca ccggtctcga tcattgagca 4041
cccggtggat cttttccagg acccggtaga ggtgggcttg gatgttgagg tacatgggca 4101
tgagcccgtc ccgggggtgg aggtagctcc actgcagggc ctcgtgctcg ggggtggtgt 4161
tgtaaatcac ccagtcatag caggggcgca gggcgtggtg ctgcacgatg tccttgagga 4221
ggagactgat ggccacgggc agtcccttgg tgtaggtgtt gacgaacctg ttgagctggg 4281
agggatgcat gcggggggag atgagatgca tcttggcctg gatcttgaga ttggcgatgt 4341
tcccacccag atcccgccgg gggttcatgt tgtgcaggac caccagcacg gtgtatccgg 4401
tgcacttggg gaatttgtca tgcaacttgg aagggaaggc gtgaaagaat ttggagacgc 4461
ccttgtgacc gcccaggttt tccatgcact catccatgat gatggcgatg ggcccgtggg 4521
cggcggcctg ggcaaagacg tttcgggggt cggacacatc gtagttgtgg tcctgggtga 4581
gctcgtcata ggccatttta atgaatttgg ggcggagggt gcccgactgg gggacaaagg 4641
tgccctcgat cccgggggcg tagttgccct cgcagatctg catctcccag gccttgagct 4701
cggagggggg gatcatgtcc acctgcgggg cgatgaaaaa aacggtttcc ggggcggggg 4761
agatgagctg ggccgaaagc aggttccgga gcagctggga cttgccgcag ccggtggggc 4821
cgtagatgac cccgatgacc ggctgcaggt ggtagttgag ggagagacag ctgccgtcct 4881
cgcggaggag gggggccacc tcgttcatca tctcgcgcac atgcatgttc tcgcgcacga 4941
gttccgccag gaggcgctcg ccccccagcg agaggagctc ttgcagcgag gcgaagtttt 5001
tcagcggctt gagtccgtcg gccatgggca ttttggagag ggtctgttgc aagagttcca 5061
gacggtccca gagctcggtg atgtgctcta gggcatctcg atccagcaga cctcctcgtt 5121
tcgcgggttg gggcggctgc gggagtaggg caccaggcga tgggcgtcca gcgaggccag 5181
ggtccggtcc ttccagggtc gcagggtccg cgtcagcgtg gtctccgtca cggtgaaggg 5241
gtgcgcgccg ggctgggcgc ttgcgagggt gcgcttcagg ctcatccggc tggtcgagaa 5301
ccgctcccgg tcggtgccct gcgcgtcggc caggtagcaa ttgagcatga gttcgtagtt 5361
gagcgcctcg gccgcgtggc ccttggcgcg gagcttacct ttggaagtgt gtccgcagac 5421
gggacagagg agggacttga gggcgtagag cttgggggcg aggaagacgg actcgggggc 5481
gtaggcgtcc gcgccgcagc tggcgcagac ggtctcgcac tccacgagcc aggtgaggtc 5541
ggggcggtcg gggtcaaaaa cgaggtttcc tccgtgcttt ttgatgcgtt tcttacctct 5601
ggtctccatg agctcgtgtc cccgctgggt gacaaagagg ctgtccgtgt ccccgtagac 5661
cgactttatg ggccggtcct cgagcggggt gccgcggtcc tcgtcgtaga ggaaccccgc 5721
ccactccgag acgaaggccc gggtccaggc cagcacgaag gaggccacgt gggaggggta 5781
gcggtcgttg tccaccagcg ggtccacctt ctccagggta tgcaagcaca tgtccccctc 5841

gtccacatcc aggaaggtga ttggcttgta agtgtaggcc acgtgaccgg gggtcccggc 5901

cgggggggta taaaaggggg cgggcccctg ctcgtcctca ctgtcttccg gatcgctgtc 5961

caggagcgcc agctgttggg gtaggtattc cctctcgaag gcgggcatga cctcggcact 6021

caggttgtca gtttctagaa acgaggagga tttgatattg acggtgccgt tggagacgcc 6081

tttcatgagc ccctcgtcca tctggtcaga aaagacgatc tttttgttgt cgagcttggt 6141

ggcgaaggag ccgtagaggg cattggagag gagcttggcg atggagcgca tggtctggtt 6201

cttttccttg tcggcgcgct ccttggcggc gatgttgagc tgcacgtact cgcgcgccac 6261

gcacttccat tcggggaaga cggtggtgag ctcgtcgggc acgattctga cccgccagcc 6321

gcggttgtgc agggtgatga ggtccacgct ggtggccacc tcgccgcgca ggggctcgtt 6381

ggtccagcag aggcgcccgc ccttgcgcga gcagaagggg ggcagcgggt ccagcatgag 6441

ctcgtcgggg gggtcggcgt ccacggtgaa gatgccgggc aggagctcgg ggtcgaagta 6501

gctgatgcag gtgcccagat cgtccagcgc cgcttgccag tcgcgcacgg ccagcgcgcg 6561

ctcgtagggg ctgaggggcg tgccccaggg catggggtgc gtgagcgcgg aggcgtacat 6621

gccgcagatg tcgtagacgt agaggggctc ctcgaggacg ccgatgtagg tggggtagca 6681

gcgccccccg cggatgctgg cgcgcacgta gtcgtacagc tcgtgcgagg gcgcgaggag 6741

ccccgcgccg aggttggagc gctgcggctt ttcggcgcgg tagacgatct ggcggaagat 6801

ggcgtgggag ttggaggaga tggtgggcct ctggaagatg ttgaagtggg cgtggggcag 6861

gccgaccgag tccctgatga agtgggcgta ggagtcctgc agcttggcga cgagctcggc 6921

ggtgacgagg acgtccaggg cgcagtagtc gagggtctct tggatgatgt cgtacttgag 6981

ctggcccttc tgcttccaca gctcgcggtt gagaaggaac tcttcgcggt ccttccagta 7041

ctcttcgagg gggaacccgt cctgatcggc acggtaagag cccaccatgt agaactggtt 7101

gacggccttg taggcgcagc agcccttctc cacggggagg gcataagctt gcgcggcctt 7161

gcgcagggag gtgtgggtga gggcgaaggt gtcgcgcacc atgaccttga ggaactggtg 7221

cttgaagtcg aggtcgtcgc agccgccctg ctcccagagt tggaagtccg tgcgcttctt 7281

gtaggcgggg ttgggcaaag cgaaagtaac atcgttgaag aggatcttgc ccgcgcgggg 7341

catgaagttg cgagtgatgc ggaaaggctg gggcacctcg gcccggttgt tgatgacctg 7401

ggcggcgagg acgatctcgt cgaagccgtt gatgttgtgc ccgacgatgt agagttccac 7461

gaatcgcggg cggcccttga cgtggggcag cttcttgagc tcgtcgtagg tgagctcggc 7521

ggggtcgctg agtccgtgct gctcaagggc ccagtcggcg acgtgggggt tggcgctgag 7581

gaaggaagtc cagagatcca cggccagggc ggtttgcaag cggtcccggt actgacggaa 7641

ctgctggccc acggccattt tttcgggggt gatgcagtag aaggtgcggg ggtcgccgtg 7701

ccagcggtcc cacttgagct ggagggcgag gtcgtgggcg agctcgacaa gcggcgggtc 7761

cccggagagt ttcatgacca gcatgaaggg gacgagctgc ttgccgaagg accccatcca 7821

ggtgtaggtt tccacatcgt aggtgaggaa gagcctttcg gtgcgaggat gcgagccgat 7881

ggggaagaac tggatctcct gccaccagtt ggaggaatgg ctgttgatgt gatggaagta 7941

gaaatgccga cggcgcgccg agcactcgtg cttgtgttta tacaagcgtc cgcagtgctc 8001
gcaacgctgc acgggatgca cgtgctgcac gagctgtacc tgagttcctt tgacgaggaa 8061
tttcagtggg cagtggagcg ctggcggctg catctggtgc tgtactacgt cctggccatc 8121
ggcgtggcca tcgtctgcct cgatggtggt catgctgacg agcccgcgcg ggaggcaggt 8181
ccagacctcg gctcggacgg gtcggagagc gaggacgagg gcgcgcaggc cggagctgtc 8241
cagggtcctg agacgctgcg gagtcaggtc agtgggcagc ggcggcgcgc ggttgacttg 8301
caggagcttt tccagggcgc gcgggaggtc cagatggtac ttgatctcca cggcgccgtt 8361
ggtggcgacg tccacggctt gcagggtccc gtgcccctgg ggcgccacca ccgtgccccg 8421
tttcttcttg ggcgctggcg gcgttggcgc tggttccatg tcggtcagaa gcggcggcga 8481
ggacgcgcgc cgggcggcag gggcggctcg gggcccggag gcaggggcgg caggggcacg 8541
tcggcgccgc gcgcgggcag gttctggtac tgcgcccgga gaagactggc gtgagcgacg 8601
acgcgacggt tgacgtcctg gatctgacgc ctctgggtga aggccacggg acccgtgagt 8661
ttgaacctga aagagagttc gacagaatca atctcggtat cgttgacggc ggcctgccgc 8721
aggatctctt gcacgtcgcc cgagttgtcc tggtaggcga tctcggtcat gaactgctcg 8781
atctcctcct cctgaaggtc tccgcggccg gcgcgctcga cggtggccgc gaggtcgttg 8841
gagatgcggg ccatgagctg cgagaaggcg ttcatgccgg cctcgttcca gacgcggctg 8901
tagaccacgg ctccgtcggg gtcgcgcgcg cgcatgacca cctgggcaag gttgagctcg 8961
acgtggcgcg tgaagaccgc gtagttgcag aggcgctggt agaggtagtt gagcgtggtg 9021
gcgatgtgct cggtgacgaa gaagtacatg atccagcggc ggagcggcat ctcgctgacg 9081
tcgcccaggg cttccaagcg ctccatggcc tcgtagaagt ccacggcgaa gttgaaaaac 9141
tgggagttgc gcgccgagac ggtcaactcc tcctccagaa gacggatgag ctctgcgatg 9201
gtggcgcgca cctcgcgctc gaaggccccg gggggctcct cttcttccat ctcctcctcc 9261
tcttcctcct ccactaacat ctcttctact tcctcctcag gcggtggtgg cgggggaggg 9321
ggcctgcgtc gccggcggcg cacgggcaga cggtcgatga agcgctcgat ggtctcgccg 9381
cgccggcgtc gcatggtctc ggtgacggcg cgcccgtcct cgcggggccg cagcgtgaag 9441
acgccgccgc gcatctccag gtggccgggg gggtccccgt tgggcaggga gagggcgctg 9501
acgatgcatc ttatcaattg ccccgtaggg actccgcgca aggacctgag cgtctcgaga 9561
tccacgggat ctgaaaaccg ttgaacgaag gcttcgagcc agtcgcagtc gcaaggtagg 9621
ctgagcacgg tttcttctgg cgggtcatgt tggttggagg gagcggggcg ggcgatgctg 9681
ctggtgatga agttgaaata ggcggttctg agacggcgga tggtggcgag gagcaccagg 9741
tctttgggcc cggcttgctg gatgcgcaga cggtcggcca tgccccaggc gtggtcctga 9801
cacctggcca ggtccttgta gtagtcctgc atgagccgct ccacgggcac ctcctcctcg 9861
cccgcgcggc cgtgcatgcg cgtgagcccg aagccgcgct ggggctggac gagcgccagg 9921
tcggcgacga cgcgctcggc gaggatggcc tgctggacct gggtgagggt ggtctggaag 9981

tcgtcgaagt cgacgaagcg gtggtaggct ccggtgttga tggtgtagga gcagttggcc 10041

atgacggacc agttgacggt ctggtggccg gggcgcacga gctcgtggta cttgaggcgc 10101

gagtaggcgc gcgtgtcgaa gatgtagtcg ttgcaggtgc gcacgaggta ctggtatccg 10161

acgaggaagt gcggcggcgg ctggcggtag agcggccatc gctcggtggc gggggcgccg 10221

ggcgcgaggt cctcgagcat gaggcggtgg tagccgtaga tgtacctgga catccaggtg 10281

atgccggcgg cggtggtgga ggcgcgcggg aactcgcgga cgcggttcca gatgttgcgc 10341

agcggcagga agtagttcat ggtggccgcg gtctggcccg tgaggcgcgc gcagtcgtgg 10401

atgctctaga catacgggca aaaacgaaag cggtcagcgg ctcgactccg tggcctggag 10461

gctaagcgaa cgggttgggc tgcgcgtgta ccccggttcg agtctctgct cgaatcaggc 10521

tggagccgca gctaacgtgg tactggcact cccgtctcga cccaagcctg ctaacgaaac 10581

ctccaggata cggaggcggg tcgtttttg gccttggtca ctggtcatga aaaactagta 10641

agcgcggaaa gcggccgccc gcgatggctc gctgccgtag tctggagaaa gaatcgccag 10701

ggttgcgttg cggtgtgccc cggttcgaga ctcagcgctc ggcgccggcc ggattccgcg 10761

gctaacgtgg gcgtggctgc cccgtcgttt ccaagacccc ttagccagcc gacttctcca 10821

gttacggagc gagcccctct ttttcttgtg tttttgccag atgcatcccg tactgcggca 10881

gatgcgcccc caccctccac cacaaccgcc cctaccgccg cagcagcagc aacagccggc 10941

gcttctgccc ccgccccagc agcagccagc cactaccgcg gcggccgccg tgagcggagc 11001

cggcgttcag tatgacctgg ccttggaaga gggcgagggg ctggcgcggc tgggggcgtc 11061

gtcgccggag cggcacccgc gcgtgcagat gaaaagggac gctcgcgagg cctacgtgcc 11121

caagcagaac ctgttcagag acaggagcgg cgaggagccc gaggagatgc gcgcctcccg 11181

cttccacgcg gggcgggagc tgcggcgcgg cctggaccga aagcgggtgc tgagggacga 11241

ggatttcgag gcggacgagc tgacggggat cagccccgcg cgcgcgcacg tggccgcggc 11301

caacctggtc acggcgtacg agcagaccgt gaaggaggag agcaacttcc aaaaatcctt 11361

caacaaccac gtgcgcacgc tgatcgcgcg cgaggaggtg accctgggcc tgatgcatct 11421

gtgggacctg ttggaggcca tcgtgcagaa ccccacgagc aagccgctga cggcgcagct 11481

gtttctggtg gtgcagcaca gtcgggacaa cgagacgttc agggaggcgc tgctgaatat 11541

caccgagccc gagggccgct ggctcctgga cctggtgaac attctgcaga gcatcgtggt 11601

gcaggagcgc gggctgccgc tgtccgagaa gctggcggcc atcaacttct cggtgctgag 11661

cctgggcaag tactacgcta ggaagatcta caagaccccg tacgtgccca tagacaagga 11721

ggtgaagatc gacgggtttt acatgcgcat gaccctgaaa gtgctgaccc tgagcgacga 11781

tctgggggtg taccgcaacg acaggatgca ccgcgcggtg agcgccagcc gccggcgcga 11841

gctgagcgac caggagctga tgcacagcct gcagcgggcc ctgaccgggg ccgggaccga 11901

gggggagagc tactttgaca tgggcgcgga cctgcgctgg cagcccagcc gccgggcttt 11961

agaggcagcc ggcggcgtgc cctacgtgga ggaggtggac gatgatgagg aggagggcga 12021

gtacctggaa gactgatggc gcgaccgtat ttttgctag atg cag caa cag cca 12075

```
                                                  Met Gln Gln Gln Pro
                                                      365

ccg cct cct gat ccc gcg atg cgg gcg gcg ctg cag agc cag ccg tcc      12123
Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu Gln Ser Gln Pro Ser
    370                 375                 380

ggc att aac tcc tcg gac gat tgg acc cag gcc atg caa cgc atc atg      12171
Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala Met Gln Arg Ile Met
385                 390                 395                 400

gcg ctg acg acc cgc aat ccc gaa gcc ttt aga cag cag cct cag gcc      12219
Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg Gln Gln Pro Gln Ala
                405                 410                 415

aac cgg ctc tcg gcc atc ctg gag gcc gtg gtg ccc tcg cgc tcg aac      12267
Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val Pro Ser Arg Ser Asn
            420                 425                 430

ccc acg cac gag aag gtg ctg gcc atc gtg aac gcg ctg gtg gag aac      12315
Pro Thr His Glu Lys Val Leu Ala Ile Val Asn Ala Leu Val Glu Asn
        435                 440                 445

aag gcc atc cgc ggc gac gag gcc ggg ctg gtg tac aac gcg ctg ctg      12363
Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val Tyr Asn Ala Leu Leu
    450                 455                 460

gag cgc gtg gcc cgc tac aac agc acc aac gtg cag acg aac ctg gac      12411
Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val Gln Thr Asn Leu Asp
465                 470                 475                 480

cgc atg gtg acc gac gtg cgc gag gcg gtg tcg cag cgc gag cgg ttc      12459
Arg Met Val Thr Asp Val Arg Glu Ala Val Ser Gln Arg Glu Arg Phe
                485                 490                 495

cac cgc gag tcg aac ctg ggc tcc atg gtg gcg ctg aac gcc ttc ctg      12507
His Arg Glu Ser Asn Leu Gly Ser Met Val Ala Leu Asn Ala Phe Leu
            500                 505                 510

agc acg cag ccc gcc aac gtg ccc cgg ggc cag gag gac tac acc aac      12555
Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln Glu Asp Tyr Thr Asn
        515                 520                 525

ttt atc agc gcg ctg cgg ctg atg gtg gcc gag gtg ccc cag agc gag      12603
Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu Val Pro Gln Ser Glu
    530                 535                 540

gtg tac cag tcg ggg ccg gac tac ttc ttc cag acc agt cgc cag ggc      12651
Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln Thr Ser Arg Gln Gly
545                 550                 555                 560

ttg cag acc gtg aac ctg agc cag gct ttc aag aac ttg cag gga ctg      12699
Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys Asn Leu Gln Gly Leu
                565                 570                 575

tgg ggc gtg cag gcc ccg gtc ggg gac cgc gcg acg gtg tcg agc ctg      12747
Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala Thr Val Ser Ser Leu
            580                 585                 590

ctg acg ccg aac tcg cgc ctg ctg ctg ctg ctg ctg gtg gcg ccc ttc acg   12795
Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu Val Ala Pro Phe Thr
        595                 600                 605

gac agc ggc agc gtg agc cgc gac tcg tac ctg ggc tac ctg ctt aac      12843
Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu Gly Tyr Leu Leu Asn
    610                 615                 620

ctg tac cgc gag gcc atc ggg cag gcg cac gtg gac gag cag acc tac      12891
Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val Asp Glu Gln Thr Tyr
```

```
625                 630                 635                 640

cag gag atc acc cac gtg agc cgc gcg ctg ggc cag gag gac ccg ggc      12939
Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly Gln Glu Asp Pro Gly
                645                 650                 655

aac ctg gag gcc acc ctg aac ttc ctg ctg acc aac cgg tcg cag aag      12987
Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr Asn Arg Ser Gln Lys
            660                 665                 670

atc ccg ccc cag tac gcg ctg agc acc gag gag gag cgc atc ctg cgc      13035
Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu Glu Arg Ile Leu Arg
        675                 680                 685

tac gtg cag cag agc gtg ggg ctg ttc ctg atg cag gag ggg gcc acg      13083
Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met Gln Glu Gly Ala Thr
    690                 695                 700

ccc agc gcc gcg ctc gac atg acc gcg cgc aac atg gag ccc agc atg      13131
Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn Met Glu Pro Ser Met
705                 710                 715                 720

tac gcc cgc aac cgc ccg ttc atc aat aag ctg atg gac tac ttg cat      13179
Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu Met Asp Tyr Leu His
                725                 730                 735

cgg gcg gcc gcc atg aac tcg gac tac ttt acc aac gcc atc ttg aac      13227
Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr Asn Ala Ile Leu Asn
            740                 745                 750

ccg cac tgg ctc ccg ccg ccc ggg ttc tac acg ggc gag tac gac atg      13275
Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr Gly Glu Tyr Asp Met
        755                 760                 765

ccc gac ccc aac gac ggg ttc ctg tgg gac gac gtg gac agc agc gtg      13323
Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp Val Asp Ser Ser Val
    770                 775                 780

ttc tcg ccg cgc ccc acc acc acc gtg tgg aag aaa gag ggc ggg gac      13371
Phe Ser Pro Arg Pro Thr Thr Thr Val Trp Lys Lys Glu Gly Gly Asp
785                 790                 795                 800

cgg cgg ccg tcc tcg gcg ctg tcc ggt cgc gcg ggt gct gcc gcg gcg      13419
Arg Arg Pro Ser Ser Ala Leu Ser Gly Arg Ala Gly Ala Ala Ala Ala
                805                 810                 815

gtg ccc gag gcc gcc agc ccc ttc ccg agc ctg ccc ttt tcg ctg aac      13467
Val Pro Glu Ala Ala Ser Pro Phe Pro Ser Leu Pro Phe Ser Leu Asn
            820                 825                 830

agc gtg cgc agc agc gag ctg ggt cgg ctg acg cgg ccg cgc ctg ctg      13515
Ser Val Arg Ser Ser Glu Leu Gly Arg Leu Thr Arg Pro Arg Leu Leu
        835                 840                 845

ggc gag gag gag tac ctg aac gac tcc ttg ttg agg ccc gag cgc gag      13563
Gly Glu Glu Glu Tyr Leu Asn Asp Ser Leu Leu Arg Pro Glu Arg Glu
    850                 855                 860

aaa aac ttc ccc aat aac ggg ata gag agc ctg gtg gac aag atg agc      13611
Lys Asn Phe Pro Asn Asn Gly Ile Glu Ser Leu Val Asp Lys Met Ser
865                 870                 875                 880

cgc tgg aag acg tac gcg cac gag cac agg gac gag ccc cga gct agc      13659
Arg Trp Lys Thr Tyr Ala His Glu His Arg Asp Glu Pro Arg Ala Ser
                885                 890                 895

agc agc gcc ggc gcc acc cgt aga cgc cag cgg cac gac agg cag cgg      13707
Ser Ser Ala Gly Ala Thr Arg Arg Arg Gln Arg His Asp Arg Gln Arg
            900                 905                 910
```

```
gga ctg gtg tgg gac gat gag gat tcc gcc gac gac agc agc gtg ttg      13755
Gly Leu Val Trp Asp Asp Glu Asp Ser Ala Asp Asp Ser Ser Val Leu
        915                 920                 925

gac ttg ggt ggg agt ggt ggt ggt aac ccg ttc gct cac ttg cgc ccc      13803
Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe Ala His Leu Arg Pro
    930                 935                 940

cgt atc ggg cgc ctg atg taagaatctg aaaaaataaa aaaacggtac             13851
Arg Ile Gly Arg Leu Met
945                 950

tcaccaaggc catggcgacc agcgtgcgtt cttctctgtt gtttgtagta gt atg atg    13909
                                                        Met Met


agg cgc gtg tac ccg gag ggt cct cct ccc tcg tac gag agc gtg atg      13957
Arg Arg Val Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser Val Met
        955                 960                 965

cag cag gcg gtg gcg gcg gcg atg cag ccc ccg ctg gag gcg cct tac      14005
Gln Gln Ala Val Ala Ala Ala Met Gln Pro Pro Leu Glu Ala Pro Tyr
    970                 975                 980

gtg ccc ccg cgg tac ctg gcg cct acg gag ggg cgg aac agc att cgt      14053
Val Pro Pro Arg Tyr Leu Ala Pro Thr Glu Gly Arg Asn Ser Ile Arg
985                 990                 995                 1000

tac tcg gag ctg gca  ccc ttg tac gat acc  acc cgg ttg tac ctg        14098
Tyr Ser Glu Leu Ala  Pro Leu Tyr Asp Thr  Thr Arg Leu Tyr Leu
                1005                1010                1015

gtg gac aac aag tcg  gcg gac atc gcc tcg  ctg aac tac cag aac        14143
Val Asp Asn Lys Ser  Ala Asp Ile Ala Ser  Leu Asn Tyr Gln Asn
                1020                1025                1030

gac cac agc aac ttc  ctg acc acc gtg gtg  cag aac aac gat ttc        14188
Asp His Ser Asn Phe  Leu Thr Thr Val Val  Gln Asn Asn Asp Phe
                1035                1040                1045

acc ccc acg gag gcc  agc acc cag acc atc  aac ttt gac gag cgc        14233
Thr Pro Thr Glu Ala  Ser Thr Gln Thr Ile  Asn Phe Asp Glu Arg
                1050                1055                1060

tcg cgg tgg ggc ggc  cag ctg aaa acc atc  atg cac acc aac atg        14278
Ser Arg Trp Gly Gly  Gln Leu Lys Thr Ile  Met His Thr Asn Met
                1065                1070                1075

ccc aac gtg aac gag  ttc atg tac agc aac  aag ttc aag gcg cgg        14323
Pro Asn Val Asn Glu  Phe Met Tyr Ser Asn  Lys Phe Lys Ala Arg
                1080                1085                1090

gtg atg gtc tcg cgc  aag acc ccc aac ggg  gtg acg gtg gat gag        14368
Val Met Val Ser Arg  Lys Thr Pro Asn Gly  Val Thr Val Asp Glu
                1095                1100                1105

aat tat gat ggt agt  cag gac gag ctg acc  tac gag tgg gtg gag        14413
Asn Tyr Asp Gly Ser  Gln Asp Glu Leu Thr  Tyr Glu Trp Val Glu
                1110                1115                1120

ttt gag ctg ccc gag  ggc aac ttc tcg gtg  acc atg acc atc gat        14458
Phe Glu Leu Pro Glu  Gly Asn Phe Ser Val  Thr Met Thr Ile Asp
                1125                1130                1135

ctg atg aac aac gcc  atc atc gac aac tac  ttg gcg gtg gga cgg        14503
Leu Met Asn Asn Ala  Ile Ile Asp Asn Tyr  Leu Ala Val Gly Arg
                1140                1145                1150
```

```
cag aac ggg gtg ctg  gag agc gac atc ggc  gtg aag ttc gac acg        14548
Gln Asn Gly Val Leu  Glu Ser Asp Ile Gly  Val Lys Phe Asp Thr
                1155                1160                1165

cgc aac ttc cgg ctg  ggc tgg gac ccc gtg  acc gag ctg gtg atg        14593
Arg Asn Phe Arg Leu  Gly Trp Asp Pro Val  Thr Glu Leu Val Met
                1170                1175                1180

ccg ggc gtg tac acc  aac gag gcc ttc cac  ccc gac atc gtc ctg        14638
Pro Gly Val Tyr Thr  Asn Glu Ala Phe His  Pro Asp Ile Val Leu
                1185                1190                1195

ctg ccc ggc tgc ggc  gtg gac ttc acc gag  agc cgc ctc agc aac        14683
Leu Pro Gly Cys Gly  Val Asp Phe Thr Glu  Ser Arg Leu Ser Asn
                1200                1205                1210

ctg ctg ggc atc cgc  aag cgg cag ccc ttc  cag gag ggc ttc cag        14728
Leu Leu Gly Ile Arg  Lys Arg Gln Pro Phe  Gln Glu Gly Phe Gln
                1215                1220                1225

atc ctg tac gag gac  ctg gag ggg ggc aac  atc ccc gcg ctg ctg        14773
Ile Leu Tyr Glu Asp  Leu Glu Gly Gly Asn  Ile Pro Ala Leu Leu
                1230                1235                1240

gac gtc gaa gcc tac  gag aaa agc aag gag  gag gcc gcc gca gcg        14818
Asp Val Glu Ala Tyr  Glu Lys Ser Lys Glu  Glu Ala Ala Ala Ala
                1245                1250                1255

gcg acc gcg gcc gtg  gct acc gct gcg acc  acc gat gca gat gca        14863
Ala Thr Ala Ala Val  Ala Thr Ala Ala Thr  Thr Asp Ala Asp Ala
                1260                1265                1270

gct act act acc agg  ggc gat aca ttc gcc  acc cag gcg gag gaa        14908
Ala Thr Thr Thr Arg  Gly Asp Thr Phe Ala  Thr Gln Ala Glu Glu
                1275                1280                1285

gca gcc gcc cta gcg  gcg acc gat gat agt  gaa agt aag ata gtc        14953
Ala Ala Ala Leu Ala  Ala Thr Asp Asp Ser  Glu Ser Lys Ile Val
                1290                1295                1300

atc aag ccg gtg gag  aag gac agc aag gac  agg agc tac aac gtt        14998
Ile Lys Pro Val Glu  Lys Asp Ser Lys Asp  Arg Ser Tyr Asn Val
                1305                1310                1315

cta tcg gat gga aag  aac acc gcc tac cgc  agc tgg tac ctg gcc        15043
Leu Ser Asp Gly Lys  Asn Thr Ala Tyr Arg  Ser Trp Tyr Leu Ala
                1320                1325                1330

tac aac tac ggc gac  cct gag aag ggc gtg  cgc tcc tgg acg ctg        15088
Tyr Asn Tyr Gly Asp  Pro Glu Lys Gly Val  Arg Ser Trp Thr Leu
                1335                1340                1345

ctc acc acc tcg gac  gtc acc tgc ggc gtg  gag caa gtc tac tgg        15133
Leu Thr Thr Ser Asp  Val Thr Cys Gly Val  Glu Gln Val Tyr Trp
                1350                1355                1360

tcg ctg ccc gac atg  atg caa gac ccg gtc  acc ttc cgc tcc acg        15178
Ser Leu Pro Asp Met  Met Gln Asp Pro Val  Thr Phe Arg Ser Thr
                1365                1370                1375

cgt caa gtt agc aac  tac ccg gtg gtg ggc  gcc gag ctc ctg ccc        15223
Arg Gln Val Ser Asn  Tyr Pro Val Val Gly  Ala Glu Leu Leu Pro
                1380                1385                1390

gtc tac tcc aag agc  ttc ttc aac gag cag  gcc gtc tac tcg cag        15268
Val Tyr Ser Lys Ser  Phe Phe Asn Glu Gln  Ala Val Tyr Ser Gln
                1395                1400                1405

cag ctg cgc gcc ttc  acc tcg ctc acg cac  gtc ttc aac cgc ttc        15313
```

```
Gln Leu Arg Ala Phe  Thr Ser Leu Thr His  Val Phe Asn Arg Phe
                1410                1415                1420

ccc gag aac cag atc  ctc gtc cgc ccg ccc  gcg ccc acc att acc        15358
Pro Glu Asn Gln Ile  Leu Val Arg Pro Pro  Ala Pro Thr Ile Thr
                1425                1430                1435

acc gtc agt gaa aac  gtt cct gct ctc aca  gat cac ggg acc ctg        15403
Thr Val Ser Glu Asn  Val Pro Ala Leu Thr  Asp His Gly Thr Leu
                1440                1445                1450

ccg ctg cgc agc agt  atc cgg gga gtc cag  cgc gtg acc gtc act        15448
Pro Leu Arg Ser Ser  Ile Arg Gly Val Gln  Arg Val Thr Val Thr
                1455                1460                1465

gac gcc aga cgc cgc  acc tgc ccc tac gtc  tac aag gcc ctg ggc        15493
Asp Ala Arg Arg Arg  Thr Cys Pro Tyr Val  Tyr Lys Ala Leu Gly
                1470                1475                1480

gta gtc gcg ccg cgc  gtc ctc tcg agc cgc  acc ttc taaaaa atg tcc     15541
Val Val Ala Pro Arg  Val Leu Ser Ser Arg  Thr Phe        Met Ser
                1485                1490

att  ctc atc tcg ccc agt  aat aac acc ggt tgg  ggc ctg cgc gcg       15586
Ile  Leu Ile Ser Pro Ser  Asn Asn Thr Gly Trp  Gly Leu Arg Ala
1495                1500                1505

ccc  agc aag atg tac gga  ggc gct cgc caa cgc  tcc acg caa cac       15631
Pro  Ser Lys Met Tyr Gly  Gly Ala Arg Gln Arg  Ser Thr Gln His
1510                1515                1520

ccc  gtg cgc gtg cgc ggg  cac ttc cgc gct ccc  tgg ggc gcc ctc       15676
Pro  Val Arg Val Arg Gly  His Phe Arg Ala Pro  Trp Gly Ala Leu
1525                1530                1535

aag  ggc cgc gtg cgc tcg  cgc acc acc gtc gac  gac gtg atc gac       15721
Lys  Gly Arg Val Arg Ser  Arg Thr Thr Val Asp  Asp Val Ile Asp
1540                1545                1550

cag  gtg gtg gcc gac gcg  cgc aac tac acg ccc  gcc gcc gcg ccc       15766
Gln  Val Val Ala Asp Ala  Arg Asn Tyr Thr Pro  Ala Ala Ala Pro
1555                1560                1565

gcc  tcc acc gtg gac gcc  gtc atc gac agc gtg  gtg gcc gac gcg       15811
Ala  Ser Thr Val Asp Ala  Val Ile Asp Ser Val  Val Ala Asp Ala
1570                1575                1580

cgc  cgg tac gcc cgc gcc  aag agc cgg cgg cgg  cgc atc gcc cgg       15856
Arg  Arg Tyr Ala Arg Ala  Lys Ser Arg Arg Arg  Arg Ile Ala Arg
1585                1590                1595

cgg  cac cgg agc acc ccc  gcc atg cgc gcg gcg  cga gcc ttg ctg       15901
Arg  His Arg Ser Thr Pro  Ala Met Arg Ala Ala  Arg Ala Leu Leu
1600                1605                1610

cgc  agg gcc agg cgc acg  gga cgc agg gcc atg  ctc agg gcg gcc       15946
Arg  Arg Ala Arg Arg Thr  Gly Arg Arg Ala Met  Leu Arg Ala Ala
1615                1620                1625

aga  cgc gcg gcc tcc ggc  agc agc agc gcc ggc  agg acc cgc aga       15991
Arg  Arg Ala Ala Ser Gly  Ser Ser Ser Ala Gly  Arg Thr Arg Arg
1630                1635                1640

cgc  gcg gcc acg gcg gcg  gcg gcg gcc atc gcc  agc atg tcc cgc       16036
Arg  Ala Ala Thr Ala Ala  Ala Ala Ala Ile Ala  Ser Met Ser Arg
1645                1650                1655

ccg  cgg cgc ggc aac gtg  tac tgg gtg cgc gac  gcc gcc acc ggt       16081
Pro  Arg Arg Gly Asn Val  Tyr Trp Val Arg Asp  Ala Ala Thr Gly
```

```
1660                1665                1670

gtg  cgc gtg ccc gtg cgc  acc cgc ccc cct cgc  act tgaagatgct        16127
Val  Arg Val Pro Val Arg  Thr Arg Pro Pro Arg  Thr
1675                1680                1685

gacttcgcga tgttgatgtg tcccagcggc gaggagg atg tcc aag cgc  aaa ttc    16182
                                          Met Ser Lys Arg  Lys Phe
                                                          1690

aag gaa gag  atg ctc cag gtc atc  gcg cct gag atc tac  ggc ccc       16227
Lys Glu Glu  Met Leu Gln Val Ile  Ala Pro Glu Ile Tyr  Gly Pro
        1695                1700                1705

gcg gcg gcg  gtg aag gag gaa aga  aag ccc cgc aaa ctg  aag cgg       16272
Ala Ala Ala  Val Lys Glu Glu Arg  Lys Pro Arg Lys Leu  Lys Arg
        1710                1715                1720

gtc aaa aag  gac aaa aag gag gag  gaa gat gac gga ctg  gtg gag       16317
Val Lys Lys  Asp Lys Lys Glu Glu  Glu Asp Asp Gly Leu  Val Glu
        1725                1730                1735

ttt gtg cgc  gag ttc gcc ccc cgg  cgg cgc gtg cag tgg  cgc ggg       16362
Phe Val Arg  Glu Phe Ala Pro Arg  Arg Arg Val Gln Trp  Arg Gly
        1740                1745                1750

cgg aaa gtg  aaa ccg gtg ctg cgg  ccc ggc acc acg gtg  gtc ttc       16407
Arg Lys Val  Lys Pro Val Leu Arg  Pro Gly Thr Thr Val  Val Phe
        1755                1760                1765

acg ccc ggc  gag cgt tcc ggc tcc  gcc tcc aag cgc tcc  tac gac       16452
Thr Pro Gly  Glu Arg Ser Gly Ser  Ala Ser Lys Arg Ser  Tyr Asp
        1770                1775                1780

gag gtg tac  ggg gac gag gac atc  ctc gag cag gcg gcc  gag cgt       16497
Glu Val Tyr  Gly Asp Glu Asp Ile  Leu Glu Gln Ala Ala  Glu Arg
        1785                1790                1795

ctg ggc gag  ttt gct tac ggc aag  cgc agc cgc ccc gcg  ccc ttg       16542
Leu Gly Glu  Phe Ala Tyr Gly Lys  Arg Ser Arg Pro Ala  Pro Leu
        1800                1805                1810

aaa gag gag  gcg gtg tcc atc ccg  ctg gac cac ggc aac  ccc acg       16587
Lys Glu Glu  Ala Val Ser Ile Pro  Leu Asp His Gly Asn  Pro Thr
        1815                1820                1825

ccg agc ctg  aag ccg gtg acc ctg  cag cag gtg ctg ccg  agc gcg       16632
Pro Ser Leu  Lys Pro Val Thr Leu  Gln Gln Val Leu Pro  Ser Ala
        1830                1835                1840

gcg ccg cgc  cgg ggc ttc aag cgc  gag ggc ggc gag gat  ctg tac       16677
Ala Pro Arg  Arg Gly Phe Lys Arg  Glu Gly Gly Glu Asp  Leu Tyr
        1845                1850                1855

ccg acc atg  cag ctg atg gtg ccc  aag cgc cag aag ctg  gag gac       16722
Pro Thr Met  Gln Leu Met Val Pro  Lys Arg Gln Lys Leu  Glu Asp
        1860                1865                1870

gtg ctg gag  cac atg aag gtg gac  ccc gag gtg cag ccc  gag gtc       16767
Val Leu Glu  His Met Lys Val Asp  Pro Glu Val Gln Pro  Glu Val
        1875                1880                1885

aag gtg cgg  ccc atc aag cag gtg  gcc ccg ggc ctg ggc  gtg cag       16812
Lys Val Arg  Pro Ile Lys Gln Val  Ala Pro Gly Leu Gly  Val Gln
        1890                1895                1900

acc gtg gac  atc aag atc ccc acg  gag ccc atg gaa acg  cag acc       16857
Thr Val Asp  Ile Lys Ile Pro Thr  Glu Pro Met Glu Thr  Gln Thr
        1905                1910                1915
```

```
gag ccc gtg  aag ccc agc acc agc  acc atg gag gtg cag  acg gat       16902
Glu Pro Val  Lys Pro Ser Thr Ser  Thr Met Glu Val Gln  Thr Asp
        1920                 1925                 1930

ccc tgg atg  ccg gcg ccg gct tcc  acc acc acc acc acc  cgc cga       16947
Pro Trp Met  Pro Ala Pro Ala Ser  Thr Thr Thr Thr Thr  Arg Arg
        1935                 1940                 1945

aga cgc aag  tac ggc gcg gcc agc  ctg ctg atg ccc aac  tac gcg       16992
Arg Arg Lys  Tyr Gly Ala Ala Ser  Leu Leu Met Pro Asn  Tyr Ala
        1950                 1955                 1960

ctg cat cct  tcc atc atc ccc acg  ccg ggc tac cgc ggc  acg cgc       17037
Leu His Pro  Ser Ile Ile Pro Thr  Pro Gly Tyr Arg Gly  Thr Arg
        1965                 1970                 1975

ttc tac cgc  ggc tac agc agc cgc  cgc aag acc acc acc  cgc cgc       17082
Phe Tyr Arg  Gly Tyr Ser Ser Arg  Arg Lys Thr Thr Thr  Arg Arg
        1980                 1985                 1990

cgc cgt cgc  cgc acc cgc cgc agc  acc acc gcg act tcc  gcc gcc       17127
Arg Arg Arg  Arg Thr Arg Arg Ser  Thr Thr Ala Thr Ser  Ala Ala
        1995                 2000                 2005

gcc ttg gtg  cgg aga gtg tac cgc  agc ggg cgt gag cct  ctg acc       17172
Ala Leu Val  Arg Arg Val Tyr Arg  Ser Gly Arg Glu Pro  Leu Thr
        2010                 2015                 2020

ctg ccg cgc  gcg cgc tac cac ccg  agc atc gcc att taactctgcc         17218
Leu Pro Arg  Ala Arg Tyr His Pro  Ser Ile Ala Ile
        2025                 2030

gtcgcctcct tgcagat atg  gcc ctc aca tgc cgc  ctc cgc gtc ccc att     17268
                   Met  Ala Leu Thr Cys Arg  Leu Arg Val Pro Ile
                   2035                 2040                 2045

acg ggc tac cga gga  aga aag ccg cgc cgt  aga agg ctg acg ggg       17313
Thr Gly Tyr Arg Gly  Arg Lys Pro Arg Arg  Arg Arg Leu Thr Gly
                2050                 2055                 2060

aac ggg ctg cgt cgc  cat cac cac cgg cgg  cgg cgc gcc atc agc       17358
Asn Gly Leu Arg Arg  His His His Arg Arg  Arg Arg Ala Ile Ser
                2065                 2070                 2075

aag cgg ttg ggg gga  ggc ttc ctg ccc gcg  ctg atc ccc atc atc       17403
Lys Arg Leu Gly Gly  Gly Phe Leu Pro Ala  Leu Ile Pro Ile Ile
                2080                 2085                 2090

gcc gcg gcg atc ggg  gcg atc ccc ggc ata  gct tcc gtg gcg gtg       17448
Ala Ala Ala Ile Gly  Ala Ile Pro Gly Ile  Ala Ser Val Ala Val
                2095                 2100                 2105

cag gcc tct cag cgc  cac tgagacacag cttggaaaat ttgtaataaa           17496
Gln Ala Ser Gln Arg  His
                2110

aaaatggact gacgctcctg gtcctgtgat gtgtgttttt ag atg gaa gac atc       17550
                                              Met Glu Asp Ile
                                                          2115

aat ttt tcg tcc ctg  gca ccg cga cac ggc  acg cgg ccg ttt atg       17595
Asn Phe Ser Ser Leu  Ala Pro Arg His Gly  Thr Arg Pro Phe Met
                2120                 2125                 2130

ggc acc tgg agc gac  atc ggc aac agc caa  ctg aac ggg ggc gcc       17640
Gly Thr Trp Ser Asp  Ile Gly Asn Ser Gln  Leu Asn Gly Gly Ala
                2135                 2140                 2145
```

```
ttc aat tgg agc agt  ctc tgg agc ggg ctt  aag aat ttc ggg tcc        17685
Phe Asn Trp Ser Ser  Leu Trp Ser Gly Leu  Lys Asn Phe Gly Ser
                2150                2155                2160

acg ctc aaa acc tat  ggc agc aag gcg tgg  aac agc acc aca ggg        17730
Thr Leu Lys Thr Tyr  Gly Ser Lys Ala Trp  Asn Ser Thr Thr Gly
                2165                2170                2175

cag gcg ctg agg gat  aag ctg aaa gag cag  aac ttc cag cag aag        17775
Gln Ala Leu Arg Asp  Lys Leu Lys Glu Gln  Asn Phe Gln Gln Lys
                2180                2185                2190

gtg gtc gat ggg ctc  gct tcg ggc atc aac  ggg gtg gtg gac ctg        17820
Val Val Asp Gly Leu  Ala Ser Gly Ile Asn  Gly Val Val Asp Leu
                2195                2200                2205

gcc aac cag gcc gtg  cag cgg cag atc aac  agc cgc ctg gac ccg        17865
Ala Asn Gln Ala Val  Gln Arg Gln Ile Asn  Ser Arg Leu Asp Pro
                2210                2215                2220

gtg ccg ccc gcc ggc  tcc gtg gag atg ccg  cag gtg gag gag gag        17910
Val Pro Pro Ala Gly  Ser Val Glu Met Pro  Gln Val Glu Glu Glu
                2225                2230                2235

ctg cct ccc ctg gac  aag cgg ggc gag aag  cga ccc cgc ccc gac        17955
Leu Pro Pro Leu Asp  Lys Arg Gly Glu Lys  Arg Pro Arg Pro Asp
                2240                2245                2250

gcg gag gag acg ctg  ctg acg cac acg gac  gag ccg ccc ccg tac        18000
Ala Glu Glu Thr Leu  Leu Thr His Thr Asp  Glu Pro Pro Pro Tyr
                2255                2260                2265

gag gag gcg gtg aaa  ctg ggt ctg ccc acc  acg cgg ccc att gcg        18045
Glu Glu Ala Val Lys  Leu Gly Leu Pro Thr  Thr Arg Pro Ile Ala
                2270                2275                2280

ccc cta gcc acc ggg  gtg ctg aaa ccc gag  agt aat aag ccc gcg        18090
Pro Leu Ala Thr Gly  Val Leu Lys Pro Glu  Ser Asn Lys Pro Ala
                2285                2290                2295

acc ctg gac ttg cct  cct ccc cag cct tcc  cgc ccc tcc aca gtg        18135
Thr Leu Asp Leu Pro  Pro Pro Gln Pro Ser  Arg Pro Ser Thr Val
                2300                2305                2310

gct aag ccc ctg ccg  ccg gtg gcc gtg gcc  cgc gcg cga ccc ggg        18180
Ala Lys Pro Leu Pro  Pro Val Ala Val Ala  Arg Ala Arg Pro Gly
                2315                2320                2325

ggc tcc gcc cgc cct  cat gcg aac tgg cag  agc act ctg aac agc        18225
Gly Ser Ala Arg Pro  His Ala Asn Trp Gln  Ser Thr Leu Asn Ser
                2330                2335                2340

atc gtg ggt ctg gga  gtg cag agt gtg aag  cgc cgc cgc tgc tat        18270
Ile Val Gly Leu Gly  Val Gln Ser Val Lys  Arg Arg Arg Cys Tyr
                2345                2350                2355

taaacctacc gtagcgctta acttgcttgt ctgtgtgtgt atgtattatg tcgccgccgc    18330

tgtccgccag aaggaggagt gaagaggcgc gtcgccgagt tgcaag atg gcc acc       18385
                                                    Met Ala Thr


cca tcg  atg ctg ccc cag tgg  gcg tac atg cac atc  gcc gga cag       18430
Pro Ser  Met Leu Pro Gln Trp  Ala Tyr Met His Ile  Ala Gly Gln
    2360                2365                2370

gac gct  tcg gag tac ctg agt  ccg ggt ctg gtg cag  ttc gcc cgc       18475
Asp Ala  Ser Glu Tyr Leu Ser  Pro Gly Leu Val Gln  Phe Ala Arg
    2375                2380                2385
```

```
gcc aca  gac acc tac ttc agt  ctg ggg aac aag ttt  agg aac ccc       18520
Ala Thr  Asp Thr Tyr Phe Ser  Leu Gly Asn Lys Phe  Arg Asn Pro
    2390                 2395                 2400

acg gtg  gcg ccc acg cac gat  gtg acc acc gac cgc  agc cag cgg       18565
Thr Val  Ala Pro Thr His Asp  Val Thr Thr Asp Arg  Ser Gln Arg
    2405                 2410                 2415

ctg acg  ctg cgc ttc gtg ccc  gtg gac cgc gag gac  aac acc tac       18610
Leu Thr  Leu Arg Phe Val Pro  Val Asp Arg Glu Asp  Asn Thr Tyr
    2420                 2425                 2430

tcg tac  aaa gtg cgc tac acg  ctg gcc gtg ggc gac  aac cgc gtg       18655
Ser Tyr  Lys Val Arg Tyr Thr  Leu Ala Val Gly Asp  Asn Arg Val
    2435                 2440                 2445

ctg gac  atg gcc agc acc tac  ttt gac atc cgc ggc  gtg ctg gac       18700
Leu Asp  Met Ala Ser Thr Tyr  Phe Asp Ile Arg Gly  Val Leu Asp
    2450                 2455                 2460

cgg ggc  cct agc ttc aaa ccc  tac tcc ggc acc gcc  tac aac agc       18745
Arg Gly  Pro Ser Phe Lys Pro  Tyr Ser Gly Thr Ala  Tyr Asn Ser
    2465                 2470                 2475

ctg gct  ccc aag gga gcg ccc  aat tcc agc cag tgg  gag cga gct       18790
Leu Ala  Pro Lys Gly Ala Pro  Asn Ser Ser Gln Trp  Glu Arg Ala
    2480                 2485                 2490

aag aca  aac aat aac gga gcc  acg gaa tct gtt acc  ttt ggt gtg       18835
Lys Thr  Asn Asn Asn Gly Ala  Thr Glu Ser Val Thr  Phe Gly Val
    2495                 2500                 2505

gct gcc  atg ggg ggt ata gat  att aca aaa gag ggt  ctc cag att       18880
Ala Ala  Met Gly Gly Ile Asp  Ile Thr Lys Glu Gly  Leu Gln Ile
    2510                 2515                 2520

gga act  gat gaa act aaa gct  gat agt aaa gaa att  tat gca gac       18925
Gly Thr  Asp Glu Thr Lys Ala  Asp Ser Lys Glu Ile  Tyr Ala Asp
    2525                 2530                 2535

aaa acc  tac caa cct gaa cct  cag ata gga gag gag  aac tgg caa       18970
Lys Thr  Tyr Gln Pro Glu Pro  Gln Ile Gly Glu Glu  Asn Trp Gln
    2540                 2545                 2550

gaa aca  ttc tcc tat tat ggc  ggc aga gct ctt aaa  aaa gat acc       19015
Glu Thr  Phe Ser Tyr Tyr Gly  Gly Arg Ala Leu Lys  Lys Asp Thr
    2555                 2560                 2565

aag atg  aag cca tgc tac ggc  tcc ttt gct aaa cca  acg aat gtc       19060
Lys Met  Lys Pro Cys Tyr Gly  Ser Phe Ala Lys Pro  Thr Asn Val
    2570                 2575                 2580

aaa gga  ggt cag gcc aaa ttt  aaa gtt cag gac ggt  caa caa act       19105
Lys Gly  Gly Gln Ala Lys Phe  Lys Val Gln Asp Gly  Gln Gln Thr
    2585                 2590                 2595

aca gaa  tat gat atc gac tta  gct ttc ttt gat att  cca aac tct       19150
Thr Glu  Tyr Asp Ile Asp Leu  Ala Phe Phe Asp Ile  Pro Asn Ser
    2600                 2605                 2610

gga aca  gga ggg aat ggc acg  aat gtt aat tat gat  cca gat atg       19195
Gly Thr  Gly Gly Asn Gly Thr  Asn Val Asn Tyr Asp  Pro Asp Met
    2615                 2620                 2625

gtc atg  tac act gaa aat gtg  gat ttg gag acc cct  gat acc cac       19240
Val Met  Tyr Thr Glu Asn Val  Asp Leu Glu Thr Pro  Asp Thr His
    2630                 2635                 2640
```

```
att gtt  tac aaa cca ggg act  tcc gat gac agt tct  gaa gca aac       19285
Ile Val  Tyr Lys Pro Gly Thr  Ser Asp Asp Ser Ser  Glu Ala Asn
    2645                 2650                 2655

ttg ctt  cag cag tcc atg cct  aac aga ccc aac tat  att ggg ttt       19330
Leu Leu  Gln Gln Ser Met Pro  Asn Arg Pro Asn Tyr  Ile Gly Phe
    2660                 2665                 2670

aga gac  aac ttt atc ggt ctc  atg tac tac aac agt  act ggc aat       19375
Arg Asp  Asn Phe Ile Gly Leu  Met Tyr Tyr Asn Ser  Thr Gly Asn
    2675                 2680                 2685

atg ggt  gtg ctg gct ggt cag  gcc tcc cag ctg aat  gct gtg gtc       19420
Met Gly  Val Leu Ala Gly Gln  Ala Ser Gln Leu Asn  Ala Val Val
    2690                 2695                 2700

gac ttg  caa gac aga aac acc  gag cta tcc tac cag  ctc ttg ctt       19465
Asp Leu  Gln Asp Arg Asn Thr  Glu Leu Ser Tyr Gln  Leu Leu Leu
    2705                 2710                 2715

gac tct  ctg ggc gat aga acc  cgg tat ttc agt atg  tgg aac cag       19510
Asp Ser  Leu Gly Asp Arg Thr  Arg Tyr Phe Ser Met  Trp Asn Gln
    2720                 2725                 2730

gcg gtg  gac agt tat gac cct  gat gtg cgc att att  gaa aac cat       19555
Ala Val  Asp Ser Tyr Asp Pro  Asp Val Arg Ile Ile  Glu Asn His
    2735                 2740                 2745

ggt gtg  gaa gat gaa ctt ccc  aac tat tgc ttc cca  ttg gat gga       19600
Gly Val  Glu Asp Glu Leu Pro  Asn Tyr Cys Phe Pro  Leu Asp Gly
    2750                 2755                 2760

gct ggt  act aat gct gtc tat  cag ggt gtt aaa gca  aaa act aat       19645
Ala Gly  Thr Asn Ala Val Tyr  Gln Gly Val Lys Ala  Lys Thr Asn
    2765                 2770                 2775

gga ggc  gca gcc aat gga gat  tgg gag caa gat aca  gac gtg tca       19690
Gly Gly  Ala Ala Asn Gly Asp  Trp Glu Gln Asp Thr  Asp Val Ser
    2780                 2785                 2790

aac att  aac cag ata tgc aag  ggg aac atc tat gcc  atg gaa atc       19735
Asn Ile  Asn Gln Ile Cys Lys  Gly Asn Ile Tyr Ala  Met Glu Ile
    2795                 2800                 2805

aac ctc  caa gcc aac ctg tgg  aga agt ttc ctc tac  tcg aac gtg       19780
Asn Leu  Gln Ala Asn Leu Trp  Arg Ser Phe Leu Tyr  Ser Asn Val
    2810                 2815                 2820

gcc ctg  tac ctg ccc gat tct  tac aag tac acg ccg  gcc aac atc       19825
Ala Leu  Tyr Leu Pro Asp Ser  Tyr Lys Tyr Thr Pro  Ala Asn Ile
    2825                 2830                 2835

acc ttg  ccc acg aat acc aac  acc tat gat tac atg  aat ggg aga       19870
Thr Leu  Pro Thr Asn Thr Asn  Thr Tyr Asp Tyr Met  Asn Gly Arg
    2840                 2845                 2850

gtg gcg  cct ccc tcg ttg gtg  gat gcc tac atc aac  atc ggg gcg       19915
Val Ala  Pro Pro Ser Leu Val  Asp Ala Tyr Ile Asn  Ile Gly Ala
    2855                 2860                 2865

cgc tgg  tcg ctg gac ccc atg  gac aac gtc aat ccc  ttc aac cac       19960
Arg Trp  Ser Leu Asp Pro Met  Asp Asn Val Asn Pro  Phe Asn His
    2870                 2875                 2880

cac cgc  aac gcg ggg ctg cgc  tac cgc tcc atg ctt  ctg ggc aac       20005
His Arg  Asn Ala Gly Leu Arg  Tyr Arg Ser Met Leu  Leu Gly Asn
    2885                 2890                 2895

ggg cgc  ttc gtg ccc ttc cac  atc cag gtg ccc cag  aaa ttt ttc       20050
```

```
Gly Arg  Phe Val Pro Phe His  Ile Gln Val Pro Gln  Lys Phe Phe
    2900                2905                2910

gcc atc  aag agc ctc ctg ctc  ctg ccc ggg tcc tac  acc tac gag       20095
Ala Ile  Lys Ser Leu Leu Leu  Leu Pro Gly Ser Tyr  Thr Tyr Glu
    2915                2920                2925

tgg aac  ttc cgc aag gac gtc  aac atg atc ctg cag  agc tcc ctc       20140
Trp Asn  Phe Arg Lys Asp Val  Asn Met Ile Leu Gln  Ser Ser Leu
    2930                2935                2940

ggc aac  gac ctg cgc acg gac  ggg gcc tcc atc tcc  ttc acc agc       20185
Gly Asn  Asp Leu Arg Thr Asp  Gly Ala Ser Ile Ser  Phe Thr Ser
    2945                2950                2955

atc aac  ctc tac gcc acc ttc  ttc ccc atg gcg cac  aac acg gcc       20230
Ile Asn  Leu Tyr Ala Thr Phe  Phe Pro Met Ala His  Asn Thr Ala
    2960                2965                2970

tcc acg  ctc gag gcc atg ctg  cgc aac gac acc aac  gac cag tcc       20275
Ser Thr  Leu Glu Ala Met Leu  Arg Asn Asp Thr Asn  Asp Gln Ser
    2975                2980                2985

ttc aac  gac tac ctc tcg gcg  gcc aac atg ctc tac  ccc atc cca       20320
Phe Asn  Asp Tyr Leu Ser Ala  Ala Asn Met Leu Tyr  Pro Ile Pro
    2990                2995                3000

gcc aac  gcc acc aac gtg ccc  atc tcc atc ccc tcg  cgc aac tgg       20365
Ala Asn  Ala Thr Asn Val Pro  Ile Ser Ile Pro Ser  Arg Asn Trp
    3005                3010                3015

gcc gcc  ttc cgc ggc tgg tcc  ttc acg cgt ctc aag  acc aag gag       20410
Ala Ala  Phe Arg Gly Trp Ser  Phe Thr Arg Leu Lys  Thr Lys Glu
    3020                3025                3030

acg ccc  tcg ctg ggc tcc ggg  ttc gac ccc tac ttc  gtc tac tcg       20455
Thr Pro  Ser Leu Gly Ser Gly  Phe Asp Pro Tyr Phe  Val Tyr Ser
    3035                3040                3045

ggc tcc  atc ccc tac ctc gac  ggc acc ttc tac ctc  aac cac acc       20500
Gly Ser  Ile Pro Tyr Leu Asp  Gly Thr Phe Tyr Leu  Asn His Thr
    3050                3055                3060

ttc aag  aag gtc tcc atc acc  ttc gac tcc tcc gtc  agc tgg ccc       20545
Phe Lys  Lys Val Ser Ile Thr  Phe Asp Ser Ser Val  Ser Trp Pro
    3065                3070                3075

ggc aac  gac cgg ctc ctg acg  ccc aac gag ttc gaa  atc aag cgc       20590
Gly Asn  Asp Arg Leu Leu Thr  Pro Asn Glu Phe Glu  Ile Lys Arg
    3080                3085                3090

acc gtc  gac ggc gag ggc tac  aac gtg gcc cag tgc  aac atg acc       20635
Thr Val  Asp Gly Glu Gly Tyr  Asn Val Ala Gln Cys  Asn Met Thr
    3095                3100                3105

aag gac  tgg ttc ctg gtc cag  atg ctg gcc cac tac  aac atc ggc       20680
Lys Asp  Trp Phe Leu Val Gln  Met Leu Ala His Tyr  Asn Ile Gly
    3110                3115                3120

tac cag  ggc ttc tac gtg ccc  gag ggc tac aag gac  cgc atg tac       20725
Tyr Gln  Gly Phe Tyr Val Pro  Glu Gly Tyr Lys Asp  Arg Met Tyr
    3125                3130                3135

tcc ttc  ttc cgc aac ttc cag  ccc atg agc cgc cag  gtg gtg gac       20770
Ser Phe  Phe Arg Asn Phe Gln  Pro Met Ser Arg Gln  Val Val Asp
    3140                3145                3150

gag gtc  aac tac aag gac tac  cag gcc gtc acc ctg  gcc tac cag       20815
Glu Val  Asn Tyr Lys Asp Tyr  Gln Ala Val Thr Leu  Ala Tyr Gln
```

```
    3155                3160                3165

cac aac  aac tcg ggc ttc gtc  ggc tac ctc gcg ccc  acc atg cgc       20860
His Asn  Asn Ser Gly Phe Val  Gly Tyr Leu Ala Pro  Thr Met Arg
    3170                3175                3180

cag ggc  cag ccc tac ccc gcc  aac tac ccg tac ccg  ctc atc ggc       20905
Gln Gly  Gln Pro Tyr Pro Ala  Asn Tyr Pro Tyr Pro  Leu Ile Gly
    3185                3190                3195

aag agc  gcc gtc acc agc gtc  acc cag aaa aag ttc  ctc tgc gac       20950
Lys Ser  Ala Val Thr Ser Val  Thr Gln Lys Lys Phe  Leu Cys Asp
    3200                3205                3210

agg gtc  atg tgg cgc atc ccc  ttc tcc agc aac ttc  atg tcc atg       20995
Arg Val  Met Trp Arg Ile Pro  Phe Ser Ser Asn Phe  Met Ser Met
    3215                3220                3225

ggc gcg  ctc acc gac ctc ggc  cag aac atg ctc tat  gcc aac tcc       21040
Gly Ala  Leu Thr Asp Leu Gly  Gln Asn Met Leu Tyr  Ala Asn Ser
    3230                3235                3240

gcc cac  gcg cta gac atg aat  ttc gaa gtc gac ccc  atg gat gag       21085
Ala His  Ala Leu Asp Met Asn  Phe Glu Val Asp Pro  Met Asp Glu
    3245                3250                3255

tcc acc  ctt ctc tat gtt gtc  ttc gaa gtc ttc gac  gtc gtc cga       21130
Ser Thr  Leu Leu Tyr Val Val  Phe Glu Val Phe Asp  Val Val Arg
    3260                3265                3270

gtg cac  cag ccc cac cgc ggc  gtc atc gag gcc gtc  tac ctg cgc       21175
Val His  Gln Pro His Arg Gly  Val Ile Glu Ala Val  Tyr Leu Arg
    3275                3280                3285

acc ccc  ttc tcg gcc ggt aac  gcc acc acc taagctcttg cttcttgcaa g    21226
Thr Pro  Phe Ser Ala Gly Asn  Ala Thr Thr
    3290                3295

atg gct  gag ccc acg ggc tcc  ggc gag cag gag ctc  agg gcc atc       21271
Met Ala  Glu Pro Thr Gly Ser  Gly Glu Gln Glu Leu  Arg Ala Ile
    3300                3305                3310

atc cgc  gac ctg ggc tgc ggg  ccc tac ttc ctg ggc  acc ttc gat       21316
Ile Arg  Asp Leu Gly Cys Gly  Pro Tyr Phe Leu Gly  Thr Phe Asp
    3315                3320                3325

aag cgc  ttc ccg gga ttc atg  gcc ccg cac aag ctg  gcc tgc gcc       21361
Lys Arg  Phe Pro Gly Phe Met  Ala Pro His Lys Leu  Ala Cys Ala
    3330                3335                3340

atc gtc  aac acg gcc ggc cgc  gag acc ggg ggc gag  cac tgg ctg       21406
Ile Val  Asn Thr Ala Gly Arg  Glu Thr Gly Gly Glu  His Trp Leu
    3345                3350                3355

gcc ttc  gcc tgg aac ccg cgc  tcg aac acc tgc tac  ctc ttc gac       21451
Ala Phe  Ala Trp Asn Pro Arg  Ser Asn Thr Cys Tyr  Leu Phe Asp
    3360                3365                3370

ccc ttc  ggg ttc tcg gac gag  cgc ctc aag cag atc  tac cag ttc       21496
Pro Phe  Gly Phe Ser Asp Glu  Arg Leu Lys Gln Ile  Tyr Gln Phe
    3375                3380                3385

gag tac  gag ggc ctg ctg cgc  cgc agc gcc ctg gcc  acc gag gac       21541
Glu Tyr  Glu Gly Leu Leu Arg  Arg Ser Ala Leu Ala  Thr Glu Asp
    3390                3395                3400

cgc tgc  gtc acc ctg gaa aag  tcc acc cag acc gtg  cag ggt ccg       21586
Arg Cys  Val Thr Leu Glu Lys  Ser Thr Gln Thr Val  Gln Gly Pro
    3405                3410                3415
```

```
cgc tcg  gcc gcc tgc ggg ctc  ttt tgc tgc atg ttc  ctg cac gcc       21631
Arg Ser  Ala Ala Cys Gly Leu  Phe Cys Cys Met Phe  Leu His Ala
    3420                 3425                 3430

ttc gtg  cac tgg ccc gac cgc  ccc atg gac aag aac  ccc acc atg       21676
Phe Val  His Trp Pro Asp Arg  Pro Met Asp Lys Asn  Pro Thr Met
    3435                 3440                 3445

aac ttg  ctg acg ggg gtg ccc  aac ggc atg ctc cag  tcg ccc cag       21721
Asn Leu  Leu Thr Gly Val Pro  Asn Gly Met Leu Gln  Ser Pro Gln
    3450                 3455                 3460

gtg gaa  ccc acc ctg cgc cgc  aac cag gag gcg ctc  tac cgc ttc       21766
Val Glu  Pro Thr Leu Arg Arg  Asn Gln Glu Ala Leu  Tyr Arg Phe
    3465                 3470                 3475

ctc aac  gcc cac tcc gcc tac  ttt cgc tcc cac cgc  gcg cgc atc       21811
Leu Asn  Ala His Ser Ala Tyr  Phe Arg Ser His Arg  Ala Arg Ile
    3480                 3485                 3490

gag aag  gcc acc gcc ttc gac  cgc atg aat caa gac  atg taaaccgtgt    21860
Glu Lys  Ala Thr Ala Phe Asp  Arg Met Asn Gln Asp  Met
    3495                 3500                 3505

gtgtatgtga atgctttatt cataataaac agcacatgtt tatgccacct tctctgaggc    21920

tctgacttta ttta gaa atc gaa ggg  gtt ctg ccg gct ctc  ggc gtg ccc    21970
               Glu Ile Glu Gly  Val Leu Pro Ala Leu  Gly Val Pro
                           3510                 3515

cgc ggg  cag gga tac gtt gcg  gaa ctg gta ctt ggg  cag cca ctt       22015
Arg Gly  Gln Gly Tyr Val Ala  Glu Leu Val Leu Gly  Gln Pro Leu
    3520                 3525                 3530

gaa ctc  ggg gat cag cag ctt  cgg cac ggg gag gtc  ggg gaa cga       22060
Glu Leu  Gly Asp Gln Gln Leu  Arg His Gly Glu Val  Gly Glu Arg
    3535                 3540                 3545

gtc gct  cca cag ctt gcg cgt  gag ttg cag ggc gcc  cag cag gtc       22105
Val Ala  Pro Gln Leu Ala Arg  Glu Leu Gln Gly Ala  Gln Gln Val
    3550                 3555                 3560

ggg cgc  gga gat ctt gaa atc  gca gtt ggg acc cgc  gtt ctg cgc       22150
Gly Arg  Gly Asp Leu Glu Ile  Ala Val Gly Thr Arg  Val Leu Arg
    3565                 3570                 3575

gcg aga  gtt gcg gta cac ggg  gtt gca gca ctg gaa  cac cat cag       22195
Ala Arg  Val Ala Val His Gly  Val Ala Ala Leu Glu  His His Gln
    3580                 3585                 3590

ggc cgg  gtg ctt cac gct cgc  cag cac cgt cgc gtc  ggt gat gcc       22240
Gly Arg  Val Leu His Ala Arg  Gln His Arg Arg Val  Gly Asp Ala
    3595                 3600                 3605

ctc cac  gtc cag atc ctc ggc  gtt ggc cat ccc gaa  ggg ggt cat       22285
Leu His  Val Gln Ile Leu Gly  Val Gly His Pro Glu  Gly Gly His
    3610                 3615                 3620

ctt gca  ggt ctg ccg ccc cat  gct ggg cac gca gcc  ggg ctt gtg       22330
Leu Ala  Gly Leu Pro Pro His  Ala Gly His Ala Ala  Gly Leu Val
    3625                 3630                 3635

gtt gca  atc gca gtg cag ggg  gat cag cat cat ctg  ggc ctg ctc       22375
Val Ala  Ile Ala Val Gln Gly  Asp Gln His His Leu  Gly Leu Leu
    3640                 3645                 3650

gga gct  cat gcc cgg gta cat  ggc ctt cat gaa agc  ctc cag ctg       22420
Gly Ala  His Ala Arg Val His  Gly Leu His Glu Ser  Leu Gln Leu
```

```
    3655                3660                3665

gcg gaa  ggc ctg ctg cgc ctt  gcc gcc ctc ggt gaa  gaa gac ccc       22465
Ala Glu  Gly Leu Leu Arg Leu  Ala Ala Leu Gly Glu  Glu Asp Pro
    3670                3675                3680

gca gga  ctt gct aga gaa ctg  gtt ggt agc gca gcc  cgc gtc gtg       22510
Ala Gly  Leu Ala Arg Glu Leu  Val Gly Ser Ala Ala  Arg Val Val
    3685                3690                3695

cac gca  gca gcg cgc gtc gtt  gtt ggc cag ctg cac  cac gct gcg       22555
His Ala  Ala Ala Arg Val Val  Val Gly Gln Leu His  His Ala Ala
    3700                3705                3710

ccc cca  gcg gtt ctg ggt gat  ctt ggc ccg gtc ggg  gtt ctc ctt       22600
Pro Pro  Ala Val Leu Gly Asp  Leu Gly Pro Val Gly  Val Leu Leu
    3715                3720                3725

cag cgc  gcg ctg ccc gtt ctc  gct cgc cac atc cat  ctc gat cgt       22645
Gln Arg  Ala Leu Pro Val Leu  Ala Arg His Ile His  Leu Asp Arg
    3730                3735                3740

gtg ctc  ctt ctg gat cat cac  ggt ccc gtg cag gca  ccg cag ctt       22690
Val Leu  Leu Leu Asp His His  Gly Pro Val Gln Ala  Pro Gln Leu
    3745                3750                3755

gcc ctc  ggc ctc ggt gca gcc  gtg cag cca cag cgc  gca gcc ggt       22735
Ala Leu  Gly Leu Gly Ala Ala  Val Gln Pro Gln Arg  Ala Ala Gly
    3760                3765                3770

gct ctc  cca gtt ctt gtg ggc  gat ctg gga gtg cga  gtg cac gaa       22780
Ala Leu  Pro Val Leu Val Gly  Asp Leu Gly Val Arg  Val His Glu
    3775                3780                3785

gcc ctg  cag gaa gcg gcc cat  cat cgc ggt cag ggt  ctt gtt gct       22825
Ala Leu  Gln Glu Ala Ala His  His Arg Gly Gln Gly  Leu Val Ala
    3790                3795                3800

ggt gaa  ggt cag cgg gat gcc  gcg gtg ctc ctc gtt  cac ata cag       22870
Gly Glu  Gly Gln Arg Asp Ala  Ala Val Leu Leu Val  His Ile Gln
    3805                3810                3815

gtg gca  gat gcg gcg gta cac  ctc gcc ctg ctc ggg  cat cag ctg       22915
Val Ala  Asp Ala Ala Val His  Leu Ala Leu Leu Gly  His Gln Leu
    3820                3825                3830

gaa ggc  gga ctt cag gtc gct  ctc cac gcg gta ccg  gtc cat cag       22960
Glu Gly  Gly Leu Gln Val Ala  Leu His Ala Val Pro  Val His Gln
    3835                3840                3845

cag cgt  cat cac ttc cat gcc  ctt ctc cca ggc cga  aac gat cgg       23005
Gln Arg  His His Phe His Ala  Leu Leu Pro Gly Arg  Asn Asp Arg
    3850                3855                3860

cag gct  cag ggg gtt ctt cac  cgt cat ctt agt cgc  cgc cgc cga       23050
Gln Ala  Gln Gly Val Leu His  Arg His Leu Ser Arg  Arg Arg Arg
    3865                3870                3875

agt cag  ggg gtc gtt ctc gtc  cag ggt ctc aaa cac  tcg ctt gcc       23095
Ser Gln  Gly Val Val Leu Val  Gln Gly Leu Lys His  Ser Leu Ala
    3880                3885                3890

gtc ctt  ctc ggt gat gcg cac  ggg ggg gaa ggc gaa  gcc cac ggc       23140
Val Leu  Leu Gly Asp Ala His  Gly Gly Glu Gly Glu  Ala His Gly
    3895                3900                3905

cgc cag  ctc ctc ctc ggc ctg  cct ttc gtc ctc gct  gtc ctg gct       23185
Arg Gln  Leu Leu Leu Gly Leu  Pro Phe Val Leu Ala  Val Leu Ala
    3910                3915                3920
```

```
gat gtc  ttg caa agg cac atg  ctt ggt ctt gcg ggg  ttt ctt ttt       23230
Asp Val  Leu Gln Arg His Met  Leu Gly Leu Ala Gly  Phe Leu Phe
    3925                 3930                 3935

ggg cgg  cag agg cgg cgg cgg  cgg aga cgt gct ggg  cga gcg cga       23275
Gly Arg  Gln Arg Arg Arg Arg  Arg Arg Arg Ala Gly  Arg Ala Arg
    3940                 3945                 3950

gtt ctc  gct cac cac gac tat  ttc ttc ttc ttg gcc  gtc gtc cga       23320
Val Leu  Ala His His Asp Tyr  Phe Phe Phe Leu Ala  Val Val Arg
    3955                 3960                 3965

gac cac  gcg gcg gta ggc atg  cct ctt ctg ggg cag  agg cgg agg       23365
Asp His  Ala Ala Val Gly Met  Pro Leu Leu Gly Gln  Arg Arg Arg
    3970                 3975                 3980

cga cgg  gct ctc gcg gtt cgg  cgg gcg gct ggc aga  gcc cct tcc       23410
Arg Arg  Ala Leu Ala Val Arg  Arg Ala Ala Gly Arg  Ala Pro Ser
    3985                 3990                 3995

gcg ttc  ggg ggt gcg ctc ctg  gcg gcg ctg ctc tga ctg  act tcc       23455
Ala Phe  Gly Gly Ala Leu Leu  Ala Ala Leu Leu     Leu  Thr Ser
    4000                 4005                     4010

tcc gcg gcc  ggc cat tgtgttctcc tagggagcaa caacaagcat ggagactcag    23510
Ser Ala Ala  Gly His
        4015

ccatcgtcgc caacatcgcc atctgccccc gccgccgccg acgagaacca gcagcagcag    23570

aatgaaagct taaccgcccc gccgcccagc cccacctccg acgccgcggc cccagacatg    23630

caagagatgg aggaatccat cgagattgac ctgggctacg tgacgcccgc ggagcacgag    23690

gaggagctgg cagcgcgctt ttcagccccg gaagagaacc accaagagca gccagagcag    23750

gaagcagaga gcgagcagag ccaggctggg ctcgagcatg gcgactacct gagcggggca    23810

gaggacgtgc tcatcaagca tctggcccgc caatgcatca tcgtcaagga cgcgctgctc    23870

gaccgcgccg aggtgcccct cagcgtggcg gagctcagcc gcgcctacga gcgcaacctc    23930

ttctcgccgc gcgtgccccc caagcgccag cccaacggca cctgcgagcc caacccgcgc    23990

ctcaacttct acccggtctt cgcggtgccc gaggccctgg ccacctacca cctcttttc     24050

aagaaccaaa ggatccccgt ctcctgccgc gccaaccgca cccgcgccga cgccctgctc    24110

aacctgggcc ccggcgcccg cctacctgat atcgcctcct tggaagaggt tcccaagatc    24170

ttcgagggtc tgggcagcga cgagactcgg gccgcgaacg ctctgcaagg aagcggagag    24230

gagcatgagc accacagcgc cctggtggag ttggaaggcg acaacgcgcg cctggcggtc    24290

ctcaagcgca cggtcgagct gacccacttc gcctacccgg cgctcaacct gccccccaag    24350

gtcatgagcg ccgtcatgga ccaggtgctc atcaagcgcg cctcgccccc ctcggaggag    24410

gagatgcagg accccgagag ctcggacgag ggcaagcccg tggtcagcga cgagcagctg    24470

gcgcgctggc tgggaacgag tagcaccccc cagagtctgg aagagcggcg caagctcatg    24530

atggccgtgg tcctggtgac cgtggagctt gagtgtctgc gccgcttctt cgccgacgcg    24590

gagaccctgc gcaaggtcga ggagaacctg cactacctct tcaggcacgg gttcgtgcgc    24650

caggcctgca agatctccaa cgtggagctg accaacctgg tctcctacat gggcatcctg    24710
```

```
cacgagaacc gcctggggca gaacgtgctg cacaccaccc tgcgcgggga ggcccgccgc    24770

gactacatcc gcgactgcgt ctacctgtac ctctgccaca cctggcagac gggcatgggc    24830

gtgtggcagc agtgcctgga ggagcagaac ctgaaagagc tctgcaagct cctgcagaag    24890

aacctgaagg ccctgtggac cgggttcgac gagcgtacca ccgcctcgga cctggccgac    24950

ctcatcttcc ccgagcgcct gcggctgacg ctgcgcaacg ggctgcccga ctttatgagc    25010

caaagcatgt tgcaaaactt tcgctctttc atcctcgaac gctccgggat cctgcccgcc    25070

acctgctccg cgctgccctc ggacttcgtg ccgctgacct tccgcgagtg ccccccgccg    25130

ctctggagcc actgctactt gctgcgcctg gccaactacc tggcctacca ctcggacgtg    25190

atcgaggacg tcagcggcga gggtctgctc gagtgccact gccgctgcaa cctctgcacg    25250

ccgcaccgct ccctggcctg caacccccag ctgctgagcg agacccagat catcggcacc    25310

ttcgagttgc aaggccccgg cgaggagggc aaggggggtc tgaaactcac cccggggctg    25370

tggacctcgg cctacttgcg caagttcgtg cccgaggact accatccctt cgagatcagg    25430

ttctacgagg accaatccca gccgcccaag gccgagctgt cggcctgcgt catcacccag    25490

ggggccatcc tggcccaatt gcaagccatc cagaaatccc gccaagaatt tctgctgaaa    25550

aagggccacg gggtctactt ggacccccag accggagagg agctcaaccc cagcttcccc    25610

cagg atg ccc aga  gga agc agc aag aag  ctg aaa gtg gag ctg  ccg      25656
     Met Pro Arg  Gly Ser Ser Lys Lys  Leu Lys Val Glu Leu  Pro
              4020                4025                4030

ctg ccg ccg gag  gat ttg gag gaa gac  tgg gag agc agt cag  gca      25701
Leu Pro Pro Glu  Asp Leu Glu Glu Asp  Trp Glu Ser Ser Gln  Ala
             4035                4040                4045

gag gag gag gag  atg gaa gac tgg gac  agc act cag gca gag  gag      25746
Glu Glu Glu Glu  Met Glu Asp Trp Asp  Ser Thr Gln Ala Glu  Glu
             4050                4055                4060

gac agc ctg caa  gac agt ctg gaa gac  gag gtg gag gag gca  gag      25791
Asp Ser Leu Gln  Asp Ser Leu Glu Asp  Glu Val Glu Glu Ala  Glu
             4065                4070                4075

gaa gaa gca gcc  gcc gcc aga ccg tcg  tcc tcg gcg gag aaa  gca      25836
Glu Glu Ala Ala  Ala Ala Arg Pro Ser  Ser Ser Ala Glu Lys  Ala
             4080                4085                4090

agc agc acg gat  acc atc tcc gct ccg  ggt cgg ggt ctc ggc  ggc      25881
Ser Ser Thr Asp  Thr Ile Ser Ala Pro  Gly Arg Gly Leu Gly  Gly
             4095                4100                4105

cgg gcc cac agt  aga tgg gac gag acc  ggg cgc ttc ccg aac  ccc      25926
Arg Ala His Ser  Arg Trp Asp Glu Thr  Gly Arg Phe Pro Asn  Pro
             4110                4115                4120

acc acc cag acc  ggt aag aag gag cgg  cag gga tac aag tcc  tgg      25971
Thr Thr Gln Thr  Gly Lys Lys Glu Arg  Gln Gly Tyr Lys Ser  Trp
             4125                4130                4135

cgg ggg cac aaa  aac gcc atc gtc tcc  tgc ttg caa gcc tgc  ggg      26016
Arg Gly His Lys  Asn Ala Ile Val Ser  Cys Leu Gln Ala Cys  Gly
             4140                4145                4150

ggc aac atc tcc  ttc acc cgg cgc tac  ctg ctc ttc cac cgc  ggg      26061
Gly Asn Ile Ser  Phe Thr Arg Arg Tyr  Leu Leu Phe His Arg  Gly
             4155                4160                4165
```

```
gtg aac ttc ccc  cgc aac atc ttg cat  tac tac cgt cac ctc  cac       26106
Val Asn Phe Pro  Arg Asn Ile Leu His  Tyr Tyr Arg His Leu  His
            4170                 4175                 4180

agc ccc tac tac  tgt ttc caa gaa gag  gca gaa acc cag cag  cag       26151
Ser Pro Tyr Tyr  Cys Phe Gln Glu Glu  Ala Glu Thr Gln Gln  Gln
            4185                 4190                 4195

cag aaa acc agc  agc agc tagaaaatcc acagcggcgg cggcggcagg            26199
Gln Lys Thr Ser  Ser Ser
            4200

tggactgagg atcgcggcga acgagccggc gcagacccgg gagctgagga accggatctt    26259

tcccaccctc tatgccatct tccagcagag tcgggggcag gagcaggaac tgaaagtcaa    26319

gaaccgttct ctgcgctcgc tcacccgcag ttgtctgtat cacaagagcg aagaccaact    26379

tcagcgcact ctcgaggacg ccgaggctct cttcaacaag tactgcgcgc tcactcttaa    26439

agagtagccc gcgcccgccc acacacggaa aaaggcggga attacgtcac cacctgcgcc    26499

cttcgcccga ccatcatc atg agc aaa  gag att ccc acg cct  tac atg tgg    26550
                   Met Ser Lys  Glu Ile Pro Thr Pro  Tyr Met Trp
                            4205                 4210

agc tac  cag ccc cag atg ggc  ctg gcc gcc ggc gcc  gcc cag gac       26595
Ser Tyr  Gln Pro Gln Met Gly  Leu Ala Ala Gly Ala  Ala Gln Asp
    4215                 4220                 4225

tac tcc  acc cgc atg aac tgg  ctc agt gcc ggg ccc  gcg atg atc       26640
Tyr Ser  Thr Arg Met Asn Trp  Leu Ser Ala Gly Pro  Ala Met Ile
    4230                 4235                 4240

tca cgg  gtg aat gac atc cgc  gcc cac cga aac cag  ata ctc cta       26685
Ser Arg  Val Asn Asp Ile Arg  Ala His Arg Asn Gln  Ile Leu Leu
    4245                 4250                 4255

gaa cag  tca gcg atc acc gcc  acg ccc cgc cat cac  ctt aat ccg       26730
Glu Gln  Ser Ala Ile Thr Ala  Thr Pro Arg His His  Leu Asn Pro
    4260                 4265                 4270

cgt aat  tgg ccc gcc gcc ctg  gtg tac cag gaa att  ccc cag ccc       26775
Arg Asn  Trp Pro Ala Ala Leu  Val Tyr Gln Glu Ile  Pro Gln Pro
    4275                 4280                 4285

acg acc  gta cta ctt ccg cga  gac gcc cag gcc gaa  gtc cag ctg       26820
Thr Thr  Val Leu Leu Pro Arg  Asp Ala Gln Ala Glu  Val Gln Leu
    4290                 4295                 4300

act aac  tca ggt gtc cag ctg  gcc ggc ggc gcc gcc  ctg tgt cgt       26865
Thr Asn  Ser Gly Val Gln Leu  Ala Gly Gly Ala Ala  Leu Cys Arg
    4305                 4310                 4315

cac cgc  ccc gct cag ggt ata  aag cgg ctg gtg atc  cga ggc aga       26910
His Arg  Pro Ala Gln Gly Ile  Lys Arg Leu Val Ile  Arg Gly Arg
    4320                 4325                 4330

ggc aca  cag ctc aac gac gag  gtg gtg agc tct tcg  ctg ggt ctg       26955
Gly Thr  Gln Leu Asn Asp Glu  Val Val Ser Ser Ser  Leu Gly Leu
    4335                 4340                 4345

cga cct  gac gga gtc ttc caa  ctc gcc gga tcg ggg  aga tct tcc       27000
Arg Pro  Asp Gly Val Phe Gln  Leu Ala Gly Ser Gly  Arg Ser Ser
    4350                 4355                 4360

ttc acg  cct cgt cag gcc gtc  ctg act ttg gag agt  tcg tcc tcg       27045
Phe Thr  Pro Arg Gln Ala Val  Leu Thr Leu Glu Ser  Ser Ser Ser
```

```
    4365                4370                4375

cag ccc  cgc tcg ggt ggc atc  ggc act ctc cag ttc  gtg gag gag       27090
Gln Pro  Arg Ser Gly Gly Ile  Gly Thr Leu Gln Phe  Val Glu Glu
    4380                4385                4390

ttc act  ccc tcg gtc tac ttc  aac ccc ttc tcc ggc  tcc ccc ggc       27135
Phe Thr  Pro Ser Val Tyr Phe  Asn Pro Phe Ser Gly  Ser Pro Gly
    4395                4400                4405

cac tac  ccg gac gag ttc atc  ccg aac ttc gac gcc  atc agc gag       27180
His Tyr  Pro Asp Glu Phe Ile  Pro Asn Phe Asp Ala  Ile Ser Glu
    4410                4415                4420

tcg gtg  gac ggc tac gat tga atg  tcc cat ggt ggc gcg  gct gac       27225
Ser Val  Asp Gly Tyr Asp     Met  Ser His Gly Gly Ala  Ala Asp
    4425                    4430                4435

cta gct cgg  ctt cga cac ctg gac  cac tgc cgc cgc ttc  cgc tgc       27270
Leu Ala Arg  Leu Arg His Leu Asp  His Cys Arg Arg Phe  Arg Cys
        4440                4445                4450

ttc gct cgg  gat ctc gcc gag ttt  gcc tac ttt gag ctg  ccc gag       27315
Phe Ala Arg  Asp Leu Ala Glu Phe  Ala Tyr Phe Glu Leu  Pro Glu
        4455                4460                4465

gag cac cct  cag ggc ccg gcc cac  gga gtg cgg atc atc  gtc gaa       27360
Glu His Pro  Gln Gly Pro Ala His  Gly Val Arg Ile Ile  Val Glu
        4470                4475                4480

ggg ggc ctc  gac tcc cac ctg ctt  cgg atc ttc agc cag  cgt ccg       27405
Gly Gly Leu  Asp Ser His Leu Leu  Arg Ile Phe Ser Gln  Arg Pro
        4485                4490                4495

atc ctg gtc  gag cgc gag caa gga  cag acc cgt ctg acc  ctg tac       27450
Ile Leu Val  Glu Arg Glu Gln Gly  Gln Thr Arg Leu Thr  Leu Tyr
        4500                4505                4510

tgc atc tgc  aac cac ccc ggc ctg  cat gaa agt ctt tgt  tgt ctg       27495
Cys Ile Cys  Asn His Pro Gly Leu  His Glu Ser Leu Cys  Cys Leu
        4515                4520                4525

ctg tgt act  gag tat aat aaa agc  tgagatcagc gactactccg             27539
Leu Cys Thr  Glu Tyr Asn Lys Ser
        4530                4535

gacttccgtg tgttcctgaa tccatcaacc agtccctgtt cttcaccggg aacgagaccg    27599

agctccagct ccagtgtaag ccccacaaga agtacctcac ctggctgttc cagggctccc    27659

cgatcgccgt tgtcaaccac tgcgacaacg acggagtcct gctgagcggc cctgccaacc    27719

ttacttttc cacccgcaga agcaagctcc agctcttcca acccttcctc cccgggacct    27779

atcagtgcgt ctcgggaccc tgccatcaca ccttccacct gatcccgaat accacagcgt    27839

cgctccccgc tactaacaac caaactaccc accaacgcca ccgtcgcgac ctttcctctg    27899

aatctaatac cactaccgga ggtgagctcc gaggtcgacc aacctctggg atttactacg    27959

gcccctggga ggtggtgggg ttaatagcgc taggcctagt tgtgggtggg cttttggctc    28019

tctgctacct atacctccct tgctgttcgt acttagtggt gctgtgttgc tggtttaaga    28079

a atg ggg cag atc acc  cta gtg agc tgc ggt  gtg ctg gtg gcg gtg       28125
  Met Gly Gln Ile Thr  Leu Val Ser Cys Gly  Val Leu Val Ala Val
                   4540                4545                4550

gtg ctt tcg att gtg  gga ctg ggc ggc gcg  gct gta gtg aag gag       28170
```

```
Val Leu Ser Ile Val  Gly Leu Gly Gly Ala  Ala Val Val Lys Glu
                4555                4560                4565

aag gcc gat ccc tgc  ttg cat ttc aat ccc  gat aaa tgc cag ctg        28215
Lys Ala Asp Pro Cys  Leu His Phe Asn Pro  Asp Lys Cys Gln Leu
                4570                4575                4580

agt ttt cag ccc gat  ggc aat cgg tgc gcg  gtg ctg atc aag tgc        28260
Ser Phe Gln Pro Asp  Gly Asn Arg Cys Ala  Val Leu Ile Lys Cys
                4585                4590                4595

gga tgg gaa tgc gag  aac gtg aga atc gag  tac aat aac aag act        28305
Gly Trp Glu Cys Glu  Asn Val Arg Ile Glu  Tyr Asn Asn Lys Thr
                4600                4605                4610

cgg aac aat act ctc  gcg tcc acg tgg cag  ccc ggg gac ccc gag        28350
Arg Asn Asn Thr Leu  Ala Ser Thr Trp Gln  Pro Gly Asp Pro Glu
                4615                4620                4625

tgg tac acc gtc tct  gtc ccc ggt gct gac  ggc tcc ccg cgc acc        28395
Trp Tyr Thr Val Ser  Val Pro Gly Ala Asp  Gly Ser Pro Arg Thr
                4630                4635                4640

gtg aat aat act ttc  att ttt gcg cac atg  tgc gac acg gtc atg        28440
Val Asn Asn Thr Phe  Ile Phe Ala His Met  Cys Asp Thr Val Met
                4645                4650                4655

tgg atg agc aag cag  tac gat atg tgg ccc  ccc acg aag gag aac        28485
Trp Met Ser Lys Gln  Tyr Asp Met Trp Pro  Pro Thr Lys Glu Asn
                4660                4665                4670

atc gtg gtc ttc tcc  atc gct tac agc ctg  tgc acg gtg cta atc        28530
Ile Val Val Phe Ser  Ile Ala Tyr Ser Leu  Cys Thr Val Leu Ile
                4675                4680                4685

acc gct atc gtg tgc  ctg agc att cac atg  ctc atc gct att cgc        28575
Thr Ala Ile Val Cys  Leu Ser Ile His Met  Leu Ile Ala Ile Arg
                4690                4695                4700

ccc aga aat aat gcc  gaa aaa gaa aaa cag  cca taacacgttt             28618
Pro Arg Asn Asn Ala  Glu Lys Glu Lys Gln  Pro
                4705                4710

tttcacacac ctttttcaga cc atg gcc tct gtt  aaa ttt ttg ctt tta        28667
                          Met Ala Ser Val  Lys Phe Leu Leu Leu
                                    4715                4720

ttt gcc agt ctc att  act gtt ata agt aat  gag aaa ctc act att        28712
Phe Ala Ser Leu Ile  Thr Val Ile Ser Asn  Glu Lys Leu Thr Ile
                4725                4730                4735

tac att ggc act aac  cac act cta gaa gga  att cca aaa tcc tca        28757
Tyr Ile Gly Thr Asn  His Thr Leu Glu Gly  Ile Pro Lys Ser Ser
                4740                4745                4750

tgg tat tgc tat ttt  gat caa gat cca gac  tta act ata gaa ctg        28802
Trp Tyr Cys Tyr Phe  Asp Gln Asp Pro Asp  Leu Thr Ile Glu Leu
                4755                4760                4765

tgt ggt aac aag gga  caa aat aca agc att  cat tta att aac ttt        28847
Cys Gly Asn Lys Gly  Gln Asn Thr Ser Ile  His Leu Ile Asn Phe
                4770                4775                4780

aaa tgc gga gac gat  ttg aaa tta att aat  atc act aaa gag tat        28892
Lys Cys Gly Asp Asp  Leu Lys Leu Ile Asn  Ile Thr Lys Glu Tyr
                4785                4790                4795

gga ggt atg tat tac  tat gtt aca gaa aat  aac aac atg cag ttt        28937
Gly Gly Met Tyr Tyr  Tyr Val Thr Glu Asn  Asn Asn Met Gln Phe
```

```
                4800                4805                4810

tat gaa gtt act gta  act aat ccc acc acg  cct aga aca aca aca       28982
Tyr Glu Val Thr Val  Thr Asn Pro Thr Thr  Pro Arg Thr Thr Thr
                4815                4820                4825

acc acc aca aag act  aca cct gtt acc act  atg cag ctc act acc       29027
Thr Thr Thr Lys Thr  Thr Pro Val Thr Thr  Met Gln Leu Thr Thr
                4830                4835                4840

aat aac att ttt gcc  atg cgt cag aag gcc  aac aat agc acc agc       29072
Asn Asn Ile Phe Ala  Met Arg Gln Lys Ala  Asn Asn Ser Thr Ser
                4845                4850                4855

att caa ccc ccc cca  ccc agt gag gaa att  ccc aaa tcc atg att       29117
Ile Gln Pro Pro Pro  Pro Ser Glu Glu Ile  Pro Lys Ser Met Ile
                4860                4865                4870

ggc att att gtt gct  gta gtg gtg tgc atg  ttg atc atc gcc ttg       29162
Gly Ile Ile Val Ala  Val Val Val Cys Met  Leu Ile Ile Ala Leu
                4875                4880                4885

tgc atg gtg tac tat  gcc ttc tgc tac aga  aag cac aga ctg aac       29207
Cys Met Val Tyr Tyr  Ala Phe Cys Tyr Arg  Lys His Arg Leu Asn
                4890                4895                4900

gac aag cta gaa cac  tta cta agt gtt gaa  ttt taatttttt             29250
Asp Lys Leu Glu His  Leu Leu Ser Val Glu  Phe
                4905                4910

agaaccatga agatcctagg ccttttaatt ttttctatca ttacctctgc tctatgcaat   29310

tctgacaatg aggacgttac tgtcgttgtc ggatcaaatt atacactgaa aggtccagcg   29370

aagggtatgc tttcgtggta ttgctggttt ggaactgaca ctgaacaaac cgaattatgc   29430

aatcttcaaa atggcaaagt tcataattct aaaatttaca attatatatg caatggcact   29490

gatttgatac tcctcaatat cacgaaatca tatgctggca gttattcatg ccctggagat   29550

gatgctgaca atatgatttt ttataaattg caagtggttg atcccactac tccacctcca   29610

cccaccacaa ctactcacac cacacacaca gaacaaacca cagcagagga ggcggcaaag   29670

ttagctttgc aggtccaaga cagttcattt gttggcatta cccctacacc cgatcagcgg   29730

tgtccggggc tgctcgtcag cggcattgtc ggtgtgcttt cgggattagc agttataatc   29790

atctgcatgt tcatttttgc ttgctgctat agaaggcttt accgacaaaa atcagaccca   29850

ctgctgaacc tctatgttta atttttttcca gagcc atg aag gca gtt  agc gct     29903
                                      Met Lys Ala Val  Ser Ala
                                                      4915

cta gtt ttt  tgt tct ttg att ggc  act gtt ttt agt gtt  agc ttt       29948
Leu Val Phe  Cys Ser Leu Ile Gly  Thr Val Phe Ser Val  Ser Phe
        4920                4925                4930

tta aaa caa  att aat gtt act gag  ggg gaa aat gtg aca  ctg gta       29993
Leu Lys Gln  Ile Asn Val Thr Glu  Gly Glu Asn Val Thr  Leu Val
        4935                4940                4945

ggc gta gaa  ggt gct caa aat acc  acc tgg aca aaa tac  cac ctc       30038
Gly Val Glu  Gly Ala Gln Asn Thr  Thr Trp Thr Lys Tyr  His Leu
        4950                4955                4960

gat ggg tgg  aaa gat att tgc aat  tgg agt gtc att act  tac aca       30083
Asp Gly Trp  Lys Asp Ile Cys Asn  Trp Ser Val Ile Thr  Tyr Thr
        4965                4970                4975
```

```
tgt gag gga  gtt aat ttg acc ata  gtc aat gcc agc caa  aat cag       30128
Cys Glu Gly  Val Asn Leu Thr Ile  Val Asn Ala Ser Gln  Asn Gln
        4980                 4985                 4990

aag ggt tgg  att aaa ggg caa tct  gtt agt gtt acc agt  gag ggg       30173
Lys Gly Trp  Ile Lys Gly Gln Ser  Val Ser Val Thr Ser  Glu Gly
        4995                 5000                 5005

tac tat acc  cag cat act ctt atc  tat gac att ata gtc  ata ccg       30218
Tyr Tyr Thr  Gln His Thr Leu Ile  Tyr Asp Ile Ile Val  Ile Pro
        5010                 5015                 5020

ctg cct acg  cct agc cca cct agc  act acc aca cag aca  acc cac       30263
Leu Pro Thr  Pro Ser Pro Pro Ser  Thr Thr Thr Gln Thr  Thr His
        5025                 5030                 5035

act aca caa  aca acc aca tac agt  aca tca aat cag cct  acc acc       30308
Thr Thr Gln  Thr Thr Thr Tyr Ser  Thr Ser Asn Gln Pro  Thr Thr
        5040                 5045                 5050

act aca aca  gca gag gtt gcc agc  tcg tct ggg gtc cga  gcg gca       30353
Thr Thr Thr  Ala Glu Val Ala Ser  Ser Ser Gly Val Arg  Ala Ala
        5055                 5060                 5065

ttt ttg atg  ttg gcc cca tct agc  agt ccc act gct agt  acc aat       30398
Phe Leu Met  Leu Ala Pro Ser Ser  Ser Pro Thr Ala Ser  Thr Asn
        5070                 5075                 5080

gag cag act  act gaa ttt ttg tcc  act gtc gag agc cac  acc aca       30443
Glu Gln Thr  Thr Glu Phe Leu Ser  Thr Val Glu Ser His  Thr Thr
        5085                 5090                 5095

gct acc tcg  agt gcc ttc tct agc  acc gcc aat ctc tcc  tcg ctt       30488
Ala Thr Ser  Ser Ala Phe Ser Ser  Thr Ala Asn Leu Ser  Ser Leu
        5100                 5105                 5110

tcc tct aca  cca atc agt ccc gct  act act act acc ccc  gct att       30533
Ser Ser Thr  Pro Ile Ser Pro Ala  Thr Thr Thr Thr Pro  Ala Ile
        5115                 5120                 5125

ctt ccc act  ccc ctg aag caa act  gag gac agc ggc atg  caa tgg       30578
Leu Pro Thr  Pro Leu Lys Gln Thr  Glu Asp Ser Gly Met  Gln Trp
        5130                 5135                 5140

cag atc acc  ctg ctc att gtg atc  ggg ttg gtc atc cta  gcc gtg       30623
Gln Ile Thr  Leu Leu Ile Val Ile  Gly Leu Val Ile Leu  Ala Val
        5145                 5150                 5155

ttg ctc tac  tac atc ttc cgc cgc  cgc att ccc aac gcg  cac cgc       30668
Leu Leu Tyr  Tyr Ile Phe Arg Arg  Arg Ile Pro Asn Ala  His Arg
        5160                 5165                 5170

aag ccg gtc  tac aag ccc atc att  gtc ggg cag ccg gag  ccg ctt       30713
Lys Pro Val  Tyr Lys Pro Ile Ile  Val Gly Gln Pro Glu  Pro Leu
        5175                 5180                 5185

cag gtg gaa  ggg ggt cta agg aat  ctt ctc ttc tct ttt  aca gta       30758
Gln Val Glu  Gly Gly Leu Arg Asn  Leu Leu Phe Ser Phe  Thr Val
        5190                 5195                 5200

tgg tgattgaact atgattccta gacaattctt gatcactatt cttatctgcc          30811
Trp


tcctccaagt ctgtgccacc ctcgctctgg tggccaacgc cagtccagac tgtattgggc   30871

ccttcgcctc ctacgtgctc tttgccttca tcacctgcat ctgctgctgt agcatagtct   30931
```

```
gcctgcttat caccttcttc cagttcattg actggatctt tgtgcgcatc gcctacctgc    30991

gccaccaccc ccagtaccgc gaccagcgag tggcgcagct gctcaggctc ctctgataag    31051

catgcgggct ctgctacttc tcgcgcttct gctgttagtg ctcccccgtc ccgttgaccc    31111

ccggcccccc actcagtccc ccgaggaggt ccgcaaatgc aaattccaag aaccctggaa    31171

attcctcaaa tgctaccgcc aaaaatcaga catgcatccc agctggatca tgatcattgg    31231

gatcgtgaac attctggcct gcaccctcat ctcctttgtg atttacccct gctttgactt    31291

tggttggaac tcgccagagg cgctctatct cccgcctgaa cctgacacac caccacagca    31351

acctcaggca cacgcactac caccaccaca gcctaggcca caatacatgc ccatattaga    31411

ctatgaggcc gagccacagc gacccatgct ccccgctatt agttacttca atctaaccgg    31471

cggag atg act  gac cca ctg gcc aac  aac aac gtc aac gac  ctt ctc      31518
      Met Thr  Asp Pro Leu Ala Asn  Asn Asn Val Asn Asp  Leu Leu
          5205                 5210                 5215

ctg gac atg  gac ggc cgc gcc tcg  gag cag cga ctc gcc  caa ctt       31563
Leu Asp Met  Asp Gly Arg Ala Ser  Glu Gln Arg Leu Ala  Gln Leu
        5220                 5225                 5230

cgc att cgc  cag cag cag gag aga  gcc gtc aag gag ctg  cag gac       31608
Arg Ile Arg  Gln Gln Gln Glu Arg  Ala Val Lys Glu Leu  Gln Asp
        5235                 5240                 5245

ggc ata gcc  atc cac cag tgc aag  aaa ggc atc ttc tgc  ctg gtg       31653
Gly Ile Ala  Ile His Gln Cys Lys  Lys Gly Ile Phe Cys  Leu Val
        5250                 5255                 5260

aaa cag gcc  aag atc tcc tac gag  gtc acc cag acc gac  cat cgc       31698
Lys Gln Ala  Lys Ile Ser Tyr Glu  Val Thr Gln Thr Asp  His Arg
        5265                 5270                 5275

ctc tcc tac  gag ctc ctg cag cag  cgc cag aag ttc acc  tgc ctg       31743
Leu Ser Tyr  Glu Leu Leu Gln Gln  Arg Gln Lys Phe Thr  Cys Leu
        5280                 5285                 5290

gtc gga gtc  aac ccc atc gtc atc  acc cag cag tcg ggc  gat acc       31788
Val Gly Val  Asn Pro Ile Val Ile  Thr Gln Gln Ser Gly  Asp Thr
        5295                 5300                 5305

aag ggg tgc  atc cac tgc tcc tgc  gac tcc ccc gac tgc  gtc cac       31833
Lys Gly Cys  Ile His Cys Ser Cys  Asp Ser Pro Asp Cys  Val His
        5310                 5315                 5320

act ctg atc  aag acc ctc tgc ggc  ctc cgc gac ctc ctc  ccc atg       31878
Thr Leu Ile  Lys Thr Leu Cys Gly  Leu Arg Asp Leu Leu  Pro Met
        5325                 5330                 5335

aac taatcacccc cttatccagt gaaataaaga tcatattgat gattaaataa           31931
Asn


aaaaaataat catttgattt gaaataaaga tacaatcata ttgatgattt gagtttaata    31991

aaaataaaga atcacttact tgaaatctga taccaggtct ctgtccatgt tttctgccaa    32051

caccacttca ctcccctctt cccagctctg gtactgcagg ccccggcggg ctgcaaactt    32111

cctccacacc ctgaagggga tgtcaaattc ctcctgtccc tcaatcttca ttttatcttc    32171

tatcag atg tcc  aaa aag cgc gtc cgg  gtg gat gat gac ttc  gac ccc     32219
       Met Ser  Lys Lys Arg Val Arg  Val Asp Asp Asp Phe  Asp Pro
           5340                 5345                 5350
```

```
gtc tac ccc  tac gat gca gac aac  gca ccg acc gtg ccc  ttc atc       32264
Val Tyr Pro  Tyr Asp Ala Asp Asn  Ala Pro Thr Val Pro  Phe Ile
        5355                 5360                 5365

aac ccc ccc  ttc gtc tct tca gat  gga ttc caa gag aag  ccc ctg       32309
Asn Pro Pro  Phe Val Ser Ser Asp  Gly Phe Gln Glu Lys  Pro Leu
        5370                 5375                 5380

ggg gtg ctg  tcc ctg cgt ctg gcc  gat ccc gtc acc acc  aag aac       32354
Gly Val Leu  Ser Leu Arg Leu Ala  Asp Pro Val Thr Thr  Lys Asn
        5385                 5390                 5395

ggg gaa atc  acc ctc aag ctg gga  gat ggg gtg gac ctc  gac tcc       32399
Gly Glu Ile  Thr Leu Lys Leu Gly  Asp Gly Val Asp Leu  Asp Ser
        5400                 5405                 5410

tcg gga aaa  ctc atc tcc aac acg  gcc acc aag gcc gcc  gcc cct       32444
Ser Gly Lys  Leu Ile Ser Asn Thr  Ala Thr Lys Ala Ala  Ala Pro
        5415                 5420                 5425

ctc agt ttt  tcc aac aac acc att  tcc ctt aac atg gat  acc cct       32489
Leu Ser Phe  Ser Asn Asn Thr Ile  Ser Leu Asn Met Asp  Thr Pro
        5430                 5435                 5440

ttt tac aac  aac aat gga aag tta  ggc atg aaa gtc act  gct cca       32534
Phe Tyr Asn  Asn Asn Gly Lys Leu  Gly Met Lys Val Thr  Ala Pro
        5445                 5450                 5455

ctg aag ata  cta gac aca gac ttg  cta aaa aca ctt gtt  gta gct       32579
Leu Lys Ile  Leu Asp Thr Asp Leu  Leu Lys Thr Leu Val  Val Ala
        5460                 5465                 5470

tat gga caa  ggt tta gga aca aac  acc act ggt gcc ctt  gtt gcc       32624
Tyr Gly Gln  Gly Leu Gly Thr Asn  Thr Thr Gly Ala Leu  Val Ala
        5475                 5480                 5485

caa cta gca  tcc cca ctt gct ttt  gat agc aat agc aaa  att gcc       32669
Gln Leu Ala  Ser Pro Leu Ala Phe  Asp Ser Asn Ser Lys  Ile Ala
        5490                 5495                 5500

ctt aat tta  ggc aat gga cca ttg  aaa gtg gat gca aat  aga ctg       32714
Leu Asn Leu  Gly Asn Gly Pro Leu  Lys Val Asp Ala Asn  Arg Leu
        5505                 5510                 5515

aac atc aat  tgc aat aga gga ctc  tat gtt act acc aca  aaa gat       32759
Asn Ile Asn  Cys Asn Arg Gly Leu  Tyr Val Thr Thr Thr  Lys Asp
        5520                 5525                 5530

gca ctg gaa  gcc aat ata agt tgg  gct aat gct atg aca  ttt ata       32804
Ala Leu Glu  Ala Asn Ile Ser Trp  Ala Asn Ala Met Thr  Phe Ile
        5535                 5540                 5545

gga aat gcc  atg ggt gtc aat att  gat aca caa aaa ggc  ttg caa       32849
Gly Asn Ala  Met Gly Val Asn Ile  Asp Thr Gln Lys Gly  Leu Gln
        5550                 5555                 5560

ttt ggc acc  act agt acc gtc gca  gat gtt aaa aac gct  tac ccc       32894
Phe Gly Thr  Thr Ser Thr Val Ala  Asp Val Lys Asn Ala  Tyr Pro
        5565                 5570                 5575

ata caa atc  aaa ctt gga gct ggt  ctc aca ttt gac agc  aca ggt       32939
Ile Gln Ile  Lys Leu Gly Ala Gly  Leu Thr Phe Asp Ser  Thr Gly
        5580                 5585                 5590

gca att gtt  gca tgg aac aaa gat  gat gac aag ctt aca  cta tgg       32984
Ala Ile Val  Ala Trp Asn Lys Asp  Asp Asp Lys Leu Thr  Leu Trp
        5595                 5600                 5605
```

```
acc aca gcc  gac ccc tct cca aat  tgt cac ata tat tct  gaa aag       33029
Thr Thr Ala  Asp Pro Ser Pro Asn  Cys His Ile Tyr Ser  Glu Lys
        5610                 5615                 5620

gat gct aag  ctt aca ctt tgc ttg  aca aag tgt ggc agt  cag att       33074
Asp Ala Lys  Leu Thr Leu Cys Leu  Thr Lys Cys Gly Ser  Gln Ile
        5625                 5630                 5635

ctg ggc act  gtt tcc ctc ata gct  gtt gat act ggc agt  tta aat       33119
Leu Gly Thr  Val Ser Leu Ile Ala  Val Asp Thr Gly Ser  Leu Asn
        5640                 5645                 5650

ccc ata aca  gga aca gta acc act  gct ctt gtc tca ctt  aaa ttc       33164
Pro Ile Thr  Gly Thr Val Thr Thr  Ala Leu Val Ser Leu  Lys Phe
        5655                 5660                 5665

gat gca aat  gga gtt ttg caa agc  agc tca aca cta gac  tca gac       33209
Asp Ala Asn  Gly Val Leu Gln Ser  Ser Ser Thr Leu Asp  Ser Asp
        5670                 5675                 5680

tat tgg aat  ttc aga cag gga gat  gtt aca cct gct gaa  gcc tat       33254
Tyr Trp Asn  Phe Arg Gln Gly Asp  Val Thr Pro Ala Glu  Ala Tyr
        5685                 5690                 5695

act aat gct  ata ggt ttc atg ccc  aat cta aaa gca tac  cct aaa       33299
Thr Asn Ala  Ile Gly Phe Met Pro  Asn Leu Lys Ala Tyr  Pro Lys
        5700                 5705                 5710

aac aca agt  gga gct gca aaa agt  cac att gtt ggg aaa  gtg tac       33344
Asn Thr Ser  Gly Ala Ala Lys Ser  His Ile Val Gly Lys  Val Tyr
        5715                 5720                 5725

cta cat ggg  gat aca gac aaa cca  ctg gac ctc att att  act ttc       33389
Leu His Gly  Asp Thr Asp Lys Pro  Leu Asp Leu Ile Ile  Thr Phe
        5730                 5735                 5740

aat gaa aca  agt gat gaa tct tgc  act tac tgt att aac  ttt caa       33434
Asn Glu Thr  Ser Asp Glu Ser Cys  Thr Tyr Cys Ile Asn  Phe Gln
        5745                 5750                 5755

tgg cag tgg  ggg gct gat caa tat  aaa aat gaa aca ctt  gcc gtc       33479
Trp Gln Trp  Gly Ala Asp Gln Tyr  Lys Asn Glu Thr Leu  Ala Val
        5760                 5765                 5770

agt tca ttc  acc ttt tcc tat att  gct aaa gaa taaaccccac            33522
Ser Ser Phe  Thr Phe Ser Tyr Ile  Ala Lys Glu
        5775                 5780

tctgtacccc atctctgtct atggaaaaaa ctctgaaaca caaaataaaa taaagttcaa    33582

gtgttttatt gattcaacag ttttacagga ttcgagcagt tatttttcct ccaccctccc    33642

aggacatgga atacaccacc ctctcccccc gcacagcctt gaacatctga atgccattgg    33702

tgatggacat gcttttggtc tccacgttcc acacagtttc agagcgagcc agtctcgggt    33762

cggtcaggga gatgaaaccc tccgggcact cccgcatctg cacctcacag ctcaacagct    33822

gaggattgtc ctcggtggtc gggatcacgg tta tct gga  aga agc aga aga        33873
                                    Ser Gly  Arg Ser Arg Arg
                                        5785

gcg  gcg gtg gga atc ata  gtc cgc gaa cgg gat  cgg ccg gtg gtg       33918
Ala  Ala Val Gly Ile Ile  Val Arg Glu Arg Asp  Arg Pro Val Val
5790                 5795                 5800

tcg  cat cag gcc ccg cag  cag tcg ctg tcg ccg  ccg ctc cgt caa       33963
Ser  His Gln Ala Pro Gln  Gln Ser Leu Ser Pro  Pro Leu Arg Gln
5805                 5810                 5815
```

```
gct  gct gct cag ggg gtc  cgg gtc cag gga ctc  cct cag cat gat       34008
Ala  Ala Ala Gln Gly Val  Arg Val Gln Gly Leu  Pro Gln His Asp
5820                 5825                 5830

gcc  cac ggc cct cag cat  cag tcg tct ggt gcg  gcg ggc gca gca       34053
Ala  His Gly Pro Gln His  Gln Ser Ser Gly Ala  Ala Gly Ala Ala
5835                 5840                 5845

gcg  cat gcg gat ctc gct  cag gtc gct gca gta  cgt gca aca cag       34098
Ala  His Ala Asp Leu Ala  Gln Val Ala Ala Val  Arg Ala Thr Gln
5850                 5855                 5860

gac  cac cag gtt gtt caa  cag tcc ata gtt caa  cac gct cca gcc       34143
Asp  His Gln Val Val Gln  Gln Ser Ile Val Gln  His Ala Pro Ala
5865                 5870                 5875

gaa  act cat cgc ggg aag  gat gct acc cac gtg  gcc gtc gta cca       34188
Glu  Thr His Arg Gly Lys  Asp Ala Thr His Val  Ala Val Val Pro
5880                 5885                 5890

gat  cct cag gta aat caa  gtg gcg ccc cct cca  gaa cac gct gcc       34233
Asp  Pro Gln Val Asn Gln  Val Ala Pro Pro Pro  Glu His Ala Ala
5895                 5900                 5905

cat  gta cat gat ctc ctt  ggg cat gtg gcg gtt  cac cac ctc ccg       34278
His  Val His Asp Leu Leu  Gly His Val Ala Val  His His Leu Pro
5910                 5915                 5920

gta  cca cat cac cct ctg  gtt gaa cat gca gcc  ccg gat gat cct       34323
Val  Pro His His Pro Leu  Val Glu His Ala Ala  Pro Asp Asp Pro
5925                 5930                 5935

gcg  gaa cca cag ggc cag  cac cgc ccc gcc cgc  cat gca gcg aag       34368
Ala  Glu Pro Gln Gly Gln  His Arg Pro Ala Arg  His Ala Ala Lys
5940                 5945                 5950

aga  ccc cgg gtc ccg aca  atg gca atg gag gac  cca ccg ctc gta       34413
Arg  Pro Arg Val Pro Thr  Met Ala Met Glu Asp  Pro Pro Leu Val
5955                 5960                 5965

ccc  gtg gat cat ctg gga  gct gaa caa gtc tat  gtt ggc aca gca       34458
Pro  Val Asp His Leu Gly  Ala Glu Gln Val Tyr  Val Gly Thr Ala
5970                 5975                 5980

cag  gca tat gct cat gca  tct ctt cag cac tct  cag ctc ctc ggg       34503
Gln  Ala Tyr Ala His Ala  Ser Leu Gln His Ser  Gln Leu Leu Gly
5985                 5990                 5995

ggt  caa aac cat atc cca  ggg cac ggg gaa ctc  ttg cag gac agc       34548
Gly  Gln Asn His Ile Pro  Gly His Gly Glu Leu  Leu Gln Asp Ser
6000                 6005                 6010

gaa  ccc cgc aga aca ggg  caa tcc tcg cac ata  act tac att gtg       34593
Glu  Pro Arg Arg Thr Gly  Gln Ser Ser His Ile  Thr Tyr Ile Val
6015                 6020                 6025

cat  gga cag ggt atc gca  atc agg cag cac cgg  gtg atc ctc cac       34638
His  Gly Gln Gly Ile Ala  Ile Arg Gln His Arg  Val Ile Leu His
6030                 6035                 6040

cag  aga agc gcg ggt ctc  ggt ctc ctc aca gcg  tgg taa ggg ggc       34683
Gln  Arg Ser Ala Gly Leu  Gly Leu Leu Thr Ala  Trp     Gly Gly
6045                 6050                 6055

cgg ccg  ata cgg gtg atg gcg  gga cgc ggc tga tcg tgt  tcg cga       34728
Arg Pro  Ile Arg Val Met Ala  Gly Arg Gly     Ser Cys  Ser Arg
    6060                 6065                     6070
```

```
ccg tgt cat  gat gca gtt gct ttc  gga cat tttcgtactt gctgtagcag     34778
Pro Cys His  Asp Ala Val Ala Phe  Gly His
        6075                 6080

aacctggtcc gggcgctgca caccgatcgc cggcggcggt cccggcgctt ggaacgctcg    34838

gtgttgaagt tgtaaaacag ccactctctc agaccgtgca gcagatctag ggcctcagga    34898

gtgatgaaga tcccatcatg cctgatggct ctaatcacat cgaccaccgt ggaatgggcc    34958

agacccagcc agatgatgca attttgttgg gtttcggtga cggcgggga gggaagaaca     35018

ggaagaacca tgattaactt ttaatccaaa cggtctcgga gcacttcaaa atgaagatcg    35078

cggagatggc acctctcgcc cccgctgtgt tggtggaaaa taacagccag gtcaaaggtg    35138

atacggttct cgagatgttc cacggtggct tccagcaaag cctccacgcg cacatccaga    35198

aacaagacaa tagcgaaagc gggagggttc tctaattcct caatcatcat gttacactcc    35258

tgcaccatcc ccagataatt ttcatttttc cagccttgaa tgattcgaac tagttcctga    35318

ggtaaatcca agccagccat gataaagagc tcgcgcagag cgccctccac cggcattctt    35378

aagcacaccc tcataattcc aagatattct gctcctggtt cacctgcagc agattgacaa    35438

gcggaatatc aaaatctctg ccgcgatccc taagctcctc cctcagcaat aactgtaagt    35498

actctttcat atcctctccg aaatttttag ccataggacc gccaggaatg agattaggac    35558

aagccacatt acagataaac cgaagtcccc cccagtgagc attgccaaat gtaagattga    35618

aataagcatg ctggctagac ccggtgatat cttccagata actggacaga aaatcgccca    35678

ggcaattttt aagaaaatca acaaaagaaa aatcttccag gtgcacgttt agggcctcgg    35738

gaacaacgat ggagtaagtg caaggggtgc gttccagcat ggttagttag ctgatctgta    35798

aaaaaacaaa aaataaaaca ttaaaccatg ctagcctggc gaacaggtgg gtaaatcgtt    35858

ctctccagca ccaggcaggc cacggggtct ccggcgcgac cctcgtaaaa attgtcgcta    35918

tgattgaaaa ccatcacaga gagacgttcc cggtggccgg cgtgaatgat tcgacaagat    35978

gaatacaccc ccggaacatt ggcgtccgcg agtgaaaaaa agcggccgag gaagcaataa    36038

ggcactacaa tgctcagtct caagtccagc aaagcgatgc catgcggatg aagcacaaaa    36098

ttctcaggtg cgtacaaaat gtaattactc ccctcctgca caggcagcaa agccccagat    36158

ccctccagat acacatacaa agcctcagcg tccatagctt accgagcagc agcacacaac    36218

aggcgcaaga gtcagagaaa ggctgagctc taacctgtcc cccgctctct gctcaatata    36278

tagcccagat ctacactgac gtaaaggcca aagtctaaaa atacccgcca aataatcaca    36338

cacgcccagc acacgcccag aaaccggtga cacactcaaa aaaatacgcg cacttcctca    36398

aacgcccaaa ctgccgtcat ttccgggttc ccacgctacg tcatcagaat tcgactttca    36458

aatccgtcga ccgttaaaca cgtcactcgc cccgccccta acggtcgccc tcctctcggc    36518

caatcacagc cccgcatccc caaattcaaa cgcctcattt gcatattaac gcgcacaaaa    36578

agtttgaggt atattattga tgatgatcgt ttaaactatg cggtgtgaaa taccgcacag    36638

atgcgtaagg agaaaatacc gcatcaggcg ctcttccgct tcctcgctca ctgactcgct    36698

gcgctcggtc gttcggctgc ggcgagcggt atcagctcac tcaaaggcgg taatacggtt    36758
```

```
atccacagaa tcaggggata acgcaggaaa gaacatgtga gcaaaaggcc agcaaaaggc    36818

caggaaccgt aaaaaggccg cgttgctggc gtttttccat aggctccgcc cccctgacga    36878

gcatcacaaa aatcgacgct caagtcagag gtggcgaaac ccgacaggac tataaagata    36938

ccaggcgttt cccccctggaa gctccctcgt gcgctctcct gttccgaccc tgccgcttac    36998

cggatacctg tccgcctttc tcccttcggg aagcgtggcg ctttctcata gctcacgctg    37058

taggtatctc agttcggtgt aggtcgttcg ctccaagctg ggctgtgtgc acgaaccccc    37118

cgttcagccc gaccgctgcg ccttatccgg taactatcgt cttgagtcca acccggtaag    37178

acacgactta tcgccactgg cagcagccac tggtaacagg attagcagag cgaggtatgt    37238

aggcggtgct acagagttct tgaagtggtg gcctaactac ggctacacta gaaggacagt    37298

atttggtatc tgcgctctgc tgaagccagt taccttcgga aaaagagttg gtagctcttg    37358

atccggcaaa caaaccaccg ctggtagcgg tggttttttt gtttgcaagc agcagattac    37418

gcgcagaaaa aaaggatctc aagaagatcc tttgatcttt tctacggggt ctgacgctca    37478

gtggaacgaa aactcacgtt aagggatttt ggtcatgaga ttatcaaaaa ggatcttcac    37538

ctagatcctt ttaaattaaa aatgaagttt taaatcaatc taaagtatat atgagtaaac    37598

ttggtctgac ag tta cca atg  ctt aat cag tga ggc acc  tat ctc agc      37646
              Leu Pro Met  Leu Asn Gln     Gly Thr  Tyr Leu Ser
                      6085                     6090

gat ctg  tct att tcg ttc atc  cat agt tgc ctg act  ccc cgt cgt      37691
Asp Leu  Ser Ile Ser Phe Ile  His Ser Cys Leu Thr  Pro Arg Arg
    6095                 6100                 6105

gta gat  aac tac gat acg gga  ggg ctt acc atc tgg  ccc cag tgc      37736
Val Asp  Asn Tyr Asp Thr Gly  Gly Leu Thr Ile Trp  Pro Gln Cys
    6110                 6115                 6120

tgc aat  gat acc gcg aga ccc  acg ctc acc ggc tcc  aga ttt atc      37781
Cys Asn  Asp Thr Ala Arg Pro  Thr Leu Thr Gly Ser  Arg Phe Ile
    6125                 6130                 6135

agc aat  aaa cca gcc agc cgg  aag ggc cga gcg cag  aag tgg tcc      37826
Ser Asn  Lys Pro Ala Ser Arg  Lys Gly Arg Ala Gln  Lys Trp Ser
    6140                 6145                 6150

tgc aac  ttt atc cgc ctc cat  cca gtc tat taa ttg ttg  ccg gga      37871
Cys Asn  Phe Ile Arg Leu His  Pro Val Tyr     Leu Leu  Pro Gly
    6155                 6160                     6165

agc tag agt aag  tag ttc gcc agt taa tag ttt gcg  caa cgt tgt tgc    37919
Ser     Ser Lys      Phe Ala Ser         Phe Ala  Gln Arg Cys Cys
            6170                             6175

cat  tgc tgc agg cat cgt  ggt gtc acg ctc gtc  gtt tgg tat ggc      37964
His  Cys Cys Arg His Arg  Gly Val Thr Leu Val  Val Trp Tyr Gly
6180                 6185                 6190

ttc  att cag ctc cgg ttc  cca acg atc aag gcg  agt tac atg atc      38009
Phe  Ile Gln Leu Arg Phe  Pro Thr Ile Lys Ala  Ser Tyr Met Ile
6195                 6200                 6205

ccc  cat gtt gtg caa aaa  agc ggt tag ctc ctt cgg  tcc tcc gat      38054
Pro  His Val Val Gln Lys  Ser Gly     Leu Leu Arg  Ser Ser Asp
6210                 6215                     6220
```

```
cgt tgt  cag aag taa gtt ggc cgc  agt gtt atc act cat  ggt tat       38099
Arg Cys  Gln Lys     Val Gly Arg  Ser Val Ile Thr His  Gly Tyr
    6225                     6230                 6235

ggc agc act  gca taa ttc tct tac tgt  cat gcc atc cgt aag  atg       38144
Gly Ser Thr  Ala     Phe Ser Tyr Cys  His Ala Ile Arg Lys  Met
        6240                     6245                 6250

ctt ttc tgt gac  tgg tga gta ctc aac caa  gtc att ctg aga ata       38189
Leu Phe Cys Asp  Trp     Val Leu Asn Gln  Val Ile Leu Arg Ile
            6255                     6260                 6265

gtg tat gcg gcg acc  gag ttg ctc ttg ccc  ggc gtc aac acg gga       38234
Val Tyr Ala Ala Thr  Glu Leu Leu Leu Pro  Gly Val Asn Thr Gly
                6270                 6275                 6280

taa tac cgc gcc aca tag cag  aac ttt aaa agt gct  cat cat tgg aaa    38282
    Tyr Arg Ala Thr     Gln  Asn Phe Lys Ser Ala  His His Trp Lys
                        6285                 6290

acg  ttc ttc ggg gcg aaa  act ctc aag gat ctt  acc gct gtt gag       38327
Thr  Phe Phe Gly Ala Lys  Thr Leu Lys Asp Leu  Thr Ala Val Glu
6295                 6300                 6305

atc  cag ttc gat gta acc  cac tcg tgc acc caa  ctg atc ttc agc       38372
Ile  Gln Phe Asp Val Thr  His Ser Cys Thr Gln  Leu Ile Phe Ser
6310                 6315                 6320

atc  ttt tac ttt cac cag  cgt ttc tgg gtg agc  aaa aac agg aag       38417
Ile  Phe Tyr Phe His Gln  Arg Phe Trp Val Ser  Lys Asn Arg Lys
6325                 6330                 6335

gca  aaa tgc cgc aaa aaa  ggg aat aag ggc gac  acg gaa atg ttg       38462
Ala  Lys Cys Arg Lys Lys  Gly Asn Lys Gly Asp  Thr Glu Met Leu
6340                 6345                 6350

aat  act cat act cttccttttt caatattatt gaagcattta tcagggttat        38514
Asn  Thr His Thr
6355

tgtctcatga gcggatacat atttgaatgt atttagaaaa ataaacaaat aggggttccg    38574

cgcacatttc cccgaaaagt gccacctgac gtctaagaaa ccattattat catgacatta    38634

acctataaaa ataggcgtat cacgaggccc tttcgtcttc aagaattgtt taaactac      38692


<210>  247
<211>  363
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  247

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


Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
            20                  25                  30


His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
        35                  40                  45
```

```
Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
    50                  55                  60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65                  70                  75                  80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
                85                  90                  95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
            100                 105                 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val
        115                 120                 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His
    130                 135                 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
145                 150                 155                 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
                165                 170                 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
            180                 185                 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
        195                 200                 205

Ala Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala
    210                 215                 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225                 230                 235                 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
                245                 250                 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
            260                 265                 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
        275                 280                 285

Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
    290                 295                 300

Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr
305                 310                 315                 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
```

325 330 335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
340 345 350

Val Gly Gly Pro Gly His Lys Ala Arg Val Leu
355 360

<210> 248
<211> 587
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 248

Met Gln Gln Gln Pro Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu
1 5 10 15

Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala
20 25 30

Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg
35 40 45

Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val
50 55 60

Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn
65 70 75 80

Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val
85 90 95

Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val
100 105 110

Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ser
115 120 125

Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala
130 135 140

Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln
145 150 155 160

Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Ala Glu
165 170 175

Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln
180 185 190

```
Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys
        195                 200                 205

Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala
    210                 215                 220

Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu
225                 230                 235                 240

Val Ala Pro Phe Thr Asp Ser Gly Ser Val Ser Arg Asp Ser Tyr Leu
                245                 250                 255

Gly Tyr Leu Leu Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val
            260                 265                 270

Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly
        275                 280                 285

Gln Glu Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr
    290                 295                 300

Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Ala Leu Ser Thr Glu Glu
305                 310                 315                 320

Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met
                325                 330                 335

Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn
            340                 345                 350

Met Glu Pro Ser Met Tyr Ala Arg Asn Arg Pro Phe Ile Asn Lys Leu
        355                 360                 365

Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr
    370                 375                 380

Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr
385                 390                 395                 400

Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp
                405                 410                 415

Val Asp Ser Ser Val Phe Ser Pro Arg Pro Thr Thr Thr Val Trp Lys
            420                 425                 430

Lys Glu Gly Gly Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly Arg Ala
        435                 440                 445

Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro Ser Leu
    450                 455                 460

Pro Phe Ser Leu Asn Ser Val Arg Ser Ser Glu Leu Gly Arg Leu Thr
```

```
465                 470                 475                 480

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

Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu Ser Leu
            500                 505                 510

Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala His Glu His Arg Asp
        515                 520                 525

Glu Pro Arg Ala Ser Ser Ser Ala Gly Ala Thr Arg Arg Arg Gln Arg
    530                 535                 540

His Asp Arg Gln Arg Gly Leu Val Trp Asp Asp Glu Asp Ser Ala Asp
545                 550                 555                 560

Asp Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe
                565                 570                 575

Ala His Leu Arg Pro Arg Ile Gly Arg Leu Met
            580                 585


<210>  249
<211>  542
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  249

Met Met Arg Arg Val Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1               5                   10                  15

Val Met Gln Gln Ala Val Ala Ala Ala Met Gln Pro Pro Leu Glu Ala
            20                  25                  30

Pro Tyr Val Pro Pro Arg Tyr Leu Ala Pro Thr Glu Gly Arg Asn Ser
        35                  40                  45

Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg Leu Tyr
    50                  55                  60

Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr Gln Asn
65                  70                  75                  80

Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp Phe Thr
                85                  90                  95

Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg Ser Arg
            100                 105                 110
```

```
Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro Asn Val
        115                 120                 125

Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met Val Ser
    130                 135                 140

Arg Lys Thr Pro Asn Gly Val Thr Val Asp Glu Asn Tyr Asp Gly Ser
145                 150                 155                 160

Gln Asp Glu Leu Thr Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly
                165                 170                 175

Asn Phe Ser Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile
            180                 185                 190

Asp Asn Tyr Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp
        195                 200                 205

Ile Gly Val Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro
    210                 215                 220

Val Thr Glu Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His
225                 230                 235                 240

Pro Asp Ile Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser
                245                 250                 255

Arg Leu Ser Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu
            260                 265                 270

Gly Phe Gln Ile Leu Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala
        275                 280                 285

Leu Leu Asp Val Glu Ala Tyr Glu Lys Ser Lys Glu Glu Ala Ala Ala
    290                 295                 300

Ala Ala Thr Ala Ala Val Ala Thr Ala Ala Thr Thr Asp Ala Asp Ala
305                 310                 315                 320

Ala Thr Thr Thr Arg Gly Asp Thr Phe Ala Thr Gln Ala Glu Glu Ala
                325                 330                 335

Ala Ala Leu Ala Ala Thr Asp Asp Ser Glu Ser Lys Ile Val Ile Lys
            340                 345                 350

Pro Val Glu Lys Asp Ser Lys Asp Arg Ser Tyr Asn Val Leu Ser Asp
        355                 360                 365

Gly Lys Asn Thr Ala Tyr Arg Ser Trp Tyr Leu Ala Tyr Asn Tyr Gly
    370                 375                 380

Asp Pro Glu Lys Gly Val Arg Ser Trp Thr Leu Leu Thr Thr Ser Asp
```

385 390 395 400

Val Thr Cys Gly Val Glu Gln Val Tyr Trp Ser Leu Pro Asp Met Met
405 410 415

Gln Asp Pro Val Thr Phe Arg Ser Thr Arg Gln Val Ser Asn Tyr Pro
420 425 430

Val Val Gly Ala Glu Leu Leu Pro Val Tyr Ser Lys Ser Phe Phe Asn
435 440 445

Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg Ala Phe Thr Ser Leu Thr
450 455 460

His Val Phe Asn Arg Phe Pro Glu Asn Gln Ile Leu Val Arg Pro Pro
465 470 475 480

Ala Pro Thr Ile Thr Thr Val Ser Glu Asn Val Pro Ala Leu Thr Asp
485 490 495

His Gly Thr Leu Pro Leu Arg Ser Ser Ile Arg Gly Val Gln Arg Val
500 505 510

Thr Val Thr Asp Ala Arg Arg Arg Thr Cys Pro Tyr Val Tyr Lys Ala
515 520 525

Leu Gly Val Val Ala Pro Arg Val Leu Ser Ser Arg Thr Phe
530 535 540

<210> 250
<211> 194
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 250

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1 5 10 15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
20 25 30

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
35 40 45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
50 55 60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Ala Ser Thr
65 70 75 80

```
Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
                85                  90                  95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
            100                 105                 110

Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
        115                 120                 125

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ser
    130                 135                 140

Ser Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala
145                 150                 155                 160

Ala Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val
                165                 170                 175

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

Arg Thr
```

<210> 251
<211> 348
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 251

```
Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1               5                   10                  15

Glu Ile Tyr Gly Pro Ala Ala Ala Val Lys Glu Glu Arg Lys Pro Arg
            20                  25                  30

Lys Leu Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Glu Asp Asp Gly
        35                  40                  45

Leu Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln Trp
    50                  55                  60

Arg Gly Arg Lys Val Lys Pro Val Leu Arg Pro Gly Thr Thr Val Val
65                  70                  75                  80

Phe Thr Pro Gly Glu Arg Ser Gly Ser Ala Ser Lys Arg Ser Tyr Asp
                85                  90                  95

Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu Gln Ala Ala Glu Arg Leu
            100                 105                 110
```

```
Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Pro Ala Pro Leu Lys Glu
        115                 120                 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
    130                 135                 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Ser Ala Ala Pro Arg Arg
145                 150                 155                 160

Gly Phe Lys Arg Glu Gly Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu
                165                 170                 175

Met Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu His Met Lys
            180                 185                 190

Val Asp Pro Glu Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln
        195                 200                 205

Val Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr
    210                 215                 220

Glu Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr
225                 230                 235                 240

Met Glu Val Gln Thr Asp Pro Trp Met Pro Ala Pro Ala Ser Thr Thr
                245                 250                 255

Thr Thr Thr Arg Arg Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met
            260                 265                 270

Pro Asn Tyr Ala Leu His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg
        275                 280                 285

Gly Thr Arg Phe Tyr Arg Gly Tyr Ser Ser Arg Arg Lys Thr Thr Thr
    290                 295                 300

Arg Arg Arg Arg Arg Arg Thr Arg Arg Ser Thr Thr Ala Thr Ser Ala
305                 310                 315                 320

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

Leu Pro Arg Ala Arg Tyr His Pro Ser Ile Ala Ile
            340                 345
```

<210> 252
<211> 77
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 252

Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1 5 10 15

Arg Lys Pro Arg Arg Arg Arg Leu Thr Gly Asn Gly Leu Arg Arg His
20 25 30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
35 40 45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
50 55 60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65 70 75

<210> 253
<211> 244
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 253

Met Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg
1 5 10 15

Pro Phe Met Gly Thr Trp Ser Asp Ile Gly Asn Ser Gln Leu Asn Gly
20 25 30

Gly Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly
35 40 45

Ser Thr Leu Lys Thr Tyr Gly Ser Lys Ala Trp Asn Ser Thr Thr Gly
50 55 60

Gln Ala Leu Arg Asp Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val
65 70 75 80

Val Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn
85 90 95

Gln Ala Val Gln Arg Gln Ile Asn Ser Arg Leu Asp Pro Val Pro Pro
100 105 110

Ala Gly Ser Val Glu Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu
115 120 125

Asp Lys Arg Gly Glu Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu
130 135 140

Leu Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu

```
145                 150                 155                 160

Gly Leu Pro Thr Thr Arg Pro Ile Ala Pro Leu Ala Thr Gly Val Leu
                165                 170                 175

Lys Pro Glu Ser Asn Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Gln
            180                 185                 190

Pro Ser Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val
        195                 200                 205

Ala Arg Ala Arg Pro Gly Gly Ser Ala Arg Pro His Ala Asn Trp Gln
    210                 215                 220

Ser Thr Leu Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg
225                 230                 235                 240

Arg Arg Cys Tyr
```

<210> 254
<211> 943
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 254

```
Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1               5                   10                  15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
            20                  25                  30

Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
        35                  40                  45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
    50                  55                  60

Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65                  70                  75                  80

Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
                85                  90                  95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ser Leu Ala Pro Lys Gly
        115                 120                 125
```

```
Ala Pro Asn Ser Ser Gln Trp Glu Arg Ala Lys Thr Asn Asn Asn Gly
    130                 135                 140

Ala Thr Glu Ser Val Thr Phe Gly Val Ala Ala Met Gly Gly Ile Asp
145                 150                 155                 160

Ile Thr Lys Glu Gly Leu Gln Ile Gly Thr Asp Glu Thr Lys Ala Asp
                165                 170                 175

Ser Lys Glu Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro Gln Ile
            180                 185                 190

Gly Glu Glu Asn Trp Gln Glu Thr Phe Ser Tyr Tyr Gly Gly Arg Ala
        195                 200                 205

Leu Lys Lys Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys
    210                 215                 220

Pro Thr Asn Val Lys Gly Gly Gln Ala Lys Phe Lys Val Gln Asp Gly
225                 230                 235                 240

Gln Gln Thr Thr Glu Tyr Asp Ile Asp Leu Ala Phe Phe Asp Ile Pro
                245                 250                 255

Asn Ser Gly Thr Gly Gly Asn Gly Thr Asn Val Asn Tyr Asp Pro Asp
            260                 265                 270

Met Val Met Tyr Thr Glu Asn Val Asp Leu Glu Thr Pro Asp Thr His
        275                 280                 285

Ile Val Tyr Lys Pro Gly Thr Ser Asp Asp Ser Ser Glu Ala Asn Leu
    290                 295                 300

Leu Gln Gln Ser Met Pro Asn Arg Pro Asn Tyr Ile Gly Phe Arg Asp
305                 310                 315                 320

Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val
                325                 330                 335

Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp
            340                 345                 350

Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Leu Gly Asp
        355                 360                 365

Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp
    370                 375                 380

Pro Asp Val Arg Ile Ile Glu Asn His Gly Val Glu Asp Glu Leu Pro
385                 390                 395                 400

Asn Tyr Cys Phe Pro Leu Asp Gly Ala Gly Thr Asn Ala Val Tyr Gln
```

405 410 415

Gly Val Lys Ala Lys Thr Asn Gly Gly Ala Ala Asn Gly Asp Trp Glu
420 425 430

Gln Asp Thr Asp Val Ser Asn Ile Asn Gln Ile Cys Lys Gly Asn Ile
435 440 445

Tyr Ala Met Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe Leu
450 455 460

Tyr Ser Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Pro
465 470 475 480

Ala Asn Ile Thr Leu Pro Thr Asn Thr Asn Thr Tyr Asp Tyr Met Asn
485 490 495

Gly Arg Val Ala Pro Pro Ser Leu Val Asp Ala Tyr Ile Asn Ile Gly
500 505 510

Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn Pro Phe Asn His
515 520 525

His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly
530 535 540

Arg Phe Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile
545 550 555 560

Lys Ser Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe
565 570 575

Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu
580 585 590

Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala
595 600 605

Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met
610 615 620

Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala
625 630 635 640

Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile
645 650 655

Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr
660 665 670

Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro
675 680 685

```
Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr
    690                 695                 700

Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser Val
705                 710                 715                 720

Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile
                725                 730                 735

Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met
            740                 745                 750

Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly
        755                 760                 765

Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser
    770                 775                 780

Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val
785                 790                 795                 800

Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn
                805                 810                 815

Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln Pro
            820                 825                 830

Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr
        835                 840                 845

Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile
    850                 855                 860

Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly
865                 870                 875                 880

Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe
                885                 890                 895

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

Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu
        915                 920                 925

Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
    930                 935                 940
```

<210> 255
<211> 208
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 255

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

Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys Arg
20 25 30

Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val Asn
35 40 45

Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala Trp
50 55 60

Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe Ser
65 70 75 80

Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu Leu
85 90 95

Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu Lys
100 105 110

Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu Phe
115 120 125

Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro Met
130 135 140

Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly Met
145 150 155 160

Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu Ala
165 170 175

Leu Tyr Arg Phe Leu Asn Ala His Ser Ala Tyr Phe Arg Ser His Arg
180 185 190

Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Gln Asp Met
195 200 205

<210> 256
<211> 503
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 256

```
Glu Ile Glu Gly Val Leu Pro Ala Leu Gly Val Pro Arg Gly Gln Gly
1               5                  10                  15

Tyr Val Ala Glu Leu Val Leu Gly Gln Pro Leu Glu Leu Gly Asp Gln
            20                  25                  30

Gln Leu Arg His Gly Glu Val Gly Glu Arg Val Ala Pro Gln Leu Ala
        35                  40                  45

Arg Glu Leu Gln Gly Ala Gln Gln Val Gly Arg Gly Asp Leu Glu Ile
    50                  55                  60

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

Ala Ala Leu Glu His His Gln Gly Arg Val Leu His Ala Arg Gln His
                85                  90                  95

Arg Arg Val Gly Asp Ala Leu His Val Gln Ile Leu Gly Val Gly His
            100                 105                 110

Pro Glu Gly Gly His Leu Ala Gly Leu Pro Pro His Ala Gly His Ala
        115                 120                 125

Ala Gly Leu Val Val Ala Ile Ala Val Gln Gly Asp Gln His His Leu
    130                 135                 140

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

Gln Leu Ala Glu Gly Leu Leu Arg Leu Ala Ala Leu Gly Glu Glu Asp
                165                 170                 175

Pro Ala Gly Leu Ala Arg Glu Leu Val Gly Ser Ala Ala Arg Val Val
            180                 185                 190

His Ala Ala Ala Arg Val Val Val Gly Gln Leu His His Ala Ala Pro
        195                 200                 205

Pro Ala Val Leu Gly Asp Leu Gly Pro Val Gly Val Leu Leu Gln Arg
    210                 215                 220

Ala Leu Pro Val Leu Ala Arg His Ile His Leu Asp Arg Val Leu Leu
225                 230                 235                 240

Leu Asp His His Gly Pro Val Gln Ala Pro Gln Leu Ala Leu Gly Leu
                245                 250                 255

Gly Ala Ala Val Gln Pro Gln Arg Ala Ala Gly Ala Leu Pro Val Leu
            260                 265                 270

Val Gly Asp Leu Gly Val Arg Val His Glu Ala Leu Gln Glu Ala Ala
```

275 280 285

His His Arg Gly Gln Gly Leu Val Ala Gly Glu Gly Gln Arg Asp Ala
290 295 300

Ala Val Leu Leu Val His Ile Gln Val Ala Asp Ala Ala Val His Leu
305 310 315 320

Ala Leu Leu Gly His Gln Leu Glu Gly Gly Leu Gln Val Ala Leu His
325 330 335

Ala Val Pro Val His Gln Gln Arg His His Phe His Ala Leu Leu Pro
340 345 350

Gly Arg Asn Asp Arg Gln Ala Gln Gly Val Leu His Arg His Leu Ser
355 360 365

Arg Arg Arg Arg Ser Gln Gly Val Val Leu Val Gln Gly Leu Lys His
370 375 380

Ser Leu Ala Val Leu Leu Gly Asp Ala His Gly Gly Glu Gly Glu Ala
385 390 395 400

His Gly Arg Gln Leu Leu Leu Gly Leu Pro Phe Val Leu Ala Val Leu
405 410 415

Ala Asp Val Leu Gln Arg His Met Leu Gly Leu Ala Gly Phe Leu Phe
420 425 430

Gly Arg Gln Arg Arg Arg Arg Arg Arg Arg Ala Gly Arg Ala Arg Val
435 440 445

Leu Ala His His Asp Tyr Phe Phe Phe Leu Ala Val Val Arg Asp His
450 455 460

Ala Ala Val Gly Met Pro Leu Leu Gly Gln Arg Arg Arg Arg Arg Ala
465 470 475 480

Leu Ala Val Arg Arg Ala Ala Gly Arg Ala Pro Ser Ala Phe Gly Gly
485 490 495

Ala Leu Leu Ala Ala Leu Leu
500

<210> 257
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 257

Leu Thr Ser Ser Ala Ala Gly His
1   5

<210> 258
<211> 185
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 258

Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Leu Pro
1   5   10   15

Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu
            20   25   30

Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
        35   40   45

Asp Ser Leu Glu Asp Glu Val Glu Glu Ala Glu Glu Glu Ala Ala Ala
    50   55   60

Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr Asp Thr Ile
65   70   75   80

Ser Ala Pro Gly Arg Gly Leu Gly Gly Arg Ala His Ser Arg Trp Asp
                85   90   95

Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys Lys Glu
            100   105   110

Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser
        115   120   125

Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu
    130   135   140

Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr
145   150   155   160

Arg His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala Glu Thr
                165   170   175

Gln Gln Gln Gln Lys Thr Ser Ser Ser
            180   185

<210> 259
<211> 227
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 259

Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1 5 10 15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
20 25 30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala His Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Ile Thr Ala Thr
50 55 60

Pro Arg His His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
100 105 110

Ala Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
115 120 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
130 135 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Leu Ala Gly Ser Gly Arg Ser
145 150 155 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
165 170 175

Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
180 185 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
195 200 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
210 215 220

Gly Tyr Asp
225

<210> 260
<211> 106
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 260

Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1 5 10 15

His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Ala
20 25 30

Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
35 40 45

Arg Ile Ile Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
50 55 60

Ser Gln Arg Pro Ile Leu Val Glu Arg Glu Gln Gly Gln Thr Arg Leu
65 70 75 80

Thr Leu Tyr Cys Ile Cys Asn His Pro Gly Leu His Glu Ser Leu Cys
85 90 95

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
100 105

<210> 261
<211> 176
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 261

Met Gly Gln Ile Thr Leu Val Ser Cys Gly Val Leu Val Ala Val Val
1 5 10 15

Leu Ser Ile Val Gly Leu Gly Gly Ala Ala Val Val Lys Glu Lys Ala
20 25 30

Asp Pro Cys Leu His Phe Asn Pro Asp Lys Cys Gln Leu Ser Phe Gln
35 40 45

Pro Asp Gly Asn Arg Cys Ala Val Leu Ile Lys Cys Gly Trp Glu Cys
50 55 60

Glu Asn Val Arg Ile Glu Tyr Asn Asn Lys Thr Arg Asn Asn Thr Leu
65 70 75 80

Ala Ser Thr Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
85 90 95

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

```
Ala His Met Cys Asp Thr Val Met Trp Met Ser Lys Gln Tyr Asp Met
        115                 120                 125

Trp Pro Pro Thr Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
    130                 135                 140

Leu Cys Thr Val Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145                 150                 155                 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
                165                 170                 175
```

<210> 262
<211> 200
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 262

```
Met Ala Ser Val Lys Phe Leu Leu Leu Phe Ala Ser Leu Ile Thr Val
1               5                   10                  15

Ile Ser Asn Glu Lys Leu Thr Ile Tyr Ile Gly Thr Asn His Thr Leu
            20                  25                  30

Glu Gly Ile Pro Lys Ser Ser Trp Tyr Cys Tyr Phe Asp Gln Asp Pro
        35                  40                  45

Asp Leu Thr Ile Glu Leu Cys Gly Asn Lys Gly Gln Asn Thr Ser Ile
    50                  55                  60

His Leu Ile Asn Phe Lys Cys Gly Asp Asp Leu Lys Leu Ile Asn Ile
65                  70                  75                  80

Thr Lys Glu Tyr Gly Gly Met Tyr Tyr Tyr Val Thr Glu Asn Asn Asn
                85                  90                  95

Met Gln Phe Tyr Glu Val Thr Val Thr Asn Pro Thr Thr Pro Arg Thr
            100                 105                 110

Thr Thr Thr Thr Thr Lys Thr Thr Pro Val Thr Thr Met Gln Leu Thr
        115                 120                 125

Thr Asn Asn Ile Phe Ala Met Arg Gln Lys Ala Asn Asn Ser Thr Ser
    130                 135                 140

Ile Gln Pro Pro Pro Pro Ser Glu Glu Ile Pro Lys Ser Met Ile Gly
145                 150                 155                 160

Ile Ile Val Ala Val Val Val Cys Met Leu Ile Ile Ala Leu Cys Met
                165                 170                 175
```

```
Val Tyr Tyr Ala Phe Cys Tyr Arg Lys His Arg Leu Asn Asp Lys Leu
            180                 185                 190

Glu His Leu Leu Ser Val Glu Phe
        195                 200
```

<210> 263
<211> 292
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 263

```
Met Lys Ala Val Ser Ala Leu Val Phe Cys Ser Leu Ile Gly Thr Val
1               5                   10                  15

Phe Ser Val Ser Phe Leu Lys Gln Ile Asn Val Thr Glu Gly Glu Asn
            20                  25                  30

Val Thr Leu Val Gly Val Glu Gly Ala Gln Asn Thr Thr Trp Thr Lys
        35                  40                  45

Tyr His Leu Asp Gly Trp Lys Asp Ile Cys Asn Trp Ser Val Ile Thr
    50                  55                  60

Tyr Thr Cys Glu Gly Val Asn Leu Thr Ile Val Asn Ala Ser Gln Asn
65                  70                  75                  80

Gln Lys Gly Trp Ile Lys Gly Gln Ser Val Ser Val Thr Ser Glu Gly
                85                  90                  95

Tyr Tyr Thr Gln His Thr Leu Ile Tyr Asp Ile Ile Val Ile Pro Leu
            100                 105                 110

Pro Thr Pro Ser Pro Pro Ser Thr Thr Thr Gln Thr Thr His Thr Thr
        115                 120                 125

Gln Thr Thr Thr Tyr Ser Thr Ser Asn Gln Pro Thr Thr Thr Thr Thr
    130                 135                 140

Ala Glu Val Ala Ser Ser Ser Gly Val Arg Ala Ala Phe Leu Met Leu
145                 150                 155                 160

Ala Pro Ser Ser Ser Pro Thr Ala Ser Thr Asn Glu Gln Thr Thr Glu
                165                 170                 175

Phe Leu Ser Thr Val Glu Ser His Thr Thr Ala Thr Ser Ser Ala Phe
            180                 185                 190

Ser Ser Thr Ala Asn Leu Ser Ser Leu Ser Ser Thr Pro Ile Ser Pro
```

195 200 205

Ala Thr Thr Thr Thr Pro Ala Ile Leu Pro Thr Pro Leu Lys Gln Thr
210 215 220

Glu Asp Ser Gly Met Gln Trp Gln Ile Thr Leu Leu Ile Val Ile Gly
225 230 235 240

Leu Val Ile Leu Ala Val Leu Leu Tyr Tyr Ile Phe Arg Arg Arg Ile
245 250 255

Pro Asn Ala His Arg Lys Pro Val Tyr Lys Pro Ile Ile Val Gly Gln
260 265 270

Pro Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser
275 280 285

Phe Thr Val Trp
290

<210> 264
<211> 135
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 264

Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp Leu Leu Leu Asp
1 5 10 15

Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg
20 25 30

Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Gly Ile Ala Ile
35 40 45

His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile
50 55 60

Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser Tyr Glu Leu Leu
65 70 75 80

Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val
85 90 95

Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys
100 105 110

Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu
115 120 125

```
Arg Asp Leu Leu Pro Met Asn
    130                 135


<210>  265
<211>  445
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  265

Met Ser Lys Lys Arg Val Arg Val Asp Asp Asp Phe Asp Pro Val Tyr
1               5                   10                  15


Pro Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro
            20                  25                  30


Phe Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser
        35                  40                  45


Leu Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Glu Ile Thr Leu
    50                  55                  60


Lys Leu Gly Asp Gly Val Asp Leu Asp Ser Ser Gly Lys Leu Ile Ser
65                  70                  75                  80


Asn Thr Ala Thr Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
                85                  90                  95


Ile Ser Leu Asn Met Asp Thr Pro Phe Tyr Asn Asn Asn Gly Lys Leu
            100                 105                 110


Gly Met Lys Val Thr Ala Pro Leu Lys Ile Leu Asp Thr Asp Leu Leu
        115                 120                 125


Lys Thr Leu Val Val Ala Tyr Gly Gln Gly Leu Gly Thr Asn Thr Thr
    130                 135                 140


Gly Ala Leu Val Ala Gln Leu Ala Ser Pro Leu Ala Phe Asp Ser Asn
145                 150                 155                 160


Ser Lys Ile Ala Leu Asn Leu Gly Asn Gly Pro Leu Lys Val Asp Ala
                165                 170                 175


Asn Arg Leu Asn Ile Asn Cys Asn Arg Gly Leu Tyr Val Thr Thr Thr
            180                 185                 190


Lys Asp Ala Leu Glu Ala Asn Ile Ser Trp Ala Asn Ala Met Thr Phe
        195                 200                 205


Ile Gly Asn Ala Met Gly Val Asn Ile Asp Thr Gln Lys Gly Leu Gln
    210                 215                 220
```

```
Phe Gly Thr Thr Ser Thr Val Ala Asp Val Lys Asn Ala Tyr Pro Ile
225                 230                 235                 240

Gln Ile Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly Ala Ile
                245                 250                 255

Val Ala Trp Asn Lys Asp Asp Asp Lys Leu Thr Leu Trp Thr Thr Ala
            260                 265                 270

Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Glu Lys Asp Ala Lys Leu
        275                 280                 285

Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser
    290                 295                 300

Leu Ile Ala Val Asp Thr Gly Ser Leu Asn Pro Ile Thr Gly Thr Val
305                 310                 315                 320

Thr Thr Ala Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Val Leu Gln
                325                 330                 335

Ser Ser Ser Thr Leu Asp Ser Asp Tyr Trp Asn Phe Arg Gln Gly Asp
            340                 345                 350

Val Thr Pro Ala Glu Ala Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn
        355                 360                 365

Leu Lys Ala Tyr Pro Lys Asn Thr Ser Gly Ala Ala Lys Ser His Ile
    370                 375                 380

Val Gly Lys Val Tyr Leu His Gly Asp Thr Asp Lys Pro Leu Asp Leu
385                 390                 395                 400

Ile Ile Thr Phe Asn Glu Thr Ser Asp Glu Ser Cys Thr Tyr Cys Ile
                405                 410                 415

Asn Phe Gln Trp Gln Trp Gly Ala Asp Gln Tyr Lys Asn Glu Thr Leu
            420                 425                 430

Ala Val Ser Ser Phe Thr Phe Ser Tyr Ile Ala Lys Glu
        435                 440                 445


<210>  266
<211>  273
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  266

Ser Gly Arg Ser Arg Arg Ala Ala Val Gly Ile Ile Val Arg Glu Arg
1               5                   10                  15
```

```
Asp Arg Pro Val Val Ser His Gln Ala Pro Gln Gln Ser Leu Ser Pro
            20                  25                  30

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

Gln His Asp Ala His Gly Pro Gln His Gln Ser Ser Gly Ala Ala Gly
    50                  55                  60

Ala Ala Ala His Ala Asp Leu Ala Gln Val Ala Ala Val Arg Ala Thr
65                  70                  75                  80

Gln Asp His Gln Val Val Gln Gln Ser Ile Val Gln His Ala Pro Ala
                85                  90                  95

Glu Thr His Arg Gly Lys Asp Ala Thr His Val Ala Val Val Pro Asp
            100                 105                 110

Pro Gln Val Asn Gln Val Ala Pro Pro Pro Glu His Ala Ala His Val
        115                 120                 125

His Asp Leu Leu Gly His Val Ala Val His His Leu Pro Val Pro His
    130                 135                 140

His Pro Leu Val Glu His Ala Ala Pro Asp Asp Pro Ala Glu Pro Gln
145                 150                 155                 160

Gly Gln His Arg Pro Ala Arg His Ala Ala Lys Arg Pro Arg Val Pro
                165                 170                 175

Thr Met Ala Met Glu Asp Pro Pro Leu Val Pro Val Asp His Leu Gly
            180                 185                 190

Ala Glu Gln Val Tyr Val Gly Thr Ala Gln Ala Tyr Ala His Ala Ser
        195                 200                 205

Leu Gln His Ser Gln Leu Leu Gly Gly Gln Asn His Ile Pro Gly His
    210                 215                 220

Gly Glu Leu Leu Gln Asp Ser Glu Pro Arg Arg Thr Gly Gln Ser Ser
225                 230                 235                 240

His Ile Thr Tyr Ile Val His Gly Gln Gly Ile Ala Ile Arg Gln His
                245                 250                 255

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

Trp
```

<210> 267
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 267

Gly Gly Arg Pro Ile Arg Val Met Ala Gly Arg Gly
1 5 10

<210> 268
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 268

Ser Cys Ser Arg Pro Cys His Asp Ala Val Ala Phe Gly His
1 5 10

<210> 269
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 269

Leu Pro Met Leu Asn Gln
1 5

<210> 270
<211> 75
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 270

Gly Thr Tyr Leu Ser Asp Leu Ser Ile Ser Phe Ile His Ser Cys Leu
1 5 10 15

Thr Pro Arg Arg Val Asp Asn Tyr Asp Thr Gly Gly Leu Thr Ile Trp
20 25 30

Pro Gln Cys Cys Asn Asp Thr Ala Arg Pro Thr Leu Thr Gly Ser Arg
35 40 45

Phe Ile Ser Asn Lys Pro Ala Ser Arg Lys Gly Arg Ala Gln Lys Trp
50 55 60

Ser Cys Asn Phe Ile Arg Leu His Pro Val Tyr
65 70 75

<210> 271
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 271

Leu Leu Pro Gly Ser
1 5

<210> 272
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 272

Phe Ala Gln Arg Cys Cys His Cys Cys Arg His Arg Gly Val Thr Leu
1 5 10 15

Val Val Trp Tyr Gly Phe Ile Gln Leu Arg Phe Pro Thr Ile Lys Ala
20 25 30

Ser Tyr Met Ile Pro His Val Val Gln Lys Ser Gly
35 40

<210> 273
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 273

Leu Leu Arg Ser Ser Asp Arg Cys Gln Lys
1 5 10

<210> 274
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 274

Val Gly Arg Ser Val Ile Thr His Gly Tyr Gly Ser Thr Ala
1 5 10

<210> 275

<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 275

Phe Ser Tyr Cys His Ala Ile Arg Lys Met Leu Phe Cys Asp Trp
1 5 10 15

<210> 276
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 276

Val Leu Asn Gln Val Ile Leu Arg Ile Val Tyr Ala Ala Thr Glu Leu
1 5 10 15

Leu Leu Pro Gly Val Asn Thr Gly
20

<210> 277
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 277

Tyr Arg Ala Thr
1

<210> 278
<211> 74
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 278

Gln Asn Phe Lys Ser Ala His His Trp Lys Thr Phe Phe Gly Ala Lys
1 5 10 15

Thr Leu Lys Asp Leu Thr Ala Val Glu Ile Gln Phe Asp Val Thr His
20 25 30

Ser Cys Thr Gln Leu Ile Phe Ser Ile Phe Tyr Phe His Gln Arg Phe
35 40 45

Trp Val Ser Lys Asn Arg Lys Ala Lys Cys Arg Lys Lys Gly Asn Lys
50 55 60

Gly Asp Thr Glu Met Leu Asn Thr His Thr
65 70

<210> 279
<211> 38692
<212> DNA
<213> Artificial Sequence

<220>
<223> p2876 - E1 deleted molecular clone with HIVgagshort insertion, based on Simian Adenovirus A1320

<220>
<221> CDS
<222> (23499)..(25892)
<223> 100K

<220>
<221> CDS
<222> (27476)..(28096)
<223> E3 CR1-alpha

<220>
<221> CDS
<222> (29257)..(29868)
<223> E3 CR1-gamma

<220>
<221> CDS
<222> (31053)..(31481)
<223> E3 RID-beta

<220>
<221> CDS
<222> (34667)..(35029)
<223> E4\orf4

<400> 279
catcatcaat aatatacctc aaacttttg tgcgcgttaa tatgcaaatg aggcgtttga 60

atttggggat gcggggcggt gattggctgt gggaaaggcg accgttaggg gcggggcggg 120

tgacgttttg atgacgtgtt tgtgaggcgg agccggtttg caagttctcg tgggaaaagt 180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca 240

ggaaatgagg tgtttctggg cggatgcaag tgaaaacggg ccattttcgc gcgaaaactg 300

aatgaggaag tgaaaatctg agtaatttcg cgtttatggc agggaggagt atttgccgag 360

ggccgagtag actttgaccg attacgtggg ggtttcgatt accgtgtttt tcacctaaat 420

ttccgcgtac ggtgtcaaag tccggtgttt ttacatcatt tccccgaaaa gtgccacctg 480

acgtaactat aacggtccta aggtagcgaa agctcagatc tcccgatccc ctatggtgca 540

ctctcagtac aatctgctct gatgccgcat agttaagcca gtatctgctc cctgcttgtg 600

tgttggaggt cgctgagtag tgcgcgagca aaatttaagc tacaacaagg caaggcttga 660

ccgacaattg catgaagaat ctgcttaggg ttaggcgttt tgcgctgctt cgcgatgtac 720

gggccagata tacgcgttga cattgattat tgactagtta ttaatagtaa tcaattacgg 780

ggtcattagt tcatagccca tatatggagt tccgcgttac ataacttacg gtaaatggcc 840

cgcctggctg accgcccaac gacccccgcc cattgacgtc aataatgacg tatgttccca 900
tagtaacgcc aatagggact ttccattgac gtcaatgggt ggagtattta cggtaaactg 960
cccacttggc agtacatcaa gtgtatcata tgccaagtac gccccctatt gacgtcaatg 1020
acggtaaatg gcccgcctgg cattatgccc agtacatgac cttatgggac tttcctactt 1080
ggcagtacat ctacgtatta gtcatcgcta ttaccatggt gatgcggttt tggcagtaca 1140
tcaatgggcg tggatagcgg tttgactcac ggggatttcc aagtctccac cccattgacg 1200
tcaatgggag tttgttttgg caccaaaatc aacgggactt tccaaaatgt cgtaacaact 1260
ccgccccatt gacgcaaatg ggcggtaggc gtgtacggtg ggaggtctat ataagcagag 1320
ctcgtttagt gaaccgtcag atcgcctgga gacgccatcc acgctgtttt gacctccata 1380
gaagacaccg ggaccgatcc agcctccgcg ggcgcgcgtc gacagagaga tgggtgcgag 1440
agcgtcagta ttaagcgggg gagaattaga tcgatgggaa aaaattcggt taaggccagg 1500
gggaaagaag aagtacaagc taaagcacat cgtatgggca agcagggagc tagaacgatt 1560
cgcagttaat cctggcctgt tagaaacatc agaaggctgt agacaaatac tgggacagct 1620
acaaccatcc cttcagacag gatcagagga gcttcgatca ctatacaaca cagtagcaac 1680
cctctattgt gtgcaccagc ggatcgagat caaggacacc aaggaagctt tagacaagat 1740
agaggaagag caaaacaagt ccaagaagaa ggcccagcag gcagcagctg acacaggaca 1800
cagcaatcag gtcagccaaa attaccctat agtgcagaac atccaggggc aaatggtaca 1860
tcaggccata tcacctagaa ctttaaatgc atgggtaaaa gtagtagaag agaaggcttt 1920
cagcccagaa gtgataccca tgttttcagc attatcagaa ggagccaccc cacaggacct 1980
gaacacgatg ttgaacaccg tgggggggaca tcaagcagcc atgcaaatgt taaaagagac 2040
catcaatgag gaagctgcag aatgggatag agtgcatcca gtgcatgcag ggcctattgc 2100
accaggccag atgagagaac caaggggaag tgacatagca ggaactacta gtacccttca 2160
ggaacaaata ggatggatga caaataatcc acctatccca gtaggagaga tctacaagag 2220
gtggataatc ctgggattga acaagatcgt gaggatgtat agccctacca gcattctgga 2280
cataagacaa ggaccaaaag aacccttttag agactatgta gaccggttct ataaaactct 2340
aagagctgag caagcttcac aggaggtaaa aaattggatg acagaaacct tgttggtcca 2400
aaatgcgaac ccagattgta agaccatcct gaaggctctc ggcccagcgg ctacactaga 2460
agaaatgatg acagcatgtc agggagtagg aggacccggc cataaggcaa gagttttgta 2520
gggatccact agttctagac tcgaggggggg gcccggtacc tttaagacca atgacttaca 2580
aggcagctgt agatcttagc cacttttaa aagaaaaggg gggactggaa gggctaattc 2640
actcccaaag aagacaagat aaaccgctga tcagcctcga ctgtgccttc tagttgccag 2700
ccatctgttg tttgcccctc ccccgtgcct tccttgaccc tggaaggtgc cactcccact 2760
gtcctttcct aataaaatga ggaaattgca tcgcattgtc tgagtaggtg tcattctatt 2820
ctgggggggtg gggtggggca ggacagcaag ggggaggatt gggaagacaa tagcaggcat 2880

gctggggatg cggtgggctc tatggcttct gaggcggaaa gaaccagcag atctgcagat 2940

ctgaattcat ctatgtcggg tgcggagaaa gaggtaatga aatggcatta tgggtattat 3000

gggtctgcat taatgaatcg gccagattat gctggccacc gtgcatgtgg cctcgcaccc 3060

ccgcaagaca tggcccgagt tcgagcacaa cgtcatgacc cgctgcaatg tgcacctggg 3120

ctcccgccga ggcatgttca tgccatacca gtgcaacatg caatttgtga aggtgctgct 3180

ggagcccgat gccatgtcca gagtgagcct gacgggggtg tttgacatga atgtggagct 3240

gtggaaaatt ctgagatatg atgaatccaa gaccaggtgc cgggcctgcg aatgcggagg 3300

caagcacgcc aggcttcagc ccgtgtgtgt ggaggtgacg gaggacctgc gacccgatca 3360

tttggtgttg tcctgcaacg ggacggagtt cggctccagc ggggaagaat ctgactagag 3420

tgagtagtgt ttgggggtgg gtgggagcct gcatgatggg cagaatgact aaaatctgtg 3480

tttttctgcg cagcagcatg agcggaagcg cctcctttga gggaggggta ttcagccctt 3540

atctgacggg gcgtctcccc tcctgggctg gagtgcgtca gaatgtgatg ggatccacgg 3600

tggacggccg gcccgtgcag cccgcgaact cttcaaccct gacctacgcg accctgagct 3660

cctcgtccgt ggacgcagct gccgccgcag ctgctgcttc cgccgccagc gccgtgcgcg 3720

gaatggccct gggtgccggc tactacagct ctctggtggc caactcgagt tccgccaata 3780

atcccgccag cctgaacgag gagaagctgc tgctgctgat ggcccagctc gaggccctga 3840

cccagcgcct gggcgagctg acccagcagg tggctcagct gcaggcggag acgcgggccg 3900

cggttgccac ggtgaaaacc aaataaaaaa tgaatcaata aataaacgga aacggttgtt 3960

gattttaaca cagagtcttg aatctttatt tgatttttcg cgcgcggtag gccctggacc 4020

accggtctcg atcattgagc acccggtgga tcttttccag gacccggtag aggtgggctt 4080

ggatgttgag gtacatgggc atgagcccgt cccgggggtg gaggtagctc cactgcaggg 4140

cctcgtgctc gggggtggtg ttgtaaatca cccagtcata gcaggggcgc agggcgtggt 4200

gctgcacgat gtccttgagg aggagactga tggccacggg cagtcccttg gtgtaggtgt 4260

tgacgaacct gttgagctgg gagggatgca tgcgggggga gatgagatgc atcttggcct 4320

ggatcttgag attggcgatg ttcccaccca gatcccgccg ggggttcatg ttgtgcagga 4380

ccaccagcac ggtgtatccg gtgcacttgg ggaatttgtc atgcaacttg gaagggaagg 4440

cgtgaaagaa tttggagacg cccttgtgac cgcccaggtt ttccatgcac tcatccatga 4500

tgatggcgat gggcccgtgg gcggcggcct gggcaaagac gtttcggggg tcggacacat 4560

cgtagttgtg gtcctgggtg agctcgtcat aggccatttt aatgaatttg gggcggaggg 4620

tgcccgactg ggggacaaag gtgccctcga tcccgggggc gtagttgccc tcgcagatct 4680

gcatctccca ggccttgagc tcggaggggg ggatcatgtc cacctgcggg gcgatgaaaa 4740

aaacggtttc cggggcgggg gagatgagct gggccgaaag caggttccgg agcagctggg 4800

acttgccgca gccggtgggg ccgtagatga ccccgatgac cggctgcagg tggtagttga 4860

gggagagaca gctgccgtcc tcgcggagga ggggggccac ctcgttcatc atctcgcgca 4920

catgcatgtt ctcgcgcacg agttccgcca ggaggcgctc gccccccagc gagaggagct 4980

cttgcagcga ggcgaagttt ttcagcggct tgagtccgtc ggccatgggc attttggaga 5040

gggtctgttg caagagttcc agacggtccc agagctcggt gatgtgctct agggcatctc 5100

gatccagcag acctcctcgt ttcgcgggtt ggggcggctg cgggagtagg gcaccaggcg 5160

atgggcgtcc agcgaggcca gggtccggtc cttccagggt cgcagggtcc gcgtcagcgt 5220

ggtctccgtc acggtgaagg ggtgcgcgcc gggctgggcg cttgcgaggg tgcgcttcag 5280

gctcatccgg ctggtcgaga accgctcccg gtcggtgccc tgcgcgtcgg ccaggtagca 5340

attgagcatg agttcgtagt tgagcgcctc ggccgcgtgg cccttggcgc ggagcttacc 5400

tttggaagtg tgtccgcaga cgggacagag gagggacttg agggcgtaga gcttgggggc 5460

gaggaagacg gactcggggg cgtaggcgtc cgcgccgcag ctggcgcaga cggtctcgca 5520

ctccacgagc caggtgaggt cggggcggtc ggggtcaaaa acgaggtttc ctccgtgctt 5580

tttgatgcgt ttcttacctc tggtctccat gagctcgtgt ccccgctggg tgacaaagag 5640

gctgtccgtg tccccgtaga ccgactttat gggccggtcc tcgagcgggg tgccgcggtc 5700

ctcgtcgtag aggaaccccg cccactccga gacgaaggcc cgggtccagg ccagcacgaa 5760

ggaggccacg tgggaggggt agcggtcgtt gtccaccagc gggtccacct tctccagggt 5820

atgcaagcac atgtcccccc cgtccacatc caggaaggtg attggcttgt aagtgtaggc 5880

cacgtgaccg ggggtcccgg ccgggggggt ataaaagggg gcgggcccct gctcgtcctc 5940

actgtcttcc ggatcgctgt ccaggagcgc cagctgttgg ggtaggtatt ccctctcgaa 6000

ggcgggcatg acctcggcac tcaggttgtc agtttctaga aacgaggagg atttgatatt 6060

gacggtgccg ttggagacgc ctttcatgag cccctcgtcc atctggtcag aaaagacgat 6120

ctttttgttg tcgagcttgg tggcgaagga gccgtagagg gcattggaga ggagcttggc 6180

gatggagcgc atggtctggt tcttttcctt gtcggcgcgc tccttggcgg cgatgttgag 6240

ctgcacgtac tcgcgcgcca cgcacttcca ttcggggaag acggtggtga gctcgtcggg 6300

cacgattctg acccgccagc cgcggttgtg cagggtgatg aggtccacgc tggtggccac 6360

ctcgccgcgc aggggctcgt tggtccagca gaggcgcccg cccttgcgcg agcagaaggg 6420

gggcagcggg tccagcatga gctcgtcggg ggggtcggcg tccacggtga agatgccggg 6480

caggagctcg gggtcgaagt agctgatgca ggtgcccaga tcgtccagcg ccgcttgcca 6540

gtcgcgcacg gccagcgcgc gctcgtaggg gctgaggggc gtgccccagg gcatggggtg 6600

cgtgagcgcg gaggcgtaca tgccgcagat gtcgtagacg tagaggggct cctcgaggac 6660

gccgatgtag gtggggtagc agcgcccccc gcggatgctg gcgcgcacgt agtcgtacag 6720

ctcgtgcgag ggcgcgagga gccccgcgcc gaggttggag cgctgcggct tttcggcgcg 6780

gtagacgatc tggcggaaga tggcgtggga gttggaggag atggtgggcc tctggaagat 6840

gttgaagtgg gcgtggggca ggccgaccga gtccctgatg aagtgggcgt aggagtcctg 6900

cagcttggcg acgagctcgg cggtgacgag gacgtccagg gcgcagtagt cgagggtctc 6960

ttggatgatg tcgtacttga gctggccctt ctgcttccac agctcgcggt tgagaaggaa 7020

ctcttcgcgg tccttccagt actcttcgag ggggaacccg tcctgatcgg cacggtaaga 7080
gcccaccatg tagaactggt tgacggcctt gtaggcgcag cagcccttct ccacggggag 7140
ggcataagct tgcgcggcct tgcgcaggga ggtgtgggtg agggcgaagg tgtcgcgcac 7200
catgaccttg aggaactggt gcttgaagtc gaggtcgtcg cagccgccct gctcccagag 7260
ttggaagtcc gtgcgcttct tgtaggcggg gttgggcaaa gcgaaagtaa catcgttgaa 7320
gaggatcttg cccgcgcggg gcatgaagtt gcgagtgatg cggaaaggct ggggcacctc 7380
ggcccggttg ttgatgacct gggcggcgag gacgatctcg tcgaagccgt tgatgttgtg 7440
cccgacgatg tagagttcca cgaatcgcgg gcggcccttg acgtggggca gcttcttgag 7500
ctcgtcgtag gtgagctcgg cggggtcgct gagtccgtgc tgctcaaggg cccagtcggc 7560
gacgtggggg ttggcgctga ggaaggaagt ccagagatcc acggccaggg cggtttgcaa 7620
gcggtcccgg tactgacgga actgctggcc cacggccatt ttttcggggg tgatgcagta 7680
gaaggtgcgg gggtcgccgt gccagcggtc ccacttgagc tggagggcga ggtcgtgggc 7740
gagctcgaca agcggcgggt ccccggagag tttcatgacc agcatgaagg ggacgagctg 7800
cttgccgaag gaccccatcc aggtgtaggt ttccacatcg taggtgagga agagcctttc 7860
ggtgcgagga tgcgagccga tggggaagaa ctggatctcc tgccaccagt tggaggaatg 7920
gctgttgatg tgatggaagt agaaatgccg acggcgcgcc gagcactcgt gcttgtgttt 7980
atacaagcgt ccgcagtgct cgcaacgctg cacgggatgc acgtgctgca cgagctgtac 8040
ctgagttcct ttgacgagga atttcagtgg gcagtggagc gctggcggct gcatctggtg 8100
ctgtactacg tcctggccat cggcgtggcc atcgtctgcc tcgatggtgg tcatgctgac 8160
gagcccgcgc gggaggcagg tccagacctc ggctcggacg ggtcggagag cgaggacgag 8220
ggcgcgcagg ccggagctgt ccagggtcct gagacgctgc ggagtcaggt cagtgggcag 8280
cggcggcgcg cggttgactt gcaggagctt ttccagggcg cgcgggaggt ccagatggta 8340
cttgatctcc acggcgccgt tggtggcgac gtccacggct tgcagggtcc cgtgcccctg 8400
gggcgccacc accgtgcccc gtttcttctt gggcgctggc ggcgttggcg ctggttccat 8460
gtcggtcaga agcggcggcg aggacgcgcg ccgggcggca ggggcggctc ggggcccgga 8520
ggcaggggcg gcaggggcac gtcggcgccg cgcgcgggca ggttctggta ctgcgcccgg 8580
agaagactgg cgtgagcgac gacgcgacgg ttgacgtcct ggatctgacg cctctgggtg 8640
aaggccacgg gacccgtgag tttgaacctg aaagagagtt cgacagaatc aatctcggta 8700
tcgttgacgg cggcctgccg caggatctct tgcacgtcgc ccgagttgtc ctggtaggcg 8760
atctcggtca tgaactgctc gatctcctcc tcctgaaggt ctccgcggcc ggcgcgctcg 8820
acggtggccg cgaggtcgtt ggagatgcgg gccatgagct gcgagaaggc gttcatgccg 8880
gcctcgttcc agacgcggct gtagaccacg gctccgtcgg ggtcgcgcgc gcgcatgacc 8940
acctgggcaa ggttgagctc gacgtggcgc gtgaagaccg cgtagttgca gaggcgctgg 9000
tagaggtagt tgagcgtggt ggcgatgtgc tcggtgacga agaagtacat gatccagcgg 9060
cggagcggca tctcgctgac gtcgcccagg gcttccaagc gctccatggc ctcgtagaag 9120

tccacggcga agttgaaaaa ctgggagttg cgcgccgaga cggtcaactc ctcctccaga 9180
agacggatga gctctgcgat ggtggcgcgc acctcgcgct cgaaggcccc gggggctcc 9240
tcttcttcca tctcctcctc ctcttcctcc tccactaaca tctcttctac ttcctcctca 9300
ggcggtggtg gcgggggagg gggcctgcgt cgccggcggc gcacgggcag acggtcgatg 9360
aagcgctcga tggtctcgcc gcgccggcgt cgcatggtct cggtgacggc gcgcccgtcc 9420
tcgcggggcc gcagcgtgaa gacgccgccg cgcatctcca ggtggccggg ggggtccccg 9480
ttgggcaggg agagggcgct gacgatgcat cttatcaatt gccccgtagg gactccgcgc 9540
aaggacctga gcgtctcgag atccacggga tctgaaaacc gttgaacgaa ggcttcgagc 9600
cagtcgcagt cgcaaggtag gctgagcacg gtttcttctg gcgggtcatg ttggttggag 9660
ggagcggggc gggcgatgct gctggtgatg aagttgaaat aggcggttct gagacggcgg 9720
atggtggcga ggagcaccag gtctttgggc ccggcttgct ggatgcgcag acggtcggcc 9780
atgccccagg cgtggtcctg acacctggcc aggtccttgt agtagtcctg catgagccgc 9840
tccacgggca cctcctcctc gcccgcgcgg ccgtgcatgc gcgtgagccc gaagccgcgc 9900
tggggctgga cgagcgccag gtcggcgacg acgcgctcgg cgaggatggc ctgctggacc 9960
tgggtgaggg tggtctggaa gtcgtcgaag tcgacgaagc ggtggtaggc tccggtgttg 10020
atggtgtagg agcagttggc catgacggac cagttgacgg tctggtggcc ggggcgcacg 10080
agctcgtggt acttgaggcg cgagtaggcg cgcgtgtcga agatgtagtc gttgcaggtg 10140
cgcacgaggt actggtatcc gacgaggaag tgcggcggcg gctggcggta gagcggccat 10200
cgctcggtgg cgggggcgcc gggcgcgagg tcctcgagca tgaggcggtg gtagccgtag 10260
atgtacctgg acatccaggt gatgccggcg gcggtggtgg aggcgcgcgg gaactcgcgg 10320
acgcggttcc agatgttgcg cagcggcagg aagtagttca tggtggccgc ggtctggccc 10380
gtgaggcgcg cgcagtcgtg gatgctctag acatacgggc aaaaacgaaa gcggtcagcg 10440
gctcgactcc gtggcctgga ggctaagcga acgggttggg ctgcgcgtgt accccggttc 10500
gagtctctgc tcgaatcagg ctggagccgc agctaacgtg gtactggcac tcccgtctcg 10560
acccaagcct gctaacgaaa cctccaggat acggaggcgg gtcgtttttt ggccttggtc 10620
actggtcatg aaaaactagt aagcgcggaa agcggccgcc cgcgatggct cgctgccgta 10680
gtctggagaa agaatcgcca gggttgcgtt gcggtgtgcc ccggttcgag actcagcgct 10740
cggcgccggc cggattccgc ggctaacgtg ggcgtggctg ccccgtcgtt tccaagaccc 10800
cttagccagc cgacttctcc agttacggag cgagcccctc tttttcttgt gttttgccca 10860
gatgcatccc gtactgcggc agatgcgccc ccaccctcca ccacaaccgc ccctaccgcc 10920
gcagcagcag caacagccgg cgcttctgcc cccgccccag cagcagccag ccactaccgc 10980
ggcggccgcc gtgagcggag ccggcgttca gtatgacctg gccttggaag agggcgaggg 11040
gctggcgcgg ctgggggcgt cgtcgccgga gcggcacccg cgcgtgcaga tgaaaaggga 11100
cgctcgcgag gcctacgtgc ccaagcagaa cctgttcaga gacaggagcg gcgaggagcc 11160

cgaggagatg cgcgcctccc gcttccacgc ggggcgggag ctgcggcgcg gcctggaccg 11220

aaagcgggtg ctgagggacg aggatttcga ggcggacgag ctgacgggga tcagccccgc 11280

gcgcgcgcac gtggccgcgg ccaacctggt cacggcgtac gagcagaccg tgaaggagga 11340

gagcaacttc caaaaatcct tcaacaacca cgtgcgcacg ctgatcgcgc gcgaggaggt 11400

gaccctgggc ctgatgcatc tgtgggacct gttggaggcc atcgtgcaga accccacgag 11460

caagccgctg acggcgcagc tgtttctggt ggtgcagcac agtcgggaca acgagacgtt 11520

cagggaggcg ctgctgaata tcaccgagcc cgagggccgc tggctcctgg acctggtgaa 11580

cattctgcag agcatcgtgg tgcaggagcg cgggctgccg ctgtccgaga agctggcggc 11640

catcaacttc tcggtgctga gcctgggcaa gtactacgct aggaagatct acaagacccc 11700

gtacgtgccc atagacaagg aggtgaagat cgacgggttt tacatgcgca tgaccctgaa 11760

agtgctgacc ctgagcgacg atctgggggt gtaccgcaac gacaggatgc accgcgcggt 11820

gagcgccagc cgccggcgcg agctgagcga ccaggagctg atgcacagcc tgcagcgggc 11880

cctgaccggg gccgggaccg agggggagag ctactttgac atgggcgcgg acctgcgctg 11940

gcagcccagc cgccgggctt tagaggcagc cggcggcgtg ccctacgtgg aggaggtgga 12000

cgatgatgag gaggagggcg agtacctgga agactgatgg cgcgaccgta tttttgctag 12060

atgcagcaac agccaccgcc tcctgatccc gcgatgcggg cggcgctgca gagccagccg 12120

tccggcatta actcctcgga cgattggacc caggccatgc aacgcatcat ggcgctgacg 12180

acccgcaatc ccgaagcctt tagacagcag cctcaggcca accggctctc ggccatcctg 12240

gaggccgtgg tgccctcgcg ctcgaacccc acgcacgaga aggtgctggc catcgtgaac 12300

gcgctggtgg agaacaaggc catccgcggc gacgaggccg ggctggtgta caacgcgctg 12360

ctggagcgcg tggcccgcta caacagcacc aacgtgcaga cgaacctgga ccgcatggtg 12420

accgacgtgc gcgaggcggt gtcgcagcgc gagcggttcc accgcgagtc gaacctgggc 12480

tccatggtgg cgctgaacgc cttcctgagc acgcagcccg ccaacgtgcc ccggggccag 12540

gaggactaca ccaactttat cagcgcgctg cggctgatgg tggccgaggt gccccagagc 12600

gaggtgtacc agtcggggcc ggactacttc ttccagacca gtcgccaggg cttgcagacc 12660

gtgaacctga gccaggcttt caagaacttg cagggactgt ggggcgtgca ggccccggtc 12720

ggggaccgcg cgacggtgtc gagcctgctg acgccgaact cgcgcctgct gctgctgctg 12780

gtggcgccct tcacggacag cggcagcgtg agccgcgact cgtacctggg ctacctgctt 12840

aacctgtacc gcgaggccat cgggcaggcg cacgtggacg agcagaccta ccaggagatc 12900

acccacgtga gccgcgcgct gggccaggag gacccgggca acctggaggc caccctgaac 12960

ttcctgctga ccaaccggtc gcagaagatc ccgccccagt acgcgctgag caccgaggag 13020

gagcgcatcc tgcgctacgt gcagcagagc gtggggctgt tcctgatgca ggaggggcc 13080

acgcccagcg ccgcgctcga catgaccgcg cgcaacatgg agcccagcat gtacgcccgc 13140

aaccgcccgt tcatcaataa gctgatggac tacttgcatc gggcggccgc catgaactcg 13200

gactacttta ccaacgccat cttgaacccg cactggctcc cgccgcccgg gttctacacg 13260

ggcgagtacg acatgcccga ccccaacgac gggttcctgt gggacgacgt ggacagcagc 13320
gtgttctcgc cgcgccccac caccaccgtg tggaagaaag agggcgggga ccggcggccg 13380
tcctcggcgc tgtccggtcg cgcgggtgct gccgcggcgg tgcccgaggc cgccagcccc 13440
ttcccgagcc tgccctttc gctgaacagc gtgcgcagca gcgagctggg tcggctgacg 13500
cggccgcgcc tgctgggcga ggaggagtac ctgaacgact ccttgttgag gcccgagcgc 13560
gagaaaaact tccccaataa cgggatagag agcctggtgg acaagatgag ccgctggaag 13620
acgtacgcgc acgagcacag ggacgagccc cgagctagca gcagcgccgg cgccacccgt 13680
agacgccagc ggcacgacag gcagcgggga ctggtgtggg acgatgagga ttccgccgac 13740
gacagcagcg tgttggactt gggtgggagt ggtggtggta acccgttcgc tcacttgcgc 13800
ccccgtatcg ggcgcctgat gtaagaatct gaaaaaataa aaaaacggta ctcaccaagg 13860
ccatggcgac cagcgtgcgt tcttctctgt tgtttgtagt agtatgatga ggcgcgtgta 13920
cccggagggt cctcctccct cgtacgagag cgtgatgcag caggcggtgg cggcggcgat 13980
gcagcccccg ctggaggcgc cttacgtgcc cccgcggtac ctggcgccta cggaggggcg 14040
gaacagcatt cgttactcgg agctggcacc cttgtacgat accacccggt tgtacctggt 14100
ggacaacaag tcggcggaca tcgcctcgct gaactaccag aacgaccaca gcaacttcct 14160
gaccaccgtg gtgcagaaca acgatttcac ccccacggag gccagcaccc agaccatcaa 14220
ctttgacgag cgctcgcggt ggggcggcca gctgaaaacc atcatgcaca ccaacatgcc 14280
caacgtgaac gagttcatgt acagcaacaa gttcaaggcg cgggtgatgg tctcgcgcaa 14340
gacccccaac ggggtgacgg tggatgagaa ttatgatggt agtcaggacg agctgaccta 14400
cgagtgggtg gagtttgagc tgcccgaggg caacttctcg gtgaccatga ccatcgatct 14460
gatgaacaac gccatcatcg acaactactt ggcggtggga cggcagaacg gggtgctgga 14520
gagcgacatc ggcgtgaagt tcgacacgcg caacttccgg ctgggctggg accccgtgac 14580
cgagctggtg atgccgggcg tgtacaccaa cgaggccttc caccccgaca tcgtcctgct 14640
gcccggctgc ggcgtggact tcaccgagag ccgcctcagc aacctgctgg gcatccgcaa 14700
gcggcagccc ttccaggagg gcttccagat cctgtacgag gacctggagg ggggcaacat 14760
ccccgcgctg ctggacgtcg aagcctacga gaaaagcaag gaggaggccg ccgcagcggc 14820
gaccgcggcc gtggctaccg ctgcgaccac cgatgcagat gcagctacta ctaccagggg 14880
cgatacattc gccacccagg cggaggaagc agccgcccta gcggcgaccg atgatagtga 14940
aagtaagata gtcatcaagc cggtggagaa ggacagcaag gacaggagct acaacgttct 15000
atcggatgga aagaacaccg cctaccgcag ctggtacctg gcctacaact acggcgaccc 15060
tgagaagggc gtgcgctcct ggacgctgct caccacctcg gacgtcacct gcggcgtgga 15120
gcaagtctac tggtcgctgc ccgacatgat gcaagacccg gtcaccttcc gctccacgcg 15180
tcaagttagc aactacccgg tggtgggcgc cgagctcctg cccgtctact ccaagagctt 15240
cttcaacgag caggccgtct actcgcagca gctgcgcgcc ttcacctcgc tcacgcacgt 15300

cttcaaccgc ttccccgaga accagatcct cgtccgcccg cccgcgccca ccattaccac 15360
cgtcagtgaa aacgttcctg ctctcacaga tcacgggacc ctgccgctgc gcagcagtat 15420
ccggggagtc cagcgcgtga ccgtcactga cgccagacgc cgcacctgcc cctacgtcta 15480
caaggccctg ggcgtagtcg cgccgcgcgt cctctcgagc cgcaccttct aaaaaatgtc 15540
cattctcatc tcgcccagta ataacaccgg ttggggcctg cgcgcgccca gcaagatgta 15600
cggaggcgct cgccaacgct ccacgcaaca ccccgtgcgc gtgcgcgggc acttccgcgc 15660
tccctggggc gccctcaagg gccgcgtgcg ctcgcgcacc accgtcgacg acgtgatcga 15720
ccaggtggtg gccgacgcgc gcaactacac gcccgccgcc gcgcccgcct ccaccgtgga 15780
cgccgtcatc gacagcgtgg tggccgacgc gcgccggtac gcccgcgcca agagccggcg 15840
gcggcgcatc gcccggcggc accggagcac ccccgccatg cgcgcggcgc gagccttgct 15900
gcgcagggcc aggcgcacgg gacgcagggc catgctcagg gcggccagac gcgcggcctc 15960
cggcagcagc agcgccggca ggacccgcag acgcgcggcc acggcggcgg cggcggccat 16020
cgccagcatg tcccgcccgc ggcgcggcaa cgtgtactgg gtgcgcgacg ccgccaccgg 16080
tgtgcgcgtg cccgtgcgca cccgcccccc tcgcacttga agatgctgac ttcgcgatgt 16140
tgatgtgtcc cagcggcgag gaggatgtcc aagcgcaaat tcaaggaaga gatgctccag 16200
gtcatcgcgc ctgagatcta cggccccgcg gcggcggtga aggaggaaag aaagccccgc 16260
aaactgaagc gggtcaaaaa ggacaaaaag gaggaggaag atgacggact ggtggagttt 16320
gtgcgcgagt tcgccccccg gcggcgcgtg cagtggcgcg ggcggaaagt gaaaccggtg 16380
ctgcggcccg gcaccacggt ggtcttcacg cccggcgagc gttccggctc cgcctccaag 16440
cgctcctacg acgaggtgta cggggacgag gacatcctcg agcaggcggc cgagcgtctg 16500
ggcgagtttg cttacggcaa gcgcagccgc cccgcgccct tgaaagagga ggcggtgtcc 16560
atcccgctgg accacggcaa ccccacgccg agcctgaagc cggtgaccct gcagcaggtg 16620
ctgccgagcg cggcgccgcg ccggggcttc aagcgcgagg gcggcgagga tctgtacccg 16680
accatgcagc tgatggtgcc caagcgccag aagctggagg acgtgctgga gcacatgaag 16740
gtggaccccg aggtgcagcc cgaggtcaag gtgcggccca tcaagcaggt ggccccgggc 16800
ctgggcgtgc agaccgtgga catcaagatc cccacggagc ccatggaaac gcagaccgag 16860
cccgtgaagc ccagcaccag caccatggag gtgcagacgg atccctggat gccggcgccg 16920
gcttccacca ccaccaccac ccgccgaaga cgcaagtacg gcgcggccag cctgctgatg 16980
cccaactacg cgctgcatcc ttccatcatc cccacgccgg gctaccgcgg cacgcgcttc 17040
taccgcggct acagcagccg ccgcaagacc accacccgcc gccgccgtcg ccgcacccgc 17100
cgcagcacca ccgcgacttc cgccgccgcc ttggtgcgga gagtgtaccg cagcgggcgt 17160
gagcctctga ccctgccgcg cgcgcgctac cacccgagca tcgccattta actctgccgt 17220
cgcctccttg cagatatggc cctcacatgc cgcctccgcg tccccattac gggctaccga 17280
ggaagaaagc cgcgccgtag aaggctgacg gggaacgggc tgcgtcgcca tcaccaccgg 17340
cggcggcgcg ccatcagcaa gcggttgggg ggaggcttcc tgcccgcgct gatccccatc 17400

atcgccgcgg cgatcggggc gatccccggc atagcttccg tggcggtgca ggcctctcag 17460
cgccactgag acacagcttg gaaaatttgt aataaaaaaa tggactgacg ctcctggtcc 17520
tgtgatgtgt gtttttagat ggaagacatc aatttttcgt ccctggcacc gcgacacggc 17580
acgcggccgt ttatgggcac ctggagcgac atcggcaaca gccaactgaa cgggggcgcc 17640
ttcaattgga gcagtctctg gagcgggctt aagaatttcg ggtccacgct caaaacctat 17700
ggcagcaagg cgtggaacag caccacaggg caggcgctga gggataagct gaaagagcag 17760
aacttccagc agaaggtggt cgatgggctc gcttcgggca tcaacggggt ggtggacctg 17820
gccaaccagg ccgtgcagcg gcagatcaac agccgcctgg acccggtgcc gcccgccggc 17880
tccgtggaga tgccgcaggt ggaggaggag ctgcctcccc tggacaagcg gggcgagaag 17940
cgaccccgcc ccgacgcgga ggagacgctg ctgacgcaca cggacgagcc gcccccgtac 18000
gaggaggcgg tgaaactggg tctgcccacc acgcggccca ttgcgcccct agccaccggg 18060
gtgctgaaac ccgagagtaa taagcccgcg accctggact tgcctcctcc ccagccttcc 18120
cgcccctcca cagtggctaa gcccctgccg ccggtggccg tggcccgcgc gcgacccggg 18180
ggctccgccc gccctcatgc gaactggcag agcactctga acagcatcgt gggtctggga 18240
gtgcagagtg tgaagcgccg ccgctgctat taaacctacc gtagcgctta acttgcttgt 18300
ctgtgtgtgt atgtattatg tcgccgccgc tgtccgccag aaggaggagt gaagaggcgc 18360
gtcgccgagt tgcaagatgg ccaccccatc gatgctgccc cagtgggcgt acatgcacat 18420
cgccggacag gacgcttcgg agtacctgag tccgggtctg gtgcagttcg cccgcgccac 18480
agacacctac ttcagtctgg ggaacaagtt taggaacccc acggtggcgc ccacgcacga 18540
tgtgaccacc gaccgcagcc agcggctgac gctgcgcttc gtgcccgtgg accgcgagga 18600
caacacctac tcgtacaaag tgcgctacac gctggccgtg ggcgacaacc gcgtgctgga 18660
catggccagc acctactttg acatccgcgg cgtgctggac cggggcccta gcttcaaacc 18720
ctactccggc accgcctaca acagcctggc tcccaaggga gcgcccaatt ccagccagtg 18780
ggagcgagct aagacaaaca ataacggagc cacggaatct gttacctttg gtgtggctgc 18840
catgggggt atagatatta caaaagaggg tctccagatt ggaactgatg aaactaaagc 18900
tgatagtaaa gaaatttatg cagacaaaac ctaccaacct gaacctcaga taggagagga 18960
gaactggcaa gaaacattct cctattatgg cggcagagct cttaaaaaag ataccaagat 19020
gaagccatgc tacggctcct ttgctaaacc aacgaatgtc aaaggaggtc aggccaaatt 19080
taaagttcag gacggtcaac aaactacaga atatgatatc gacttagctt tctttgatat 19140
tccaaactct ggaacaggag ggaatggcac gaatgttaat tatgatccag atatggtcat 19200
gtacactgaa aatgtggatt tggagacccc tgatacccac attgtttaca aaccagggac 19260
ttccgatgac agttctgaag caaacttgct tcagcagtcc atgcctaaca gacccaacta 19320
tattgggttt agagacaact ttatcggtct catgtactac aacagtactg gcaatatggg 19380
tgtgctggct ggtcaggcct cccagctgaa tgctgtggtc gacttgcaag acagaaacac 19440

cgagctatcc taccagctct tgcttgactc tctgggcgat agaacccggt atttcagtat 19500
gtggaaccag gcggtggaca gttatgaccc tgatgtgcgc attattgaaa accatggtgt 19560
ggaagatgaa cttcccaact attgcttccc attggatgga gctggtacta atgctgtcta 19620
tcagggtgtt aaagcaaaaa ctaatggagg cgcagccaat ggagattggg agcaagatac 19680
agacgtgtca aacattaacc agatatgcaa ggggaacatc tatgccatgg aaatcaacct 19740
ccaagccaac ctgtggagaa gtttcctcta ctcgaacgtg gccctgtacc tgcccgattc 19800
ttacaagtac acgccggcca acatcacctt gcccacgaat accaacacct atgattacat 19860
gaatgggaga gtggcgcctc cctcgttggt ggatgcctac atcaacatcg gggcgcgctg 19920
gtcgctggac cccatggaca acgtcaatcc cttcaaccac caccgcaacg cggggctgcg 19980
ctaccgctcc atgcttctgg gcaacgggcg cttcgtgccc ttccacatcc aggtgcccca 20040
gaaatttttc gccatcaaga gcctcctgct cctgcccggg tcctacacct acgagtggaa 20100
cttccgcaag gacgtcaaca tgatcctgca gagctccctc ggcaacgacc tgcgcacgga 20160
cggggcctcc atctccttca ccagcatcaa cctctacgcc accttcttcc ccatggcgca 20220
caacacggcc tccacgctcg aggccatgct gcgcaacgac accaacgacc agtccttcaa 20280
cgactacctc tcggcggcca acatgctcta ccccatccca gccaacgcca ccaacgtgcc 20340
catctccatc ccctcgcgca actgggccgc cttccgcggc tggtccttca cgcgtctcaa 20400
gaccaaggag acgccctcgc tgggctccgg gttcgacccc tacttcgtct actcgggctc 20460
catcccctac ctcgacggca ccttctacct caaccacacc ttcaagaagg tctccatcac 20520
cttcgactcc tccgtcagct ggcccggcaa cgaccggctc ctgacgccca acgagttcga 20580
aatcaagcgc accgtcgacg gcgagggcta caacgtggcc cagtgcaaca tgaccaagga 20640
ctggttcctg gtccagatgc tggcccacta caacatcggc taccagggct tctacgtgcc 20700
cgagggctac aaggaccgca tgtactcctt cttccgcaac ttccagccca tgagccgcca 20760
ggtggtggac gaggtcaact acaaggacta ccaggccgtc accctggcct accagcacaa 20820
caactcgggc ttcgtcggct acctcgcgcc caccatgcgc cagggccagc cctaccccgc 20880
caactacccg tacccgctca tcggcaagag cgccgtcacc agcgtcaccc agaaaaagtt 20940
cctctgcgac agggtcatgt ggcgcatccc cttctccagc aacttcatgt ccatgggcgc 21000
gctcaccgac ctcggccaga acatgctcta tgccaactcc gcccacgcgc tagacatgaa 21060
tttcgaagtc gaccccatgg atgagtccac ccttctctat gttgtcttcg aagtcttcga 21120
cgtcgtccga gtgcaccagc cccaccgcgg cgtcatcgag gccgtctacc tgcgcacccc 21180
cttctcggcc ggtaacgcca ccacctaagc tcttgcttct tgcaagatgg ctgagcccac 21240
gggctccggc gagcaggagc tcagggccat catccgcgac ctgggctgcg ggccctactt 21300
cctgggcacc ttcgataagc gcttcccggg attcatggcc ccgcacaagc tggcctgcgc 21360
catcgtcaac acggccggcc gcgagaccgg gggcgagcac tggctggcct tcgcctggaa 21420
cccgcgctcg aacacctgct acctcttcga ccccttcggg ttctcggacg agcgcctcaa 21480
gcagatctac cagttcgagt acgagggcct gctgcgccgc agcgccctgg ccaccgagga 21540

ccgctgcgtc accctggaaa agtccaccca gaccgtgcag ggtccgcgct cggccgcctg 21600

cgggctcttt tgctgcatgt tcctgcacgc cttcgtgcac tggcccgacc gccccatgga 21660

caagaacccc accatgaact tgctgacggg ggtgcccaac ggcatgctcc agtcgcccca 21720

ggtggaaccc accctgcgcc gcaaccagga ggcgctctac cgcttcctca acgcccactc 21780

cgcctacttt cgctcccacc gcgcgcgcat cgagaaggcc accgccttcg accgcatgaa 21840

tcaagacatg taaaccgtgt gtgtatgtga atgctttatt cataataaac agcacatgtt 21900

tatgccacct tctctgaggc tctgacttta tttagaaatc gaaggggttc tgccggctct 21960

cggcgtgccc cgcgggcagg gatacgttgc ggaactggta cttgggcagc cacttgaact 22020

cggggatcag cagcttcggc acggggaggt cggggaacga gtcgctccac agcttgcgcg 22080

tgagttgcag ggcgcccagc aggtcgggcg cggagatctt gaaatcgcag ttgggacccg 22140

cgttctgcgc gcgagagttg cggtacacgg ggttgcagca ctggaacacc atcagggccg 22200

ggtgcttcac gctcgccagc accgtcgcgt cggtgatgcc ctccacgtcc agatcctcgg 22260

cgttggccat cccgaagggg gtcatcttgc aggtctgccg ccccatgctg ggcacgcagc 22320

cgggcttgtg gttgcaatcg cagtgcaggg ggatcagcat catctgggcc tgctcggagc 22380

tcatgcccgg gtacatggcc ttcatgaaag cctccagctg gcggaaggcc tgctgcgcct 22440

tgccgccctc ggtgaagaag accccgcagg acttgctaga gaactggttg gtagcgcagc 22500

ccgcgtcgtg cacgcagcag cgcgcgtcgt tgttggccag ctgcaccacg ctgcgccccc 22560

agcggttctg ggtgatcttg gcccggtcgg ggttctcctt cagcgcgcgc tgcccgttct 22620

cgctcgccac atccatctcg atcgtgtgct ccttctggat catcacggtc ccgtgcaggc 22680

accgcagctt gccctcggcc tcggtgcagc cgtgcagcca cagcgcgcag ccggtgctct 22740

cccagttctt gtgggcgatc tgggagtgcg agtgcacgaa gccctgcagg aagcggccca 22800

tcatcgcggt cagggtcttg ttgctggtga aggtcagcgg gatgccgcgg tgctcctcgt 22860

tcacatacag gtggcagatg cggcggtaca cctcgccctg ctcgggcatc agctggaagg 22920

cggacttcag gtcgctctcc acgcggtacc ggtccatcag cagcgtcatc acttccatgc 22980

ccttctccca ggccgaaacg atcggcaggc tcaggggttt cttcaccgtc atcttagtcg 23040

ccgccgccga agtcaggggg tcgttctcgt ccagggtctc aaacactcgc ttgccgtcct 23100

tctcggtgat gcgcacgggg gggaaggcga agcccacggc cgccagctcc tcctcggcct 23160

gcctttcgtc ctcgctgtcc tggctgatgt cttgcaaagg cacatgcttg gtcttgcggg 23220

gtttcttttt gggcggcaga ggcggcggcg gcggagacgt gctgggcgag cgcgagttct 23280

cgctcaccac gactatttct tcttcttggc cgtcgtccga gaccacgcgg cggtaggcat 23340

gcctcttctg gggcagaggc ggaggcgacg ggctctcgcg gttcggcggg cggctggcag 23400

agcccttcc gcgttcgggg gtgcgctcct ggcggcgctg ctctgactga cttcctccgc 23460

ggccggccat tgtgttctcc tagggagcaa caacaagc atg gag act cag cca tcg 23516
Met Glu Thr Gln Pro Ser
1 5

```
tcg cca aca tcg cca tct gcc ccc gcc gcc gcc gac gag aac cag cag      23564
Ser Pro Thr Ser Pro Ser Ala Pro Ala Ala Ala Asp Glu Asn Gln Gln
            10                  15                  20

cag cag aat gaa agc tta acc gcc ccg ccg ccc agc ccc acc tcc gac      23612
Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro Pro Ser Pro Thr Ser Asp
        25                  30                  35

gcc gcg gcc cca gac atg caa gag atg gag gaa tcc atc gag att gac      23660
Ala Ala Ala Pro Asp Met Gln Glu Met Glu Glu Ser Ile Glu Ile Asp
    40                  45                  50

ctg ggc tac gtg acg ccc gcg gag cac gag gag gag ctg gca gcg cgc      23708
Leu Gly Tyr Val Thr Pro Ala Glu His Glu Glu Glu Leu Ala Ala Arg
55                  60                  65                  70

ttt tca gcc ccg gaa gag aac cac caa gag cag cca gag cag gaa gca      23756
Phe Ser Ala Pro Glu Glu Asn His Gln Glu Gln Pro Glu Gln Glu Ala
                75                  80                  85

gag agc gag cag agc cag gct ggg ctc gag cat ggc gac tac ctg agc      23804
Glu Ser Glu Gln Ser Gln Ala Gly Leu Glu His Gly Asp Tyr Leu Ser
            90                  95                  100

ggg gca gag gac gtg ctc atc aag cat ctg gcc cgc caa tgc atc atc      23852
Gly Ala Glu Asp Val Leu Ile Lys His Leu Ala Arg Gln Cys Ile Ile
        105                 110                 115

gtc aag gac gcg ctg ctc gac cgc gcc gag gtg ccc ctc agc gtg gcg      23900
Val Lys Asp Ala Leu Leu Asp Arg Ala Glu Val Pro Leu Ser Val Ala
    120                 125                 130

gag ctc agc cgc gcc tac gag cgc aac ctc ttc tcg ccg cgc gtg ccc      23948
Glu Leu Ser Arg Ala Tyr Glu Arg Asn Leu Phe Ser Pro Arg Val Pro
135                 140                 145                 150

ccc aag cgc cag ccc aac ggc acc tgc gag ccc aac ccg cgc ctc aac      23996
Pro Lys Arg Gln Pro Asn Gly Thr Cys Glu Pro Asn Pro Arg Leu Asn
                155                 160                 165

ttc tac ccg gtc ttc gcg gtg ccc gag gcc ctg gcc acc tac cac ctc      24044
Phe Tyr Pro Val Phe Ala Val Pro Glu Ala Leu Ala Thr Tyr His Leu
            170                 175                 180

ttt ttc aag aac caa agg atc ccc gtc tcc tgc cgc gcc aac cgc acc      24092
Phe Phe Lys Asn Gln Arg Ile Pro Val Ser Cys Arg Ala Asn Arg Thr
        185                 190                 195

cgc gcc gac gcc ctg ctc aac ctg ggc ccc ggc gcc cgc cta cct gat      24140
Arg Ala Asp Ala Leu Leu Asn Leu Gly Pro Gly Ala Arg Leu Pro Asp
    200                 205                 210

atc gcc tcc ttg gaa gag gtt ccc aag atc ttc gag ggt ctg ggc agc      24188
Ile Ala Ser Leu Glu Glu Val Pro Lys Ile Phe Glu Gly Leu Gly Ser
215                 220                 225                 230

gac gag act cgg gcc gcg aac gct ctg caa gga agc gga gag gag cat      24236
Asp Glu Thr Arg Ala Ala Asn Ala Leu Gln Gly Ser Gly Glu Glu His
                235                 240                 245

gag cac cac agc gcc ctg gtg gag ttg gaa ggc gac aac gcg cgc ctg      24284
Glu His His Ser Ala Leu Val Glu Leu Glu Gly Asp Asn Ala Arg Leu
            250                 255                 260

gcg gtc ctc aag cgc acg gtc gag ctg acc cac ttc gcc tac ccg gcg      24332
Ala Val Leu Lys Arg Thr Val Glu Leu Thr His Phe Ala Tyr Pro Ala
        265                 270                 275

ctc aac ctg ccc ccc aag gtc atg agc gcc gtc atg gac cag gtg ctc      24380
```

```
Leu Asn Leu Pro Pro Lys Val Met Ser Ala Val Met Asp Gln Val Leu
    280                 285                 290

atc aag cgc gcc tcg ccc ctc tcg gag gag gag atg cag gac ccc gag      24428
Ile Lys Arg Ala Ser Pro Leu Ser Glu Glu Glu Met Gln Asp Pro Glu
295                 300                 305                 310

agc tcg gac gag ggc aag ccc gtg gtc agc gac gag cag ctg gcg cgc      24476
Ser Ser Asp Glu Gly Lys Pro Val Val Ser Asp Glu Gln Leu Ala Arg
                315                 320                 325

tgg ctg gga acg agt agc acc ccc cag agt ctg gaa gag cgg cgc aag      24524
Trp Leu Gly Thr Ser Ser Thr Pro Gln Ser Leu Glu Glu Arg Arg Lys
            330                 335                 340

ctc atg atg gcc gtg gtc ctg gtg acc gtg gag ctt gag tgt ctg cgc      24572
Leu Met Met Ala Val Val Leu Val Thr Val Glu Leu Glu Cys Leu Arg
        345                 350                 355

cgc ttc ttc gcc gac gcg gag acc ctg cgc aag gtc gag gag aac ctg      24620
Arg Phe Phe Ala Asp Ala Glu Thr Leu Arg Lys Val Glu Glu Asn Leu
    360                 365                 370

cac tac ctc ttc agg cac ggg ttc gtg cgc cag gcc tgc aag atc tcc      24668
His Tyr Leu Phe Arg His Gly Phe Val Arg Gln Ala Cys Lys Ile Ser
375                 380                 385                 390

aac gtg gag ctg acc aac ctg gtc tcc tac atg ggc atc ctg cac gag      24716
Asn Val Glu Leu Thr Asn Leu Val Ser Tyr Met Gly Ile Leu His Glu
                395                 400                 405

aac cgc ctg ggg cag aac gtg ctg cac acc acc ctg cgc ggg gag gcc      24764
Asn Arg Leu Gly Gln Asn Val Leu His Thr Thr Leu Arg Gly Glu Ala
            410                 415                 420

cgc cgc gac tac atc cgc gac tgc gtc tac ctg tac ctc tgc cac acc      24812
Arg Arg Asp Tyr Ile Arg Asp Cys Val Tyr Leu Tyr Leu Cys His Thr
        425                 430                 435

tgg cag acg ggc atg ggc gtg tgg cag cag tgc ctg gag gag cag aac      24860
Trp Gln Thr Gly Met Gly Val Trp Gln Gln Cys Leu Glu Glu Gln Asn
    440                 445                 450

ctg aaa gag ctc tgc aag ctc ctg cag aag aac ctg aag gcc ctg tgg      24908
Leu Lys Glu Leu Cys Lys Leu Leu Gln Lys Asn Leu Lys Ala Leu Trp
455                 460                 465                 470

acc ggg ttc gac gag cgt acc acc gcc tcg gac ctg gcc gac ctc atc      24956
Thr Gly Phe Asp Glu Arg Thr Thr Ala Ser Asp Leu Ala Asp Leu Ile
                475                 480                 485

ttc ccc gag cgc ctg cgg ctg acg ctg cgc aac ggg ctg ccc gac ttt      25004
Phe Pro Glu Arg Leu Arg Leu Thr Leu Arg Asn Gly Leu Pro Asp Phe
            490                 495                 500

atg agc caa agc atg ttg caa aac ttt cgc tct ttc atc ctc gaa cgc      25052
Met Ser Gln Ser Met Leu Gln Asn Phe Arg Ser Phe Ile Leu Glu Arg
        505                 510                 515

tcc ggg atc ctg ccc gcc acc tgc tcc gcg ctg ccc tcg gac ttc gtg      25100
Ser Gly Ile Leu Pro Ala Thr Cys Ser Ala Leu Pro Ser Asp Phe Val
    520                 525                 530

ccg ctg acc ttc cgc gag tgc ccc ccg ccg ctc tgg agc cac tgc tac      25148
Pro Leu Thr Phe Arg Glu Cys Pro Pro Pro Leu Trp Ser His Cys Tyr
535                 540                 545                 550

ttg ctg cgc ctg gcc aac tac ctg gcc tac cac tcg gac gtg atc gag      25196
Leu Leu Arg Leu Ala Asn Tyr Leu Ala Tyr His Ser Asp Val Ile Glu
```

```
                555                 560                 565

gac gtc agc ggc gag ggt ctg ctc gag tgc cac tgc cgc tgc aac ctc      25244
Asp Val Ser Gly Glu Gly Leu Leu Glu Cys His Cys Arg Cys Asn Leu
            570                 575                 580

tgc acg ccg cac cgc tcc ctg gcc tgc aac ccc cag ctg ctg agc gag      25292
Cys Thr Pro His Arg Ser Leu Ala Cys Asn Pro Gln Leu Leu Ser Glu
        585                 590                 595

acc cag atc atc ggc acc ttc gag ttg caa ggc ccc ggc gag gag ggc      25340
Thr Gln Ile Ile Gly Thr Phe Glu Leu Gln Gly Pro Gly Glu Glu Gly
    600                 605                 610

aag ggg ggt ctg aaa ctc acc ccg ggg ctg tgg acc tcg gcc tac ttg      25388
Lys Gly Gly Leu Lys Leu Thr Pro Gly Leu Trp Thr Ser Ala Tyr Leu
615                 620                 625                 630

cgc aag ttc gtg ccc gag gac tac cat ccc ttc gag atc agg ttc tac      25436
Arg Lys Phe Val Pro Glu Asp Tyr His Pro Phe Glu Ile Arg Phe Tyr
                635                 640                 645

gag gac caa tcc cag ccg ccc aag gcc gag ctg tcg gcc tgc gtc atc      25484
Glu Asp Gln Ser Gln Pro Pro Lys Ala Glu Leu Ser Ala Cys Val Ile
            650                 655                 660

acc cag ggg gcc atc ctg gcc caa ttg caa gcc atc cag aaa tcc cgc      25532
Thr Gln Gly Ala Ile Leu Ala Gln Leu Gln Ala Ile Gln Lys Ser Arg
        665                 670                 675

caa gaa ttt ctg ctg aaa aag ggc cac ggg gtc tac ttg gac ccc cag      25580
Gln Glu Phe Leu Leu Lys Lys Gly His Gly Val Tyr Leu Asp Pro Gln
    680                 685                 690

acc gga gag gag ctc aac ccc agc ttc ccc cag gat gcc cag agg aag      25628
Thr Gly Glu Glu Leu Asn Pro Ser Phe Pro Gln Asp Ala Gln Arg Lys
695                 700                 705                 710

cag caa gaa gct gaa agt gga gct gcc gct gcc gcc gga gga ttt gga      25676
Gln Gln Glu Ala Glu Ser Gly Ala Ala Ala Ala Ala Gly Gly Phe Gly
                715                 720                 725

gga aga ctg gga gag cag tca ggc aga gga gga gga gat gga aga ctg      25724
Gly Arg Leu Gly Glu Gln Ser Gly Arg Gly Gly Gly Asp Gly Arg Leu
            730                 735                 740

gga cag cac tca ggc aga gga gga cag cct gca aga cag tct gga aga      25772
Gly Gln His Ser Gly Arg Gly Gly Gln Pro Ala Arg Gln Ser Gly Arg
        745                 750                 755

cga ggt gga gga ggc aga gga aga agc agc cgc cgc cag acc gtc gtc      25820
Arg Gly Gly Gly Gly Arg Gly Arg Ser Ser Arg Arg Gln Thr Val Val
    760                 765                 770

ctc ggc gga gaa agc aag cag cac gga tac cat ctc cgc tcc ggg tcg      25868
Leu Gly Gly Glu Ser Lys Gln His Gly Tyr His Leu Arg Ser Gly Ser
775                 780                 785                 790

ggg tct cgg cgg ccg ggc cca cag tagatgggac gagaccgggc gcttcccgaa     25922
Gly Ser Arg Arg Pro Gly Pro Gln
                795

ccccaccacc cagaccggta agaaggagcg gcagggatac aagtcctggc gggggcacaa    25982

aaacgccatc gtctcctgct tgcaagcctg cgggggcaac atctccttca cccggcgcta    26042

cctgctcttc caccgcgggg tgaacttccc ccgcaacatc ttgcattact accgtcacct    26102

ccacagcccc tactactgtt tccaagaaga ggcagaaacc cagcagcagc agaaaaccag    26162
```

```
cagcagctag aaaatccaca gcggcggcgg cggcaggtgg actgaggatc gcggcgaacg    26222

agccggcgca gacccgggag ctgaggaacc ggatctttcc caccctctat gccatcttcc    26282

agcagagtcg ggggcaggag caggaactga aagtcaagaa ccgttctctg cgctcgctca    26342

cccgcagttg tctgtatcac aagagcgaag accaacttca gcgcactctc gaggacgccg    26402

aggctctctt caacaagtac tgcgcgctca ctcttaaaga gtagcccgcg cccgcccaca    26462

cacggaaaaa ggcgggaatt acgtcaccac ctgcgccctt cgcccgacca tcatcatgag    26522

caaagagatt cccacgcctt acatgtggag ctaccagccc cagatgggcc tggccgccgg    26582

cgccgcccag gactactcca cccgcatgaa ctggctcagt gccgggcccg cgatgatctc    26642

acgggtgaat gacatccgcg cccaccgaaa ccagatactc ctagaacagt cagcgatcac    26702

cgccacgccc cgccatcacc ttaatccgcg taattggccc gccgccctgg tgtaccagga    26762

aattccccag cccacgaccg tactacttcc gcgagacgcc caggccgaag tccagctgac    26822

taactcaggt gtccagctgg ccggcggcgc cgccctgtgt cgtcaccgcc ccgctcaggg    26882

tataaagcgg ctggtgatcc gaggcagagg cacacagctc aacgacgagg tggtgagctc    26942

ttcgctgggt ctgcgacctg acggagtctt ccaactcgcc ggatcgggga gatcttcctt    27002

cacgcctcgt caggccgtcc tgactttgga gagttcgtcc tcgcagcccc gctcgggtgg    27062

catcggcact ctccagttcg tggaggagtt cactccctcg gtctacttca acccccttctc    27122

cggctccccc ggccactacc cggacgagtt catcccgaac ttcgacgcca tcagcgagtc    27182

ggtggacggc tacgattgaa tgtcccatgg tggcgcggct gacctagctc ggcttcgaca    27242

cctggaccac tgccgccgct tccgctgctt cgctcgggat ctcgccgagt ttgcctactt    27302

tgagctgccc gaggagcacc ctcagggccc ggcccacgga gtgcggatca tcgtcgaagg    27362

gggcctcgac tcccacctgc ttcggatctt cagccagcgt ccgatcctgg tcgagcgcga    27422

gcaaggacag acccgtctga ccctgtactg catctgcaac caccccggcc tgc atg        27478
                                                            Met

aaa gtc ttt gtt gtc tgc tgt gta ctg agt ata ata aaa gct gag atc      27526
Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu Ile
800                 805                 810                 815

agc gac tac tcc gga ctt ccg tgt gtt cct gaa tcc atc aac cag tcc      27574
Ser Asp Tyr Ser Gly Leu Pro Cys Val Pro Glu Ser Ile Asn Gln Ser
                820                 825                 830

ctg ttc ttc acc ggg aac gag acc gag ctc cag ctc cag tgt aag ccc      27622
Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys Pro
            835                 840                 845

cac aag aag tac ctc acc tgg ctg ttc cag ggc tcc ccg atc gcc gtt      27670
His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala Val
        850                 855                 860

gtc aac cac tgc gac aac gac gga gtc ctg ctg agc ggc cct gcc aac      27718
Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala Asn
    865                 870                 875

ctt act ttt tcc acc cgc aga agc aag ctc cag ctc ttc caa ccc ttc      27766
Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro Phe
```

```
880                 885                 890                 895

ctc ccc ggg acc tat cag tgc gtc tcg gga ccc tgc cat cac acc ttc      27814
Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr Phe
                900                 905                 910

cac ctg atc ccg aat acc aca gcg tcg ctc ccc gct act aac aac caa      27862
His Leu Ile Pro Asn Thr Thr Ala Ser Leu Pro Ala Thr Asn Asn Gln
            915                 920                 925

act acc cac caa cgc cac cgt cgc gac ctt tcc tct gaa tct aat acc      27910
Thr Thr His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn Thr
        930                 935                 940

act acc gga ggt gag ctc cga ggt cga cca acc tct ggg att tac tac      27958
Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr Tyr
    945                 950                 955

ggc ccc tgg gag gtg gtg ggg tta ata gcg cta ggc cta gtt gtg ggt      28006
Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Val Gly
960                 965                 970                 975

ggg ctt ttg gct ctc tgc tac cta tac ctc cct tgc tgt tcg tac tta      28054
Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr Leu
                980                 985                 990

gtg gtg ctg tgt tgc tgg ttt aag aaa  tgg ggc aga tca ccc             28096
Val Val Leu Cys Cys Trp Phe Lys Lys  Trp Gly Arg Ser Pro
            995                 1000                1005

tagtgagctg cggtgtgctg gtggcggtgg tgctttcgat tgtgggactg ggcggcgcgg    28156

ctgtagtgaa ggagaaggcc gatccctgct tgcatttcaa tcccgataaa tgccagctga    28216

gttttcagcc cgatggcaat cggtgcgcgg tgctgatcaa gtgcggatgg gaatgcgaga    28276

acgtgagaat cgagtacaat aacaagactc ggaacaatac tctcgcgtcc acgtggcagc    28336

ccggggaccc cgagtggtac accgtctctg tccccggtgc tgacggctcc ccgcgcaccg    28396

tgaataatac tttcattttt gcgcacatgt gcgacacggt catgtggatg agcaagcagt    28456

acgatatgtg gccccccacg aaggagaaca tcgtggtctt ctccatcgct tacagcctgt    28516

gcacggtgct aatcaccgct atcgtgtgcc tgagcattca catgctcatc gctattcgcc    28576

ccagaaataa tgccgaaaaa gaaaaacagc cataacacgt tttttcacac acctttttca    28636

gaccatggcc tctgttaaat ttttgctttt atttgccagt ctcattactg ttataagtaa    28696

tgagaaactc actatttaca ttggcactaa ccacactcta gaaggaattc caaaatcctc    28756

atggtattgc tattttgatc aagatccaga cttaactata gaactgtgtg gtaacaaggg    28816

acaaaataca agcattcatt taattaactt taaatgcgga gacgatttga aattaattaa    28876

tatcactaaa gagtatggag gtatgtatta ctatgttaca gaaaataaca acatgcagtt    28936

ttatgaagtt actgtaacta atcccaccac gcctagaaca acaacaacca ccacaaagac    28996

tacacctgtt accactatgc agctcactac caataacatt tttgccatgc gtcagaaggc    29056

caacaatagc accagcattc aacccccccc acccagtgag gaaattccca aatccatgat    29116

tggcattatt gttgctgtag tggtgtgcat gttgatcatc gccttgtgca tggtgtacta    29176

tgccttctgc tacagaaagc acagactgaa cgacaagcta gaacacttac taagtgttga    29236

attttaattt ttttagaacc atg aag atc cta ggc  ctt tta att ttt tct       29286
```

```
                        Met Lys Ile Leu Gly  Leu Leu Ile Phe Ser
                                            1010                1015

atc att acc tct gct  cta tgc aat tct gac  aat gag gac gtt act        29331
Ile Ile Thr Ser Ala  Leu Cys Asn Ser Asp  Asn Glu Asp Val Thr
                1020                1025                1030

gtc gtt gtc gga tca  aat tat aca ctg aaa  ggt cca gcg aag ggt        29376
Val Val Val Gly Ser  Asn Tyr Thr Leu Lys  Gly Pro Ala Lys Gly
                1035                1040                1045

atg ctt tcg tgg tat  tgc tgg ttt gga act  gac act gaa caa acc        29421
Met Leu Ser Trp Tyr  Cys Trp Phe Gly Thr  Asp Thr Glu Gln Thr
                1050                1055                1060

gaa tta tgc aat ctt  caa aat ggc aaa gtt  cat aat tct aaa att        29466
Glu Leu Cys Asn Leu  Gln Asn Gly Lys Val  His Asn Ser Lys Ile
                1065                1070                1075

tac aat tat ata tgc  aat ggc act gat ttg  ata ctc ctc aat atc        29511
Tyr Asn Tyr Ile Cys  Asn Gly Thr Asp Leu  Ile Leu Leu Asn Ile
                1080                1085                1090

acg aaa tca tat gct  ggc agt tat tca tgc  cct gga gat gat gct        29556
Thr Lys Ser Tyr Ala  Gly Ser Tyr Ser Cys  Pro Gly Asp Asp Ala
                1095                1100                1105

gac aat atg att ttt  tat aaa ttg caa gtg  gtt gat ccc act act        29601
Asp Asn Met Ile Phe  Tyr Lys Leu Gln Val  Val Asp Pro Thr Thr
                1110                1115                1120

cca cct cca ccc acc  aca act act cac acc  aca cac aca gaa caa        29646
Pro Pro Pro Pro Thr  Thr Thr Thr His Thr  Thr His Thr Glu Gln
                1125                1130                1135

acc aca gca gag gag  gcg gca aag tta gct  ttg cag gtc caa gac        29691
Thr Thr Ala Glu Glu  Ala Ala Lys Leu Ala  Leu Gln Val Gln Asp
                1140                1145                1150

agt tca ttt gtt ggc  att acc cct aca ccc  gat cag cgg tgt ccg        29736
Ser Ser Phe Val Gly  Ile Thr Pro Thr Pro  Asp Gln Arg Cys Pro
                1155                1160                1165

ggg ctg ctc gtc agc  ggc att gtc ggt gtg  ctt tcg gga tta gca        29781
Gly Leu Leu Val Ser  Gly Ile Val Gly Val  Leu Ser Gly Leu Ala
                1170                1175                1180

gtt ata atc atc tgc  atg ttc att ttt gct  tgc tgc tat aga agg        29826
Val Ile Ile Ile Cys  Met Phe Ile Phe Ala  Cys Cys Tyr Arg Arg
                1185                1190                1195

ctt tac cga caa aaa  tca gac cca ctg ctg  aac ctc tat gtt            29868
Leu Tyr Arg Gln Lys  Ser Asp Pro Leu Leu  Asn Leu Tyr Val
                1200                1205

taatttttc cagagccatg aaggcagtta gcgctctagt tttttgttct ttgattggca    29928

ctgtttttag tgttagcttt ttaaaacaaa ttaatgttac tgaggggaa aatgtgacac    29988

tggtaggcgt agaaggtgct caaaatacca cctggacaaa ataccacctc gatgggtgga    30048

aagatatttg caattggagt gtcattactt acacatgtga gggagttaat ttgaccatag    30108

tcaatgccag ccaaaatcag aagggttgga ttaaagggca atctgttagt gttaccagtg    30168

aggggtacta tacccagcat actcttatct atgacattat agtcataccg ctgcctacgc    30228

ctagcccacc tagcactacc acacagacaa cccacactac acaaacaacc acatacagta    30288
```

```
catcaaatca gcctaccacc actacaacag cagaggttgc cagctcgtct ggggtccgag    30348

cggcattttt gatgttggcc ccatctagca gtcccactgc tagtaccaat gagcagacta    30408

ctgaattttt gtccactgtc gagagccaca ccacagctac ctcgagtgcc ttctctagca    30468

ccgccaatct ctcctcgctt tcctctacac caatcagtcc cgctactact actacccccg    30528

ctattcttcc cactcccctg aagcaaactg aggacagcgg catgcaatgg cagatcaccc    30588

tgctcattgt gatcgggttg gtcatcctag ccgtgttgct ctactacatc ttccgccgcc    30648

gcattcccaa cgcgcaccgc aagccggtct acaagcccat cattgtcggg cagccggagc    30708

cgcttcaggt ggaagggggt ctaaggaatc ttctcttctc ttttacagta tggtgattga    30768

actatgattc ctagacaatt cttgatcact attcttatct gcctcctcca agtctgtgcc    30828

accctcgctc tggtggccaa cgccagtcca gactgtattg ggcccttcgc ctcctacgtg    30888

ctctttgcct tcatcacctg catctgctgc tgtagcatag tctgcctgct tatcaccttc    30948

ttccagttca ttgactggat ctttgtgcgc atcgcctacc tgcgccacca cccccagtac    31008

cgcgaccagc gagtggcgca gctgctcagg ctcctctgat aagc atg  cgg gct ctg    31064
                                                 Met  Arg Ala Leu
                                                 1210

cta ctt  ctc gcg ctt ctg ctg  tta gtg ctc ccc cgt  ccc gtt gac       31109
Leu Leu  Leu Ala Leu Leu Leu  Leu Val Leu Pro Arg  Pro Val Asp
    1215                 1220                 1225

ccc cgg  ccc ccc act cag tcc  ccc gag gag gtc cgc  aaa tgc aaa       31154
Pro Arg  Pro Pro Thr Gln Ser  Pro Glu Glu Val Arg  Lys Cys Lys
    1230                 1235                 1240

ttc caa  gaa ccc tgg aaa ttc  ctc aaa tgc tac cgc  caa aaa tca       31199
Phe Gln  Glu Pro Trp Lys Phe  Leu Lys Cys Tyr Arg  Gln Lys Ser
    1245                 1250                 1255

gac atg  cat ccc agc tgg atc  atg atc att ggg atc  gtg aac att       31244
Asp Met  His Pro Ser Trp Ile  Met Ile Ile Gly Ile  Val Asn Ile
    1260                 1265                 1270

ctg gcc  tgc acc ctc atc tcc  ttt gtg att tac ccc  tgc ttt gac       31289
Leu Ala  Cys Thr Leu Ile Ser  Phe Val Ile Tyr Pro  Cys Phe Asp
    1275                 1280                 1285

ttt ggt  tgg aac tcg cca gag  gcg ctc tat ctc ccg  cct gaa cct       31334
Phe Gly  Trp Asn Ser Pro Glu  Ala Leu Tyr Leu Pro  Pro Glu Pro
    1290                 1295                 1300

gac aca  cca cca cag caa cct  cag gca cac gca cta  cca cca cca       31379
Asp Thr  Pro Pro Gln Gln Pro  Gln Ala His Ala Leu  Pro Pro Pro
    1305                 1310                 1315

cag cct  agg cca caa tac atg  ccc ata tta gac tat  gag gcc gag       31424
Gln Pro  Arg Pro Gln Tyr Met  Pro Ile Leu Asp Tyr  Glu Ala Glu
    1320                 1325                 1330

cca cag  cga ccc atg ctc ccc  gct att agt tac ttc  aat cta acc       31469
Pro Gln  Arg Pro Met Leu Pro  Ala Ile Ser Tyr Phe  Asn Leu Thr
    1335                 1340                 1345

ggc gga  gat gac tgacccactg gccaacaaca acgtcaacga ccttctcctg        31521
Gly Gly  Asp Asp
    1350

gacatggacg gccgcgcctc ggagcagcga ctcgcccaac ttcgcattcg ccagcagcag    31581
```

gagagagccg tcaaggagct gcaggacggc atagccatcc accagtgcaa gaaaggcatc 31641
ttctgcctgg tgaaacaggc caagatctcc tacgaggtca cccagaccga ccatcgcctc 31701
tcctacgagc tcctgcagca gcgccagaag ttcacctgcc tggtcggagt caaccccatc 31761
gtcatcaccc agcagtcggg cgataccaag gggtgcatcc actgctcctg cgactccccc 31821
gactgcgtcc acactctgat caagaccctc tgcggcctcc gcgacctcct ccccatgaac 31881
taatcacccc cttatccagt gaaataaaga tcatattgat gattaaataa aaaaaataat 31941
catttgattt gaaataaaga tacaatcata ttgatgattt gagtttaata aaaataaaga 32001
atcacttact tgaaatctga taccaggtct ctgtccatgt tttctgccaa caccacttca 32061
ctcccctctt cccagctctg gtactgcagg ccccggcggg ctgcaaactt cctccacacc 32121
ctgaagggga tgtcaaattc ctcctgtccc tcaatcttca ttttatcttc tatcagatgt 32181
ccaaaaagcg cgtccgggtg gatgatgact tcgaccccgt ctacccctac gatgcagaca 32241
acgcaccgac cgtgcccttc atcaaccccc ccttcgtctc ttcagatgga ttccaagaga 32301
agcccctggg ggtgctgtcc ctgcgtctgg ccgatcccgt caccaccaag aacggggaaa 32361
tcaccctcaa gctgggagat ggggtggacc tcgactcctc gggaaaactc atctccaaca 32421
cggccaccaa ggccgccgcc cctctcagtt tttccaacaa caccatttcc cttaacatgg 32481
ataccccttt ttacaacaac aatggaaagt taggcatgaa agtcactgct ccactgaaga 32541
tactagacac agacttgcta aaaacacttg ttgtagctta tggacaaggt ttaggaacaa 32601
acaccactgg tgcccttgtt gcccaactag catccccact tgcttttgat agcaatagca 32661
aaattgccct taatttaggc aatggaccat tgaaagtgga tgcaaataga ctgaacatca 32721
attgcaatag aggactctat gttactacca caaaagatgc actggaagcc aatataagtt 32781
gggctaatgc tatgacattt ataggaaatg ccatgggtgt caatattgat acacaaaaag 32841
gcttgcaatt tggcaccact agtaccgtcg cagatgttaa aaacgcttac cccatacaaa 32901
tcaaacttgg agctggtctc acatttgaca gcacaggtgc aattgttgca tggaacaaag 32961
atgatgacaa gcttacacta tggaccacag ccgacccctc tccaaattgt cacatatatt 33021
ctgaaaagga tgctaagctt acactttgct tgacaaagtg tggcagtcag attctgggca 33081
ctgtttccct catagctgtt gatactggca gtttaaatcc cataacagga acagtaacca 33141
ctgctcttgt ctcacttaaa ttcgatgcaa atggagtttt gcaaagcagc tcaacactag 33201
actcagacta ttggaatttc agacagggag atgttacacc tgctgaagcc tatactaatg 33261
ctataggttt catgcccaat ctaaaagcat accctaaaaa cacaagtgga gctgcaaaaa 33321
gtcacattgt tgggaaagtg tacctacatg gggatacaga caaaccactg gacctcatta 33381
ttactttcaa tgaaacaagt gatgaatctt gcacttactg tattaacttt caatggcagt 33441
ggggggctga tcaatataaa aatgaaacac ttgccgtcag ttcattcacc ttttcctata 33501
ttgctaaaga ataaacccca ctctgtaccc catctctgtc tatggaaaaa actctgaaac 33561
acaaaataaa ataaagttca agtgttttat tgattcaaca gttttacagg attcgagcag 33621

```
ttatttttcc tccaccctcc caggacatgg aatacaccac cctctccccc cgcacagcct    33681

tgaacatctg aatgccattg gtgatggaca tgcttttggt ctccacgttc cacacagttt    33741

cagagcgagc cagtctcggg tcggtcaggg agatgaaacc ctccgggcac tcccgcatct    33801

gcacctcaca gctcaacagc tgaggattgt cctcggtggt cgggatcacg gttatctgga    33861

agaagcagaa gagcggcggt gggaatcata gtccgcgaac gggatcggcc ggtggtgtcg    33921

catcaggccc cgcagcagtc gctgtcgccg ccgctccgtc aagctgctgc tcaggggtc     33981

cgggtccagg gactccctca gcatgatgcc cacggccctc agcatcagtc gtctggtgcg    34041

gcgggcgcag cagcgcatgc ggatctcgct caggtcgctg cagtacgtgc aacacaggac    34101

caccaggttg ttcaacagtc catagttcaa cacgctccag ccgaaactca tcgcgggaag    34161

gatgctaccc acgtggccgt cgtaccagat cctcaggtaa atcaagtggc gccccctcca    34221

gaacacgctg cccatgtaca tgatctcctt gggcatgtgg cggttcacca cctcccggta    34281

ccacatcacc ctctggttga acatgcagcc ccggatgatc ctgcggaacc acagggccag    34341

caccgccccg cccgccatgc agcgaagaga ccccgggtcc cgacaatggc aatggaggac    34401

ccaccgctcg tacccgtgga tcatctggga gctgaacaag tctatgttgg cacagcacag    34461

gcatatgctc atgcatctct tcagcactct cagctcctcg ggggtcaaaa ccatatccca    34521

gggcacgggg aactcttgca ggacagcgaa ccccgcagaa cagggcaatc ctcgcacata    34581

acttacattg tgcatggaca gggtatcgca atcaggcagc accgggtgat cctccaccag    34641

agaagcgcgg gtctcggtct cctca cag cgt ggt  aag ggg gcc ggc cga  tac    34693
                           Gln Arg Gly  Lys Gly Ala Gly Arg  Tyr
                                  1355                 1360

ggg tga tgg cgg gac  gcg gct gat cgt gtt  cgc gac cgt gtc atg        34738
Gly     Trp Arg Asp  Ala Ala Asp Arg Val  Arg Asp Arg Val Met
                1365                 1370                 1375

atg cag ttg ctt tcg  gac att ttc gta ctt  gct gta gca gaa cct        34783
Met Gln Leu Leu Ser  Asp Ile Phe Val Leu  Ala Val Ala Glu Pro
                1380                 1385                 1390

ggt ccg ggc gct gca  cac cga tcg ccg gcg  gcg gtc ccg gcg ctt        34828
Gly Pro Gly Ala Ala  His Arg Ser Pro Ala  Ala Val Pro Ala Leu
                1395                 1400                 1405

gga acg ctc ggt gtt  gaa gtt gta aaa cag  cca ctc tct cag acc        34873
Gly Thr Leu Gly Val  Glu Val Val Lys Gln  Pro Leu Ser Gln Thr
                1410                 1415                 1420

gtg cag cag atc tag ggc  ctc agg agt gat gaa  gat ccc atc atg        34918
Val Gln Gln Ile     Gly  Leu Arg Ser Asp Glu  Asp Pro Ile Met
                   1425                 1430

cct  gat ggc tct aat cac  atc gac cac cgt gga  atg ggc cag acc       34963
Pro  Asp Gly Ser Asn His  Ile Asp His Arg Gly  Met Gly Gln Thr
1435                1440                 1445

cag  cca gat gat gca att  ttg ttg ggt ttc ggt  gac ggc ggg gga       35008
Gln  Pro Asp Asp Ala Ile  Leu Leu Gly Phe Gly  Asp Gly Gly Gly
1450                1455                 1460

ggg  aag aac agg aag aac  cat gattaacttt taatccaaac ggtctcggag       35059
Gly  Lys Asn Arg Lys Asn  His
1465                1470
```

cacttcaaaa tgaagatcgc ggagatggca cctctcgccc ccgctgtgtt ggtggaaaat 35119
aacagccagg tcaaaggtga tacggttctc gagatgttcc acggtggctt ccagcaaagc 35179
ctccacgcgc acatccagaa acaagacaat agcgaaagcg ggagggttct ctaattcctc 35239
aatcatcatg ttacactcct gcaccatccc cagataattt tcatttttcc agccttgaat 35299
gattcgaact agttcctgag gtaaatccaa gccagccatg ataaagagct cgcgcagagc 35359
gccctccacc ggcattctta agcacaccct cataattcca agatattctg ctcctggttc 35419
acctgcagca gattgacaag cggaatatca aaatctctgc cgcgatccct aagctcctcc 35479
ctcagcaata actgtaagta ctctttcata tcctctccga aatttttagc cataggaccg 35539
ccaggaatga gattaggaca agccacatta cagataaacc gaagtccccc ccagtgagca 35599
ttgccaaatg taagattgaa ataagcatgc tggctagacc cggtgatatc ttccagataa 35659
ctggacagaa aatcgcccag gcaattttta agaaaatcaa caaaagaaaa atcttccagg 35719
tgcacgttta gggcctcggg aacaacgatg gagtaagtgc aaggggtgcg ttccagcatg 35779
gttagttagc tgatctgtaa aaaaacaaaa aataaaacat taaaccatgc tagcctggcg 35839
aacaggtggg taaatcgttc tctccagcac caggcaggcc acggggtctc cggcgcgacc 35899
ctcgtaaaaa ttgtcgctat gattgaaaac catcacagag agacgttccc ggtggccggc 35959
gtgaatgatt cgacaagatg aatacacccc cggaacattg gcgtccgcga gtgaaaaaaa 36019
gcggccgagg aagcaataag gcactacaat gctcagtctc aagtccagca aagcgatgcc 36079
atgcggatga agcacaaaat tctcaggtgc gtacaaaatg taattactcc cctcctgcac 36139
aggcagcaaa gccccagatc cctccagata cacatacaaa gcctcagcgt ccatagctta 36199
ccgagcagca gcacacaaca ggcgcaagag tcagagaaag gctgagctct aacctgtccc 36259
ccgctctctg ctcaatatat agcccagatc tacactgacg taaaggccaa agtctaaaaa 36319
tacccgccaa ataatcacac acgcccagca cacgcccaga aaccggtgac acactcaaaa 36379
aaatacgcgc acttcctcaa acgcccaaac tgccgtcatt tccgggttcc cacgctacgt 36439
catcagaatt cgactttcaa atccgtcgac cgttaaacac gtcactcgcc ccgcccctaa 36499
cggtcgccct cctctcggcc aatcacagcc ccgcatcccc aaattcaaac gcctcatttg 36559
catattaacg cgcacaaaaa gtttgaggta tattattgat gatgatcgtt taaactatgc 36619
ggtgtgaaat accgcacaga tgcgtaagga gaaaataccg catcaggcgc tcttccgctt 36679
cctcgctcac tgactcgctg cgctcggtcg ttcggctgcg gcgagcggta tcagctcact 36739
caaaggcggt aatacggtta tccacagaat caggggataa cgcaggaaag aacatgtgag 36799
caaaaggcca gcaaaaggcc aggaaccgta aaaaggccgc gttgctggcg tttttccata 36859
ggctccgccc ccctgacgag catcacaaaa atcgacgctc aagtcagagg tggcgaaacc 36919
cgacaggact ataaagatac caggcgtttc cccctggaag ctccctcgtg cgctctcctg 36979
ttccgaccct gccgcttacc ggatacctgt ccgcctttct cccttcggga agcgtggcgc 37039
tttctcatag ctcacgctgt aggtatctca gttcggtgta ggtcgttcgc tccaagctgg 37099

gctgtgtgca cgaacccccc gttcagcccg accgctgcgc cttatccggt aactatcgtc 37159

ttgagtccaa cccggtaaga cacgacttat cgccactggc agcagccact ggtaacagga 37219

ttagcagagc gaggtatgta ggcggtgcta cagagttctt gaagtggtgg cctaactacg 37279

gctacactag aaggacagta tttggtatct gcgctctgct gaagccagtt accttcggaa 37339

aaagagttgg tagctcttga tccggcaaac aaaccaccgc tggtagcggt ggtttttttg 37399

tttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct ttgatctttt 37459

ctacggggtc tgacgctcag tggaacgaaa actcacgtta agggattttg gtcatgagat 37519

tatcaaaaag gatcttcacc tagatccttt taaattaaaa atgaagtttt aaatcaatct 37579

aaagtatata tgagtaaact tggtctgaca gttaccaatg cttaatcagt gaggcaccta 37639

tctcagcgat ctgtctattt cgttcatcca tagttgcctg actccccgtc gtgtagataa 37699

ctacgatacg ggagggctta ccatctggcc ccagtgctgc aatgataccg cgagacccac 37759

gctcaccggc tccagattta tcagcaataa accagccagc cggaagggcc gagcgcagaa 37819

gtggtcctgc aactttatcc gcctccatcc agtctattaa ttgttgccgg gaagctagag 37879

taagtagttc gccagttaat agtttgcgca acgttgttgc cattgctgca ggcatcgtgg 37939

tgtcacgctc gtcgtttggt atggcttcat tcagctccgg ttcccaacga tcaaggcgag 37999

ttacatgatc ccccatgttg tgcaaaaaag cggttagctc cttcggtcct ccgatcgttg 38059

tcagaagtaa gttggccgca gtgttatcac tcatggttat ggcagcactg cataattctc 38119

ttactgtcat gccatccgta agatgctttt ctgtgactgg tgagtactca accaagtcat 38179

tctgagaata gtgtatgcgg cgaccgagtt gctcttgccc ggcgtcaaca cgggataata 38239

ccgcgccaca tagcagaact ttaaaagtgc tcatcattgg aaaacgttct tcggggcgaa 38299

aactctcaag gatcttaccg ctgttgagat ccagttcgat gtaacccact cgtgcaccca 38359

actgatcttc agcatctttt actttcacca gcgtttctgg gtgagcaaaa acaggaaggc 38419

aaaatgccgc aaaaaaggga ataagggcga cacggaaatg ttgaatactc atactcttcc 38479

tttttcaata ttattgaagc atttatcagg gttattgtct catgagcgga tacatatttg 38539

aatgtattta gaaaaataaa caaatagggg ttccgcgcac atttccccga aaagtgccac 38599

ctgacgtcta agaaaccatt attatcatga cattaaccta taaaaatagg cgtatcacga 38659

ggccctttcg tcttcaagaa ttgtttaaac tac 38692

<210> 280
<211> 798
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 280

Met Glu Thr Gln Pro Ser Ser Pro Thr Ser Pro Ser Ala Pro Ala Ala
1 5 10 15

```
Ala Asp Glu Asn Gln Gln Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro
            20                  25                  30

Pro Ser Pro Thr Ser Asp Ala Ala Ala Pro Asp Met Gln Glu Met Glu
        35                  40                  45

Glu Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His Glu
    50                  55                  60

Glu Glu Leu Ala Ala Arg Phe Ser Ala Pro Glu Glu Asn His Gln Glu
65                  70                  75                  80

Gln Pro Glu Gln Glu Ala Glu Ser Glu Gln Ser Gln Ala Gly Leu Glu
                85                  90                  95

His Gly Asp Tyr Leu Ser Gly Ala Glu Asp Val Leu Ile Lys His Leu
            100                 105                 110

Ala Arg Gln Cys Ile Ile Val Lys Asp Ala Leu Leu Asp Arg Ala Glu
        115                 120                 125

Val Pro Leu Ser Val Ala Glu Leu Ser Arg Ala Tyr Glu Arg Asn Leu
    130                 135                 140

Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr Cys Glu
145                 150                 155                 160

Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro Glu Ala
                165                 170                 175

Leu Ala Thr Tyr His Leu Phe Phe Lys Asn Gln Arg Ile Pro Val Ser
            180                 185                 190

Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Leu Asn Leu Gly Pro
        195                 200                 205

Gly Ala Arg Leu Pro Asp Ile Ala Ser Leu Glu Glu Val Pro Lys Ile
    210                 215                 220

Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala Leu Gln
225                 230                 235                 240

Gly Ser Gly Glu Glu His Glu His His Ser Ala Leu Val Glu Leu Glu
                245                 250                 255

Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu Leu Thr
            260                 265                 270

His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met Ser Ala
        275                 280                 285

Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Leu Ser Glu Glu
```

290 295 300

Glu Met Gln Asp Pro Glu Ser Ser Asp Glu Gly Lys Pro Val Val Ser
305 310 315 320

Asp Glu Gln Leu Ala Arg Trp Leu Gly Thr Ser Ser Thr Pro Gln Ser
325 330 335

Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr Val
340 345 350

Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu Arg
355 360 365

Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val Arg
370 375 380

Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr
385 390 395 400

Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His Thr
405 410 415

Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val Tyr
420 425 430

Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln Gln
435 440 445

Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln Lys
450 455 460

Asn Leu Lys Ala Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala Ser
465 470 475 480

Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu Arg
485 490 495

Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe Arg
500 505 510

Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser Ala
515 520 525

Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro Pro
530 535 540

Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala Tyr
545 550 555 560

His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu Cys
565 570 575

```
His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys Asn
            580                 585                 590

Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu Gln
        595                 600                 605

Gly Pro Gly Glu Glu Gly Lys Gly Gly Leu Lys Leu Thr Pro Gly Leu
    610                 615                 620

Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp Tyr His Pro
625                 630                 635                 640

Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro Pro Lys Ala Glu
                645                 650                 655

Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu Ala Gln Leu Gln
            660                 665                 670

Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys Gly His Gly
        675                 680                 685

Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn Pro Ser Phe Pro
    690                 695                 700

Gln Asp Ala Gln Arg Lys Gln Gln Glu Ala Glu Ser Gly Ala Ala Ala
705                 710                 715                 720

Ala Ala Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Ser Gly Arg Gly
                725                 730                 735

Gly Gly Asp Gly Arg Leu Gly Gln His Ser Gly Arg Gly Gly Gln Pro
            740                 745                 750

Ala Arg Gln Ser Gly Arg Arg Gly Gly Gly Gly Arg Gly Arg Ser Ser
        755                 760                 765

Arg Arg Gln Thr Val Val Leu Gly Gly Glu Ser Lys Gln His Gly Tyr
    770                 775                 780

His Leu Arg Ser Gly Ser Gly Ser Arg Arg Pro Gly Pro Gln
785                 790                 795


<210>  281
<211>  207
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  281

Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
```

1 5 10 15

Ile Ser Asp Tyr Ser Gly Leu Pro Cys Val Pro Glu Ser Ile Asn Gln
20 25 30

Ser Leu Phe Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys
35 40 45

Pro His Lys Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala
50 55 60

Val Val Asn His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala
65 70 75 80

Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro
85 90 95

Phe Leu Pro Gly Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr
100 105 110

Phe His Leu Ile Pro Asn Thr Thr Ala Ser Leu Pro Ala Thr Asn Asn
115 120 125

Gln Thr Thr His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn
130 135 140

Thr Thr Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr
145 150 155 160

Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Val
165 170 175

Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr
180 185 190

Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
195 200 205

<210> 282
<211> 204
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 282

Met Lys Ile Leu Gly Leu Leu Ile Phe Ser Ile Ile Thr Ser Ala Leu
1 5 10 15

Cys Asn Ser Asp Asn Glu Asp Val Thr Val Val Val Gly Ser Asn Tyr
20 25 30

```
Thr Leu Lys Gly Pro Ala Lys Gly Met Leu Ser Trp Tyr Cys Trp Phe
        35                  40                  45

Gly Thr Asp Thr Glu Gln Thr Glu Leu Cys Asn Leu Gln Asn Gly Lys
    50                  55                  60

Val His Asn Ser Lys Ile Tyr Asn Tyr Ile Cys Asn Gly Thr Asp Leu
65                  70                  75                  80

Ile Leu Leu Asn Ile Thr Lys Ser Tyr Ala Gly Ser Tyr Ser Cys Pro
                85                  90                  95

Gly Asp Asp Ala Asp Asn Met Ile Phe Tyr Lys Leu Gln Val Val Asp
            100                 105                 110

Pro Thr Thr Pro Pro Pro Pro Thr Thr Thr Thr His Thr Thr His Thr
        115                 120                 125

Glu Gln Thr Thr Ala Glu Glu Ala Ala Lys Leu Ala Leu Gln Val Gln
    130                 135                 140

Asp Ser Ser Phe Val Gly Ile Thr Pro Thr Pro Asp Gln Arg Cys Pro
145                 150                 155                 160

Gly Leu Leu Val Ser Gly Ile Val Gly Val Leu Ser Gly Leu Ala Val
                165                 170                 175

Ile Ile Ile Cys Met Phe Ile Phe Ala Cys Cys Tyr Arg Arg Leu Tyr
            180                 185                 190

Arg Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
        195                 200


<210>  283
<211>  143
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  283

Met Arg Ala Leu Leu Leu Leu Ala Leu Leu Leu Leu Val Leu Pro Arg
1               5                   10                  15

Pro Val Asp Pro Arg Pro Pro Thr Gln Ser Pro Glu Glu Val Arg Lys
            20                  25                  30

Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Lys Cys Tyr Arg Gln Lys
        35                  40                  45

Ser Asp Met His Pro Ser Trp Ile Met Ile Ile Gly Ile Val Asn Ile
    50                  55                  60
```

```
Leu Ala Cys Thr Leu Ile Ser Phe Val Ile Tyr Pro Cys Phe Asp Phe
65                  70                  75                  80


Gly Trp Asn Ser Pro Glu Ala Leu Tyr Leu Pro Pro Glu Pro Asp Thr
                85                  90                  95


Pro Pro Gln Gln Pro Gln Ala His Ala Leu Pro Pro Pro Gln Pro Arg
            100                 105                 110


Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala Glu Pro Gln Arg Pro
        115                 120                 125


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


<210>  284
<211>  10
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  284

Gln Arg Gly Lys Gly Ala Gly Arg Tyr Gly
1               5                   10


<210>  285
<211>  62
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  285

Trp Arg Asp Ala Ala Asp Arg Val Arg Asp Arg Val Met Met Gln Leu
1               5                   10                  15


Leu Ser Asp Ile Phe Val Leu Ala Val Ala Glu Pro Gly Pro Gly Ala
            20                  25                  30


Ala His Arg Ser Pro Ala Ala Val Pro Ala Leu Gly Thr Leu Gly Val
        35                  40                  45


Glu Val Val Lys Gln Pro Leu Ser Gln Thr Val Gln Gln Ile
    50                  55                  60


<210>  286
<211>  47
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct
```

<400> 286

Gly Leu Arg Ser Asp Glu Asp Pro Ile Met Pro Asp Gly Ser Asn His
1 5 10 15

Ile Asp His Arg Gly Met Gly Gln Thr Gln Pro Asp Asp Ala Ile Leu
20 25 30

Leu Gly Phe Gly Asp Gly Gly Gly Gly Lys Asn Arg Lys Asn His
35 40 45

<210> 287
<211> 36781
<212> DNA
<213> Artificial Sequence

<220>
<223> p2875 - E1 deleted molecular clone, based on Simian Adenovirus A1337

<220>
<221> repeat_region
<222> (1)..(123)
<223> ITR

<220>
<221> polyA_signal
<222> (749)..(951)

<220>
<221> polyA_signal
<222> (749)..(951)
<223> BGH-PolyA (bovine growth hormone (bGH) polyadenylation signal)

<220>
<221> misc_feature
<222> (2030)..(3651)
<223> IVa2 complement (2030..3360, 3640..3651)

<220>
<221> misc_feature
<222> (3640)..(11891)
<223> pol complement (3640..6705, 11883..11891)

<220>
<221> misc_feature
<222> (6513)..(11891)
<223> pTP complement (6513..8441, 11883..11891)

<220>
<221> CDS
<222> (8878)..(10059)
<223> 52K

<220>
<221> CDS
<222> (10086)..(11852)
<223> pIIIa

<220>
<221> CDS
<222> (11936)..(13531)
<223> penton

<220>

<221> CDS
<222> (13538)..(14116)
<223> pVII

<220>
<221> CDS
<222> (14161)..(15186)
<223> V

<220>
<221> CDS
<222> (15213)..(15443)
<223> pX

<220>
<221> CDS
<222> (15478)..(16254)
<223> pVI

<220>
<221> CDS
<222> (16360)..(19152)
<223> hexon

<220>
<221> CDS
<222> (19168)..(19797)
<223> protease

<220>
<221> CDS
<222> (19877)..(21412)
<223> DBP Complement (19877..21412)

<220>
<221> CDS
<222> (21441)..(23843)
<223> 100K

<220>
<221> CDS
<222> (24465)..(25145)
<223> pVIII

<220>
<221> CDS
<222> (25149)..(25466)
<223> E3\12.5K

<220>
<221> CDS
<222> (26043)..(26570)
<223> E3\gp19K

<220>
<221> CDS
<222> (26609)..(27349)
<223> E3\CR1-beta

<220>
<221> CDS
<222> (28011)..(28883)
<223> E3\CR1-delta

<220>
<221> CDS
<222> (29170)..(29616)
<223> E3\RID-beta

<220>
<221> CDS
<222> (30125)..(31594)
<223> fiber

<220>
<221> misc_feature
<222> (31690)..(33017)
<223> E4 orf 6/7 Complement (31690..31940, 32664..33017)

<220>
<221> CDS
<222> (31941)..(32837)
<223> E4\orf6 (complement 31941..32837)

<220>
<221> CDS
<222> (33120)..(33470)
<223> E4\orf3 (complement 33120..33470)

<220>
<221> CDS
<222> (33909)..(34280)
<223> E4\orf1 (complement 33909..34280)

<220>
<221> repeat_region
<222> (34558)..(34680)
<223> ITR (complement 34558..34680)

<220>
<221> misc_feature
<222> (34926)..(34932)
<223> pMB1\ORI: low copy number

<220>
<221> misc_feature
<222> (34935)..(35523)
<223> pMB1\ORI

<220>
<221> rep_origin
<222> (34936)..(34936)
<223> ORI

<220>
<221> CDS
<222> (35694)..(36557)
<223> AP(R) [Note: E-286] Complement (35694..36557)

<400> 287
caataatata cctcaaactt tttgtgcgcg ttaatatgca aatgaggcgt ttgaatttgg 60

gaagggagga aggtgattgg ccgagagaag ggcgaccgtt aggggcgggg cgagtgacgt 120

tttgatgacg tggccgcgag gaggagccag tttgcaagtt ctcgtgggaa aagtgacgtc 180

aaacgaggtg tggtttgaac acggaaatac tcaattttcc cgcgctctct gacaggaaat 240

gaggtgtttt tgggcggatg caagttaaaa cgggccattt tcgcgcgaaa actgaatgag 300

gaagtgaaaa tctgagtaat ttcgcgttta tggcagggag gagtatttgc cgagggccga 360

gtagactttg accgattacg tgggggtttc gattaccgtg tttttcacct aaatttccgc 420

gtacggtgtc aaagtccggt gtttttacat catttccccg aaaagtgcca cctgacgtaa 480

ctataacggt cctaaggtag cgaaagctca gatctcccga tcccctatgg tgcactctca 540

gtacaatctg ctctgatgcc gcatagttaa gccagtatct gctccctgct tgtgtgttgg 600
aggtcgctga gtagtgcgcg agcaaaattt aagctacaac aaggcaaggc ttgaccgaca 660
attgcatgaa gaatctgctt agggttaggc gttttgcgct gcttcgcgat gtacgggcca 720
gatatacgcg gtacgaaacc gctgatcagc ctcgactgtg ccttctagtt gccagccatc 780
tgttgtttgc ccctcccccg tgccttcctt gaccctggaa ggtgccactc ccactgtcct 840
ttcctaataa aatgaggaaa ttgcatcgca ttgtctgagt aggtgtcatt ctattctggg 900
gggtggggtg gggcaggaca gcaaggggga ggattgggaa gacaatagca ggcatgctgg 960
ggatgcggtg ggctctatgg cttctgaggc ggaaagaacc agcagatctg cagatctgaa 1020
ttcatctatg tcgggtgcgg agaaagaggt aatgaaatgg cacatatgct ggccaccgtg 1080
catgtggctt cccatgcccg caagccctgg cccgagttcg agcacaatgt catgaccagg 1140
tgcaatatgc atctggggtc tcgccgaggc atgttcatgc cctaccagtg caacctgaat 1200
tatgtgaagg tgctgctgga gcccgatgcc atgtccagag tgagcctgac gggggtgttt 1260
gacatgaatg tggaggtgtg gaagattctg agatatgatg aatccaagac caggtgccga 1320
gcctgcgagt gcggagggaa gcatgccagg ttccagcccg tgtgtgtgga tgtgacggag 1380
gacctgcgac ccgatcattt ggtgttgtcc tgcaccggga cggagttcgg ttccagcggg 1440
gaagaatctg actagagtga gtagtgttct ggggcggggg aggacctgca tgagggccag 1500
aatgattgaa atctgtgctt ttctgtgtgt tgcagcagca tgagcggaag cggctccttt 1560
gagggagggg tattcagccc ttatctgacg gggcgtctcc cctcctgggc gggagtgcgt 1620
cagaatgtga tgggatccac ggtggacggc cggcccgtgc agcccgcgaa ctcttcaacc 1680
ctgacctatg caaccctgag ctcttcgtcg gtggacgcag ctgccgccgc agctgctgca 1740
tctgccgcca gcgccgtgcg cggaatggcc atgggcgccg gctactacgg cactctggtg 1800
gccaactcga gttccaccaa taatcccgcc agcctgaacg aggagaagct gctgctgctg 1860
atggcccagc tcgaggcctt gacccagcgc ctgggcgagc tgacccagca ggtggctcag 1920
ctgcaggagc agacgcgggc cgcggttgcc acggtgaaat ccaaataaaa aatgaatcaa 1980
taaataaacg gagacggttg ttgattttaa cacagagtct gaatctttat ttgatttttc 2040
gcgcgcggta ggccctggac caccggtctc gatcattgag cactcggtgg atcttttcca 2100
ggacccggta gaggtgggct tggatgttga ggtacatggg catgagcccg tcccgggggt 2160
ggaggtagct ccattgcagg gcctcgtgct cgggggtggt gttgtaaatc acccagtcat 2220
agcaggggcg cagggcatgg tgttgcacaa tatctttgag gaggagactg atggccacgg 2280
gcagcccttt ggtgtaggtg tttacaaatc tgttgagctg ggagggatgc atgcgggggg 2340
agatgaggtg catcttggcc tggatcttga gattggcgat gttaccgccc agatcccgcc 2400
tggggttcat gttgtgcagg accaccagca cggtgtatcc ggtgcacttg gggaatttat 2460
catgcaactt ggaagggaag gcgtgaaaga atttggcgac gcccttgtgc ccgcccaggt 2520
tttccatgca ctcatccatg atgatggcga tggggccgtg ggcggcggcc tgggcaaaaa 2580
cgtttcgggg gtcggacaca tcatagttgt ggtcctgggt gagatcatca taggccattt 2640

taatgaattt ggggcggagg gtgccggact gggggacaaa ggtaccctcg atcccggggg 2700
cgtagttccc ctcacagatc tgcatctccc aggctttgag ctcggagggg gggatcatgt 2760
ccacctgcgg ggcgataaag aacacggttt ccggggcggg agagatgagc tgggccgaaa 2820
gcaagttccg gagcagctgg gacttgccgc agccggtggg gccgtagatg accccgatga 2880
ccggttgcag gtggtagttg agggagagac agctgccgtc ctcccggagg agggggggcca 2940
cctcgttcat catctcgcgc acgtgcatgt tctcgcgcac cagttccgcc aggaggcgct 3000
ctccccccag ggataggagc tcctggagcg aggcgaagtt tttcagcggc ttgagtccgt 3060
cggccatggg cattttggag agggtctgtt gcaagagttc caagcggtcc cagagctcgg 3120
tgatgtgctc tacggcatct cgatccagca gacctcctcg tttcgcgggt tggggcggct 3180
gcgggagtag ggcaccagac gatgggcgtc cagcgcagcc agggtccggt ccttccaggg 3240
tcgcagcgtc cgcgtcaggg tggtctccgt cacggtgaag gggtgcgcgc cgggctgggc 3300
gcttgcgagg gtgcgcttca ggctcatccg gctggtcgaa aaccgctccc gatcggcgcc 3360
ctgcgcgtcg gccaggtagc aattgaccat gagttcgtaa ttgagcgcct cggccgcgtg 3420
acctttggcg cggagcttac ctttggaagt ctgcccgcag gtgggacaga ggagggactt 3480
gagggcgtag agcttggggg cgaggaagac ggactcgggg gcgtaggcgt ccgcgccgca 3540
gtgggcgcag acggtctcgc actccacgag ccaggtgagg tcgggctggt cggggtcaaa 3600
aaccagtttc ccgccgttct ttttgatgcg tttcttacct ttggtctcca tgagctcgtg 3660
tccccgctgg gtgacaaaga ggctgtccgt gtccccgtag accgacttta tgggccggtc 3720
ctcgagcggt gtgccgcggt cctcctcgta gaggaacccc gcccactccg agacgaaagc 3780
ccgggtccag gccagcacga aggaggccac gtgggacggg tagcggtcgt tgtccaccag 3840
cgggtccacc ttctccaggg tatgcaaaca catgtccccc tcgtccacat ccaggaaggt 3900
gattggcttg taagtgtagg ccacgtgacc gggggtccca gccggggggg tataaaaggg 3960
ggcgggcccc tgctcgtcct cactgtcttc cggatcgctg tccaggagcg ccagctgttg 4020
gggtaggtat tccctctcga aggcgggcat gacctcggca ctcaggttgt cagtttctag 4080
aaacgaggag gatttgatat tgacggtgcc ggcggagatg cctttcaaga gcccctcgtc 4140
catctggtca gaaaagacga tctttttgtt gtcgagtttg gtggcgaagg agccgtagag 4200
ggcattggag aggagcttgg cgatagagcg catggtctgg ttttttcct tgtcggcgcg 4260
ctccttggcc gcgatgttga gctgcacgta ctcgcgcgcc acgcacttcc attcggggaa 4320
gacggtggtc agctcgtcgg gcacgattct gacttgccag ccccggttat gcagggtgat 4380
gaggtccaca ctggtgccca cctcgccgcg caggggctcg ttggtccagc agagtcgacc 4440
gcccttgcgc gagcagaagg ggggcagggg gtccagcatg acctcgtcgg gggggtcggc 4500
atcgatggtg aagatgcctg gcaggagatc ggggtcgaag tagctgatgg aagtggccag 4560
atcgtccagg gcagcttgcc attcgcgcac ggccagcgcg cgctcgtagg gactgagggg 4620
cgtgccccaa ggcatggggt gtgtgagcgc ggaggcgtac atgccgcaga tgtcgtagac 4680

gtagaggggc tcctcgagga tgccgatgta ggtggggtaa cagcgccccc cgcggatgct 4740

ggcgcgcacg tagtcataca gctcatgcga gggggcgagg agccccgggc ccaggttggt 4800

gcgactgggc ttttcggcgc ggtagacgat ctggcgaaag atggcatgcg agttggagga 4860

gatggtgggc ctttggaaga tgttgaagtg ggcgtggggc agaccgaccg agtcgcggat 4920

gaagtgggcg taggagtctt gcagtttggc gacgagctcg gcggtgacga ggacgtccag 4980

agcgcagtag tcgagggtct cctggatgat gtcatacttg agctggccct tttgtttcca 5040

cagctcgcgg ttgagaagga actcttcgcg gtccttccag tactcttcga gggggaaccc 5100

gtcctgatct gcacggtaag agcctagcat gtagaactgg ttgacggcct tgtaggcgca 5160

gcagcccttc tccacgggga gggcgtaggc ctgggcggcc ttgcgcaggg aggtgtgcgt 5220

gagggcgaag gtgtccctga ccatgacctt gaggaactgg tgcttgaaat cgatatcgtc 5280

gcagcccccc tgctcccaga gctggaagtc cgtgcgcttc ttgtaggcgg ggttgggcaa 5340

agcgaaagta acatcgttga aaaggatctt gcccgcgcgg ggcataaagt tgcgagtgat 5400

gcggaaaggc tggggcacct cggcccggtt gttgatgacc tgggcggcga gcacgatctc 5460

gtcgaaaccg ttgatgttgt ggcccacgat gtagagttcc acgaatcgcg ggcggccctt 5520

gacgtggggc agcttcttga gctcctcgta ggtgagctcg tcggggtcgc tgagaccgtg 5580

ctgctcgagc gcccagtcgg cgagatgggg gttggcgcgg aggaaggaag tccagagatc 5640

cacggccagg gcggtttgca gacggtcccg gtactgacgg aactgctgcc cgacggccat 5700

tttttcgggg gtgacgcagt agaaggtgcg ggggtccccg tgccagcggt cccatttgag 5760

ctggagggcg agatcgaggg cgagctcgac gaggcggtcg tccccggaga gtttcatgac 5820

cagcatgaag gggacgagct gcttgccgaa ggaccccatc caggtgtagg tttccacatc 5880

gtaggtgagg aagagccttt cggtgcgagg atgcgagccg atggggaaga actggatctc 5940

ctgccaccaa ttggaggaat ggctgttgat gtgatggaag tagaaatgcc gacggcgcgc 6000

cgaacactcg tgcttgtgtt tatacaagcg gccacagtgc tcgcaacgct gcacgggatg 6060

cacgtgctgc acgagctgta cctgagttcc tttgacgagg aatttcagtg ggaagtggag 6120

tcgtggcgcc tgcatctcgt gctgtactac gtcgtggtgg tcggcctggc cctcttctgc 6180

ctcgatggtg gtcatgctga cgagcccgcg cgggaggcag gtccagacct cggcgcgagc 6240

gggtcggaga gcgaggacga gggcgcgcag gccggagctg tccagggtcc tgagacgctg 6300

cggagtcagg tcagtgggca gcggcggcgc gcggttgact tgcaggagtt tttccagggc 6360

gcgcgggagg tccagatggt acttgatctc caccgcgccg ttggtggcga cgtcgatggc 6420

ttgcagggtc ccgtgcccct ggggtgtgac caccgtcccc cgtttcttct tgggcggctg 6480

gggcgacggg ggcggtgcct cttccatggt tagaagcggc ggcgaggacg cgcgccgggc 6540

ggcagaggcg gctcggggcc cggaggcagg ggcggcaggg gcacgtcggc gccgcgcgcg 6600

ggtaggttct ggtactgcgc ccggagaaga ctggcgtgag cgacgacgcg acggttgacg 6660

tcctggatct gacgcctctg ggtgaaggcc acgggacccg tgagtttgaa cctgaaagag 6720

agttcgacag aatcaatctc ggtatcgttg acggcggcct gccgcaggat ctcttgcacg 6780

tcgcccgagt tgtcctggta ggcgatctcg gtcatgaact gctcgatctc ctcctcctga 6840
aggtctccgc ggccggcgcg ctccacggtg gccgcgaggt cgttggagat gcggcccatg 6900
agctgcgaga aggcgttcat gcccgcctcg ttccagacgc ggctgtagac cacgacgccc 6960
tcgggatcgc gggcgcgcat gaccacctgg gcgaggttga gctccacgtg gcgcgtgaag 7020
accgcgtagt tgcagaggcg ctggtagagg tagttgagcg tggtggcgat gtgctcggtg 7080
acgaagaaat acatgatcca gcggcggagc ggcatctcgc tgacgtcgcc cagcgcctcc 7140
aagcgttcca tggcctcgta aaagtccacg gcgaagttga aaaactggga gttgcgcgcc 7200
gagacggtca actcctcctc cagaagacgg atgagctcgg cgatggtggc gcgcacctcg 7260
cgctcgaagg cccccgggag ttcctcctct tccatctcct cttcttcctc ctccactaac 7320
atctcttcta cttcctcctc aggcggtggt ggcgggggag ggggcctgcg tcgccggcgg 7380
cgcacgggca gacggtcgat gaagcgctcg atggtctcgc cgcgccggcg tcgcatggtc 7440
tcggtgacgg cgcgcccgtc ctcgcggggc cgcagcgtga agacgccgcc gcgcatctcc 7500
aggtggccgg gggggtcccc gttgggcagg gagagggcgc tgacgatgca tcttatcaat 7560
tgccccgtag ggactccgcg caaggacctg agcgtctcga gatccacggg atctgaaaac 7620
cgttgaacga aggcttcgag ccagtcgcag tcgcaaggta ggctgagcac ggtttcttct 7680
ggcgggtcat gttggggagc ggggcgggcg atgctgctgg tgatgaagtt gaaataggcg 7740
gttctgagac ggcggatggt ggcgaggagc accaggtctt tgggcccggc ttgctggatg 7800
cgcagacggt cggccatgcc ccaggcgtgg tcctgacacc tggccaggtc cttgtagtag 7860
tcctgcatga gccgctccac gggcacctcc tcctcgcccg cgcggccgtg catgcgcgtg 7920
agcccgaagc cgcgctgggg ctggacgagc gccaggtcgg cgacgacgcg ctcggcgagg 7980
atggcctgct ggatctgggt gagggtggtc tggaagtcgt caaagtcgac gaagcggtgg 8040
taggctccgg tgttgatggt gtaggagcag ttggccatga cggaccagtt gacggtctgg 8100
tggcccggac gcacgagctc gtggtacttg aggcgcgagt aggcgcgcgt gtcgaagatg 8160
tagtcgttgc aggtgcgcac caggtactgg tagccgatga ggaagtgcgg cggcggctgg 8220
cggtagagcg gccatcgctc ggtggcgggg gcgccgggcg cgaggtcctc gagcatggtg 8280
cggtggtagc cgtagatgta cctggacatc caggtgatgc cggcggcggt ggtggaggcg 8340
cgcgggaact cgcggacgcg gttccagatg ttgcgcagcg gcaggaagta gttcatggtg 8400
ggcacggtct ggcccgtgag gcgcgcgcag tcgtggatgc tctatacggg caaaaacgaa 8460
agcggtcagc ggctcgactc cgtggcctgg aggctaagcg aacgggttgg gctgcgcgtg 8520
taccccggtt cgaatctcga atcaggctgg agccgcagct aacgtggtac tggcactccc 8580
gtctcgaccc aagcctgcac caaccctcca ggatacggag gcgggtcgtt ttgcaacttt 8640
ttttcggagg ccggaaatga agactagtaa gcgcggaaag cggccgaccg cgatggctcg 8700
ctgccgtagt ctggagaaga atcgccaggg ttgcgttgcg gtgtgccccg gttcgaggcc 8760
ggccggattc cgcggctaac gagggcgtgg ctgccccgtc gtttccaaga ccccctagcc 8820

```
agccgacttc tccagttacg gagcgagccc ctcttttgtt ttgtttgttt ttgccag        8877

atg cat ccc gta ctg cgg cag atg cgc ccc cac cac cct cca ccg caa       8925
Met His Pro Val Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln
1               5                  10                  15

caa cag ccc cct cca cag ccg gcg ctt ctg ccc ccg ccc cag cag cag       8973
Gln Gln Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln
            20                  25                  30

cag caa ctt cca gcc acg acc gcc gcg gcc gcc gtg agc ggg gct gga       9021
Gln Gln Leu Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly
        35                  40                  45

cag act tct cag tat gac ctg gcc ttg gaa gag ggc gag ggg ctg gcg       9069
Gln Thr Ser Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala
    50                  55                  60

cgc ctg ggg gcg tcg tcg ccg gag cgg cac ccg cgc gtg cag atg aaa       9117
Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys
65                  70                  75                  80

agg gac gct cgc gag gcc tac gtg ccc aag cag aac ctg ttc aga gac       9165
Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp
                85                  90                  95

agg agc ggc gag gag ccc gag gag atg cgc gcg gcc cgg ttc cac gcg       9213
Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ala Arg Phe His Ala
            100                 105                 110

ggg cgg gag ctg cgg cgc ggc ctg gac cga aag agg gtg ctg agg gac       9261
Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp
        115                 120                 125

gag gat ttc gag gcg gac gag ctg acg ggg atc agc ccc gcg cgc gcg       9309
Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala
    130                 135                 140

cac gtg gcc gcg gcc aac ctg gtc acg gcg tac gag cag acc gtg aag       9357
His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys
145                 150                 155                 160

gag gag agc aac ttc caa aaa tcc ttc aac aac cac gtg cgc acc ctg       9405
Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu
                165                 170                 175

atc gcg cgc gag gag gtg acc ctg ggc ctg atg cac ctg tgg gac ctg       9453
Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu
            180                 185                 190

ctg gag gcc atc gtg cag aac ccc acc agc aag ccg ctg acg gcg cag       9501
Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln
        195                 200                 205

ctg ttc ctg gtg gtg cag cat agt cgg gac aac gag gcg ttc agg gag       9549
Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Ala Phe Arg Glu
    210                 215                 220

gcg ctg ctg aat atc acc gag ccc gag ggc cgc tgg ctc ctg gac ctg       9597
Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu
225                 230                 235                 240

gtg aac att ctg cag agc atc gtg gtg cag gag cgc ggg ctg ccg ctg       9645
Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu
                245                 250                 255

tcc gag aag ctg gcg gcc atc aac ttc tcg gtg ctg agt ctg ggc aag       9693
Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys
            260                 265                 270
```

```
tac tac gct agg aag atc tac aag acc ccg tac gtg ccc ata gac aag       9741
Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys
        275                 280                 285

gag gtg aag atc gac ggg ttt tac atg cgc atg acc ctg aaa gtg ctg       9789
Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu
    290                 295                 300

acc ctg agc gac gat ctg ggg gtg tac cgc aac gac agg atg cac cgc       9837
Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg
305                 310                 315                 320

gcg gtg agc gcc agc agg cgg cgc gag ctg agc gac cag gag ctg atg       9885
Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met
                325                 330                 335

cat agt ctg cag cgg gcc ctg acc ggg gcc ggg acc gag ggg gag agc       9933
His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser
            340                 345                 350

tac ttt gac atg ggc gcg gac ctg cac tgg cag ccc agc cgc cgg gcc       9981
Tyr Phe Asp Met Gly Ala Asp Leu His Trp Gln Pro Ser Arg Arg Ala
        355                 360                 365

ttg gag gcg gca ggc ggt ccc ccc tac ata gaa gag gtg gac gat gag      10029
Leu Glu Ala Ala Gly Gly Pro Pro Tyr Ile Glu Glu Val Asp Asp Glu
    370                 375                 380

gtg gac gag gag ggc gag tac ctg gaa gac tgatggcgcg accgtatttt      10079
Val Asp Glu Glu Gly Glu Tyr Leu Glu Asp
385                 390

tgctag atg caa caa cag cca cct cct gat ccc gcg atg cgg gcg gcg      10127
       Met Gln Gln Gln Pro Pro Pro Asp Pro Ala Met Arg Ala Ala
       395                 400                 405

ctg cag agc cag ccg tcc ggc att aac tcc tcg gac gat tgg acc cag      10175
Leu Gln Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln
    410                 415                 420

gcc atg caa cgc atc atg gcg ctg acg acc cgc aac ccc gaa gcc ttt      10223
Ala Met Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe
425                 430                 435                 440

aga cag cag ccc cag gcc aac cgg ctc tcg gcc atc ctg gag gcc gtg      10271
Arg Gln Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val
                445                 450                 455

gtg ccc tcg cgc tcc aac ccc acg cac gag aag gtc ctg gcc atc gtg      10319
Val Pro Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val
            460                 465                 470

aac gcg ctg gtg gag aac aag gcc atc cgc ggc gac gag gcc ggc ctg      10367
Asn Ala Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu
        475                 480                 485

gtg tac aac gcg ctg ctg gag cgc gtg gcc cgc tac aac agc acc aac      10415
Val Tyr Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn
    490                 495                 500

gtg cag acc aac ctg gac cgc atg gtg acc gac gtg cgc gag gcc gtg      10463
Val Gln Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val
505                 510                 515                 520

gcc cag cgc gag cgg ttc cac cgc gag tcc aac ctg gga tcc atg gtg      10511
Ala Gln Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val
                525                 530                 535
```

```
gcg ctg aac gcc ttc ctc agc acc cag ccc gcc aac gtg ccc cgg ggc      10559
Ala Leu Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly
            540                 545                 550

cag gag gac tac acc aac ttc atc agc gcc ctg cgc ctg atg gtg acc      10607
Gln Glu Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Thr
        555                 560                 565

gag gtg ccc cag agc gag gtg tac cag tcc ggg ccg gac tac ttc ttc      10655
Glu Val Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe
    570                 575                 580

cag acc agt cgc cag ggc ttg cag acc gtg aac ctg agc cag gcg ttc      10703
Gln Thr Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe
585                 590                 595                 600

aag aac ttg cag ggc ctg tgg ggc gtg cag gcc ccg gtc ggg gac cgc      10751
Lys Asn Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg
                605                 610                 615

gcg acg gtg tcg agc ctg ctg acg ccg aac tcg cgc ctg ctg ctg ctg      10799
Ala Thr Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu
            620                 625                 630

ctg gtg gcc ccc ttc acg gac agc ggc agc atc aac cgc aac tcg tac      10847
Leu Val Ala Pro Phe Thr Asp Ser Gly Ser Ile Asn Arg Asn Ser Tyr
        635                 640                 645

ctg ggc tac ctg att aac ctg tac cgc gag gcc atc ggc cag gcg cac      10895
Leu Gly Tyr Leu Ile Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His
    650                 655                 660

gtg gac gag cag acc tac cag gag atc acc cac gtg agc cgc gcc ctg      10943
Val Asp Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu
665                 670                 675                 680

ggc cag gac gac ccg ggc aat ctg gaa gcc acc ctg aac ttt ttg ctg      10991
Gly Gln Asp Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu
                685                 690                 695

acc aac cgg tcg cag aag atc ccg ccc cag tac acg ctc agc gcc gag      11039
Thr Asn Arg Ser Gln Lys Ile Pro Pro Gln Tyr Thr Leu Ser Ala Glu
            700                 705                 710

gag gag cgc atc ctg cga tac gtg cag cag agc gtg ggc ctg ttc ctg      11087
Glu Glu Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu
        715                 720                 725

atg cag gag ggg gcc acc ccc agc gcc gcg ctc gac atg acc gcg cgc      11135
Met Gln Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg
    730                 735                 740

aac atg gag ccc agc atg tac gcc agc aac cgc ccg ttc atc aat aaa      11183
Asn Met Glu Pro Ser Met Tyr Ala Ser Asn Arg Pro Phe Ile Asn Lys
745                 750                 755                 760

ctg atg gac tac ttg cat cgg gcg gcc gcc atg aac tct gac tat ttc      11231
Leu Met Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe
                765                 770                 775

acc aac gcc atc ctg aat ccc cac tgg ctc ccg ccg ccg ggg ttc tac      11279
Thr Asn Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr
            780                 785                 790

acg ggc gag tac gac atg ccc gac ccc aat gac ggg ttc ctg tgg gac      11327
Thr Gly Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp
        795                 800                 805

gat gtg gac agc agc gtg ttc tcc ccc cga ccg ggt gct aac gag cgc      11375
```

```
Asp Val Asp Ser Ser Val Phe Ser Pro Arg Pro Gly Ala Asn Glu Arg
    810                 815                 820

ccc ttg tgg aag aag gaa ggc agc gac cga cgc ccg tcc tcg gcg ctg      11423
Pro Leu Trp Lys Lys Glu Gly Ser Asp Arg Arg Pro Ser Ser Ala Leu
825                 830                 835                 840

tcc ggc cgc gag ggt gct gcc gcg gcg gtg ccc gag gcc gcc agt cct      11471
Ser Gly Arg Glu Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro
                845                 850                 855

ttc ccg agc ttg ccc ttc tcg ctg aac agt att cgc agc agc gag ctg      11519
Phe Pro Ser Leu Pro Phe Ser Leu Asn Ser Ile Arg Ser Ser Glu Leu
            860                 865                 870

ggc agg atc acg cgc ccg cgc ttg ctg ggc gag gag gag tac ttg aat      11567
Gly Arg Ile Thr Arg Pro Arg Leu Leu Gly Glu Glu Glu Tyr Leu Asn
        875                 880                 885

gac tcg ctg ttg aga ccc gag cgg gag aag aac ttc ccc aat aac ggg      11615
Asp Ser Leu Leu Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly
    890                 895                 900

ata gag agc ctg gtg gac aag atg agc cgc tgg aag acg tat gcg cag      11663
Ile Glu Ser Leu Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala Gln
905                 910                 915                 920

gag cac agg gac gat ccg tcg cag ggg gcc acg agc cgg ggc agc gcc      11711
Glu His Arg Asp Asp Pro Ser Gln Gly Ala Thr Ser Arg Gly Ser Ala
                925                 930                 935

gcc cgt aaa cgc cgg tgg cac gac agg cag cgg gga ctg atg tgg gac      11759
Ala Arg Lys Arg Arg Trp His Asp Arg Gln Arg Gly Leu Met Trp Asp
            940                 945                 950

gat gag gat tcc gcc gac gac agc agc gtg ttg gac ttg ggt ggg agt      11807
Asp Glu Asp Ser Ala Asp Asp Ser Ser Val Leu Asp Leu Gly Gly Ser
        955                 960                 965

ggt aac ccg ttc gct cac ctg cgc ccc cgc atc ggg cgc atg atg          11852
Gly Asn Pro Phe Ala His Leu Arg Pro Arg Ile Gly Arg Met Met
    970                 975                 980

taagagaaac cgaaaataaa tgatactcac caaggccatg gcgaccagcg tgcgttcgtt    11912

tcttctctgt tgttgtatct agt atg atg agg cgt gcg tac ccg gag ggt cct    11965
                          Met Met Arg Arg Ala Tyr Pro Glu Gly Pro
                              985                 990

cct ccc tcg tac gag agc gtg  atg cag cag gcg atg  gcg gcg gcg gcg    12013
Pro Pro Ser Tyr Glu Ser Val  Met Gln Gln Ala Met  Ala Ala Ala Ala
    995                 1000                1005

gcg  atg cag ccc ccg ctg  gag gct cct tac gtg  ccc ccg cgg tac       12058
Ala  Met Gln Pro Pro Leu  Glu Ala Pro Tyr Val  Pro Pro Arg Tyr
1010                1015                1020

ctg  gcg cct acg gag ggg  cgg aac agc att cgt  tac tcg gag ctg       12103
Leu  Ala Pro Thr Glu Gly  Arg Asn Ser Ile Arg  Tyr Ser Glu Leu
1025                1030                1035

gca  ccc ttg tac gat acc  acc cgg ttg tac ctg  gtg gac aac aag       12148
Ala  Pro Leu Tyr Asp Thr  Thr Arg Leu Tyr Leu  Val Asp Asn Lys
1040                1045                1050

tcg  gcg gac atc gcc tcg  ctg aac tac cag aac  gac cac agc aac       12193
Ser  Ala Asp Ile Ala Ser  Leu Asn Tyr Gln Asn  Asp His Ser Asn
1055                1060                1065
```

```
ttc  ctg acc acc gtg gtg  cag aac aat gac ttc  acc ccc acg gag       12238
Phe  Leu Thr Thr Val Val  Gln Asn Asn Asp Phe  Thr Pro Thr Glu
1070                 1075                 1080

gcc  agc acc cag acc atc  aac ttt gac gag cgc  tcg cgg tgg ggc       12283
Ala  Ser Thr Gln Thr Ile  Asn Phe Asp Glu Arg  Ser Arg Trp Gly
1085                 1090                 1095

ggt  cag ctg aaa acc atc  atg cac acc aac atg  ccc aac gtg aac       12328
Gly  Gln Leu Lys Thr Ile  Met His Thr Asn Met  Pro Asn Val Asn
1100                 1105                 1110

gag  ttc atg tac agc aac  aag ttc aag gcg cgg  gtg atg gtc tcc       12373
Glu  Phe Met Tyr Ser Asn  Lys Phe Lys Ala Arg  Val Met Val Ser
1115                 1120                 1125

cgc  aag acc ccc aac ggg  gtg aca gtg aca gat  ggt agt cag gat       12418
Arg  Lys Thr Pro Asn Gly  Val Thr Val Thr Asp  Gly Ser Gln Asp
1130                 1135                 1140

atc  ttg gag tat gaa tgg  gtg gag ttt gag ctg  ccc gaa ggc aac       12463
Ile  Leu Glu Tyr Glu Trp  Val Glu Phe Glu Leu  Pro Glu Gly Asn
1145                 1150                 1155

ttc  tcg gtg acc atg acc  atc gac ctg atg aac  aac gcc atc atc       12508
Phe  Ser Val Thr Met Thr  Ile Asp Leu Met Asn  Asn Ala Ile Ile
1160                 1165                 1170

gac  aat tac ttg gcg gtg  ggg cgg cag aac ggg  gtc ctg gag agc       12553
Asp  Asn Tyr Leu Ala Val  Gly Arg Gln Asn Gly  Val Leu Glu Ser
1175                 1180                 1185

gat  atc ggc gtg aag ttc  gac act agg aac ttc  agg ctg ggc tgg       12598
Asp  Ile Gly Val Lys Phe  Asp Thr Arg Asn Phe  Arg Leu Gly Trp
1190                 1195                 1200

gac  ccc gtg acc gag ctg  gtc atg ccc ggg gtg  tac acc aac gag       12643
Asp  Pro Val Thr Glu Leu  Val Met Pro Gly Val  Tyr Thr Asn Glu
1205                 1210                 1215

gcc  ttc cac ccc gat att  gtc ttg ctg ccc ggc  tgc ggg gtg gac       12688
Ala  Phe His Pro Asp Ile  Val Leu Leu Pro Gly  Cys Gly Val Asp
1220                 1225                 1230

ttc  acc gag agc cgc ctc  agc aac ctg ctg ggc  att cgc aag agg       12733
Phe  Thr Glu Ser Arg Leu  Ser Asn Leu Leu Gly  Ile Arg Lys Arg
1235                 1240                 1245

cag  ccc ttc cag gag ggc  ttc cag atc atg tac  gag gat ctg gag       12778
Gln  Pro Phe Gln Glu Gly  Phe Gln Ile Met Tyr  Glu Asp Leu Glu
1250                 1255                 1260

ggg  ggc aac atc ccc gcg  ctc ctg gat gtc gac  gcc tat gag aaa       12823
Gly  Gly Asn Ile Pro Ala  Leu Leu Asp Val Asp  Ala Tyr Glu Lys
1265                 1270                 1275

agc  aag gag gag agc gcc  gcc gcg gcg act gca  gct gta gcc acc       12868
Ser  Lys Glu Glu Ser Ala  Ala Ala Ala Thr Ala  Ala Val Ala Thr
1280                 1285                 1290

gcc  tct acc gag gtc agg  ggc gat aat ttt gcc  agc cct gca gca       12913
Ala  Ser Thr Glu Val Arg  Gly Asp Asn Phe Ala  Ser Pro Ala Ala
1295                 1300                 1305

gtg  gca gcg gcc gag gcg  gct gaa acc gaa agt  aag ata gtc att       12958
Val  Ala Ala Ala Glu Ala  Ala Glu Thr Glu Ser  Lys Ile Val Ile
1310                 1315                 1320

cag  ccg gtg gag aag gat  agc aag gac agg agc  tac aac gtg ctg       13003
```

```
Gln  Pro Val Glu Lys Asp  Ser Lys Asp Arg Ser  Tyr Asn Val Leu
1325                1330                1335

ccg  gac aag ata aac acc  gcc tac cgc agc tgg  tac ctg gcc tac       13048
Pro  Asp Lys Ile Asn Thr  Ala Tyr Arg Ser Trp  Tyr Leu Ala Tyr
1340                1345                1350

aac  tat ggc gac ccc gag  aag ggc gtg cgc tcc  tgg acg ctg ctc       13093
Asn  Tyr Gly Asp Pro Glu  Lys Gly Val Arg Ser  Trp Thr Leu Leu
1355                1360                1365

acc  acc tcg gac gtc acc  tgc ggc gtg gag caa  gtc tac tgg tcg       13138
Thr  Thr Ser Asp Val Thr  Cys Gly Val Glu Gln  Val Tyr Trp Ser
1370                1375                1380

ctg  ccc gac atg atg caa  gac ccg gtc acc ttc  cgc tcc acg cgt       13183
Leu  Pro Asp Met Met Gln  Asp Pro Val Thr Phe  Arg Ser Thr Arg
1385                1390                1395

caa  gtt agc aac tac ccg  gtg gtg ggc gcc gag  ctc ctg ccc gtc       13228
Gln  Val Ser Asn Tyr Pro  Val Val Gly Ala Glu  Leu Leu Pro Val
1400                1405                1410

tac  tcc aag agc ttc ttc  aac gag cag gcc gtc  tac tcg cag cag       13273
Tyr  Ser Lys Ser Phe Phe  Asn Glu Gln Ala Val  Tyr Ser Gln Gln
1415                1420                1425

ctg  cgc gcc ttc acc tcg  ctc acg cac gtc ttc  aac cgc ttc ccc       13318
Leu  Arg Ala Phe Thr Ser  Leu Thr His Val Phe  Asn Arg Phe Pro
1430                1435                1440

gag  aac cag atc ctc gtc  cgc ccg ccc gcg ccc  acc att acc acc       13363
Glu  Asn Gln Ile Leu Val  Arg Pro Pro Ala Pro  Thr Ile Thr Thr
1445                1450                1455

gtc  agt gaa aac gtt cct  gct ctc aca gat cac  ggg acc ctg ccg       13408
Val  Ser Glu Asn Val Pro  Ala Leu Thr Asp His  Gly Thr Leu Pro
1460                1465                1470

ctg  cgc agc agt atc cgg  gga gtc cag cgc gtg  acc gtt act gac       13453
Leu  Arg Ser Ser Ile Arg  Gly Val Gln Arg Val  Thr Val Thr Asp
1475                1480                1485

gcc  aga cgc cgc acc tgc  ccc tac gtc tac aag  gcc ctg ggc ata       13498
Ala  Arg Arg Arg Thr Cys  Pro Tyr Val Tyr Lys  Ala Leu Gly Ile
1490                1495                1500

gtc  gcg ccg cgc gtc ctc  tcg agc cgc acc ttc  taaaaa atg tcc att    13546
Val  Ala Pro Arg Val Leu  Ser Ser Arg Thr Phe         Met Ser Ile
1505                1510                1515

ctc atc  tcg ccc agt aat aac  acc ggt tgg ggc ctg  cgc gcg ccc       13591
Leu Ile  Ser Pro Ser Asn Asn  Thr Gly Trp Gly Leu  Arg Ala Pro
    1520                1525                1530

agc aag  atg tac gga ggc gct  cgc caa cgc tcc acg  caa cac ccc       13636
Ser Lys  Met Tyr Gly Gly Ala  Arg Gln Arg Ser Thr  Gln His Pro
    1535                1540                1545

gtg cgc  gtg cgc ggg cac ttc  cgc gct ccc tgg ggc  gcc ctc aag       13681
Val Arg  Val Arg Gly His Phe  Arg Ala Pro Trp Gly  Ala Leu Lys
    1550                1555                1560

ggc cgc  gtg cgg tcg cgc acc  acc gtc gac gac gtg  atc gac cag       13726
Gly Arg  Val Arg Ser Arg Thr  Thr Val Asp Asp Val  Ile Asp Gln
    1565                1570                1575

gtg gtg  gcc gac gcg cgc aac  tac acc ccc gcc gcc  gcg ccc gtc       13771
Val Val  Ala Asp Ala Arg Asn  Tyr Thr Pro Ala Ala  Ala Pro Val
```

```
    1580                1585                1590

tcc acc  gtg gac gcc gtc atc  gac agc gtg gtg gcc  gac gcg cgc       13816
Ser Thr  Val Asp Ala Val Ile  Asp Ser Val Val Ala  Asp Ala Arg
    1595                1600                1605

cgg tac  gcc cgc gcc aag agc  cgg cgg cgg cgc atc  gcc cgg cgg       13861
Arg Tyr  Ala Arg Ala Lys Ser  Arg Arg Arg Arg Ile  Ala Arg Arg
    1610                1615                1620

cac cgg  agc acc ccc gcc atg  cgc gcg gcg cga gcc  ttg ctg cgc       13906
His Arg  Ser Thr Pro Ala Met  Arg Ala Ala Arg Ala  Leu Leu Arg
    1625                1630                1635

agg gcc  agg cgc acg gga cgc  agg gcc atg ctc agg  gcg gcc aga       13951
Arg Ala  Arg Arg Thr Gly Arg  Arg Ala Met Leu Arg  Ala Ala Arg
    1640                1645                1650

cgc gcg  gcc tca ggc gcc agc  gcc ggc agg acc cgg  aga cgc gcg       13996
Arg Ala  Ala Ser Gly Ala Ser  Ala Gly Arg Thr Arg  Arg Arg Ala
    1655                1660                1665

gcc acg  gcg gcg gca gcg gcc  atc gcc agc atg tcc  cgc ccg cgg       14041
Ala Thr  Ala Ala Ala Ala Ala  Ile Ala Ser Met Ser  Arg Pro Arg
    1670                1675                1680

cga ggg  aac gtg tac tgg gtg  cgc gac gcc gcc acc  ggt gtg cgc       14086
Arg Gly  Asn Val Tyr Trp Val  Arg Asp Ala Ala Thr  Gly Val Arg
    1685                1690                1695

gtg ccc  gtg cgc acc cgc ccc  cct cgc act tgaagatgtt cacttcgcga      14136
Val Pro  Val Arg Thr Arg Pro  Pro Arg Thr
    1700                1705

tgttgatgtg tcccagcggc gagg atg tcc  aag cgc aaa ttc aag  gaa gag     14187
                          Met Ser  Lys Arg Lys Phe Lys  Glu Glu
                              1710                1715

atg ctc cag  gtc atc gcg cct gag  atc tac ggc ccc gcg  gtg gtg       14232
Met Leu Gln  Val Ile Ala Pro Glu  Ile Tyr Gly Pro Ala  Val Val
        1720                1725                1730

aag gag gaa  aga aag ccc cgc aaa  atc aag cgg gtc aaa  aag gac       14277
Lys Glu Glu  Arg Lys Pro Arg Lys  Ile Lys Arg Val Lys  Lys Asp
        1735                1740                1745

aaa aag gaa  gaa gaa agt gat gtg  gac gga ctg gtg gag  ttt gtg       14322
Lys Lys Glu  Glu Glu Ser Asp Val  Asp Gly Leu Val Glu  Phe Val
        1750                1755                1760

cgc gag ttc  gcc ccc cgg cgg cgc  gtg cag tgg cgc ggg  cgg aag       14367
Arg Glu Phe  Ala Pro Arg Arg Arg  Val Gln Trp Arg Gly  Arg Lys
        1765                1770                1775

gtg cgc ccg  gtg ctg aga cca ggc  act acg gtg gtc ttc  acg ccc       14412
Val Arg Pro  Val Leu Arg Pro Gly  Thr Thr Val Val Phe  Thr Pro
        1780                1785                1790

ggc gag cgc  tcc ggc acc gct tcc  aag cgc tcc tac gac  gag gtg       14457
Gly Glu Arg  Ser Gly Thr Ala Ser  Lys Arg Ser Tyr Asp  Glu Val
        1795                1800                1805

tac ggg gac  gag gac atc ctc gag  cag gcg gcc gag cgc  ctg ggc       14502
Tyr Gly Asp  Glu Asp Ile Leu Glu  Gln Ala Ala Glu Arg  Leu Gly
        1810                1815                1820

gag ttt gct  tac ggc aag cgc agc  cgc tcc gcg ccg aag  gaa gag       14547
Glu Phe Ala  Tyr Gly Lys Arg Ser  Arg Ser Ala Pro Lys  Glu Glu
        1825                1830                1835
```

```
gcg gtg tcc  atc ccg ctg gac cac  ggc aac ccc acg ccg  agc ctc       14592
Ala Val Ser  Ile Pro Leu Asp His  Gly Asn Pro Thr Pro  Ser Leu
        1840                 1845                 1850

aag ccc gtg  acc ctg cag cag gtg  ctg ccg acc gcg gcg  ccg cgc       14637
Lys Pro Val  Thr Leu Gln Gln Val  Leu Pro Thr Ala Ala  Pro Arg
        1855                 1860                 1865

cgg ggg ttc  aag cgc gag ggc gag  gat ctg tac ccc acc  atg cag       14682
Arg Gly Phe  Lys Arg Glu Gly Glu  Asp Leu Tyr Pro Thr  Met Gln
        1870                 1875                 1880

ctg atg gtg  ccc aag cgc cag aag  ctg gaa gac gtg ctg  gag acc       14727
Leu Met Val  Pro Lys Arg Gln Lys  Leu Glu Asp Val Leu  Glu Thr
        1885                 1890                 1895

atg aag gtg  gac ccg gac gtg cag  ccc gag gtc aag gtg  cgg ccc       14772
Met Lys Val  Asp Pro Asp Val Gln  Pro Glu Val Lys Val  Arg Pro
        1900                 1905                 1910

atc aag cag  gtg gcc ccg ggc ctg  ggc gtg cag acc gtg  gac atc       14817
Ile Lys Gln  Val Ala Pro Gly Leu  Gly Val Gln Thr Val  Asp Ile
        1915                 1920                 1925

aag atc ccc  acg gag ccc atg gaa  acg cag acc gag ccc  gtg aaa       14862
Lys Ile Pro  Thr Glu Pro Met Glu  Thr Gln Thr Glu Pro  Val Lys
        1930                 1935                 1940

ccc agc acc  agc acc atg gag gtg  cag acg gat cct tgg  atg cca       14907
Pro Ser Thr  Ser Thr Met Glu Val  Gln Thr Asp Pro Trp  Met Pro
        1945                 1950                 1955

tcg gct act  agc cga aga ccc cgg  cgc aag tac ggc gcg  gcc agc       14952
Ser Ala Thr  Ser Arg Arg Pro Arg  Arg Lys Tyr Gly Ala  Ala Ser
        1960                 1965                 1970

ctg ctg atg  ccc aac tac gcg ctg  cat cct tcc atc atc  ccc acg       14997
Leu Leu Met  Pro Asn Tyr Ala Leu  His Pro Ser Ile Ile  Pro Thr
        1975                 1980                 1985

ccg ggc tac  cgc ggc acg cgc ttc  tac cgc ggt cat aca  agc cgc       15042
Pro Gly Tyr  Arg Gly Thr Arg Phe  Tyr Arg Gly His Thr  Ser Arg
        1990                 1995                 2000

cgc cgc aag  acc acc acc cgc cgc  cgc cgt cgc cgc aca  acc gct       15087
Arg Arg Lys  Thr Thr Thr Arg Arg  Arg Arg Arg Arg Thr  Thr Ala
        2005                 2010                 2015

gct gca tct  acc cct gcc gcc ctg  gtg cgg aga gtg tac  cgc cgc       15132
Ala Ala Ser  Thr Pro Ala Ala Leu  Val Arg Arg Val Tyr  Arg Arg
        2020                 2025                 2030

ggc cgc gcg  cct ctg acc ctg ccg  cgc gcg cgc tac cac  ccg agc       15177
Gly Arg Ala  Pro Leu Thr Leu Pro  Arg Ala Arg Tyr His  Pro Ser
        2035                 2040                 2045

att gcc att  taaactttcg cctgctttgc agatca atg gcc ctc aca tgc       15227
Ile Ala Ile                              Met Ala Leu Thr Cys
        2050                                         2055

cgc ctc cgc gtt ccc  att acg ggc tac cga  gga aga aaa ccg cgc       15272
Arg Leu Arg Val Pro  Ile Thr Gly Tyr Arg  Gly Arg Lys Pro Arg
                2060                 2065                 2070

cgt aga agg ctg gcg  ggg aac ggg atg cgt  cgc cac cac cac cgg       15317
Arg Arg Arg Leu Ala  Gly Asn Gly Met Arg  Arg His His His Arg
                2075                 2080                 2085
```

```
cgg cgg cgc gcc atc  agc aag cgg ttg ggg  gga ggc ttc ctg ccc        15362
Arg Arg Arg Ala Ile  Ser Lys Arg Leu Gly  Gly Gly Phe Leu Pro
                2090                2095                2100

gcg ctg atc ccc atc  atc gcc gcg gcg atc  ggg gcg atc ccc ggc        15407
Ala Leu Ile Pro Ile  Ile Ala Ala Ala Ile  Gly Ala Ile Pro Gly
                2105                2110                2115

att gct tcc gtg gcg  gtg cag gcc tct cag  cgc cac tgagacacac         15453
Ile Ala Ser Val Ala  Val Gln Ala Ser Gln  Arg His
                2120                2125

ttggaaacat cttgtaataa acca atg gac tct  gac gct cct ggt cct  gtg     15504
                           Met Asp Ser  Asp Ala Pro Gly Pro  Val
                                  2130                2135

atg tgt ttt cgt  aga cag atg gaa gac  atc aat ttt tcg tcc  ctg       15549
Met Cys Phe Arg  Arg Gln Met Glu Asp  Ile Asn Phe Ser Ser  Leu
            2140                2145                2150

gct ccg cga cac  ggc acg cgg ccg ttc  atg ggc acc tgg agc  gac       15594
Ala Pro Arg His  Gly Thr Arg Pro Phe  Met Gly Thr Trp Ser  Asp
            2155                2160                2165

atc ggc acc agc  caa ctg aac ggg ggc  gcc ttc aat tgg agc  agt       15639
Ile Gly Thr Ser  Gln Leu Asn Gly Gly  Ala Phe Asn Trp Ser  Ser
            2170                2175                2180

ctc tgg agc ggg  ctt aag aat ttc ggg  tcc acg ctt aaa acc  tat       15684
Leu Trp Ser Gly  Leu Lys Asn Phe Gly  Ser Thr Leu Lys Thr  Tyr
            2185                2190                2195

ggc agc aag gcg  tgg aac agc acc aca  ggg cag gcg ctg agg  gat       15729
Gly Ser Lys Ala  Trp Asn Ser Thr Thr  Gly Gln Ala Leu Arg  Asp
            2200                2205                2210

aag ctg aaa gag  cag aac ttc cag cag  aag gtg gtc gat ggc  ctg       15774
Lys Leu Lys Glu  Gln Asn Phe Gln Gln  Lys Val Val Asp Gly  Leu
            2215                2220                2225

gcc tcg ggc atc  aac ggg gtg gtg gac  ctg gcc aac cag gcc  gtg       15819
Ala Ser Gly Ile  Asn Gly Val Val Asp  Leu Ala Asn Gln Ala  Val
            2230                2235                2240

cag cgg cag atc  aac agc cgc ctg gac  ccg gtg ccg ccc gcc  ggc       15864
Gln Arg Gln Ile  Asn Ser Arg Leu Asp  Pro Val Pro Pro Ala  Gly
            2245                2250                2255

tcc gtg gag atg  ccg cag gtg gag gag  gag ctg cct ccc ctg  gac       15909
Ser Val Glu Met  Pro Gln Val Glu Glu  Glu Leu Pro Pro Leu  Asp
            2260                2265                2270

aag cgg ggc gag  aag cga ccc cgc ccc  gac gcg gag gag acg  ctg       15954
Lys Arg Gly Glu  Lys Arg Pro Arg Pro  Asp Ala Glu Glu Thr  Leu
            2275                2280                2285

ctg acg cac acg  gac gag ccg ccc ccg  tac gag gag gcg gtg  aaa       15999
Leu Thr His Thr  Asp Glu Pro Pro Pro  Tyr Glu Glu Ala Val  Lys
            2290                2295                2300

ctg ggc ctg ccc  acc acg cgg ccc atc  gcg cct ctg gcc acc  ggg       16044
Leu Gly Leu Pro  Thr Thr Arg Pro Ile  Ala Pro Leu Ala Thr  Gly
            2305                2310                2315

gtg ctg aaa ccc  gaa agt agt aag ccc  gcg acc ctg gac ttg  cct       16089
Val Leu Lys Pro  Glu Ser Ser Lys Pro  Ala Thr Leu Asp Leu  Pro
            2320                2325                2330

cct ccc cag cct  tcc cgc ccc tcc aca  gtg gct aag cct ctg  ccg       16134
```

```
Pro Pro Gln Pro  Ser Arg Pro Ser Thr  Val Ala Lys Pro Leu  Pro
            2335                2340                2345

ccg gtg gcc gtg  gcc cgc gcg cga ccc  ggg ggc acc gcc cgc  cct       16179
Pro Val Ala Val  Ala Arg Ala Arg Pro  Gly Gly Thr Ala Arg  Pro
            2350                2355                2360

cat gcg aac tgg  cag agc act ctg aac  agc atc gtg ggt ctg  gga       16224
His Ala Asn Trp  Gln Ser Thr Leu Asn  Ser Ile Val Gly Leu  Gly
            2365                2370                2375

gtg cag agt gtg  aag cgc cgc cgc tgc  tat taaacctacc gtagcgctta      16274
Val Gln Ser Val  Lys Arg Arg Arg Cys  Tyr
            2380                2385

acttgcttgt ctgtgtgtgt atgtattatg tcgccgccgc tgtcgccaga aggaggagtg    16334

aagaggcgcg tcgccgagtt gcaag atg gcc acc cca  tcg atg ctg ccc cag     16386
                            Met Ala Thr Pro  Ser Met Leu Pro Gln
                                        2390                2395

tgg gcg tac atg cac  atc gcc gga cag gac  gct tcg gag tac ctg       16431
Trp Ala Tyr Met His  Ile Ala Gly Gln Asp  Ala Ser Glu Tyr Leu
                2400                2405                2410

agt ccg ggt ctg gtg  cag ttc gcc cgc gcc  aca gac acc tac ttc       16476
Ser Pro Gly Leu Val  Gln Phe Ala Arg Ala  Thr Asp Thr Tyr Phe
                2415                2420                2425

agt ctg ggg aac aag  ttt agg aac ccc acg  gtg gcg ccc acg cac       16521
Ser Leu Gly Asn Lys  Phe Arg Asn Pro Thr  Val Ala Pro Thr His
                2430                2435                2440

gat gtg acc acc gac  cgc agc cag cgg ctg  acg ctg cgc ttc gtg       16566
Asp Val Thr Thr Asp  Arg Ser Gln Arg Leu  Thr Leu Arg Phe Val
                2445                2450                2455

ccc gtg gac cgc gag  gac aac acc tac tcg  tac aaa gtg cgc tac       16611
Pro Val Asp Arg Glu  Asp Asn Thr Tyr Ser  Tyr Lys Val Arg Tyr
                2460                2465                2470

acg ctg gcc gtg ggc  gac aac cgc gtg ctg  gac atg gcc agc acc       16656
Thr Leu Ala Val Gly  Asp Asn Arg Val Leu  Asp Met Ala Ser Thr
                2475                2480                2485

tac ttt gac atc cgc  ggc gtg ctg gac cgg  ggc cct agc ttc aaa       16701
Tyr Phe Asp Ile Arg  Gly Val Leu Asp Arg  Gly Pro Ser Phe Lys
                2490                2495                2500

ccc tac tcc ggc acc  gcc tac aat gct ctg  gcc ccc aag gga gca       16746
Pro Tyr Ser Gly Thr  Ala Tyr Asn Ala Leu  Ala Pro Lys Gly Ala
                2505                2510                2515

ccc aac act tgc cag  tgg aca tac aca gat  aag caa acc gaa aaa       16791
Pro Asn Thr Cys Gln  Trp Thr Tyr Thr Asp  Lys Gln Thr Glu Lys
                2520                2525                2530

aca gcc acg tat ggg  aat gcg cct gta caa  ggc att gcc atc aca       16836
Thr Ala Thr Tyr Gly  Asn Ala Pro Val Gln  Gly Ile Ala Ile Thr
                2535                2540                2545

aaa gat ggt att caa  ctt gga act gac agt  gat gga aat cct gta       16881
Lys Asp Gly Ile Gln  Leu Gly Thr Asp Ser  Asp Gly Asn Pro Val
                2550                2555                2560

tat gct caa aag aca  ttt gaa ccc gaa cct  caa gtg ggt gat gca       16926
Tyr Ala Gln Lys Thr  Phe Glu Pro Glu Pro  Gln Val Gly Asp Ala
                2565                2570                2575
```

```
gaa tgg cat gac act  aca ggt aca gat gaa  aag tat gga ggc agg        16971
Glu Trp His Asp Thr  Thr Gly Thr Asp Glu  Lys Tyr Gly Gly Arg
                2580                2585                2590

gca ctt aag cct gac  acc aaa atg aag cct  tgc tat ggt tct ttt        17016
Ala Leu Lys Pro Asp  Thr Lys Met Lys Pro  Cys Tyr Gly Ser Phe
                2595                2600                2605

gcc aaa ccc act aac  aaa gaa ggt gga cag  gca aag aac aga aca        17061
Ala Lys Pro Thr Asn  Lys Glu Gly Gly Gln  Ala Lys Asn Arg Thr
                2610                2615                2620

aaa act gat gga act  ggc gaa gag cct gat  att gat atg gca ttt        17106
Lys Thr Asp Gly Thr  Gly Glu Glu Pro Asp  Ile Asp Met Ala Phe
                2625                2630                2635

ttt gac ggc aga aat  gca act aca gct ggt  ttg gct cca gaa att        17151
Phe Asp Gly Arg Asn  Ala Thr Thr Ala Gly  Leu Ala Pro Glu Ile
                2640                2645                2650

gtt ttg tat act gag  aat gtg gat ctg gag  act cca gat acc cat        17196
Val Leu Tyr Thr Glu  Asn Val Asp Leu Glu  Thr Pro Asp Thr His
                2655                2660                2665

att gta tac aaa gca  ggc aca gat gac agc  agc tct tcg att aat        17241
Ile Val Tyr Lys Ala  Gly Thr Asp Asp Ser  Ser Ser Ser Ile Asn
                2670                2675                2680

ttg ggg cag caa tcc  atg ccc aac aga ccc  aac tac att ggg ttc        17286
Leu Gly Gln Gln Ser  Met Pro Asn Arg Pro  Asn Tyr Ile Gly Phe
                2685                2690                2695

aga gac aac ttt atc  ggg ctc atg tac tac  aac agc act ggc aat        17331
Arg Asp Asn Phe Ile  Gly Leu Met Tyr Tyr  Asn Ser Thr Gly Asn
                2700                2705                2710

atg ggg gtg ctg gcc  ggt cag gct tct cag  ctg aat gct gtg gtt        17376
Met Gly Val Leu Ala  Gly Gln Ala Ser Gln  Leu Asn Ala Val Val
                2715                2720                2725

gac ttg caa gac aga  aac acc gaa ctg tcc  tac cag ctc ttg ctt        17421
Asp Leu Gln Asp Arg  Asn Thr Glu Leu Ser  Tyr Gln Leu Leu Leu
                2730                2735                2740

gac tct ctg ggc gac  aga acc ctg tat ttc  agt atg tgg aat cag        17466
Asp Ser Leu Gly Asp  Arg Thr Leu Tyr Phe  Ser Met Trp Asn Gln
                2745                2750                2755

gcg gtg gac agc tat  gat cct gat gtg cgc  att att gaa aac cat        17511
Ala Val Asp Ser Tyr  Asp Pro Asp Val Arg  Ile Ile Glu Asn His
                2760                2765                2770

ggt gtg gaa gat gaa  ctt ccc aac tat tgc  ttc cct ctg gat gct        17556
Gly Val Glu Asp Glu  Leu Pro Asn Tyr Cys  Phe Pro Leu Asp Ala
                2775                2780                2785

gtt ggt agg aca gat  act tat cag gga att  aag ccc aat gga ggc        17601
Val Gly Arg Thr Asp  Thr Tyr Gln Gly Ile  Lys Pro Asn Gly Gly
                2790                2795                2800

gat cca gcc aca tgg  gcc aaa gat gac agc  gcc aat gat gct aat        17646
Asp Pro Ala Thr Trp  Ala Lys Asp Asp Ser  Ala Asn Asp Ala Asn
                2805                2810                2815

gaa atg ggc aag ggc  aat cca ttc gcc atg  gaa atc aac atc caa        17691
Glu Met Gly Lys Gly  Asn Pro Phe Ala Met  Glu Ile Asn Ile Gln
                2820                2825                2830

gcc aac ctg tgg agg  aac ttc ctc tac gcc  aac gtg gcc ctg tac        17736
```

```
Ala Asn Leu Trp Arg  Asn Phe Leu Tyr Ala  Asn Val Ala Leu Tyr
                2835                2840                2845

cta ccc gat tct tac  aag tac acg ccg gcc  aac gtc acc ctg ccc        17781
Leu Pro Asp Ser Tyr  Lys Tyr Thr Pro Ala  Asn Val Thr Leu Pro
                2850                2855                2860

acc aac acc aac acc  tac gat tat atg aac  ggc cgg gtg gtg gcg        17826
Thr Asn Thr Asn Thr  Tyr Asp Tyr Met Asn  Gly Arg Val Val Ala
                2865                2870                2875

cct tcg ctg gtg gac  tcc tac atc aac atc  ggg gcg cgc tgg tcg        17871
Pro Ser Leu Val Asp  Ser Tyr Ile Asn Ile  Gly Ala Arg Trp Ser
                2880                2885                2890

ctg gac ccc atg gac  aac gtc aat ccc ttc  aac cac cac cgc aac        17916
Leu Asp Pro Met Asp  Asn Val Asn Pro Phe  Asn His His Arg Asn
                2895                2900                2905

gcg ggc ttg cgc tac  cgc tcc atg ctc ctg  ggc aac ggg cgc tac        17961
Ala Gly Leu Arg Tyr  Arg Ser Met Leu Leu  Gly Asn Gly Arg Tyr
                2910                2915                2920

gtg ccc ttc cac atc  cag gtg ccc cag aaa  ttt ttc gcc atc aag        18006
Val Pro Phe His Ile  Gln Val Pro Gln Lys  Phe Phe Ala Ile Lys
                2925                2930                2935

agc ctc ctg ctc ctg  ccc ggg tcc tac acc  tac gag tgg aac ttc        18051
Ser Leu Leu Leu Leu  Pro Gly Ser Tyr Thr  Tyr Glu Trp Asn Phe
                2940                2945                2950

cgc aag gac gtc aac  atg atc ctg cag agc  tcc ctc ggc aac gac        18096
Arg Lys Asp Val Asn  Met Ile Leu Gln Ser  Ser Leu Gly Asn Asp
                2955                2960                2965

ctg cgc acg gac ggg  gcc tcc atc tcc ttc  acc agc atc aac ctc        18141
Leu Arg Thr Asp Gly  Ala Ser Ile Ser Phe  Thr Ser Ile Asn Leu
                2970                2975                2980

tac gcc acc ttc ttc  ccc atg gcg cac aac  acg gcc tcc acg ctc        18186
Tyr Ala Thr Phe Phe  Pro Met Ala His Asn  Thr Ala Ser Thr Leu
                2985                2990                2995

gag gcc atg ctg cgc  aac gac acc aac gac  cag tcc ttc aac gac        18231
Glu Ala Met Leu Arg  Asn Asp Thr Asn Asp  Gln Ser Phe Asn Asp
                3000                3005                3010

tac ctc tcg gcg gcc  aac atg ctc tac ccc  atc ccg gcc aac gcc        18276
Tyr Leu Ser Ala Ala  Asn Met Leu Tyr Pro  Ile Pro Ala Asn Ala
                3015                3020                3025

acc aac gtg ccc atc  tcc atc ccc tcg cgc  aac tgg gcc gcc ttc        18321
Thr Asn Val Pro Ile  Ser Ile Pro Ser Arg  Asn Trp Ala Ala Phe
                3030                3035                3040

cgc ggc tgg tcc ttc  acg cgc ctc aag acc  aag gag acg ccc tcg        18366
Arg Gly Trp Ser Phe  Thr Arg Leu Lys Thr  Lys Glu Thr Pro Ser
                3045                3050                3055

ctg ggc tcc ggg ttc  gac ccc tac ttc gtc  tac tcg ggc tcc atc        18411
Leu Gly Ser Gly Phe  Asp Pro Tyr Phe Val  Tyr Ser Gly Ser Ile
                3060                3065                3070

ccc tac ctc gac ggc  acc ttc tac ctc aac  cac acc ttc aag aag        18456
Pro Tyr Leu Asp Gly  Thr Phe Tyr Leu Asn  His Thr Phe Lys Lys
                3075                3080                3085

gtc tcc atc acc ttc  gac tcc tcc gtc agc  tgg ccc ggc aac gac        18501
Val Ser Ile Thr Phe  Asp Ser Ser Val Ser  Trp Pro Gly Asn Asp
```

```
                3090                3095                3100

cgg ctc ctg acg ccc  aac gag ttc gaa atc  aag cgc acc gtc gac       18546
Arg Leu Leu Thr Pro  Asn Glu Phe Glu Ile  Lys Arg Thr Val Asp
                3105                3110                3115

ggc gag ggc tac aac  gtg gcc cag tgc aac  atg acc aag gac tgg       18591
Gly Glu Gly Tyr Asn  Val Ala Gln Cys Asn  Met Thr Lys Asp Trp
                3120                3125                3130

ttc ctg gtc cag atg  ctg gcc cac tac aac  atc ggc tac cag ggc       18636
Phe Leu Val Gln Met  Leu Ala His Tyr Asn  Ile Gly Tyr Gln Gly
                3135                3140                3145

ttc tac gtg ccc gag  ggc tac aag gac cgc  atg tac tcc ttc ttc       18681
Phe Tyr Val Pro Glu  Gly Tyr Lys Asp Arg  Met Tyr Ser Phe Phe
                3150                3155                3160

cgc aac ttc cag ccc  atg agc cgc cag gtg  gtg gac gag gtc aac       18726
Arg Asn Phe Gln Pro  Met Ser Arg Gln Val  Val Asp Glu Val Asn
                3165                3170                3175

tac aag gac tac cag  gcc gtc acc ctg gcc  tac cag cac aac aac       18771
Tyr Lys Asp Tyr Gln  Ala Val Thr Leu Ala  Tyr Gln His Asn Asn
                3180                3185                3190

tcg ggc ttc gtc ggc  tac ctc gcg ccc acc  atg cgc cag ggc cag       18816
Ser Gly Phe Val Gly  Tyr Leu Ala Pro Thr  Met Arg Gln Gly Gln
                3195                3200                3205

ccc tac ccc gcc aac  tac ccg tac ccg ctc  atc ggc aag agc gcc       18861
Pro Tyr Pro Ala Asn  Tyr Pro Tyr Pro Leu  Ile Gly Lys Ser Ala
                3210                3215                3220

gtc acc agc gtc acc  cag aaa aag ttc ctc  tgc gac agg gtc atg       18906
Val Thr Ser Val Thr  Gln Lys Lys Phe Leu  Cys Asp Arg Val Met
                3225                3230                3235

tgg cgc atc ccc ttc  tcc agc aac ttc atg  tcc atg ggc gcg ctc       18951
Trp Arg Ile Pro Phe  Ser Ser Asn Phe Met  Ser Met Gly Ala Leu
                3240                3245                3250

acc gac ctc ggc cag  aac atg ctc tat gcc  aac tcc gcc cac gcg       18996
Thr Asp Leu Gly Gln  Asn Met Leu Tyr Ala  Asn Ser Ala His Ala
                3255                3260                3265

cta gac atg aat ttc  gaa gtc gac ccc atg  gat gag tcc acc ctt       19041
Leu Asp Met Asn Phe  Glu Val Asp Pro Met  Asp Glu Ser Thr Leu
                3270                3275                3280

ctc tat gtt gtc ttc  gaa gtc ttc gac gtc  gtc cga gtg cac cag       19086
Leu Tyr Val Val Phe  Glu Val Phe Asp Val  Val Arg Val His Gln
                3285                3290                3295

ccc cac cgc ggc gtc  atc gag gcc gtc tac  ctg cgc acc ccc ttc       19131
Pro His Arg Gly Val  Ile Glu Ala Val Tyr  Leu Arg Thr Pro Phe
                3300                3305                3310

tcg gcc ggt aac gcc  acc acc taaattgcta cttgc atg atg gct  gag       19179
Ser Ala Gly Asn Ala  Thr Thr                  Met Met Ala  Glu
                3315                                3320

gcc gcg ggc tcc  ggc gag cag gag ctc  agg gcc atc atc cgc  gac       19224
Ala Ala Gly Ser  Gly Glu Gln Glu Leu  Arg Ala Ile Ile Arg  Asp
            3325                3330                3335

ctg ggc tgc ggg  ccc tac ttc ctg ggc  acc ttc gat aag cgc  ttc       19269
Leu Gly Cys Gly  Pro Tyr Phe Leu Gly  Thr Phe Asp Lys Arg  Phe
            3340                3345                3350
```

```
ccg gga ttc atg  gcc ccg cac aag ctg  gcc tgc gcc atc gtc  aac       19314
Pro Gly Phe Met  Ala Pro His Lys Leu  Ala Cys Ala Ile Val  Asn
            3355                 3360                 3365

acg gcc ggt cgc  gag acc ggg ggc gag  cac tgg ctg gcc ttc  gcc       19359
Thr Ala Gly Arg  Glu Thr Gly Gly Glu  His Trp Leu Ala Phe  Ala
            3370                 3375                 3380

tgg aac ccg cgc  tcg aac acc tgc tac  ctc ttc gac ccc ttc  ggg       19404
Trp Asn Pro Arg  Ser Asn Thr Cys Tyr  Leu Phe Asp Pro Phe  Gly
            3385                 3390                 3395

ttc tcg gac gag  cgc ctc aag cag atc  tac cag ttc gag tac  gag       19449
Phe Ser Asp Glu  Arg Leu Lys Gln Ile  Tyr Gln Phe Glu Tyr  Glu
            3400                 3405                 3410

ggc ctg ctg cgc  cgc agc gcc ctg gcc  acc gag gac cgc tgc  gtc       19494
Gly Leu Leu Arg  Arg Ser Ala Leu Ala  Thr Glu Asp Arg Cys  Val
            3415                 3420                 3425

acc ctg gaa aag  tcc acc cag acc gtg  cag ggt ccg cgc tcg  gcc       19539
Thr Leu Glu Lys  Ser Thr Gln Thr Val  Gln Gly Pro Arg Ser  Ala
            3430                 3435                 3440

gcc tgc ggg ctc  ttc tgc tgc atg ttc  ctg cac gcc ttc gtg  cac       19584
Ala Cys Gly Leu  Phe Cys Cys Met Phe  Leu His Ala Phe Val  His
            3445                 3450                 3455

tgg ccc gac cgc  ccc atg gac aag aac  ccc acc atg aac ttg  ctg       19629
Trp Pro Asp Arg  Pro Met Asp Lys Asn  Pro Thr Met Asn Leu  Leu
            3460                 3465                 3470

acg ggg gtg ccc  aac ggc atg ctc cag  tcg ccc cag gtg gaa  ccc       19674
Thr Gly Val Pro  Asn Gly Met Leu Gln  Ser Pro Gln Val Glu  Pro
            3475                 3480                 3485

acc ctg cgc cgc  aac cag gag gcg ctc  tac cgc ttc ctc aac  tcc       19719
Thr Leu Arg Arg  Asn Gln Glu Ala Leu  Tyr Arg Phe Leu Asn  Ser
            3490                 3495                 3500

cac tcc gcc tac  ttt cgc tcc cac cgc  gcg cgc atc gag aag  gcc       19764
His Ser Ala Tyr  Phe Arg Ser His Arg  Ala Arg Ile Glu Lys  Ala
            3505                 3510                 3515

acc gcc ttc gat  cgc atg aac aat caa  gac atg taaaccgtgt             19807
Thr Ala Phe Asp  Arg Met Asn Asn Gln  Asp Met
            3520                 3525

gtgtatgttt aaaatatctt ttaataaaca gcactttcat gttacacatg catctgagat    19867

gattattta gaa atc gaa  agg gtt ctg ccg ggt  ctc ggc atg gcc cgc      19915
          Glu Ile Glu  Arg Val Leu Pro Gly  Leu Gly Met Ala Arg
                  3530                 3535                 3540

ggg cag gga cac gtt  gcg gaa ctg gta ctt  ggc cag cca ctt gaa       19960
Gly Gln Gly His Val  Ala Glu Leu Val Leu  Gly Gln Pro Leu Glu
                3545                 3550                 3555

ctc ggg gat cag cag  ttt cgg cag cgg ggt  gtc ggg gaa gga gtc       20005
Leu Gly Asp Gln Gln  Phe Arg Gln Arg Gly  Val Gly Glu Gly Val
                3560                 3565                 3570

ggt cca cag ctt ccg  cgt cag ttg cag ggc  gcc cag cag gtc ggg       20050
Gly Pro Gln Leu Pro  Arg Gln Leu Gln Gly  Ala Gln Gln Val Gly
                3575                 3580                 3585

cgc gga gat ctt gaa  atc gca gtt ggg acc  cgc gtt ctg cgc gcg       20095
Arg Gly Asp Leu Glu  Ile Ala Val Gly Thr  Arg Val Leu Arg Ala
```

```
                3590                3595                3600

aga gtt gcg gta cac  ggg gtt gca gca ctg  gaa cac cat cag ggc        20140
Arg Val Ala Val His  Gly Val Ala Ala Leu  Glu His His Gln Gly
                3605                3610                3615

cgg gtg ctt cac gct  cgc cag cac cgt cgc  gtc ggt gat gct ctc        20185
Arg Val Leu His Ala  Arg Gln His Arg Arg  Val Gly Asp Ala Leu
                3620                3625                3630

cac gtc gag gtc ctc  ggc gtt ggc cat ccc  gaa ggg ggt cat ctt        20230
His Val Glu Val Leu  Gly Val Gly His Pro  Glu Gly Gly His Leu
                3635                3640                3645

gca ggt ctg cct tcc  cat agt ggg cac gca  ccc ggg ctt gtg gtt        20275
Ala Gly Leu Pro Ser  His Ser Gly His Ala  Pro Gly Leu Val Val
                3650                3655                3660

gca atc gca gtg cag  ggg gat cag cat cat  ctg ggc ctg gtc ggc        20320
Ala Ile Ala Val Gln  Gly Asp Gln His His  Leu Gly Leu Val Gly
                3665                3670                3675

gtt cat ccc cgg gta  cat ggc ctt cat gaa  agc ctc caa ttg cct        20365
Val His Pro Arg Val  His Gly Leu His Glu  Ser Leu Gln Leu Pro
                3680                3685                3690

gaa agc ctg ctg ggc  ctt ggc tcc ctc ggt  gaa gaa gac ccc gca        20410
Glu Ser Leu Leu Gly  Leu Gly Ser Leu Gly  Glu Glu Asp Pro Ala
                3695                3700                3705

gga ctt gct aga gaa  ctg gtt ggt agc gca  ccc ggc gtc gtg cac        20455
Gly Leu Ala Arg Glu  Leu Val Gly Ser Ala  Pro Gly Val Val His
                3710                3715                3720

gca gca gcg cgc gtc  gtt gtt ggc cag ctg  cac cac gct gcg ccc        20500
Ala Ala Ala Arg Val  Val Val Gly Gln Leu  His His Ala Ala Pro
                3725                3730                3735

cca gcg gtt ctg ggt  gat ctt ggc ccg gtc  ggg gtt ctc ctt cag        20545
Pro Ala Val Leu Gly  Asp Leu Gly Pro Val  Gly Val Leu Leu Gln
                3740                3745                3750

cgc gcg ctg ccc gtt  ctc gct cgc cac atc  cat ctc gat cat gtg        20590
Arg Ala Leu Pro Val  Leu Ala Arg His Ile  His Leu Asp His Val
                3755                3760                3765

ctc ctt ctg gat cat  ggt ggt ccc gtg cag  gca ccg cag ctt gcc        20635
Leu Leu Leu Asp His  Gly Gly Pro Val Gln  Ala Pro Gln Leu Ala
                3770                3775                3780

ctc ggt ctc ggt gca  ccc gtg cag cca cag  cgc gca ccc ggt gca        20680
Leu Gly Leu Gly Ala  Pro Val Gln Pro Gln  Arg Ala Pro Gly Ala
                3785                3790                3795

ctc cca gtt ctt gtg  ggc gat ctg gga atg  cgc gtg cac gaa ccc        20725
Leu Pro Val Leu Val  Gly Asp Leu Gly Met  Arg Val His Glu Pro
                3800                3805                3810

ctg cag gaa gcg gcc  cat cat ggt ggt cag  ggt ctt gtt gct agt        20770
Leu Gln Glu Ala Ala  His His Gly Gly Gln  Gly Leu Val Ala Ser
                3815                3820                3825

gaa ggt cag cgg gat  gcc gcg gtg ctc ctc  gtt gat gta cag gtg        20815
Glu Gly Gln Arg Asp  Ala Ala Val Leu Leu  Val Asp Val Gln Val
                3830                3835                3840

gca gat gcg gcg gta  cac ctc gcc ctg ctc  ggg cat cag ctg gaa        20860
Ala Asp Ala Ala Val  His Leu Ala Leu Leu  Gly His Gln Leu Glu
                3845                3850                3855
```

```
gtt ggc ttt cag gtc  ggt ctc cac gcg gta  gcg gtc cat cag tat        20905
Val Gly Phe Gln Val  Gly Leu His Ala Val  Ala Val His Gln Tyr
                3860                3865                3870

agt cat gat ttc cat  acc ctt ctc cca ggc  cga gac gat ggg cag        20950
Ser His Asp Phe His  Thr Leu Leu Pro Gly  Arg Asp Asp Gly Gln
                3875                3880                3885

gct cat agg gtt ctt  cac cat cat ctt agc  act agc agc cgc ggc        20995
Ala His Arg Val Leu  His His His Leu Ser  Thr Ser Ser Arg Gly
                3890                3895                3900

cag ggg gtc gct ctc  atc cag ggt ctc aaa  gct ccg ctt gcc gtc        21040
Gln Gly Val Ala Leu  Ile Gln Gly Leu Lys  Ala Pro Leu Ala Val
                3905                3910                3915

ctt ctc ggt gat ccg  cac cgg ggg gta gct  gaa gcc cac ggc cgc        21085
Leu Leu Gly Asp Pro  His Arg Gly Val Ala  Glu Ala His Gly Arg
                3920                3925                3930

cag ctc ctc ctc ggc  ctg cct ttc gtc ctc  gct gtc ctg gct gac        21130
Gln Leu Leu Leu Gly  Leu Pro Phe Val Leu  Ala Val Leu Ala Asp
                3935                3940                3945

gtc ctg cag gac cac  atg ctt ggt ctt gcg  ggg ttt ctt ctt ggg        21175
Val Leu Gln Asp His  Met Leu Gly Leu Ala  Gly Phe Leu Leu Gly
                3950                3955                3960

cgg cag cgg cgg cgg  aga tgc ttg tgg cga  ggg gga gcg cga gtt        21220
Arg Gln Arg Arg Arg  Arg Cys Leu Trp Arg  Gly Gly Ala Arg Val
                3965                3970                3975

ctc gct cac cac tac  tat ctc ttc ctc ttc  gtg gtc cga ggc cac        21265
Leu Ala His His Tyr  Tyr Leu Phe Leu Phe  Val Val Arg Gly His
                3980                3985                3990

gcg gcg gta ggt atg  tct ctt cgg ggg cag  agg cgg agg cga cgg        21310
Ala Ala Val Gly Met  Ser Leu Arg Gly Gln  Arg Arg Arg Arg Arg
                3995                4000                4005

gct ctc gcc gcc gcg  act tgg cgg atg gct  ggc aga gcc cct tcc        21355
Ala Leu Ala Ala Ala  Thr Trp Arg Met Ala  Gly Arg Ala Pro Ser
                4010                4015                4020

gcg atc ggg ggt gcg  ctc ccg gcg gcg ctc  tga ctg act tcc tcc        21400
Ala Ile Gly Gly Ala  Leu Pro Ala Ala Leu      Leu Thr Ser Ser
                4025                4030

gcg  gcc ggc cat tgtgttctcc tagggaggaa caacaagc atg gag  act cag     21452
Ala  Ala Gly His                                 Met Glu  Thr Gln
4035                                                 4040

cca tcg cca  acc tcg cca tct gcc  ccc acc acc gcc gac  gag aag       21497
Pro Ser Pro  Thr Ser Pro Ser Ala  Pro Thr Thr Ala Asp  Glu Lys
        4045                4050                4055

cag cag aat  gaa agc tta acc gcc  ccg ccg ccc agc ccc  gcc acc       21542
Gln Gln Asn  Glu Ser Leu Thr Ala  Pro Pro Pro Ser Pro  Ala Thr
        4060                4065                4070

tcc gac gca  gcc gcg gtc cca gac  atg caa gag atg gag  gaa tcc       21587
Ser Asp Ala  Ala Ala Val Pro Asp  Met Gln Glu Met Glu  Glu Ser
        4075                4080                4085

atc gag att  gac ctg ggc tat gtg  acg ccc gcg gag cac  gag gag       21632
Ile Glu Ile  Asp Leu Gly Tyr Val  Thr Pro Ala Glu His  Glu Glu
        4090                4095                4100
```

```
gag ctg gca  gtg cgc ttt caa tcg  tca agc cag gaa gat  aaa gaa       21677
Glu Leu Ala  Val Arg Phe Gln Ser  Ser Ser Gln Glu Asp  Lys Glu
        4105                 4110                 4115

cag cca gag  cag gaa gca gaa aac  gag cag agt cag gct  ggg ctc       21722
Gln Pro Glu  Gln Glu Ala Glu Asn  Glu Gln Ser Gln Ala  Gly Leu
        4120                 4125                 4130

gag cat gac  ggc gac tac ctc cac  ctg agc ggg gag gag  gac gcg       21767
Glu His Asp  Gly Asp Tyr Leu His  Leu Ser Gly Glu Glu  Asp Ala
        4135                 4140                 4145

ctc atc aag  cat ctg gcc cgg cag  gcc atc atc gtc aag  gat gcg       21812
Leu Ile Lys  His Leu Ala Arg Gln  Ala Ile Ile Val Lys  Asp Ala
        4150                 4155                 4160

ctg ctc gac  cgc acc gag gtg ccc  ctc agc gtg gag gag  ctc agc       21857
Leu Leu Asp  Arg Thr Glu Val Pro  Leu Ser Val Glu Glu  Leu Ser
        4165                 4170                 4175

cgc gcc tac  gag ctc aac ctc ttc  tcg ccg cgc gtg ccc  ccc aag       21902
Arg Ala Tyr  Glu Leu Asn Leu Phe  Ser Pro Arg Val Pro  Pro Lys
        4180                 4185                 4190

cgc cag ccc  aac ggc acc tgc gag  ccc aac ccg cgc ctc  aac ttc       21947
Arg Gln Pro  Asn Gly Thr Cys Glu  Pro Asn Pro Arg Leu  Asn Phe
        4195                 4200                 4205

tac ccg gtc  ttc gcg gtg ccc gag  gcc ctg gcc acc tac  cac atc       21992
Tyr Pro Val  Phe Ala Val Pro Glu  Ala Leu Ala Thr Tyr  His Ile
        4210                 4215                 4220

ttt ttc aag  aac caa aag atc ccc  gtc tcc tgt cgc gcc  aac cgc       22037
Phe Phe Lys  Asn Gln Lys Ile Pro  Val Ser Cys Arg Ala  Asn Arg
        4225                 4230                 4235

acc cgc gcc  gac gcc ctc ttc aac  ctg ggc ccc ggc gcc  cgc cta       22082
Thr Arg Ala  Asp Ala Leu Phe Asn  Leu Gly Pro Gly Ala  Arg Leu
        4240                 4245                 4250

cct gat atc  gcc tcc ttg gaa gag  gtt ccc aag atc ttc  gag ggt       22127
Pro Asp Ile  Ala Ser Leu Glu Glu  Val Pro Lys Ile Phe  Glu Gly
        4255                 4260                 4265

ctg ggc agc  gac gag act cgg gcc  gca aac gct ctg caa  gga gaa       22172
Leu Gly Ser  Asp Glu Thr Arg Ala  Ala Asn Ala Leu Gln  Gly Glu
        4270                 4275                 4280

gga gga gag  cat gag cac cac agc  gcc ctg gtc gag ttg  gaa ggc       22217
Gly Gly Glu  His Glu His His Ser  Ala Leu Val Glu Leu  Glu Gly
        4285                 4290                 4295

gac aac gcg  cgg ctg gcg gtg ctc  aaa cgc acg gtc gag  ctg acc       22262
Asp Asn Ala  Arg Leu Ala Val Leu  Lys Arg Thr Val Glu  Leu Thr
        4300                 4305                 4310

cat ttc gcc  tac ccg gct ctg aac  ctg ccc ccc aaa gtc  atg agc       22307
His Phe Ala  Tyr Pro Ala Leu Asn  Leu Pro Pro Lys Val  Met Ser
        4315                 4320                 4325

gcg gtc atg  gac cag gtg ctc atc  aag cgc gcg tcg ccc  atc tcc       22352
Ala Val Met  Asp Gln Val Leu Ile  Lys Arg Ala Ser Pro  Ile Ser
        4330                 4335                 4340

gag gac gag  ggc atg caa gac tcc  gag gat ggc aag ccc  gtg gtc       22397
Glu Asp Glu  Gly Met Gln Asp Ser  Glu Asp Gly Lys Pro  Val Val
        4345                 4350                 4355

agc gac gag  cag ctg gcc cgg tgg  ctg ggt cct aat gct  agt ccc       22442
```

```
Ser Asp Glu  Gln Leu Ala Arg Trp  Leu Gly Pro Asn Ala  Ser Pro
        4360                 4365                 4370

cag agt ttg  gaa gag cgg cgc aag  ctc atg atg gcc gtg  gtc ctg       22487
Gln Ser Leu  Glu Glu Arg Arg Lys  Leu Met Met Ala Val  Val Leu
        4375                 4380                 4385

gtg acc gtg  gag ctg gag tgc ctg  cgc cgc ttc ttc gcc  gac gcg       22532
Val Thr Val  Glu Leu Glu Cys Leu  Arg Arg Phe Phe Ala  Asp Ala
        4390                 4395                 4400

gag acc ctg  cgc aag gtc gag gag  aac ctg cac tac ctc  ttc agg       22577
Glu Thr Leu  Arg Lys Val Glu Glu  Asn Leu His Tyr Leu  Phe Arg
        4405                 4410                 4415

cac ggg ttc  gtg cgc cag gcc tgc  aag atc tcc aac gtg  gag ctg       22622
His Gly Phe  Val Arg Gln Ala Cys  Lys Ile Ser Asn Val  Glu Leu
        4420                 4425                 4430

acc aac ctg  gtc tcc tac atg ggc  atc ttg cac gag aac  cgc ctg       22667
Thr Asn Leu  Val Ser Tyr Met Gly  Ile Leu His Glu Asn  Arg Leu
        4435                 4440                 4445

ggg cag aac  gtg ctg cac acc acc  ctg cgc ggg gag gcc  cgc cgc       22712
Gly Gln Asn  Val Leu His Thr Thr  Leu Arg Gly Glu Ala  Arg Arg
        4450                 4455                 4460

gac tac atc  cgc gac tgc gtc tac  ctc tac ctc tgc cac  acc tgg       22757
Asp Tyr Ile  Arg Asp Cys Val Tyr  Leu Tyr Leu Cys His  Thr Trp
        4465                 4470                 4475

cag acg ggc  atg ggc gtg tgg cag  cag tgt ctg gag gag  cag aac       22802
Gln Thr Gly  Met Gly Val Trp Gln  Gln Cys Leu Glu Glu  Gln Asn
        4480                 4485                 4490

ctg aaa gag  ctc tgc aag ctc ctg  cag aag aac ctc aag  ggt ctg       22847
Leu Lys Glu  Leu Cys Lys Leu Leu  Gln Lys Asn Leu Lys  Gly Leu
        4495                 4500                 4505

tgg acc ggg  ttc gac gag cgg acc  acc gcc tcg gac ctg  gcc gac       22892
Trp Thr Gly  Phe Asp Glu Arg Thr  Thr Ala Ser Asp Leu  Ala Asp
        4510                 4515                 4520

ctc atc ttc  ccc gag cgc ctc agg  ctg acg ctg cgc aac  ggc ctg       22937
Leu Ile Phe  Pro Glu Arg Leu Arg  Leu Thr Leu Arg Asn  Gly Leu
        4525                 4530                 4535

ccc gac ttt  atg agc caa agc atg  ttg caa aac ttt cgc  tct ttc       22982
Pro Asp Phe  Met Ser Gln Ser Met  Leu Gln Asn Phe Arg  Ser Phe
        4540                 4545                 4550

atc ctc gaa  cgc tcc gga atc ctg  ccc gcc acc tgc tcc  gcg ctg       23027
Ile Leu Glu  Arg Ser Gly Ile Leu  Pro Ala Thr Cys Ser  Ala Leu
        4555                 4560                 4565

ccc tcg gac  ttc gtg ccg ctg acc  ttc cgc gag tgc ccc  ccg ccg       23072
Pro Ser Asp  Phe Val Pro Leu Thr  Phe Arg Glu Cys Pro  Pro Pro
        4570                 4575                 4580

ctg tgg agc  cac tgc tac ctg ctg  cgc ctg gcc aac tac  ctg gcc       23117
Leu Trp Ser  His Cys Tyr Leu Leu  Arg Leu Ala Asn Tyr  Leu Ala
        4585                 4590                 4595

tac cac tcg  gac gtg atc gag gac  gtc agc ggc gag ggc  ctg ctt       23162
Tyr His Ser  Asp Val Ile Glu Asp  Val Ser Gly Glu Gly  Leu Leu
        4600                 4605                 4610

gag tgc cac  tgc cgc tgc aac ctc  tgc acg ccg cac cgc  tcc ctg       23207
Glu Cys His  Cys Arg Cys Asn Leu  Cys Thr Pro His Arg  Ser Leu
```

```
        4615                4620                4625

gcc tgc aac  ccc cag ctg ctg agc  gag acc cag atc atc  ggc acc       23252
Ala Cys Asn  Pro Gln Leu Leu Ser  Glu Thr Gln Ile Ile  Gly Thr
        4630                4635                4640

ttc gag ttg  caa ggg ccc agc gat  gac ggc gag gga gcc  aag ggg       23297
Phe Glu Leu  Gln Gly Pro Ser Asp  Asp Gly Glu Gly Ala  Lys Gly
        4645                4650                4655

ggt ctg aaa  ctc acc ccg ggg ctg  tgg acc tcg gcc tac  ttg cgc       23342
Gly Leu Lys  Leu Thr Pro Gly Leu  Trp Thr Ser Ala Tyr  Leu Arg
        4660                4665                4670

aag ttc gtg  ccc gag gac tac cat  ccc ttc gag atc agg  ttc tac       23387
Lys Phe Val  Pro Glu Asp Tyr His  Pro Phe Glu Ile Arg  Phe Tyr
        4675                4680                4685

gag gac caa  tcc cag ccg cct aag  gcc gag ctg tcg gcc  tgc gtc       23432
Glu Asp Gln  Ser Gln Pro Pro Lys  Ala Glu Leu Ser Ala  Cys Val
        4690                4695                4700

atc acc cag  ggg gcc atc ctg gcc  caa ttg caa gcc atc  cag aaa       23477
Ile Thr Gln  Gly Ala Ile Leu Ala  Gln Leu Gln Ala Ile  Gln Lys
        4705                4710                4715

tcc cgc caa  gaa ttc ttg ctg aaa  aag ggc cgc ggg gtc  tac ctc       23522
Ser Arg Gln  Glu Phe Leu Leu Lys  Lys Gly Arg Gly Val  Tyr Leu
        4720                4725                4730

gac ccc cag  acc ggt gag gag ctc  aac ccc ggc ttc ccc  cag gat       23567
Asp Pro Gln  Thr Gly Glu Glu Leu  Asn Pro Gly Phe Pro  Gln Asp
        4735                4740                4745

gcc ccg agg  aaa caa gaa gct gaa  agt gga gct gcc gcc  cgt gga       23612
Ala Pro Arg  Lys Gln Glu Ala Glu  Ser Gly Ala Ala Ala  Arg Gly
        4750                4755                4760

gga ttt gga  gga aga ctg gga gaa  cag cag tca ggc aga  gga gga       23657
Gly Phe Gly  Gly Arg Leu Gly Glu  Gln Gln Ser Gly Arg  Gly Gly
        4765                4770                4775

gat gga gga  aga ctg gga cag cac  tca ggc aga gga gga  cag cct       23702
Asp Gly Gly  Arg Leu Gly Gln His  Ser Gly Arg Gly Gly  Gln Pro
        4780                4785                4790

gca aga cag  tct gga gga aga cga  gga gga ggc aga ggt  gga aga       23747
Ala Arg Gln  Ser Gly Gly Arg Arg  Gly Gly Gly Arg Gly  Gly Arg
        4795                4800                4805

agc agc cgc  cgc cag acc gtc gtc  ctc ggc ggg gga gaa  agc aag       23792
Ser Ser Arg  Arg Gln Thr Val Val  Leu Gly Gly Gly Glu  Ser Lys
        4810                4815                4820

cag cac gga  tac cat ctc cgc tcc  ggg tcg ggg tcc cgc  tcg gcc       23837
Gln His Gly  Tyr His Leu Arg Ser  Gly Ser Gly Ser Arg  Ser Ala
        4825                4830                4835

cca cag tagatgggac gagaccgggc gattcccgaa ccccaccatc cagaccggta       23893
Pro Gln

agaaggagcg gcagggatac aagtcctggc gggggcacaa aaacgccatc gtctcctgct    23953

tgcaggcctg cgggggcaac atctccttca ccaggcgcta cctgctcttc caccgcgggg    24013

tgaacttccc ccgcaacatc ttgcattact accgtcacct ccacagcccc tactacttcc    24073

aagaagaggc agcagcagaa aaagaccagc agaaaaccag cagctagaaa atccacagcg    24133
```

```
gcagcaggtg gactgaggat cgcggcgaac gagccggcgc agacccggga gctgaggaac    24193

cggatctttc ccaccctcta tgccatcttc cagcagagtc gggggcagga gcaggaactg    24253

aaagtcaaga accgttctct gcgctcgctc acccgcagtt gtctgtatca caagagcgaa    24313

gaccaacttc agcgcactct cgaggacgcc gaggctctct tcaacaagta ctgcgcgctc    24373

actcttaaag agtagcccgc gcccgcccag tcgcagaaaa aggcgggaat tacgtcacct    24433

gtgcccttcg ccctagccgc ctccacccat c atg  agc aaa gag att ccc  acg     24485
                                    Met  Ser Lys Glu Ile Pro  Thr
                                    4840                4845

cct tac atg tgg  agc tac cag ccc cag  atg ggc ctg gcc gcc  ggc       24530
Pro Tyr Met Trp  Ser Tyr Gln Pro Gln  Met Gly Leu Ala Ala  Gly
            4850                4855                4860

gcc gcc cag gac  tac tcc acc cgc atg  aat tgg ctc agc gcc  ggg       24575
Ala Ala Gln Asp  Tyr Ser Thr Arg Met  Asn Trp Leu Ser Ala  Gly
            4865                4870                4875

ccc gcg atg atc  tca cgg gtg aat gac  atc cgc gcc cac cga  aac       24620
Pro Ala Met Ile  Ser Arg Val Asn Asp  Ile Arg Ala His Arg  Asn
            4880                4885                4890

cag ata ctc cta  gaa cag tca gcg ctc  acc gcc acg ccc cgc  aat       24665
Gln Ile Leu Leu  Glu Gln Ser Ala Leu  Thr Ala Thr Pro Arg  Asn
            4895                4900                4905

cac ctc aat ccg  cgt aat tgg ccc gcc  gcc ctg gtg tac cag  gaa       24710
His Leu Asn Pro  Arg Asn Trp Pro Ala  Ala Leu Val Tyr Gln  Glu
            4910                4915                4920

att ccc cag ccc  acg acc gta cta ctt  ccg cga gac gcc cag  gcc       24755
Ile Pro Gln Pro  Thr Thr Val Leu Leu  Pro Arg Asp Ala Gln  Ala
            4925                4930                4935

gaa gtc cag ctg  act aac tca ggt gtc  cag ctg gcg ggc ggc  gcc       24800
Glu Val Gln Leu  Thr Asn Ser Gly Val  Gln Leu Ala Gly Gly  Ala
            4940                4945                4950

acc ctg tgt cgt  cac cgc ccc gct cag  ggt ata aag cgg ctg  gtg       24845
Thr Leu Cys Arg  His Arg Pro Ala Gln  Gly Ile Lys Arg Leu  Val
            4955                4960                4965

atc cgg ggc aga  ggc aca cag ctc aac  gac gag gtg gtg agc  tct       24890
Ile Arg Gly Arg  Gly Thr Gln Leu Asn  Asp Glu Val Val Ser  Ser
            4970                4975                4980

tcg ctg ggt ctg  cga cct gac gga gtc  ttc caa atc gcc gga  tcg       24935
Ser Leu Gly Leu  Arg Pro Asp Gly Val  Phe Gln Ile Ala Gly  Ser
            4985                4990                4995

ggg aga tct tcc  ttc acg cct cgt cag  gcg gtc ctg act ttg  gag       24980
Gly Arg Ser Ser  Phe Thr Pro Arg Gln  Ala Val Leu Thr Leu  Glu
            5000                5005                5010

agt tcg tcc tcg  cag ccc cgc tcg ggc  ggc atc ggc act ctc  cag       25025
Ser Ser Ser Ser  Gln Pro Arg Ser Gly  Gly Ile Gly Thr Leu  Gln
            5015                5020                5025

ttc gtg gag gag  ttc act ccc tcg gtc  tac ttc aac ccc ttc  tcc       25070
Phe Val Glu Glu  Phe Thr Pro Ser Val  Tyr Phe Asn Pro Phe  Ser
            5030                5035                5040

ggc tcc ccc ggc  cac tac ccg gac gag  ttc atc ccg aac ttt  gac       25115
Gly Ser Pro Gly  His Tyr Pro Asp Glu  Phe Ile Pro Asn Phe  Asp
```

```
            5045                5050                5055

gcc atc agc gag  tcg gtg gac ggc tac  gat tga atg tcc cat ggt        25160
Ala Ile Ser Glu  Ser Val Asp Gly Tyr  Asp     Met Ser His Gly
            5060                5065                5070

ggc gcg gct gac cta  gct cgg ctt cga cac  ctg gac cac tgc cgc        25205
Gly Ala Ala Asp Leu  Ala Arg Leu Arg His  Leu Asp His Cys Arg
                5075                5080                5085

cgc ttt cgc tgc ttc  gct cgg gac ctc gcc  gag ttc acc tac ttc        25250
Arg Phe Arg Cys Phe  Ala Arg Asp Leu Ala  Glu Phe Thr Tyr Phe
                5090                5095                5100

gag ctg ccc gag gag  cat cct cag ggc ccg  gcc cac gga gtg cgg        25295
Glu Leu Pro Glu Glu  His Pro Gln Gly Pro  Ala His Gly Val Arg
                5105                5110                5115

atc gtc gtc gaa ggg  ggc cta gac tcc cac  ctg ctt cgg atc ttc        25340
Ile Val Val Glu Gly  Gly Leu Asp Ser His  Leu Leu Arg Ile Phe
                5120                5125                5130

agc cag cgc ccg atc  ctg gtc gag cgc caa  cag ggc aac acc ctc        25385
Ser Gln Arg Pro Ile  Leu Val Glu Arg Gln  Gln Gly Asn Thr Leu
                5135                5140                5145

ctg acc ctc tac tgc  atc tgc gac cac ccc  ggc ctg cat gaa agt        25430
Leu Thr Leu Tyr Cys  Ile Cys Asp His Pro  Gly Leu His Glu Ser
                5150                5155                5160

ctt tgt tgt ctg ctg  tgt act gag tat aat  aaa agc tgagatcagc         25476
Leu Cys Cys Leu Leu  Cys Thr Glu Tyr Asn  Lys Ser
                5165                5170

gactactccg gactcaactg tggtgtttct gcatccatca accagtctct gaccttcacc    25536

gggaacgaga ccgagctcca gctccagtgt aagccccaca agaagtacct cacctggctg    25596

taccagggct ccccgatcgc cgttgttaac cactgcgacg acgacggagt cctgctgaac    25656

ggccccgcca accttacttt ttccacccgc agaagcaagc tactgctctt cagacccttc    25716

ctccccggga tctatcagtg catctcggga ccctgccatc acaccttcca cctgatcccg    25776

aataccacct cttccccagc accgctcccc actaacaacc aaactaacca ccaacgccac    25836

cgtcgagacc tttcctctga ttctaatacc actaccggag gtgagctccg aggtactaag    25896

aagtcctcac ctgggattta ttacggcccc tgggaggtgg tggggttaat agctttaggc    25956

ttagtagcgg gtgggctttt ggctctctgc tacctatacc tcccttgctg ttcctactta    26016

gtggtgcttt gttgctggtt taagaa atg ggg aag  atc acc cta gtg tgc        26066
                            Met Gly Lys  Ile Thr Leu Val Cys
                                    5175                5180

ggt gtg ctg gtg acg  gtg gtg ctt tcg att  ctg gga ggg gga agc        26111
Gly Val Leu Val Thr  Val Val Leu Ser Ile  Leu Gly Gly Gly Ser
                5185                5190                5195

gcg gct gta gtg acg  gag aag aag gcc gat  ccc tgc ttg act ttc        26156
Ala Ala Val Val Thr  Glu Lys Lys Ala Asp  Pro Cys Leu Thr Phe
                5200                5205                5210

aat ccc gat aaa tgc  cgg ctg agt ttt cag  cca gat ggc aat cgg        26201
Asn Pro Asp Lys Cys  Arg Leu Ser Phe Gln  Pro Asp Gly Asn Arg
                5215                5220                5225

tgc acg gtg ctg atc  aag tgc gga tgg gaa  tgc gag agc gtg gcg        26246
```

```
Cys Thr Val Leu Ile  Lys Cys Gly Trp Glu  Cys Glu Ser Val Ala
                5230                5235                5240

atc cag tat aaa aac  aag acg cgg aac aat  act ctc gcg tcc aca        26291
Ile Gln Tyr Lys Asn  Lys Thr Arg Asn Asn  Thr Leu Ala Ser Thr
                5245                5250                5255

tgg cag ccc ggg gac  ccc gag tgg tac acc  gtc tct gtc cct ggt        26336
Trp Gln Pro Gly Asp  Pro Glu Trp Tyr Thr  Val Ser Val Pro Gly
                5260                5265                5270

gct gac ggc tcc ctc  cac acg gtg aac aac  act ttc att ttt gag        26381
Ala Asp Gly Ser Leu  His Thr Val Asn Asn  Thr Phe Ile Phe Glu
                5275                5280                5285

cac atg tgc gaa acc  gcc atg ttc atg agc  aag cag tac ggt atg        26426
His Met Cys Glu Thr  Ala Met Phe Met Ser  Lys Gln Tyr Gly Met
                5290                5295                5300

tgg ccc cca cga aaa  gag aat atc gtg gtc  ttc tcc atc gct tac        26471
Trp Pro Pro Arg Lys  Glu Asn Ile Val Val  Phe Ser Ile Ala Tyr
                5305                5310                5315

agc gcg tgc acg gtg  cta atc acc gcg atc  gtg tgc ctg agc att        26516
Ser Ala Cys Thr Val  Leu Ile Thr Ala Ile  Val Cys Leu Ser Ile
                5320                5325                5330

cac atg ctc atc gct  att cgc ccc aga aat  aat gcc gag aaa gag        26561
His Met Leu Ile Ala  Ile Arg Pro Arg Asn  Asn Ala Glu Lys Glu
                5335                5340                5345

aaa cag cca taacacactt ttttcacaca ccttgttttt tacagaca atg cgt        26614
Lys Gln Pro                                             Met Arg
                                                        5350

ctg tta att ttt gtt  atc att aca ctc agc  ttt aac tat gcc cat        26659
Leu Leu Ile Phe Val  Ile Ile Thr Leu Ser  Phe Asn Tyr Ala His
                5355                5360                5365

ggc tat gca aat ata  caa aaa acc ctc tat  gta ggc tct gac tct        26704
Gly Tyr Ala Asn Ile  Gln Lys Thr Leu Tyr  Val Gly Ser Asp Ser
                5370                5375                5380

aca tta gaa ggt act  caa tct caa gcc agg  gtt tca tgg tat ttt        26749
Thr Leu Glu Gly Thr  Gln Ser Gln Ala Arg  Val Ser Trp Tyr Phe
                5385                5390                5395

tat aaa ggc tct gat  gac cca att act ctt  tgc aaa ggt gat cag        26794
Tyr Lys Gly Ser Asp  Asp Pro Ile Thr Leu  Cys Lys Gly Asp Gln
                5400                5405                5410

ggg cgc ata aca aag  cca cct atc aca ttt  agc tgc acc aga aca        26839
Gly Arg Ile Thr Lys  Pro Pro Ile Thr Phe  Ser Cys Thr Arg Thr
                5415                5420                5425

aac ctc acg ctt tta  tcc att aca aaa gaa  tat gct ggc act tat        26884
Asn Leu Thr Leu Leu  Ser Ile Thr Lys Glu  Tyr Ala Gly Thr Tyr
                5430                5435                5440

tac agc aca aat ttt  cat cgt ggg caa gat  aaa tat tat act gtt        26929
Tyr Ser Thr Asn Phe  His Arg Gly Gln Asp  Lys Tyr Tyr Thr Val
                5445                5450                5455

aag gta gaa aac cct  acc acc cct aga aca  act aca aag ccc acc        26974
Lys Val Glu Asn Pro  Thr Thr Pro Arg Thr  Thr Thr Lys Pro Thr
                5460                5465                5470

aca act aag aag ccc  act aca cct aag aag  cct acc aca ccc aaa        27019
Thr Thr Lys Lys Pro  Thr Thr Pro Lys Lys  Pro Thr Thr Pro Lys
```

```
                5475                5480                5485

acc act aag aca aca  act gct aag acc act  acc aca aag cca acc        27064
Thr Thr Lys Thr Thr  Thr Ala Lys Thr Thr  Thr Thr Lys Pro Thr
                5490                5495                5500

aca acc agc acc aca  ctt gct ata act aca  cac aca cac act gag        27109
Thr Thr Ser Thr Thr  Leu Ala Ile Thr Thr  His Thr His Thr Glu
                5505                5510                5515

ctg acc tca cag gca  act act gaa aat gat  ttg gtt gcc ctg ttg        27154
Leu Thr Ser Gln Ala  Thr Thr Glu Asn Asp  Leu Val Ala Leu Leu
                5520                5525                5530

caa aag ggg gag aac  agt agc agc agt cct  ctg cct act acc ccc        27199
Gln Lys Gly Glu Asn  Ser Ser Ser Ser Pro  Leu Pro Thr Thr Pro
                5535                5540                5545

agt gag gaa ata ccc  aag tcc atg gtt ggc  att atc gct gct gta        27244
Ser Glu Glu Ile Pro  Lys Ser Met Val Gly  Ile Ile Ala Ala Val
                5550                5555                5560

gtg gtg tgt atg ctg  att atc atc ttg tgc  atg atg tac tat gcc        27289
Val Val Cys Met Leu  Ile Ile Ile Leu Cys  Met Met Tyr Tyr Ala
                5565                5570                5575

tgc tac tac aga aaa  cac agg ctg aac aac  aaa ctg gac ccc tta        27334
Cys Tyr Tyr Arg Lys  His Arg Leu Asn Asn  Lys Leu Asp Pro Leu
                5580                5585                5590

ctg agt gtt gat ttt  taatttttta gaaccatgaa gatcctaagc ctttttgttt     27389
Leu Ser Val Asp Phe
                5595

tttctataat tattacctct gctatttgtg aatcagtgga taaggacgtt actgtcacca    27449

ctggctctaa ttatacacta aaagggcctt cctcaggtat gctttcgtgg tattgttatt    27509

ttggaaatga tgataaacag acagagctat gtaactttca gaacggcaaa accaaaaatt    27569

ctaaaataga taactatcaa tgccagggta ctaatttagt actgatgaat atcacgaaag    27629

catatgctgg cagttattcc tgtcctggac aaaacaccga ggaaatgatt ttttacaaat    27689

taattgtagt tgaccctact actccagcac cacccaccac aaccaaggca cataccacag    27749

acacacagga aaccactcca gaggcagaag tagcagagtt agcaaagcag attcatgaag    27809

attcatttgt tgccaatacc cccacacacc ccggaccgca atgtccaggg ccattagtca    27869

gcggcattgt cggtgtgctt tgcgggttag cagttataat catctgcatg ttcatttttg    27929

cttgctgcta cagaaggctt caccgacaaa aatcagaccc actgctgaac ctctatgttt    27989

aatttttgat tttccagagc c atg aag gca ctt agc  act tta gta ttt ttg     28040
                        Met Lys Ala Leu Ser  Thr Leu Val Phe Leu
                                            5600                5605

tcc ttg att ggc att  gtt ttc agt gct ggg  ttt ttg aaa aat ctt        28085
Ser Leu Ile Gly Ile  Val Phe Ser Ala Gly  Phe Leu Lys Asn Leu
                5610                5615                5620

acc att att gaa ggt  gat aat gca aca ctg  gta gga atc agc ggt        28130
Thr Ile Ile Glu Gly  Asp Asn Ala Thr Leu  Val Gly Ile Ser Gly
                5625                5630                5635

cag aat gtt agt tgg  cta aaa tat cat cta  gat ggg tgg aaa cct        28175
Gln Asn Val Ser Trp  Leu Lys Tyr His Leu  Asp Gly Trp Lys Pro
                5640                5645                5650
```

```
att tgc acc tgg aat  gtc agt gtg tac aca  tgc cat ggt gtt aac        28220
Ile Cys Thr Trp Asn  Val Ser Val Tyr Thr  Cys His Gly Val Asn
                5655                5660                5665

ctc acc att acc aat  gcc acc caa gat cag  aat ggc agg ttt aag        28265
Leu Thr Ile Thr Asn  Ala Thr Gln Asp Gln  Asn Gly Arg Phe Lys
                5670                5675                5680

ggt cag agt ttc act  agc aac aat ggg tat  gaa acc cat aac atg        28310
Gly Gln Ser Phe Thr  Ser Asn Asn Gly Tyr  Glu Thr His Asn Met
                5685                5690                5695

ttc atc tat gat gtc  act gtc ata tca aat  aag act aca cct acc        28355
Phe Ile Tyr Asp Val  Thr Val Ile Ser Asn  Lys Thr Thr Pro Thr
                5700                5705                5710

aca cag aca ccc act  aca cat agc tca act  cat gcc atg cag acc        28400
Thr Gln Thr Pro Thr  Thr His Ser Ser Thr  His Ala Met Gln Thr
                5715                5720                5725

act cag aca acc aca  tac act aca tct act  gag tcc acc acc acc        28445
Thr Gln Thr Thr Thr  Tyr Thr Thr Ser Thr  Glu Ser Thr Thr Thr
                5730                5735                5740

act aca gca gag gta  tcc agc aca gcg cct  cag ccc cag gca ttg        28490
Thr Thr Ala Glu Val  Ser Ser Thr Ala Pro  Gln Pro Gln Ala Leu
                5745                5750                5755

gct ttg atg gct cag  cct agc agc atg act  gct aaa acc aat gag        28535
Ala Leu Met Ala Gln  Pro Ser Ser Met Thr  Ala Lys Thr Asn Glu
                5760                5765                5770

cag act act gaa ttt  ttg tcc act att cag  agc agc acc aca gct        28580
Gln Thr Thr Glu Phe  Leu Ser Thr Ile Gln  Ser Ser Thr Thr Ala
                5775                5780                5785

acc tcg agt gcc ttc  tct agc acc gcc aat  ctc acc tcg ctt tcc        28625
Thr Ser Ser Ala Phe  Ser Ser Thr Ala Asn  Leu Thr Ser Leu Ser
                5790                5795                5800

tct acg cca atc agt  aac gct act acc tcc  ccc gct cct ctt ccc        28670
Ser Thr Pro Ile Ser  Asn Ala Thr Thr Ser  Pro Ala Pro Leu Pro
                5805                5810                5815

act cct ctg aag caa  tcc gag tct agc acg  cag ctg cag atc acc        28715
Thr Pro Leu Lys Gln  Ser Glu Ser Ser Thr  Gln Leu Gln Ile Thr
                5820                5825                5830

ctg ctc att gtg atc  ggg gtg gtc atc ctg  gca gtg ctg ctc tac        28760
Leu Leu Ile Val Ile  Gly Val Val Ile Leu  Ala Val Leu Leu Tyr
                5835                5840                5845

ttt atc ttc tgc cgc  cgc atc ccc aac gcg  aaa ccg gcc tac aag        28805
Phe Ile Phe Cys Arg  Arg Ile Pro Asn Ala  Lys Pro Ala Tyr Lys
                5850                5855                5860

ccc att gtt atc ggg  acg ccg gag ccg ctt  cag gtg gag gga ggt        28850
Pro Ile Val Ile Gly  Thr Pro Glu Pro Leu  Gln Val Glu Gly Gly
                5865                5870                5875

cta agg aat ctt ctc  ttc tct ttt aca gta  tgg tgatttgaac             28893
Leu Arg Asn Leu Leu  Phe Ser Phe Thr Val  Trp
                5880                5885

tatgattcct agacatttca ttatcacttc tctaatctgt gtgctccaag tctgtgccac    28953

cctcgctctc gtggctaacg cgagtccaga ctgcattgga gcgttcgcct cctacgtgct    29013
```

```
ctttgccttc atcacctgca tctgctgctg tagcatagtc tgcctgctta tcaccttctt    29073

ccagttcgtt gactgggtct ttgtgcgcat cgcctacctg cgccaccacc cccagtaccg    29133

cgaccagaga gtggcgcaac tgttgagact catctg atg ata agc atg  cgg gct     29187
                                          Met Ile Ser Met  Arg Ala
                                                       5890

ctg cta cta  ctt ctc gcg ctt ctg  cta gct ccc ctc gcc  gcc ccc       29232
Leu Leu Leu  Leu Leu Ala Leu Leu  Leu Ala Pro Leu Ala  Ala Pro
        5895                 5900                 5905

cta tcc ctc  aaa tcc ccc acc cag  tcc cct gaa gag gtt  cga aaa       29277
Leu Ser Leu  Lys Ser Pro Thr Gln  Ser Pro Glu Glu Val  Arg Lys
        5910                 5915                 5920

tgt aaa ttc  caa gaa ccc tgg aaa  ttc ctt tca tgc tac  aaa ctc       29322
Cys Lys Phe  Gln Glu Pro Trp Lys  Phe Leu Ser Cys Tyr  Lys Leu
        5925                 5930                 5935

aaa tca gaa  atg cac ccc agc tgg  atc atg atc gtt gga  atc gta       29367
Lys Ser Glu  Met His Pro Ser Trp  Ile Met Ile Val Gly  Ile Val
        5940                 5945                 5950

aac atc ctt  gcc tgt acc ctc ttc  tcc ttt gtg att tac  ccc cgc       29412
Asn Ile Leu  Ala Cys Thr Leu Phe  Ser Phe Val Ile Tyr  Pro Arg
        5955                 5960                 5965

ttt gac ttt  ggg tgg aac gca ccc  gag gcg ctc tgg ctc  ccg cct       29457
Phe Asp Phe  Gly Trp Asn Ala Pro  Glu Ala Leu Trp Leu  Pro Pro
        5970                 5975                 5980

gat ccc gac  aca cca cca cag cag  cag caa aat cag gca  cag gca       29502
Asp Pro Asp  Thr Pro Pro Gln Gln  Gln Gln Asn Gln Ala  Gln Ala
        5985                 5990                 5995

cat gca cca  cca cag cct agg cca  caa tac atg ccc atc  tta gac       29547
His Ala Pro  Pro Gln Pro Arg Pro  Gln Tyr Met Pro Ile  Leu Asp
        6000                 6005                 6010

tat gag gcc  gag cca cag cga gcc  atg ctt cct gct att  agt tac       29592
Tyr Glu Ala  Glu Pro Gln Arg Ala  Met Leu Pro Ala Ile  Ser Tyr
        6015                 6020                 6025

ttc aat cta  acc ggc gga gat gac  tgaccccatg gccaacaaca             29636
Phe Asn Leu  Thr Gly Gly Asp Asp
        6030                 6035

ccgtcaacga cctcctggac atggacggcc gcgcctcgga gcagcgactc gcccaactcc    29696

gcatccgcca gcagcaggag agagccgtca aggagctgca ggacgcggtg gccatccacc    29756

agtgcaagag aggcatcttc tgcctggtga agcaggccaa gatctccttc gaggtcacgt    29816

ccaccgacca tcgcctctcc tacgagctcc tgcagcagcg ccagaagttc acctgcctgg    29876

tcggagtcaa ccccatcgtc atcacccagc agtctggcga taccaagggt tgcatccact    29936

gctcctgcga ctcccccgag tgcgttcaca ccctgatcaa gaccctctgc ggcctccgcg    29996

acctcctccc catgaactaa tcaactaacc ccctaccct ttaccctcca gtaaaaataa    30056

agattaaaaa tgattgaatt gatcaataaa gaatcactta cttgaaatct gaaaccaggt    30116

ctctgtcc atg ttt tct gtc agc  agc act tca ctc ccc  tct tcc caa       30163
          Met Phe Ser Val Ser  Ser Thr Ser Leu Pro  Ser Ser Gln
                       6040                 6045

ctc tgg  tac tgc agg ccc cgg  cgg gct gca aac ttc  ctc cac act       30208
```

```
Leu Trp  Tyr Cys Arg Pro Arg  Arg Ala Ala Asn Phe  Leu His Thr
    6050                 6055                 6060

ctg aag  ggg atg tca aat tcc  tcc tgt ccc tca atc  ttc att ttt       30253
Leu Lys  Gly Met Ser Asn Ser  Ser Cys Pro Ser Ile  Phe Ile Phe
    6065                 6070                 6075

atc ttc  tat cag atg tcc aaa  aag cgc gcg cgg gtg  gat gat ggc       30298
Ile Phe  Tyr Gln Met Ser Lys  Lys Arg Ala Arg Val  Asp Asp Gly
    6080                 6085                 6090

ttc gac  ccc gtg tac ccc tac  gat gca gac aac gca  ccg act gtg       30343
Phe Asp  Pro Val Tyr Pro Tyr  Asp Ala Asp Asn Ala  Pro Thr Val
    6095                 6100                 6105

ccc ttc  atc aac cct ccc ttc  gtc tct tca gat gga  ttc caa gaa       30388
Pro Phe  Ile Asn Pro Pro Phe  Val Ser Ser Asp Gly  Phe Gln Glu
    6110                 6115                 6120

aag ccc  ctg ggg gtg ttg tcc  ctg cga ctg gcc gac  ccc gtc acc       30433
Lys Pro  Leu Gly Val Leu Ser  Leu Arg Leu Ala Asp  Pro Val Thr
    6125                 6130                 6135

acc aag  aat ggg gct gtc acc  ctc aag ctg ggg gag  ggg gtg gac       30478
Thr Lys  Asn Gly Ala Val Thr  Leu Lys Leu Gly Glu  Gly Val Asp
    6140                 6145                 6150

ctc gac  gac tcg gga aaa ctc  atc tcc aaa aat gcc  acc aag gcc       30523
Leu Asp  Asp Ser Gly Lys Leu  Ile Ser Lys Asn Ala  Thr Lys Ala
    6155                 6160                 6165

act gcc  cct ctc agt att tcc  aac ggc acc att tcc  ctt aac atg       30568
Thr Ala  Pro Leu Ser Ile Ser  Asn Gly Thr Ile Ser  Leu Asn Met
    6170                 6175                 6180

gcc gcc  cct ttt tac aac aac  aat gga acg tta agt  ctc aat gtt       30613
Ala Ala  Pro Phe Tyr Asn Asn  Asn Gly Thr Leu Ser  Leu Asn Val
    6185                 6190                 6195

tct aca  cca tta gca gta ttt  ccc act ttt aac act  tta ggt atc       30658
Ser Thr  Pro Leu Ala Val Phe  Pro Thr Phe Asn Thr  Leu Gly Ile
    6200                 6205                 6210

agt ctt  gga aac ggt ctt caa  act tct aat aag ttg  ctg act gta       30703
Ser Leu  Gly Asn Gly Leu Gln  Thr Ser Asn Lys Leu  Leu Thr Val
    6215                 6220                 6225

cag tta  act cat cct ctt aca  ttc agc tca aat agc  atc aca gta       30748
Gln Leu  Thr His Pro Leu Thr  Phe Ser Ser Asn Ser  Ile Thr Val
    6230                 6235                 6240

aaa aca  gac aaa gga ctc tat  att aat tct agt gga  aac aga ggg       30793
Lys Thr  Asp Lys Gly Leu Tyr  Ile Asn Ser Ser Gly  Asn Arg Gly
    6245                 6250                 6255

ctt gag  gct aac ata agc cta  aaa aga gga ctg att  ttt gat ggt       30838
Leu Glu  Ala Asn Ile Ser Leu  Lys Arg Gly Leu Ile  Phe Asp Gly
    6260                 6265                 6270

aat gct  att gca aca tac ctt  gga agt ggt tta gac  tat gga tcc       30883
Asn Ala  Ile Ala Thr Tyr Leu  Gly Ser Gly Leu Asp  Tyr Gly Ser
    6275                 6280                 6285

tat gat  agc gat ggg aaa aca  aga ccc atc atc acc  aaa att gga       30928
Tyr Asp  Ser Asp Gly Lys Thr  Arg Pro Ile Ile Thr  Lys Ile Gly
    6290                 6295                 6300

gca ggt  ttg aat ttt gat gct  aat aat gcc atg gct  gtg aag cta       30973
Ala Gly  Leu Asn Phe Asp Ala  Asn Asn Ala Met Ala  Val Lys Leu
```

```
    6305                6310                6315

ggc aca  ggt tta agt ttt gac  tct gcc ggt gcc tta  aca gct gga       31018
Gly Thr  Gly Leu Ser Phe Asp  Ser Ala Gly Ala Leu  Thr Ala Gly
    6320                6325                6330

aac aaa  gag gat gac aag cta  aca ctt tgg act aca  cct gac cca       31063
Asn Lys  Glu Asp Asp Lys Leu  Thr Leu Trp Thr Thr  Pro Asp Pro
    6335                6340                6345

agc cct  aat tgt caa tta ctt  tca gac aga gat gcc  aaa ttt acc       31108
Ser Pro  Asn Cys Gln Leu Leu  Ser Asp Arg Asp Ala  Lys Phe Thr
    6350                6355                6360

cta tgt  ctt aca aaa tgc ggt  agt caa ata cta ggc  act gtt gca       31153
Leu Cys  Leu Thr Lys Cys Gly  Ser Gln Ile Leu Gly  Thr Val Ala
    6365                6370                6375

gta gct  gct gtt act gta ggt  tca gca cta aat cca  att aat gac       31198
Val Ala  Ala Val Thr Val Gly  Ser Ala Leu Asn Pro  Ile Asn Asp
    6380                6385                6390

aca gta  aaa agc gcc ata gta  ttc ctt aga ttt gac  tct gac ggt       31243
Thr Val  Lys Ser Ala Ile Val  Phe Leu Arg Phe Asp  Ser Asp Gly
    6395                6400                6405

gtg ctc  atg tca aac tca tca  atg gta ggt gat tac  tgg aac ttt       31288
Val Leu  Met Ser Asn Ser Ser  Met Val Gly Asp Tyr  Trp Asn Phe
    6410                6415                6420

agg gaa  gga cag acc acc caa  agt gtg gcc tat aca  aat gct gtg       31333
Arg Glu  Gly Gln Thr Thr Gln  Ser Val Ala Tyr Thr  Asn Ala Val
    6425                6430                6435

gga ttc  atg ccc aat cta ggt  gca tat cct aaa acc  caa agc aaa       31378
Gly Phe  Met Pro Asn Leu Gly  Ala Tyr Pro Lys Thr  Gln Ser Lys
    6440                6445                6450

aca cca  aaa aat agt ata gta  agt cag gta tat tta  aat gga gaa       31423
Thr Pro  Lys Asn Ser Ile Val  Ser Gln Val Tyr Leu  Asn Gly Glu
    6455                6460                6465

act act  atg cca atg aca ctg  aca ata act ttc aat  ggc act gat       31468
Thr Thr  Met Pro Met Thr Leu  Thr Ile Thr Phe Asn  Gly Thr Asp
    6470                6475                6480

gaa aaa  gac aca aca cct gtg  agc act tac tcc atg  act ttt aca       31513
Glu Lys  Asp Thr Thr Pro Val  Ser Thr Tyr Ser Met  Thr Phe Thr
    6485                6490                6495

tgg cag  tgg act gga gac tat  aag gac aag aat att  acc ttt gct       31558
Trp Gln  Trp Thr Gly Asp Tyr  Lys Asp Lys Asn Ile  Thr Phe Ala
    6500                6505                6510

acc aac  tcc ttt act ttc tcc  tac atg gcc caa gaa  taaaccctgc       31604
Thr Asn  Ser Phe Thr Phe Ser  Tyr Met Ala Gln Glu
    6515                6520                6525

atgccaaccc cattgttccc accactatgg aaaactctga agcagaaaaa aataaagttc   31664

aagtgtttta ttgattcaac agttttcaca gaattcgagt agttattttc cctcctccct   31724

cccaactcat ggaatacacc accctctccc cacgcacagc cttaaacatc tgaatgccat   31784

tggtaatgga catggttttg gtctccacat tccacacagt ttcagagcga gccagtctcg   31844

ggtcggtcag ggagatgaaa ccctccgggc actcctgcat ctgcacctca aagttcagta   31904

gctgagggct gtcctcggtg gtcgggatca cagtta tct gga aga aga gcg  gtg     31958
```

```
                                        Ser Gly Arg Arg Ala  Val
                                                        6530

aga gtc ata atc  cgc gaa cgg gat cgg  gcg gtt gtg gcg cat  cag       32003
Arg Val Ile Ile  Arg Glu Arg Asp Arg  Ala Val Val Ala His  Gln
            6535                 6540                 6545

gcc ccg cag cag  tcg ctg tct gcg ccg  ctc cgt caa gct gct  gct       32048
Ala Pro Gln Gln  Ser Leu Ser Ala Pro  Leu Arg Gln Ala Ala  Ala
            6550                 6555                 6560

caa ggg gtc tgg  gtc cag gga ctc cct  gcg cat gat gcc gat  ggc       32093
Gln Gly Val Trp  Val Gln Gly Leu Pro  Ala His Asp Ala Asp  Gly
            6565                 6570                 6575

cct gag cat cag  tcg cct ggt gcg gcg  ggc gca gca gcg gat  gcg       32138
Pro Glu His Gln  Ser Pro Gly Ala Ala  Gly Ala Ala Ala Asp  Ala
            6580                 6585                 6590

gat ctc act cag  gtc gga gca gta cgt  gca gca cag cac tac  caa       32183
Asp Leu Thr Gln  Val Gly Ala Val Arg  Ala Ala Gln His Tyr  Gln
            6595                 6600                 6605

gtt gtt caa cag  tcc ata gtt caa cgt  gct cca gcc aaa act  cat       32228
Val Val Gln Gln  Ser Ile Val Gln Arg  Ala Pro Ala Lys Thr  His
            6610                 6615                 6620

ctg tgg aac tat  gct gcc cac atg tcc  atc gta cca gat cct  gat       32273
Leu Trp Asn Tyr  Ala Ala His Met Ser  Ile Val Pro Asp Pro  Asp
            6625                 6630                 6635

gta aat cag gtg  gcg ccc cct cca gaa  cac act gcc cat gta  cat       32318
Val Asn Gln Val  Ala Pro Pro Pro Glu  His Thr Ala His Val  His
            6640                 6645                 6650

gat ctc ctt ggg  cat gtg cag gtt cac  cac ctc ccg gta cca  cat       32363
Asp Leu Leu Gly  His Val Gln Val His  His Leu Pro Val Pro  His
            6655                 6660                 6665

cac ccg ctg gtt  gaa cat gca gcc ctg  gat aat cct gcg gaa  cca       32408
His Pro Leu Val  Glu His Ala Ala Leu  Asp Asn Pro Ala Glu  Pro
            6670                 6675                 6680

gat ggc cag cac  cgc ccc gcc cgc cat  gca gcg cag gga ccc  cgg       32453
Asp Gly Gln His  Arg Pro Ala Arg His  Ala Ala Gln Gly Pro  Arg
            6685                 6690                 6695

gtc ctg gca atg  gca gtg gag cac cca  ccg ctc acg gcc gtg  gat       32498
Val Leu Ala Met  Ala Val Glu His Pro  Pro Leu Thr Ala Val  Asp
            6700                 6705                 6710

taa ctg gga gct gaa  caa gtc tat gtt ggc  aca gca cag gca cac       32543
    Leu Gly Ala Glu  Gln Val Tyr Val Gly  Thr Ala Gln Ala His
                6715                 6720                 6725

gct cat gca tgt ctt  cag cac tct cag ttc  ctc ggg ggt cag gac       32588
Ala His Ala Cys Leu  Gln His Ser Gln Phe  Leu Gly Gly Gln Asp
                6730                 6735                 6740

cat gtc cca ggg cac  ggg gaa ctc ttg cag  gac agt gaa ccc ggc       32633
His Val Pro Gly His  Gly Glu Leu Leu Gln  Asp Ser Glu Pro Gly
                6745                 6750                 6755

aga aca ggg cag ccc  tcg cac aca act tac  att gtg cat gga cag       32678
Arg Thr Gly Gln Pro  Ser His Thr Thr Tyr  Ile Val His Gly Gln
                6760                 6765                 6770

ggt atc gca atc agg  cag cac cgg atg atc  ctc cac cag aga agc       32723
Gly Ile Ala Ile Arg  Gln His Arg Met Ile  Leu His Gln Arg Ser
```

```
                6775                6780                6785

gcg ggt ctc ggt ctc  ctc aca gcg agg taa ggg  ggc cgg cgg ttg        32768
Ala Gly Leu Gly Leu  Leu Thr Ala Arg     Gly  Gly Arg Arg Leu
                6790                    6795

gta  cgg atg atg gcg gga  tga cgc taa tcg tgt tct gga  tcg tgt       32813
Val  Arg Met Met Ala Gly      Arg     Ser Cys Ser Gly  Ser Cys
6800                6805                        6810

cat gat gga  gct gtt tcc tga cat tttcgtactt cacgaagcag aacctggtac    32867
His Asp Gly  Ala Val Ser     His
        6815

gggcactgca caccgctcgc cggcgacggt ctcggcgctt cgagcgctcg gtgttgaagt    32927

tatagaacag ccactccctc agagcgtgca gtatctcctg agcctcttgg gtgatgaaaa    32987

tcccatccgc tctgatggct ctgatcacat cggccacggt ggaatgggcc agacccagcc    33047

agatgatgca attttgttgg gtttcggtga cggagggaga gggaagaaca ggaagaacca    33107

tgattaactt ta ttc  caa acg gtc tcg gag  cac ttc aaa atg cag  gtc     33155
              Phe  Gln Thr Val Ser Glu  His Phe Lys Met Gln  Val
              6820                6825                6830

ccg gag gtg gca  cct ctc gcc ccc act  gtg ttg gtg gaa aat  aac       33200
Pro Glu Val Ala  Pro Leu Ala Pro Thr  Val Leu Val Glu Asn  Asn
            6835                6840                6845

agc cag gtc aaa  ggt gac acg gtt ctc  gag atg ttc cac ggt  ggc       33245
Ser Gln Val Lys  Gly Asp Thr Val Leu  Glu Met Phe His Gly  Gly
            6850                6855                6860

ttc cag caa agc  ctc cac gcg cac atc  cag aaa caa gag gac  agc       33290
Phe Gln Gln Ser  Leu His Ala His Ile  Gln Lys Gln Glu Asp  Ser
            6865                6870                6875

gaa agc ggg agc  gtt ttc taa ttc ctc aat  cat cat att aca ctc        33335
Glu Ser Gly Ser  Val Phe     Phe Leu Asn  His His Ile Thr Leu
            6880                    6885                6890

ctg cac cat ccc cag  ata att ttc att ttt  cca gcc ttg aat gat        33380
Leu His His Pro Gln  Ile Ile Phe Ile Phe  Pro Ala Leu Asn Asp
                6895                6900                6905

tcg tat tag ttc ctg agg  taa atc caa gcc agc cat  gat aaa aag ctc    33428
Ser Tyr     Phe Leu Arg      Ile Gln Ala Ser His  Asp Lys Lys Leu
                    6910                    6915

gcg  cag agc gcc ctc cac  cgg cat tct taa gca cac  cct cat           33470
Ala  Gln Ser Ala Leu His  Arg His Ser     Ala His  Pro His
6920                6925                    6930

aattccaaga gattctgctc ctggttcacc tgcagcagat taacaatggg aatatcaaaa    33530

tctctgccgc gatccctaag ctcctccctc aacaataact gtatgtaatc tttcatatca    33590

tctccgaaat ttttagccat agggccgcca ggaataagag cagggcaagc cacattacag    33650

ataaagcgaa gtcctcccca gtgagcattg ccaaatgtaa gattgaaata agcatgctgg    33710

ctagaccctg tgatatcttc cagataactg gacagaaaat caggcaagca atttttaaga    33770

aaatcaacaa aagaaaagtc gtccaggtgc aggtttagag cctcaggaac aacgatggaa    33830

taagtgcaag gagtgcgttc cagcatggtt agtgtttttt tggtgatctg tagaacaaaa    33890

aataaacatg caatatta aac cat gct  agc ctg gcg aac agg  tgg gta aat    33941
```

```
                    Asn His Ala  Ser Leu Ala Asn Arg  Trp Val Asn
                            6935                6940

cac tct  ttc cag cac cag gca  ggc tac ggg gtc tcc  ggc gcg acc       33986
His Ser  Phe Gln His Gln Ala  Gly Tyr Gly Val Ser  Gly Ala Thr
    6945                6950                6955

ctc gta  gaa gct gtc gcc atg  att gaa aag cat cac  cga gag acc       34031
Leu Val  Glu Ala Val Ala Met  Ile Glu Lys His His  Arg Glu Thr
    6960                6965                6970

ttc ccg  gtg gcc ggc atg gat  gat tcg aga aga agc  ata cac tcc       34076
Phe Pro  Val Ala Gly Met Asp  Asp Ser Arg Arg Ser  Ile His Ser
    6975                6980                6985

ggg aac  att ggc atc cgt gag  tga aaa aaa gcg acc tat  aaa gcc       34121
Gly Asn  Ile Gly Ile Arg Glu      Lys Lys Ala Thr Tyr  Lys Ala
    6990                6995                    7000

tcg ggg cac  tac aat gct caa tct  caa ttc cag caa agc  cac ccc       34166
Ser Gly His  Tyr Asn Ala Gln Ser  Gln Phe Gln Gln Ser  His Pro
        7005                7010                7015

atg cgg atg  gag cac aaa att ggc  agg tgc gta aaa aat  gta att       34211
Met Arg Met  Glu His Lys Ile Gly  Arg Cys Val Lys Asn  Val Ile
        7020                7025                7030

act ccc ctc  ctg cac agg cag caa  agc ccc cgc tcc ctc  cag aaa       34256
Thr Pro Leu  Leu His Arg Gln Gln  Ser Pro Arg Ser Leu  Gln Lys
        7035                7040                7045

cac ata caa  agc ctc agc gtc cat  agcttaccga gcacggcagg             34300
His Ile Gln  Ser Leu Ser Val His
        7050                7055

cgcaagagtc agagaaaagg ctgagctcta acctgactgc ccgctcctgt gctcaatata    34360

tagccctaac ctacactgac gtaaaggcca aagtctaaaa atacccgcca aaatgacaca    34420

cacgcccagc acacgcccag aaaccggtga cacactcaaa aaaatacgtg cgcttcctca    34480

aacgcccaaa ccggcgtcat ttccgggttc ccacgctacg tcaccgctca gcgactttca    34540

aattccgtcg accgttaaaa acgtcactcg ccccgcccct aacggtcgcc cttctctcgg    34600

ccaatcacct tcctcccttc ccaaattcaa acgcctcatt tgcatattaa cgcgcacaaa    34660

aagtttgagg tatattattg atgatgatcg tttaaactat gcggtgtgaa ataccgcaca    34720

gatgcgtaag gagaaaatac cgcatcaggc gctcttccgc ttcctcgctc actgactcgc    34780

tgcgctcggt cgttcggctg cggcgagcgg tatcagctca ctcaaaggcg gtaatacggt    34840

tatccacaga atcaggggat aacgcaggaa agaacatgtg agcaaaaggc cagcaaaagg    34900

ccaggaaccg taaaaaggcc gcgttgctgg cgttttcca taggctccgc ccccctgacg    34960

agcatcacaa aaatcgacgc tcaagtcaga ggtggcgaaa cccgacagga ctataaagat    35020

accaggcgtt tccccctgga agctccctcg tgcgctctcc tgttccgacc ctgccgctta    35080

ccggatacct gtccgccttt ctcccttcgg gaagcgtggc gctttctcat agctcacgct    35140

gtaggtatct cagttcggtg taggtcgttc gctccaagct gggctgtgtg cacgaacccc    35200

ccgttcagcc cgaccgctgc gccttatccg gtaactatcg tcttgagtcc aacccggtaa    35260

gacacgactt atcgccactg gcagcagcca ctggtaacag gattagcaga gcgaggtatg    35320
```

```
taggcggtgc tacagagttc ttgaagtggt ggcctaacta cggctacact agaaggacag    35380

tatttggtat ctgcgctctg ctgaagccag ttaccttcgg aaaaagagtt ggtagctctt    35440

gatccggcaa acaaaccacc gctggtagcg gtggtttttt tgtttgcaag cagcagatta    35500

cgcgcagaaa aaaaggatct caagaagatc ctttgatctt ttctacgggg tctgacgctc    35560

agtggaacga aaactcacgt taagggattt tggtcatgag attatcaaaa aggatcttca    35620

cctagatcct tttaaattaa aaatgaagtt ttaaatcaat ctaaagtata tatgagtaaa    35680

cttggtctga cag tta cca atg ctt aat  cag tga ggc acc tat ctc  agc     35729
               Leu Pro Met Leu Asn  Gln     Gly Thr Tyr Leu  Ser
                                7060                    7065

gat ctg tct att  tcg ttc atc cat agt  tgc ctg act ccc cgt  cgt       35774
Asp Leu Ser Ile  Ser Phe Ile His Ser  Cys Leu Thr Pro Arg  Arg
            7070                7075                7080

gta gat aac tac  gat acg gga ggg ctt  acc atc tgg ccc cag  tgc       35819
Val Asp Asn Tyr  Asp Thr Gly Gly Leu  Thr Ile Trp Pro Gln  Cys
            7085                7090                7095

tgc aat gat acc  gcg aga ccc acg ctc  acc ggc tcc aga ttt  atc       35864
Cys Asn Asp Thr  Ala Arg Pro Thr Leu  Thr Gly Ser Arg Phe  Ile
            7100                7105                7110

agc aat aaa cca  gcc agc cgg aag ggc  cga gcg cag aag tgg  tcc       35909
Ser Asn Lys Pro  Ala Ser Arg Lys Gly  Arg Ala Gln Lys Trp  Ser
            7115                7120                7125

tgc aac ttt atc  cgc ctc cat cca gtc  tat taa ttg ttg ccg gga       35954
Cys Asn Phe Ile  Arg Leu His Pro Val  Tyr     Leu Leu Pro Gly
            7130                7135                    7140

agc tag agt aag tag ttc gcc  agt taa tag ttt gcg caa cgt  tgt tgc    36002
Ser     Ser Lys     Phe Ala  Ser         Phe Ala Gln Arg  Cys Cys
                        7145                        7150

cat tgc tgc  agg cat cgt ggt gtc  acg ctc gtc gtt tgg  tat ggc       36047
His Cys Cys  Arg His Arg Gly Val  Thr Leu Val Val Trp  Tyr Gly
        7155                7160                7165

ttc att cag  ctc cgg ttc cca acg  atc aag gcg agt tac  atg atc       36092
Phe Ile Gln  Leu Arg Phe Pro Thr  Ile Lys Ala Ser Tyr  Met Ile
        7170                7175                7180

ccc cat gtt  gtg caa aaa agc ggt  tag ctc ctt cgg tcc tcc  gat       36137
Pro His Val  Val Gln Lys Ser Gly      Leu Leu Arg Ser Ser  Asp
        7185                7190                    7195

cgt tgt cag aag  taa gtt ggc cgc agt gtt  atc act cat ggt tat       36182
Arg Cys Gln Lys      Val Gly Arg Ser Val  Ile Thr His Gly Tyr
            7200                    7205                7210

ggc agc act gca taa ttc  tct tac tgt cat gcc  atc cgt aag atg       36227
Gly Ser Thr Ala     Phe  Ser Tyr Cys His Ala  Ile Arg Lys Met
                    7215                7220

ctt  ttc tgt gac tgg tga gta  ctc aac caa gtc att  ctg aga ata       36272
Leu  Phe Cys Asp Trp     Val  Leu Asn Gln Val Ile  Leu Arg Ile
7225                    7230                7235

gtg tat  gcg gcg acc gag ttg  ctc ttg ccc ggc gtc  aac acg gga       36317
Val Tyr  Ala Ala Thr Glu Leu  Leu Leu Pro Gly Val  Asn Thr Gly
    7240                7245                7250

taa tac cgc  gcc aca tag cag aac ttt  aaa agt gct cat cat  tgg       36362
```

```
    Tyr Arg  Ala Thr     Gln Asn Phe  Lys Ser Ala His His  Trp
        7255                     7260                 7265

aaa acg ttc ttc  ggg gcg aaa act ctc  aag gat ctt acc gct  gtt       36407
Lys Thr Phe Phe  Gly Ala Lys Thr Leu  Lys Asp Leu Thr Ala  Val
            7270                 7275                 7280

gag atc cag ttc  gat gta acc cac tcg  tgc acc caa ctg atc  ttc       36452
Glu Ile Gln Phe  Asp Val Thr His Ser  Cys Thr Gln Leu Ile  Phe
            7285                 7290                 7295

agc atc ttt tac  ttt cac cag cgt ttc  tgg gtg agc aaa aac  agg       36497
Ser Ile Phe Tyr  Phe His Gln Arg Phe  Trp Val Ser Lys Asn  Arg
            7300                 7305                 7310

aag gca aaa tgc  cgc aaa aaa ggg aat  aag ggc gac acg gaa  atg       36542
Lys Ala Lys Cys  Arg Lys Lys Gly Asn  Lys Gly Asp Thr Glu  Met
            7315                 7320                 7325

ttg aat act cat  act cttccttttt caatattatt gaagcattta tcagggttat     36597
Leu Asn Thr His  Thr
            7330

tgtctcatga gcggatacat atttgaatgt atttagaaaa ataaacaaat aggggttccg    36657

cgcacatttc cccgaaaagt gccacctgac gtctaagaaa ccattattat catgacatta    36717

acctataaaa ataggcgtat cacgaggccc tttcgtcttc aagaattgtt taaactacca    36777

tcat                                                                 36781
```

<210> 288
<211> 394
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 288

```
Met His Pro Val Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln
1               5                  10                  15

Gln Gln Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln
            20                  25                  30

Gln Gln Leu Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly
        35                  40                  45

Gln Thr Ser Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala
    50                  55                  60

Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys
65                  70                  75                  80

Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp
                85                  90                  95

Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ala Arg Phe His Ala
            100                 105                 110
```

```
Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp
        115                 120                 125

Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala
    130                 135                 140

His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys
145                 150                 155                 160

Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu
                165                 170                 175

Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu
            180                 185                 190

Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln
        195                 200                 205

Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Ala Phe Arg Glu
    210                 215                 220

Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu
225                 230                 235                 240

Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu
                245                 250                 255

Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys
            260                 265                 270

Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys
        275                 280                 285

Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu
    290                 295                 300

Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg
305                 310                 315                 320

Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met
                325                 330                 335

His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser
            340                 345                 350

Tyr Phe Asp Met Gly Ala Asp Leu His Trp Gln Pro Ser Arg Arg Ala
        355                 360                 365

Leu Glu Ala Ala Gly Gly Pro Pro Tyr Ile Glu Glu Val Asp Asp Glu
    370                 375                 380
```

Val Asp Glu Glu Gly Glu Tyr Leu Glu Asp
385 390

<210> 289
<211> 589
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 289

Met Gln Gln Gln Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu Gln
1 5 10 15

Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala Met
20 25 30

Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg Gln
35 40 45

Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val Pro
50 55 60

Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn Ala
65 70 75 80

Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val Tyr
85 90 95

Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val Gln
100 105 110

Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ala Gln
115 120 125

Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala Leu
130 135 140

Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln Glu
145 150 155 160

Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Thr Glu Val
165 170 175

Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln Thr
180 185 190

Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys Asn
195 200 205

Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala Thr
210 215 220

```
Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu Val
225                 230                 235                 240

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

Tyr Leu Ile Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val Asp
            260                 265                 270

Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly Gln
        275                 280                 285

Asp Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr Asn
    290                 295                 300

Arg Ser Gln Lys Ile Pro Pro Gln Tyr Thr Leu Ser Ala Glu Glu Glu
305                 310                 315                 320

Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met Gln
                325                 330                 335

Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn Met
            340                 345                 350

Glu Pro Ser Met Tyr Ala Ser Asn Arg Pro Phe Ile Asn Lys Leu Met
        355                 360                 365

Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr Asn
    370                 375                 380

Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr Gly
385                 390                 395                 400

Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp Val
                405                 410                 415

Asp Ser Ser Val Phe Ser Pro Arg Pro Gly Ala Asn Glu Arg Pro Leu
            420                 425                 430

Trp Lys Lys Glu Gly Ser Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly
        435                 440                 445

Arg Glu Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro
    450                 455                 460

Ser Leu Pro Phe Ser Leu Asn Ser Ile Arg Ser Ser Glu Leu Gly Arg
465                 470                 475                 480

Ile Thr Arg Pro Arg Leu Leu Gly Glu Glu Glu Tyr Leu Asn Asp Ser
                485                 490                 495
```

Leu Leu Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu
500 505 510

Ser Leu Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala Gln Glu His
515 520 525

Arg Asp Asp Pro Ser Gln Gly Ala Thr Ser Arg Gly Ser Ala Ala Arg
530 535 540

Lys Arg Arg Trp His Asp Arg Gln Arg Gly Leu Met Trp Asp Asp Glu
545 550 555 560

Asp Ser Ala Asp Asp Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Asn
565 570 575

Pro Phe Ala His Leu Arg Pro Arg Ile Gly Arg Met Met
580 585

<210> 290
<211> 532
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 290

Met Met Arg Arg Ala Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1 5 10 15

Val Met Gln Gln Ala Met Ala Ala Ala Ala Ala Met Gln Pro Pro Leu
20 25 30

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

Asn Ser Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg
50 55 60

Leu Tyr Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr
65 70 75 80

Gln Asn Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp
85 90 95

Phe Thr Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg
100 105 110

Ser Arg Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro
115 120 125

Asn Val Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met
130 135 140

```
Val Ser Arg Lys Thr Pro Asn Gly Val Thr Val Thr Asp Gly Ser Gln
145                 150                 155                 160

Asp Ile Leu Glu Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly Asn
                165                 170                 175

Phe Ser Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile Asp
            180                 185                 190

Asn Tyr Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp Ile
        195                 200                 205

Gly Val Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro Val
    210                 215                 220

Thr Glu Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His Pro
225                 230                 235                 240

Asp Ile Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser Arg
                245                 250                 255

Leu Ser Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu Gly
            260                 265                 270

Phe Gln Ile Met Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala Leu
        275                 280                 285

Leu Asp Val Asp Ala Tyr Glu Lys Ser Lys Glu Glu Ser Ala Ala Ala
    290                 295                 300

Ala Thr Ala Ala Val Ala Thr Ala Ser Thr Glu Val Arg Gly Asp Asn
305                 310                 315                 320

Phe Ala Ser Pro Ala Ala Val Ala Ala Ala Glu Ala Ala Glu Thr Glu
                325                 330                 335

Ser Lys Ile Val Ile Gln Pro Val Glu Lys Asp Ser Lys Asp Arg Ser
            340                 345                 350

Tyr Asn Val Leu Pro Asp Lys Ile Asn Thr Ala Tyr Arg Ser Trp Tyr
        355                 360                 365

Leu Ala Tyr Asn Tyr Gly Asp Pro Glu Lys Gly Val Arg Ser Trp Thr
    370                 375                 380

Leu Leu Thr Thr Ser Asp Val Thr Cys Gly Val Glu Gln Val Tyr Trp
385                 390                 395                 400

Ser Leu Pro Asp Met Met Gln Asp Pro Val Thr Phe Arg Ser Thr Arg
                405                 410                 415
```

Gln Val Ser Asn Tyr Pro Val Val Gly Ala Glu Leu Leu Pro Val Tyr
420 425 430

Ser Lys Ser Phe Phe Asn Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg
435 440 445

Ala Phe Thr Ser Leu Thr His Val Phe Asn Arg Phe Pro Glu Asn Gln
450 455 460

Ile Leu Val Arg Pro Pro Ala Pro Thr Ile Thr Thr Val Ser Glu Asn
465 470 475 480

Val Pro Ala Leu Thr Asp His Gly Thr Leu Pro Leu Arg Ser Ser Ile
485 490 495

Arg Gly Val Gln Arg Val Thr Val Thr Asp Ala Arg Arg Arg Thr Cys
500 505 510

Pro Tyr Val Tyr Lys Ala Leu Gly Ile Val Ala Pro Arg Val Leu Ser
515 520 525

Ser Arg Thr Phe
530

<210> 291
<211> 193
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 291

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1 5 10 15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
20 25 30

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
35 40 45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
50 55 60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Val Ser Thr
65 70 75 80

Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
85 90 95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
100 105 110

Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
115 120 125

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ala
130 135 140

Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala Ala
145 150 155 160

Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val Arg
165 170 175

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

Thr

<210> 292
<211> 342
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 292

Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1 5 10 15

Glu Ile Tyr Gly Pro Ala Val Val Lys Glu Glu Arg Lys Pro Arg Lys
20 25 30

Ile Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Glu Ser Asp Val Asp
35 40 45

Gly Leu Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln
50 55 60

Trp Arg Gly Arg Lys Val Arg Pro Val Leu Arg Pro Gly Thr Thr Val
65 70 75 80

Val Phe Thr Pro Gly Glu Arg Ser Gly Thr Ala Ser Lys Arg Ser Tyr
85 90 95

Asp Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu Gln Ala Ala Glu Arg
100 105 110

Leu Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Ser Ala Pro Lys Glu
115 120 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
130 135 140

```
Lys Pro Val Thr Leu Gln Gln Val Leu Pro Thr Ala Ala Pro Arg Arg
145                 150                 155                 160

Gly Phe Lys Arg Glu Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu Met
                165                 170                 175

Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu Thr Met Lys Val
            180                 185                 190

Asp Pro Asp Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln Val
        195                 200                 205

Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr Glu
    210                 215                 220

Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr Met
225                 230                 235                 240

Glu Val Gln Thr Asp Pro Trp Met Pro Ser Ala Thr Ser Arg Arg Pro
                245                 250                 255

Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn Tyr Ala Leu
            260                 265                 270

His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg Gly Thr Arg Phe Tyr
        275                 280                 285

Arg Gly His Thr Ser Arg Arg Arg Lys Thr Thr Thr Arg Arg Arg Arg
    290                 295                 300

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

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

His Pro Ser Ile Ala Ile
            340
```

<210> 293
<211> 77
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 293

```
Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1               5                   10                  15

Arg Lys Pro Arg Arg Arg Arg Leu Ala Gly Asn Gly Met Arg Arg His
```

20 25 30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
35 40 45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
50 55 60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65 70 75

<210> 294
<211> 259
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 294

Met Asp Ser Asp Ala Pro Gly Pro Val Met Cys Phe Arg Arg Gln Met
1 5 10 15

Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg Pro
20 25 30

Phe Met Gly Thr Trp Ser Asp Ile Gly Thr Ser Gln Leu Asn Gly Gly
35 40 45

Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly Ser
50 55 60

Thr Leu Lys Thr Tyr Gly Ser Lys Ala Trp Asn Ser Thr Thr Gly Gln
65 70 75 80

Ala Leu Arg Asp Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val Val
85 90 95

Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn Gln
100 105 110

Ala Val Gln Arg Gln Ile Asn Ser Arg Leu Asp Pro Val Pro Pro Ala
115 120 125

Gly Ser Val Glu Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu Asp
130 135 140

Lys Arg Gly Glu Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu Leu
145 150 155 160

Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu Gly
165 170 175

```
Leu Pro Thr Thr Arg Pro Ile Ala Pro Leu Ala Thr Gly Val Leu Lys
            180                 185                 190

Pro Glu Ser Ser Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Gln Pro
        195                 200                 205

Ser Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val Ala
    210                 215                 220

Arg Ala Arg Pro Gly Gly Thr Ala Arg Pro His Ala Asn Trp Gln Ser
225                 230                 235                 240

Thr Leu Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg Arg
                245                 250                 255

Arg Cys Tyr
```

<210> 295
<211> 931
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 295

```
Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1               5                   10                  15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
            20                  25                  30

Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
        35                  40                  45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
    50                  55                  60

Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65                  70                  75                  80

Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
                85                  90                  95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
        115                 120                 125

Ala Pro Asn Thr Cys Gln Trp Thr Tyr Thr Asp Lys Gln Thr Glu Lys
    130                 135                 140
```

```
Thr Ala Thr Tyr Gly Asn Ala Pro Val Gln Gly Ile Ala Ile Thr Lys
145                 150                 155                 160

Asp Gly Ile Gln Leu Gly Thr Asp Ser Asp Gly Asn Pro Val Tyr Ala
                165                 170                 175

Gln Lys Thr Phe Glu Pro Glu Pro Gln Val Gly Asp Ala Glu Trp His
            180                 185                 190

Asp Thr Thr Gly Thr Asp Glu Lys Tyr Gly Gly Arg Ala Leu Lys Pro
        195                 200                 205

Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys Pro Thr Asn
    210                 215                 220

Lys Glu Gly Gly Gln Ala Lys Asn Arg Thr Lys Thr Asp Gly Thr Gly
225                 230                 235                 240

Glu Glu Pro Asp Ile Asp Met Ala Phe Phe Asp Gly Arg Asn Ala Thr
                245                 250                 255

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

Leu Glu Thr Pro Asp Thr His Ile Val Tyr Lys Ala Gly Thr Asp Asp
        275                 280                 285

Ser Ser Ser Ser Ile Asn Leu Gly Gln Gln Ser Met Pro Asn Arg Pro
    290                 295                 300

Asn Tyr Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn
305                 310                 315                 320

Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn
                325                 330                 335

Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu
            340                 345                 350

Leu Leu Asp Ser Leu Gly Asp Arg Thr Leu Tyr Phe Ser Met Trp Asn
        355                 360                 365

Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His
    370                 375                 380

Gly Val Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asp Ala Val
385                 390                 395                 400

Gly Arg Thr Asp Thr Tyr Gln Gly Ile Lys Pro Asn Gly Gly Asp Pro
                405                 410                 415
```

```
Ala Thr Trp Ala Lys Asp Asp Ser Ala Asn Asp Ala Asn Glu Met Gly
            420                 425                 430

Lys Gly Asn Pro Phe Ala Met Glu Ile Asn Ile Gln Ala Asn Leu Trp
        435                 440                 445

Arg Asn Phe Leu Tyr Ala Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr
    450                 455                 460

Lys Tyr Thr Pro Ala Asn Val Thr Leu Pro Thr Asn Thr Asn Thr Tyr
465                 470                 475                 480

Asp Tyr Met Asn Gly Arg Val Val Ala Pro Ser Leu Val Asp Ser Tyr
                485                 490                 495

Ile Asn Ile Gly Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn
            500                 505                 510

Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu
        515                 520                 525

Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys
    530                 535                 540

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

Glu Trp Asn Phe Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu
                565                 570                 575

Gly Asn Asp Leu Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile
            580                 585                 590

Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr
        595                 600                 605

Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp
    610                 615                 620

Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr
625                 630                 635                 640

Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly
                645                 650                 655

Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser
            660                 665                 670

Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp
        675                 680                 685

Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe
```

690 695 700

Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn
705 710 715 720

Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala
725 730 735

Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His
740 745 750

Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp
755 760 765

Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val
770 775 780

Val Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr
785 790 795 800

Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg
805 810 815

Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys
820 825 830

Ser Ala Val Thr Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val
835 840 845

Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu
850 855 860

Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu
865 870 875 880

Asp Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr Leu Leu Tyr
885 890 895

Val Val Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg
900 905 910

Gly Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn
915 920 925

Ala Thr Thr
930

<210> 296
<211> 210
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 296

Met Met Ala Glu Ala Ala Gly Ser Gly Glu Gln Glu Leu Arg Ala Ile
1 5 10 15

Ile Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys
20 25 30

Arg Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val
35 40 45

Asn Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala
50 55 60

Trp Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe
65 70 75 80

Ser Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu
85 90 95

Leu Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu
100 105 110

Lys Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu
115 120 125

Phe Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro
130 135 140

Met Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly
145 150 155 160

Met Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu
165 170 175

Ala Leu Tyr Arg Phe Leu Asn Ser His Ser Ala Tyr Phe Arg Ser His
180 185 190

Arg Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Asn Gln
195 200 205

Asp Met
210

<210> 297
<211> 503
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 297

```
Glu Ile Glu Arg Val Leu Pro Gly Leu Gly Met Ala Arg Gly Gln Gly
1               5                  10                  15

His Val Ala Glu Leu Val Leu Gly Gln Pro Leu Glu Leu Gly Asp Gln
            20                  25                  30

Gln Phe Arg Gln Arg Gly Val Gly Glu Gly Val Gly Pro Gln Leu Pro
        35                  40                  45

Arg Gln Leu Gln Gly Ala Gln Gln Val Gly Arg Gly Asp Leu Glu Ile
    50                  55                  60

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

Ala Ala Leu Glu His His Gln Gly Arg Val Leu His Ala Arg Gln His
                85                  90                  95

Arg Arg Val Gly Asp Ala Leu His Val Glu Val Leu Gly Val Gly His
            100                 105                 110

Pro Glu Gly Gly His Leu Ala Gly Leu Pro Ser His Ser Gly His Ala
        115                 120                 125

Pro Gly Leu Val Val Ala Ile Ala Val Gln Gly Asp Gln His His Leu
    130                 135                 140

Gly Leu Val Gly Val His Pro Arg Val His Gly Leu His Glu Ser Leu
145                 150                 155                 160

Gln Leu Pro Glu Ser Leu Leu Gly Leu Gly Ser Leu Gly Glu Glu Asp
                165                 170                 175

Pro Ala Gly Leu Ala Arg Glu Leu Val Gly Ser Ala Pro Gly Val Val
            180                 185                 190

His Ala Ala Ala Arg Val Val Val Gly Gln Leu His His Ala Ala Pro
        195                 200                 205

Pro Ala Val Leu Gly Asp Leu Gly Pro Val Gly Val Leu Leu Gln Arg
    210                 215                 220

Ala Leu Pro Val Leu Ala Arg His Ile His Leu Asp His Val Leu Leu
225                 230                 235                 240

Leu Asp His Gly Gly Pro Val Gln Ala Pro Gln Leu Ala Leu Gly Leu
                245                 250                 255

Gly Ala Pro Val Gln Pro Gln Arg Ala Pro Gly Ala Leu Pro Val Leu
            260                 265                 270
```

```
Val Gly Asp Leu Gly Met Arg Val His Glu Pro Leu Gln Glu Ala Ala
        275                 280                 285

His His Gly Gly Gln Gly Leu Val Ala Ser Glu Gly Gln Arg Asp Ala
    290                 295                 300

Ala Val Leu Leu Val Asp Val Gln Val Ala Asp Ala Ala Val His Leu
305                 310                 315                 320

Ala Leu Leu Gly His Gln Leu Glu Val Gly Phe Gln Val Gly Leu His
                325                 330                 335

Ala Val Ala Val His Gln Tyr Ser His Asp Phe His Thr Leu Leu Pro
            340                 345                 350

Gly Arg Asp Asp Gly Gln Ala His Arg Val Leu His His His Leu Ser
        355                 360                 365

Thr Ser Ser Arg Gly Gln Gly Val Ala Leu Ile Gln Gly Leu Lys Ala
    370                 375                 380

Pro Leu Ala Val Leu Leu Gly Asp Pro His Arg Gly Val Ala Glu Ala
385                 390                 395                 400

His Gly Arg Gln Leu Leu Leu Gly Leu Pro Phe Val Leu Ala Val Leu
                405                 410                 415

Ala Asp Val Leu Gln Asp His Met Leu Gly Leu Ala Gly Phe Leu Leu
            420                 425                 430

Gly Arg Gln Arg Arg Arg Arg Cys Leu Trp Arg Gly Gly Ala Arg Val
        435                 440                 445

Leu Ala His His Tyr Tyr Leu Phe Leu Phe Val Val Arg Gly His Ala
    450                 455                 460

Ala Val Gly Met Ser Leu Arg Gly Gln Arg Arg Arg Arg Arg Ala Leu
465                 470                 475                 480

Ala Ala Ala Thr Trp Arg Met Ala Gly Arg Ala Pro Ser Ala Ile Gly
                485                 490                 495

Gly Ala Leu Pro Ala Ala Leu
            500
```

<210> 298
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 298

Leu Thr Ser Ser Ala Ala Gly His
1 5

<210> 299
<211> 801
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 299

Met Glu Thr Gln Pro Ser Pro Thr Ser Pro Ser Ala Pro Thr Thr Ala
1 5 10 15

Asp Glu Lys Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro Pro Ser Pro
20 25 30

Ala Thr Ser Asp Ala Ala Ala Val Pro Asp Met Gln Glu Met Glu Glu
35 40 45

Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His Glu Glu
50 55 60

Glu Leu Ala Val Arg Phe Gln Ser Ser Ser Gln Glu Asp Lys Glu Gln
65 70 75 80

Pro Glu Gln Glu Ala Glu Asn Glu Gln Ser Gln Ala Gly Leu Glu His
85 90 95

Asp Gly Asp Tyr Leu His Leu Ser Gly Glu Glu Asp Ala Leu Ile Lys
100 105 110

His Leu Ala Arg Gln Ala Ile Ile Val Lys Asp Ala Leu Leu Asp Arg
115 120 125

Thr Glu Val Pro Leu Ser Val Glu Glu Leu Ser Arg Ala Tyr Glu Leu
130 135 140

Asn Leu Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr
145 150 155 160

Cys Glu Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro
165 170 175

Glu Ala Leu Ala Thr Tyr His Ile Phe Phe Lys Asn Gln Lys Ile Pro
180 185 190

Val Ser Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Phe Asn Leu
195 200 205

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

```
Lys Ile Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala
225                 230                 235                 240

Leu Gln Gly Glu Gly Gly Glu His Glu His His Ser Ala Leu Val Glu
                245                 250                 255

Leu Glu Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu
            260                 265                 270

Leu Thr His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met
        275                 280                 285

Ser Ala Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Ile Ser
    290                 295                 300

Glu Asp Glu Gly Met Gln Asp Ser Glu Asp Gly Lys Pro Val Val Ser
305                 310                 315                 320

Asp Glu Gln Leu Ala Arg Trp Leu Gly Pro Asn Ala Ser Pro Gln Ser
                325                 330                 335

Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr Val
            340                 345                 350

Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu Arg
        355                 360                 365

Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val Arg
    370                 375                 380

Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr
385                 390                 395                 400

Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His Thr
                405                 410                 415

Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val Tyr
            420                 425                 430

Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln Gln
        435                 440                 445

Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln Lys
    450                 455                 460

Asn Leu Lys Gly Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala Ser
465                 470                 475                 480

Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu Arg
                485                 490                 495
```

```
Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe Arg
            500                 505                 510

Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser Ala
        515                 520                 525

Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro Pro
    530                 535                 540

Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala Tyr
545                 550                 555                 560

His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu Cys
                565                 570                 575

His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys Asn
            580                 585                 590

Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu Gln
        595                 600                 605

Gly Pro Ser Asp Asp Gly Glu Gly Ala Lys Gly Gly Leu Lys Leu Thr
    610                 615                 620

Pro Gly Leu Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp
625                 630                 635                 640

Tyr His Pro Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro Pro
                645                 650                 655

Lys Ala Glu Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu Ala
            660                 665                 670

Gln Leu Gln Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys
        675                 680                 685

Gly Arg Gly Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn Pro
    690                 695                 700

Gly Phe Pro Gln Asp Ala Pro Arg Lys Gln Glu Ala Glu Ser Gly Ala
705                 710                 715                 720

Ala Ala Arg Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Gln Ser Gly
                725                 730                 735

Arg Gly Gly Asp Gly Gly Arg Leu Gly Gln His Ser Gly Arg Gly Gly
            740                 745                 750

Gln Pro Ala Arg Gln Ser Gly Gly Arg Arg Gly Gly Gly Arg Gly Gly
        755                 760                 765
```

Arg Ser Ser Arg Arg Gln Thr Val Val Leu Gly Gly Gly Glu Ser Lys
770 775 780

Gln His Gly Tyr His Leu Arg Ser Gly Ser Gly Ser Arg Ser Ala Pro
785 790 795 800

Gln

<210> 300
<211> 227
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 300

Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1 5 10 15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
20 25 30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala His Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Leu Thr Ala Thr
50 55 60

Pro Arg Asn His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
100 105 110

Thr Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
115 120 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
130 135 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Ile Ala Gly Ser Gly Arg Ser
145 150 155 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
165 170 175

Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
180 185 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
195 200 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
210 215 220

Gly Tyr Asp
225

<210> 301
<211> 106
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 301

Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1 5 10 15

His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Thr
20 25 30

Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
35 40 45

Arg Ile Val Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
50 55 60

Ser Gln Arg Pro Ile Leu Val Glu Arg Gln Gln Gly Asn Thr Leu Leu
65 70 75 80

Thr Leu Tyr Cys Ile Cys Asp His Pro Gly Leu His Glu Ser Leu Cys
85 90 95

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
100 105

<210> 302
<211> 176
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 302

Met Gly Lys Ile Thr Leu Val Cys Gly Val Leu Val Thr Val Val Leu
1 5 10 15

Ser Ile Leu Gly Gly Gly Ser Ala Ala Val Val Thr Glu Lys Lys Ala
20 25 30

```
Asp Pro Cys Leu Thr Phe Asn Pro Asp Lys Cys Arg Leu Ser Phe Gln
        35                  40                  45

Pro Asp Gly Asn Arg Cys Thr Val Leu Ile Lys Cys Gly Trp Glu Cys
    50                  55                  60

Glu Ser Val Ala Ile Gln Tyr Lys Asn Lys Thr Arg Asn Asn Thr Leu
65                  70                  75                  80

Ala Ser Thr Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
                85                  90                  95

Pro Gly Ala Asp Gly Ser Leu His Thr Val Asn Asn Thr Phe Ile Phe
            100                 105                 110

Glu His Met Cys Glu Thr Ala Met Phe Met Ser Lys Gln Tyr Gly Met
        115                 120                 125

Trp Pro Pro Arg Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
    130                 135                 140

Ala Cys Thr Val Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145                 150                 155                 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
                165                 170                 175
```

<210> 303
<211> 247
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 303

```
Met Arg Leu Leu Ile Phe Val Ile Ile Thr Leu Ser Phe Asn Tyr Ala
1               5                   10                  15

His Gly Tyr Ala Asn Ile Gln Lys Thr Leu Tyr Val Gly Ser Asp Ser
            20                  25                  30

Thr Leu Glu Gly Thr Gln Ser Gln Ala Arg Val Ser Trp Tyr Phe Tyr
        35                  40                  45

Lys Gly Ser Asp Asp Pro Ile Thr Leu Cys Lys Gly Asp Gln Gly Arg
    50                  55                  60

Ile Thr Lys Pro Pro Ile Thr Phe Ser Cys Thr Arg Thr Asn Leu Thr
65                  70                  75                  80

Leu Leu Ser Ile Thr Lys Glu Tyr Ala Gly Thr Tyr Tyr Ser Thr Asn
                85                  90                  95
```

```
Phe His Arg Gly Gln Asp Lys Tyr Tyr Thr Val Lys Val Glu Asn Pro
            100                 105                 110

Thr Thr Pro Arg Thr Thr Thr Lys Pro Thr Thr Thr Lys Lys Pro Thr
        115                 120                 125

Thr Pro Lys Lys Pro Thr Thr Pro Lys Thr Thr Lys Thr Thr Thr Ala
    130                 135                 140

Lys Thr Thr Thr Thr Lys Pro Thr Thr Thr Ser Thr Thr Leu Ala Ile
145                 150                 155                 160

Thr Thr His Thr His Thr Glu Leu Thr Ser Gln Ala Thr Thr Glu Asn
                165                 170                 175

Asp Leu Val Ala Leu Leu Gln Lys Gly Glu Asn Ser Ser Ser Ser Pro
            180                 185                 190

Leu Pro Thr Thr Pro Ser Glu Glu Ile Pro Lys Ser Met Val Gly Ile
        195                 200                 205

Ile Ala Ala Val Val Val Cys Met Leu Ile Ile Ile Leu Cys Met Met
    210                 215                 220

Tyr Tyr Ala Cys Tyr Tyr Arg Lys His Arg Leu Asn Asn Lys Leu Asp
225                 230                 235                 240

Pro Leu Leu Ser Val Asp Phe
                245
```

<210> 304
<211> 291
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 304

```
Met Lys Ala Leu Ser Thr Leu Val Phe Leu Ser Leu Ile Gly Ile Val
1               5                   10                  15

Phe Ser Ala Gly Phe Leu Lys Asn Leu Thr Ile Ile Glu Gly Asp Asn
            20                  25                  30

Ala Thr Leu Val Gly Ile Ser Gly Gln Asn Val Ser Trp Leu Lys Tyr
        35                  40                  45

His Leu Asp Gly Trp Lys Pro Ile Cys Thr Trp Asn Val Ser Val Tyr
    50                  55                  60

Thr Cys His Gly Val Asn Leu Thr Ile Thr Asn Ala Thr Gln Asp Gln
65                  70                  75                  80
```

```
Asn Gly Arg Phe Lys Gly Gln Ser Phe Thr Ser Asn Asn Gly Tyr Glu
                85                  90                  95

Thr His Asn Met Phe Ile Tyr Asp Val Thr Val Ile Ser Asn Lys Thr
            100                 105                 110

Thr Pro Thr Thr Gln Thr Pro Thr Thr His Ser Ser Thr His Ala Met
        115                 120                 125

Gln Thr Thr Gln Thr Thr Thr Tyr Thr Thr Ser Thr Glu Ser Thr Thr
    130                 135                 140

Thr Thr Thr Ala Glu Val Ser Ser Thr Ala Pro Gln Pro Gln Ala Leu
145                 150                 155                 160

Ala Leu Met Ala Gln Pro Ser Ser Met Thr Ala Lys Thr Asn Glu Gln
                165                 170                 175

Thr Thr Glu Phe Leu Ser Thr Ile Gln Ser Ser Thr Thr Ala Thr Ser
            180                 185                 190

Ser Ala Phe Ser Ser Thr Ala Asn Leu Thr Ser Leu Ser Ser Thr Pro
        195                 200                 205

Ile Ser Asn Ala Thr Thr Ser Pro Ala Pro Leu Pro Thr Pro Leu Lys
    210                 215                 220

Gln Ser Glu Ser Ser Thr Gln Leu Gln Ile Thr Leu Leu Ile Val Ile
225                 230                 235                 240

Gly Val Val Ile Leu Ala Val Leu Leu Tyr Phe Ile Phe Cys Arg Arg
                245                 250                 255

Ile Pro Asn Ala Lys Pro Ala Tyr Lys Pro Ile Val Ile Gly Thr Pro
            260                 265                 270

Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser Phe
        275                 280                 285

Thr Val Trp
    290
```

<210> 305
<211> 149
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 305

```
Met Ile Ser Met Arg Ala Leu Leu Leu Leu Leu Ala Leu Leu Leu Ala
```

1 5 10 15

Pro Leu Ala Ala Pro Leu Ser Leu Lys Ser Pro Thr Gln Ser Pro Glu
20 25 30

Glu Val Arg Lys Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Ser Cys
35 40 45

Tyr Lys Leu Lys Ser Glu Met His Pro Ser Trp Ile Met Ile Val Gly
50 55 60

Ile Val Asn Ile Leu Ala Cys Thr Leu Phe Ser Phe Val Ile Tyr Pro
65 70 75 80

Arg Phe Asp Phe Gly Trp Asn Ala Pro Glu Ala Leu Trp Leu Pro Pro
85 90 95

Asp Pro Asp Thr Pro Pro Gln Gln Gln Gln Asn Gln Ala Gln Ala His
100 105 110

Ala Pro Pro Gln Pro Arg Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu
115 120 125

Ala Glu Pro Gln Arg Ala Met Leu Pro Ala Ile Ser Tyr Phe Asn Leu
130 135 140

Thr Gly Gly Asp Asp
145

<210> 306
<211> 490
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 306

Met Phe Ser Val Ser Ser Thr Ser Leu Pro Ser Ser Gln Leu Trp Tyr
1 5 10 15

Cys Arg Pro Arg Arg Ala Ala Asn Phe Leu His Thr Leu Lys Gly Met
20 25 30

Ser Asn Ser Ser Cys Pro Ser Ile Phe Ile Phe Ile Phe Tyr Gln Met
35 40 45

Ser Lys Lys Arg Ala Arg Val Asp Asp Gly Phe Asp Pro Val Tyr Pro
50 55 60

Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro Phe
65 70 75 80

```
Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser Leu
                85                  90                  95

Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Ala Val Thr Leu Lys
            100                 105                 110

Leu Gly Glu Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser Lys
        115                 120                 125

Asn Ala Thr Lys Ala Thr Ala Pro Leu Ser Ile Ser Asn Gly Thr Ile
    130                 135                 140

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

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

Gly Ile Ser Leu Gly Asn Gly Leu Gln Thr Ser Asn Lys Leu Leu Thr
            180                 185                 190

Val Gln Leu Thr His Pro Leu Thr Phe Ser Ser Asn Ser Ile Thr Val
        195                 200                 205

Lys Thr Asp Lys Gly Leu Tyr Ile Asn Ser Ser Gly Asn Arg Gly Leu
    210                 215                 220

Glu Ala Asn Ile Ser Leu Lys Arg Gly Leu Ile Phe Asp Gly Asn Ala
225                 230                 235                 240

Ile Ala Thr Tyr Leu Gly Ser Gly Leu Asp Tyr Gly Ser Tyr Asp Ser
                245                 250                 255

Asp Gly Lys Thr Arg Pro Ile Ile Thr Lys Ile Gly Ala Gly Leu Asn
            260                 265                 270

Phe Asp Ala Asn Asn Ala Met Ala Val Lys Leu Gly Thr Gly Leu Ser
        275                 280                 285

Phe Asp Ser Ala Gly Ala Leu Thr Ala Gly Asn Lys Glu Asp Asp Lys
    290                 295                 300

Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Gln Leu Leu
305                 310                 315                 320

Ser Asp Arg Asp Ala Lys Phe Thr Leu Cys Leu Thr Lys Cys Gly Ser
                325                 330                 335

Gln Ile Leu Gly Thr Val Ala Val Ala Ala Val Thr Val Gly Ser Ala
            340                 345                 350

Leu Asn Pro Ile Asn Asp Thr Val Lys Ser Ala Ile Val Phe Leu Arg
```

355 360 365

Phe Asp Ser Asp Gly Val Leu Met Ser Asn Ser Ser Met Val Gly Asp
370 375 380

Tyr Trp Asn Phe Arg Glu Gly Gln Thr Thr Gln Ser Val Ala Tyr Thr
385 390 395 400

Asn Ala Val Gly Phe Met Pro Asn Leu Gly Ala Tyr Pro Lys Thr Gln
405 410 415

Ser Lys Thr Pro Lys Asn Ser Ile Val Ser Gln Val Tyr Leu Asn Gly
420 425 430

Glu Thr Thr Met Pro Met Thr Leu Thr Ile Thr Phe Asn Gly Thr Asp
435 440 445

Glu Lys Asp Thr Thr Pro Val Ser Thr Tyr Ser Met Thr Phe Thr Trp
450 455 460

Gln Trp Thr Gly Asp Tyr Lys Asp Lys Asn Ile Thr Phe Ala Thr Asn
465 470 475 480

Ser Phe Thr Phe Ser Tyr Met Ala Gln Glu
485 490

<210> 307
<211> 186
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 307

Ser Gly Arg Arg Ala Val Arg Val Ile Ile Arg Glu Arg Asp Arg Ala
1 5 10 15

Val Val Ala His Gln Ala Pro Gln Gln Ser Leu Ser Ala Pro Leu Arg
20 25 30

Gln Ala Ala Ala Gln Gly Val Trp Val Gln Gly Leu Pro Ala His Asp
35 40 45

Ala Asp Gly Pro Glu His Gln Ser Pro Gly Ala Ala Gly Ala Ala Ala
50 55 60

Asp Ala Asp Leu Thr Gln Val Gly Ala Val Arg Ala Ala Gln His Tyr
65 70 75 80

Gln Val Val Gln Gln Ser Ile Val Gln Arg Ala Pro Ala Lys Thr His
85 90 95

```
Leu Trp Asn Tyr Ala Ala His Met Ser Ile Val Pro Asp Pro Asp Val
            100                 105                 110

Asn Gln Val Ala Pro Pro Pro Glu His Thr Ala His Val His Asp Leu
        115                 120                 125

Leu Gly His Val Gln Val His His Leu Pro Val Pro His His Pro Leu
    130                 135                 140

Val Glu His Ala Ala Leu Asp Asn Pro Ala Glu Pro Asp Gly Gln His
145                 150                 155                 160

Arg Pro Ala Arg His Ala Ala Gln Gly Pro Arg Val Leu Ala Met Ala
                165                 170                 175

Val Glu His Pro Pro Leu Thr Ala Val Asp
            180                 185
```

<210> 308
<211> 83
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 308

```
Leu Gly Ala Glu Gln Val Tyr Val Gly Thr Ala Gln Ala His Ala His
1               5                   10                  15

Ala Cys Leu Gln His Ser Gln Phe Leu Gly Gly Gln Asp His Val Pro
            20                  25                  30

Gly His Gly Glu Leu Leu Gln Asp Ser Glu Pro Gly Arg Thr Gly Gln
        35                  40                  45

Pro Ser His Thr Thr Tyr Ile Val His Gly Gln Gly Ile Ala Ile Arg
    50                  55                  60

Gln His Arg Met Ile Leu His Gln Arg Ser Ala Gly Leu Gly Leu Leu
65                  70                  75                  80

Thr Ala Arg
```

<210> 309
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 309

```
Gly Gly Arg Arg Leu Val Arg Met Met Ala Gly
```

1 5 10

<210> 310
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 310

Ser Cys Ser Gly Ser Cys His Asp Gly Ala Val Ser
1 5 10

<210> 311
<211> 63
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 311

Phe Gln Thr Val Ser Glu His Phe Lys Met Gln Val Pro Glu Val Ala
1 5 10 15

Pro Leu Ala Pro Thr Val Leu Val Glu Asn Asn Ser Gln Val Lys Gly
20 25 30

Asp Thr Val Leu Glu Met Phe His Gly Gly Phe Gln Gln Ser Leu His
35 40 45

Ala His Ile Gln Lys Gln Glu Asp Ser Glu Ser Gly Ser Val Phe
50 55 60

<210> 312
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 312

Phe Leu Asn His His Ile Thr Leu Leu His His Pro Gln Ile Ile Phe
1 5 10 15

Ile Phe Pro Ala Leu Asn Asp Ser Tyr
20 25

<210> 313
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 313

Ile Gln Ala Ser His Asp Lys Lys Leu Ala Gln Ser Ala Leu His Arg
1 5 10 15

His Ser

<210> 314
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 314

Ala His Pro His
1

<210> 315
<211> 63
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 315

Asn His Ala Ser Leu Ala Asn Arg Trp Val Asn His Ser Phe Gln His
1 5 10 15

Gln Ala Gly Tyr Gly Val Ser Gly Ala Thr Leu Val Glu Ala Val Ala
20 25 30

Met Ile Glu Lys His His Arg Glu Thr Phe Pro Val Ala Gly Met Asp
35 40 45

Asp Ser Arg Arg Ser Ile His Ser Gly Asn Ile Gly Ile Arg Glu
50 55 60

<210> 316
<211> 60
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 316

Lys Lys Ala Thr Tyr Lys Ala Ser Gly His Tyr Asn Ala Gln Ser Gln
1 5 10 15

Phe Gln Gln Ser His Pro Met Arg Met Glu His Lys Ile Gly Arg Cys
20 25 30

Val Lys Asn Val Ile Thr Pro Leu Leu His Arg Gln Gln Ser Pro Arg

35 40 45

Ser Leu Gln Lys His Ile Gln Ser Leu Ser Val His
50 55 60

<210> 317
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 317

Leu Pro Met Leu Asn Gln
1 5

<210> 318
<211> 75
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 318

Gly Thr Tyr Leu Ser Asp Leu Ser Ile Ser Phe Ile His Ser Cys Leu
1 5 10 15

Thr Pro Arg Arg Val Asp Asn Tyr Asp Thr Gly Gly Leu Thr Ile Trp
20 25 30

Pro Gln Cys Cys Asn Asp Thr Ala Arg Pro Thr Leu Thr Gly Ser Arg
35 40 45

Phe Ile Ser Asn Lys Pro Ala Ser Arg Lys Gly Arg Ala Gln Lys Trp
50 55 60

Ser Cys Asn Phe Ile Arg Leu His Pro Val Tyr
65 70 75

<210> 319
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 319

Leu Leu Pro Gly Ser
1 5

<210> 320
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 320

Phe Ala Gln Arg Cys Cys His Cys Cys Arg His Arg Gly Val Thr Leu
1   5   10   15

Val Val Trp Tyr Gly Phe Ile Gln Leu Arg Phe Pro Thr Ile Lys Ala
            20   25   30

Ser Tyr Met Ile Pro His Val Val Gln Lys Ser Gly
        35   40

<210> 321
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 321

Leu Leu Arg Ser Ser Asp Arg Cys Gln Lys
1   5   10

<210> 322
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 322

Val Gly Arg Ser Val Ile Thr His Gly Tyr Gly Ser Thr Ala
1   5   10

<210> 323
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 323

Phe Ser Tyr Cys His Ala Ile Arg Lys Met Leu Phe Cys Asp Trp
1   5   10   15

<210> 324
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 324

Val Leu Asn Gln Val Ile Leu Arg Ile Val Tyr Ala Ala Thr Glu Leu
1 5 10 15

Leu Leu Pro Gly Val Asn Thr Gly
20

<210> 325
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 325

Tyr Arg Ala Thr
1

<210> 326
<211> 74
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 326

Gln Asn Phe Lys Ser Ala His His Trp Lys Thr Phe Phe Gly Ala Lys
1 5 10 15

Thr Leu Lys Asp Leu Thr Ala Val Glu Ile Gln Phe Asp Val Thr His
20 25 30

Ser Cys Thr Gln Leu Ile Phe Ser Ile Phe Tyr Phe His Gln Arg Phe
35 40 45

Trp Val Ser Lys Asn Arg Lys Ala Lys Cys Arg Lys Lys Gly Asn Lys
50 55 60

Gly Asp Thr Glu Met Leu Asn Thr His Thr
65 70

<210> 327
<211> 36781
<212> DNA
<213> Artificial Sequence

<220>
<223> p2875 - E1 deleted molecular clone, based on Simian Adenovirus A1337

<220>
<221> CDS
<222> (23566)..(24117)
<223> 22K

<220>

<221> CDS
<222> (25423)..(26058)
<223> E3\CR1-alpha

<220>
<221> CDS
<222> (29612)..(30013)
<223> E3\14.7K

<220>
<221> CDS
<222> (32743)..(33108)
<223> E4\orf4 complement (32743..33108)

<220>
<221> CDS
<222> (33470)..(33856)
<223> E4\orf4 complement (33470..33856)

<400> 327
caataatata cctcaaactt tttgtgcgcg ttaatatgca aatgaggcgt ttgaatttgg 60

gaagggagga aggtgattgg ccgagagaag ggcgaccgtt aggggcgggg cgagtgacgt 120

tttgatgacg tggccgcgag gaggagccag tttgcaagtt ctcgtgggaa aagtgacgtc 180

aaacgaggtg tggtttgaac acggaaatac tcaattttcc cgcgctctct gacaggaaat 240

gaggtgtttt tgggcggatg caagttaaaa cgggccattt tcgcgcgaaa actgaatgag 300

gaagtgaaaa tctgagtaat ttcgcgttta tggcagggag gagtatttgc cgagggccga 360

gtagactttg accgattacg tgggggtttc gattaccgtg tttttcacct aaatttccgc 420

gtacggtgtc aaagtccggt gtttttacat catttccccg aaaagtgcca cctgacgtaa 480

ctataacggt cctaaggtag cgaaagctca gatctcccga tcccctatgg tgcactctca 540

gtacaatctg ctctgatgcc gcatagttaa gccagtatct gctccctgct tgtgtgttgg 600

aggtcgctga gtagtgcgcg agcaaaattt aagctacaac aaggcaaggc ttgaccgaca 660

attgcatgaa gaatctgctt agggttaggc gttttgcgct gcttcgcgat gtacgggcca 720

gatatacgcg gtacgaaacc gctgatcagc ctcgactgtg ccttctagtt gccagccatc 780

tgttgtttgc ccctcccccg tgccttcctt gaccctggaa ggtgccactc ccactgtcct 840

ttcctaataa aatgaggaaa ttgcatcgca ttgtctgagt aggtgtcatt ctattctggg 900

gggtggggtg gggcaggaca gcaaggggga ggattgggaa gacaatagca ggcatgctgg 960

ggatgcggtg ggctctatgg cttctgaggc ggaaagaacc agcagatctg cagatctgaa 1020

ttcatctatg tcgggtgcgg agaaagaggt aatgaaatgg cacatatgct ggccaccgtg 1080

catgtggctt cccatgcccg caagccctgg cccgagttcg agcacaatgt catgaccagg 1140

tgcaatatgc atctggggtc tcgccgaggc atgttcatgc cctaccagtg caacctgaat 1200

tatgtgaagg tgctgctgga gcccgatgcc atgtccagag tgagcctgac gggggtgttt 1260

gacatgaatg tggaggtgtg gaagattctg agatatgatg aatccaagac caggtgccga 1320

gcctgcgagt gcggagggaa gcatgccagg ttccagcccg tgtgtgtgga tgtgacggag 1380

gacctgcgac ccgatcattt ggtgttgtcc tgcaccggga cggagttcgg ttccagcggg 1440

gaagaatctg actagagtga gtagtgttct ggggcggggg aggacctgca tgagggccag 1500

aatgattgaa atctgtgctt ttctgtgtgt tgcagcagca tgagcggaag cggctccttt 1560
gagggagggg tattcagccc ttatctgacg gggcgtctcc cctcctgggc gggagtgcgt 1620
cagaatgtga tgggatccac ggtggacggc cggcccgtgc agcccgcgaa ctcttcaacc 1680
ctgacctatg caaccctgag ctcttcgtcg gtggacgcag ctgccgccgc agctgctgca 1740
tctgccgcca gcgccgtgcg cggaatggcc atgggcgccg gctactacgg cactctggtg 1800
gccaactcga gttccaccaa taatcccgcc agcctgaacg aggagaagct gctgctgctg 1860
atggcccagc tcgaggcctt gacccagcgc ctgggcgagc tgacccagca ggtggctcag 1920
ctgcaggagc agacgcgggc cgcggttgcc acggtgaaat ccaaataaaa aatgaatcaa 1980
taaataaacg gagacggttg ttgattttaa cacagagtct gaatctttat ttgatttttc 2040
gcgcgcggta ggccctggac caccggtctc gatcattgag cactcggtgg atcttttcca 2100
ggacccggta gaggtgggct tggatgttga ggtacatggg catgagcccg tcccgggggt 2160
ggaggtagct ccattgcagg gcctcgtgct cgggggtggt gttgtaaatc acccagtcat 2220
agcaggggcg cagggcatgg tgttgcacaa tatctttgag gaggagactg atggccacgg 2280
gcagcccttt ggtgtaggtg tttacaaatc tgttgagctg ggagggatgc atgcgggggg 2340
agatgaggtg catcttggcc tggatcttga gattggcgat gttaccgccc agatcccgcc 2400
tggggttcat gttgtgcagg accaccagca cggtgtatcc ggtgcacttg gggaatttat 2460
catgcaactt ggaagggaag gcgtgaaaga atttggcgac gcccttgtgc ccgcccaggt 2520
tttccatgca ctcatccatg atgatggcga tggggccgtg ggcggcggcc tgggcaaaaa 2580
cgtttcgggg gtcggacaca tcatagttgt ggtcctgggt gagatcatca taggccattt 2640
taatgaattt ggggcggagg gtgccggact gggggacaaa ggtaccctcg atcccggggg 2700
cgtagttccc ctcacagatc tgcatctccc aggctttgag ctcggagggg gggatcatgt 2760
ccacctgcgg ggcgataaag aacacggttt ccggggcggg agagatgagc tgggccgaaa 2820
gcaagttccg gagcagctgg gacttgccgc agccggtggg gccgtagatg accccgatga 2880
ccggttgcag gtggtagttg agggagagac agctgccgtc ctcccggagg agggggggcca 2940
cctcgttcat catctcgcgc acgtgcatgt tctcgcgcac cagttccgcc aggaggcgct 3000
ctccccccag ggataggagc tcctggagcg aggcgaagtt tttcagcggc ttgagtccgt 3060
cggccatggg cattttggag agggtctgtt gcaagagttc caagcggtcc cagagctcgg 3120
tgatgtgctc tacggcatct cgatccagca gacctcctcg tttcgcgggt tggggcggct 3180
gcgggagtag ggcaccagac gatgggcgtc cagcgcagcc agggtccggt ccttccaggg 3240
tcgcagcgtc cgcgtcaggg tggtctccgt cacggtgaag gggtgcgcgc cgggctgggc 3300
gcttgcgagg gtgcgcttca ggctcatccg gctggtcgaa aaccgctccc gatcggcgcc 3360
ctgcgcgtcg gccaggtagc aattgaccat gagttcgtaa ttgagcgcct cggccgcgtg 3420
acctttggcg cggagcttac ctttggaagt ctgcccgcag gtgggacaga ggagggactt 3480
gagggcgtag agcttggggg cgaggaagac ggactcgggg gcgtaggcgt ccgcgccgca 3540

gtgggcgcag acggtctcgc actccacgag ccaggtgagg tcgggctggt cggggtcaaa 3600

aaccagtttc ccgccgttct ttttgatgcg tttcttacct ttggtctcca tgagctcgtg 3660

tccccgctgg gtgacaaaga ggctgtccgt gtccccgtag accgacttta tgggccggtc 3720

ctcgagcggt gtgccgcggt cctcctcgta gaggaacccc gcccactccg agacgaaagc 3780

ccgggtccag gccagcacga aggaggccac gtgggacggg tagcggtcgt tgtccaccag 3840

cgggtccacc ttctccaggg tatgcaaaca catgtccccc tcgtccacat ccaggaaggt 3900

gattggcttg taagtgtagg ccacgtgacc gggggtccca gccgggggggg tataaaaggg 3960

ggcgggcccc tgctcgtcct cactgtcttc cggatcgctg tccaggagcg ccagctgttg 4020

gggtaggtat tccctctcga aggcgggcat gacctcggca ctcaggttgt cagtttctag 4080

aaacgaggag gatttgatat tgacggtgcc ggcggagatg cctttcaaga gcccctcgtc 4140

catctggtca gaaaagacga tctttttgtt gtcgagtttg gtggcgaagg agccgtagag 4200

ggcattggag aggagcttgg cgatagagcg catggtctgg ttttttcct tgtcggcgcg 4260

ctccttggcc gcgatgttga gctgcacgta ctcgcgcgcc acgcacttcc attcggggaa 4320

gacggtggtc agctcgtcgg gcacgattct gacttgccag ccccggttat gcagggtgat 4380

gaggtccaca ctggtgccca cctcgccgcg caggggctcg ttggtccagc agagtcgacc 4440

gcccttgcgc gagcagaagg ggggcagggg gtccagcatg acctcgtcgg gggggtcggc 4500

atcgatggtg aagatgcctg gcaggagatc ggggtcgaag tagctgatgg aagtggccag 4560

atcgtccagg gcagcttgcc attcgcgcac ggccagcgcg cgctcgtagg gactgagggg 4620

cgtgccccaa ggcatggggt gtgtgagcgc ggaggcgtac atgccgcaga tgtcgtagac 4680

gtagaggggc tcctcgagga tgccgatgta ggtggggtaa cagcgccccc cgcggatgct 4740

ggcgcgcacg tagtcataca gctcatgcga gggggcgagg agccccgggc ccaggttggt 4800

gcgactgggc ttttcggcgc ggtagacgat ctggcgaaag atggcatgcg agttggagga 4860

gatggtgggc ctttggaaga tgttgaagtg ggcgtggggc agaccgaccg agtcgcggat 4920

gaagtgggcg taggagtctt gcagtttggc gacgagctcg gcggtgacga ggacgtccag 4980

agcgcagtag tcgagggtct cctggatgat gtcatacttg agctggccct tttgtttcca 5040

cagctcgcgg ttgagaagga actcttcgcg gtccttccag tactcttcga gggggaaccc 5100

gtcctgatct gcacggtaag agcctagcat gtagaactgg ttgacggcct tgtaggcgca 5160

gcagcccttc tccacgggga gggcgtaggc ctgggcggcc ttgcgcaggg aggtgtgcgt 5220

gagggcgaag gtgtccctga ccatgacctt gaggaactgg tgcttgaaat cgatatcgtc 5280

gcagcccccc tgctcccaga gctggaagtc cgtgcgcttc ttgtaggcgg ggttgggcaa 5340

agcgaaagta acatcgttga aaaggatctt gcccgcgcgg ggcataaagt tgcgagtgat 5400

gcggaaaggc tggggcacct cggcccggtt gttgatgacc tgggcggcga gcacgatctc 5460

gtcgaaaccg ttgatgttgt ggcccacgat gtagagttcc acgaatcgcg ggcggccctt 5520

gacgtggggc agcttcttga gctcctcgta ggtgagctcg tcggggtcgc tgagaccgtg 5580

ctgctcgagc gcccagtcgg cgagatgggg gttggcgcgg aggaaggaag tccagagatc 5640

cacggccagg gcggtttgca gacggtcccg gtactgacgg aactgctgcc cgacggccat 5700

tttttcgggg gtgacgcagt agaaggtgcg ggggtccccg tgccagcggt cccatttgag 5760

ctggagggcg agatcgaggg cgagctcgac gaggcggtcg tccccggaga gtttcatgac 5820

cagcatgaag gggacgagct gcttgccgaa ggaccccatc caggtgtagg tttccacatc 5880

gtaggtgagg aagagccttt cggtgcgagg atgcgagccg atggggaaga actggatctc 5940

ctgccaccaa ttggaggaat ggctgttgat gtgatggaag tagaaatgcc gacggcgcgc 6000

cgaacactcg tgcttgtgtt tatacaagcg gccacagtgc tcgcaacgct gcacgggatg 6060

cacgtgctgc acgagctgta cctgagttcc tttgacgagg aatttcagtg ggaagtggag 6120

tcgtggcgcc tgcatctcgt gctgtactac gtcgtggtgg tcggcctggc cctcttctgc 6180

ctcgatggtg gtcatgctga cgagcccgcg cgggaggcag gtccagacct cggcgcgagc 6240

gggtcggaga gcgaggacga gggcgcgcag gccggagctg tccagggtcc tgagacgctg 6300

cggagtcagg tcagtgggca gcggcggcgc gcggttgact tgcaggagtt tttccagggc 6360

gcgcgggagg tccagatggt acttgatctc caccgcgccg ttggtggcga cgtcgatggc 6420

ttgcagggtc ccgtgcccct ggggtgtgac caccgtcccc cgtttcttct tgggcggctg 6480

gggcgacggg ggcggtgcct cttccatggt tagaagcggc ggcgaggacg cgcgccgggc 6540

ggcagaggcg gctcggggcc cggaggcagg ggcggcaggg gcacgtcggc gccgcgcgcg 6600

ggtaggttct ggtactgcgc ccggagaaga ctggcgtgag cgacgacgcg acggttgacg 6660

tcctggatct gacgcctctg ggtgaaggcc acgggacccg tgagtttgaa cctgaaagag 6720

agttcgacag aatcaatctc ggtatcgttg acggcggcct gccgcaggat ctcttgcacg 6780

tcgcccgagt tgtcctggta ggcgatctcg gtcatgaact gctcgatctc ctcctcctga 6840

aggtctccgc ggccggcgcg ctccacggtg gccgcgaggt cgttggagat gcggcccatg 6900

agctgcgaga aggcgttcat gcccgcctcg ttccagacgc ggctgtagac cacgacgccc 6960

tcgggatcgc gggcgcgcat gaccacctgg gcgaggttga gctccacgtg gcgcgtgaag 7020

accgcgtagt tgcagaggcg ctggtagagg tagttgagcg tggtggcgat gtgctcggtg 7080

acgaagaaat acatgatcca gcggcggagc ggcatctcgc tgacgtcgcc cagcgcctcc 7140

aagcgttcca tggcctcgta aaagtccacg gcgaagttga aaaactggga gttgcgcgcc 7200

gagacggtca actcctcctc cagaagacgg atgagctcgg cgatggtggc gcgcacctcg 7260

cgctcgaagg cccccgggag ttcctcctct tccatctcct cttcttcctc ctccactaac 7320

atctcttcta cttcctcctc aggcggtggt ggcgggggag ggggcctgcg tcgccggcgg 7380

cgcacgggca gacggtcgat gaagcgctcg atggtctcgc cgcgccggcg tcgcatggtc 7440

tcggtgacgg cgcgcccgtc ctcgcggggc cgcagcgtga agacgccgcc gcgcatctcc 7500

aggtggccgg gggggtcccc gttgggcagg gagagggcgc tgacgatgca tcttatcaat 7560

tgccccgtag ggactccgcg caaggacctg agcgtctcga gatccacggg atctgaaaac 7620

cgttgaacga aggcttcgag ccagtcgcag tcgcaaggta ggctgagcac ggtttcttct 7680

ggcgggtcat gttggggagc ggggcgggcg atgctgctgg tgatgaagtt gaaataggcg 7740
gttctgagac ggcggatggt ggcgaggagc accaggtctt tgggcccggc ttgctggatg 7800
cgcagacggt cggccatgcc ccaggcgtgg tcctgacacc tggccaggtc cttgtagtag 7860
tcctgcatga gccgctccac gggcacctcc tcctcgcccg cgcggccgtg catgcgcgtg 7920
agcccgaagc cgcgctgggg ctggacgagc gccaggtcgg cgacgacgcg ctcggcgagg 7980
atggcctgct ggatctgggt gagggtggtc tggaagtcgt caaagtcgac gaagcggtgg 8040
taggctccgg tgttgatggt gtaggagcag ttggccatga cggaccagtt gacggtctgg 8100
tggcccggac gcacgagctc gtggtacttg aggcgcgagt aggcgcgcgt gtcgaagatg 8160
tagtcgttgc aggtgcgcac caggtactgg tagccgatga ggaagtgcgg cggcggctgg 8220
cggtagagcg gccatcgctc ggtggcgggg gcgccgggcg cgaggtcctc gagcatggtg 8280
cggtggtagc cgtagatgta cctggacatc caggtgatgc cggcggcggt ggtggaggcg 8340
cgcgggaact cgcggacgcg gttccagatg ttgcgcagcg gcaggaagta gttcatggtg 8400
ggcacggtct ggcccgtgag gcgcgcgcag tcgtggatgc tctatacggg caaaaacgaa 8460
agcggtcagc ggctcgactc cgtggcctgg aggctaagcg aacgggttgg gctgcgcgtg 8520
taccccggtt cgaatctcga atcaggctgg agccgcagct aacgtggtac tggcactccc 8580
gtctcgaccc aagcctgcac caaccctcca ggatacggag gcgggtcgtt ttgcaacttt 8640
ttttcggagg ccggaaatga agactagtaa gcgcggaaag cggccgaccg cgatggctcg 8700
ctgccgtagt ctggagaaga atcgccaggg ttgcgttgcg gtgtgccccg gttcgaggcc 8760
ggccggattc cgcggctaac gagggcgtgg ctgccccgtc gtttccaaga ccccctagcc 8820
agccgacttc tccagttacg gagcgagccc ctcttttgtt ttgtttgttt ttgccagatg 8880
catcccgtac tgcggcagat gcgcccccac caccctccac cgcaacaaca gccccctcca 8940
cagccggcgc ttctgccccc gccccagcag cagcagcaac ttccagccac gaccgccgcg 9000
gccgccgtga gcggggctgg acagacttct cagtatgacc tggccttgga agagggcgag 9060
gggctggcgc gcctgggggc gtcgtcgccg gagcggcacc cgcgcgtgca gatgaaaagg 9120
gacgctcgcg aggcctacgt gcccaagcag aacctgttca gagacaggag cggcgaggag 9180
cccgaggaga tgcgcgcggc ccggttccac gcggggcggg agctgcggcg cggcctggac 9240
cgaaagaggg tgctgaggga cgaggatttc gaggcggacg agctgacggg gatcagcccc 9300
gcgcgcgcgc acgtggccgc ggccaacctg gtcacggcgt acgagcagac cgtgaaggag 9360
gagagcaact tccaaaaatc cttcaacaac cacgtgcgca ccctgatcgc gcgcgaggag 9420
gtgaccctgg gcctgatgca cctgtgggac ctgctggagg ccatcgtgca gaaccccacc 9480
agcaagccgc tgacggcgca gctgttcctg gtggtgcagc atagtcggga caacgaggcg 9540
ttcagggagg cgctgctgaa tatcaccgag cccgagggcc gctggctcct ggacctggtg 9600
aacattctgc agagcatcgt ggtgcaggag cgcgggctgc cgctgtccga gaagctggcg 9660
gccatcaact tctcggtgct gagtctgggc aagtactacg ctaggaagat ctacaagacc 9720
ccgtacgtgc ccatagacaa ggaggtgaag atcgacgggt tttacatgcg catgaccctg 9780

aaagtgctga ccctgagcga cgatctgggg gtgtaccgca acgacaggat gcaccgcgcg 9840
gtgagcgcca gcaggcggcg cgagctgagc gaccaggagc tgatgcatag tctgcagcgg 9900
gccctgaccg gggccgggac cgaggggggag agctactttg acatgggcgc ggacctgcac 9960
tggcagccca gccgccgggc cttggaggcg gcaggcggtc ccccctacat agaagaggtg 10020
gacgatgagg tggacgagga gggcgagtac ctggaagact gatggcgcga ccgtattttt 10080
gctagatgca acaacagcca cctcctgatc ccgcgatgcg ggcggcgctg cagagccagc 10140
cgtccggcat taactcctcg gacgattgga cccaggccat gcaacgcatc atggcgctga 10200
cgacccgcaa ccccgaagcc tttagacagc agccccaggc caaccggctc tcggccatcc 10260
tggaggccgt ggtgccctcg cgctccaacc ccacgcacga gaaggtcctg gccatcgtga 10320
acgcgctggt ggagaacaag gccatccgcg gcgacgaggc cggcctggtg tacaacgcgc 10380
tgctggagcg cgtggcccgc tacaacagca ccaacgtgca gaccaacctg gaccgcatgg 10440
tgaccgacgt gcgcgaggcc gtggcccagc gcgagcggtt ccaccgcgag tccaacctgg 10500
gatccatggt ggcgctgaac gccttcctca gcacccagcc cgccaacgtg ccccggggcc 10560
aggaggacta caccaacttc atcagcgccc tgcgcctgat ggtgaccgag gtgccccaga 10620
gcgaggtgta ccagtccggg ccggactact tcttccagac cagtcgccag ggcttgcaga 10680
ccgtgaacct gagccaggcg ttcaagaact tgcagggcct gtggggcgtg caggccccgg 10740
tcggggaccg cgcgacggtg tcgagcctgc tgacgccgaa ctcgcgcctg ctgctgctgc 10800
tggtggcccc cttcacggac agcggcagca tcaaccgcaa ctcgtacctg ggctacctga 10860
ttaacctgta ccgcgaggcc atcggccagg cgcacgtgga cgagcagacc taccaggaga 10920
tcacccacgt gagccgcgcc ctgggccagg acgacccggg caatctggaa gccaccctga 10980
acttttgct gaccaaccgg tcgcagaaga tcccgcccca gtacacgctc agcgccgagg 11040
aggagcgcat cctgcgatac gtgcagcaga gcgtgggcct gttcctgatg caggaggggg 11100
ccacccccag cgccgcgctc gacatgaccg cgcgcaacat ggagcccagc atgtacgcca 11160
gcaaccgccc gttcatcaat aaactgatgg actacttgca tcgggcggcc gccatgaact 11220
ctgactattt caccaacgcc atcctgaatc cccactggct cccgccgccg gggttctaca 11280
cgggcgagta cgacatgccc gaccccaatg acgggttcct gtgggacgat gtggacagca 11340
gcgtgttctc cccccgaccg ggtgctaacg agcgcccctt gtggaagaag gaaggcagcg 11400
accgacgccc gtcctcggcg ctgtccggcc gcgagggtgc tgccgcggcg gtgcccgagg 11460
ccgccagtcc tttcccgagc ttgcccttct cgctgaacag tattcgcagc agcgagctgg 11520
gcaggatcac gcgcccgcgc ttgctgggcg aggaggagta cttgaatgac tcgctgttga 11580
gacccgagcg ggagaagaac ttccccaata acgggataga gagcctggtg gacaagatga 11640
gccgctggaa gacgtatgcg caggagcaca gggacgatcc gtcgcagggg gccacgagcc 11700
ggggcagcgc cgcccgtaaa cgccggtggc acgacaggca gcggggactg atgtgggacg 11760
atgaggattc cgccgacgac agcagcgtgt tggacttggg tgggagtggt aacccgttcg 11820

ctcacctgcg cccccgcatc gggcgcatga tgtaagagaa accgaaaata aatgatactc 11880

accaaggcca tggcgaccag cgtgcgttcg tttcttctct gttgttgtat ctagtatgat 11940

gaggcgtgcg tacccggagg gtcctcctcc ctcgtacgag agcgtgatgc agcaggcgat 12000

ggcggcggcg gcggcgatgc agcccccgct ggaggctcct tacgtgcccc cgcggtacct 12060

ggcgcctacg gaggggcgga acagcattcg ttactcggag ctggcaccct tgtacgatac 12120

cacccggttg tacctggtgg acaacaagtc ggcggacatc gcctcgctga actaccagaa 12180

cgaccacagc aacttcctga ccaccgtggt gcagaacaat gacttcaccc ccacggaggc 12240

cagcacccag accatcaact ttgacgagcg ctcgcggtgg ggcggtcagc tgaaaaccat 12300

catgcacacc aacatgccca acgtgaacga gttcatgtac agcaacaagt tcaaggcgcg 12360

ggtgatggtc tcccgcaaga cccccaacgg ggtgacagtg acagatggta gtcaggatat 12420

cttggagtat gaatgggtgg agtttgagct gcccgaaggc aacttctcgg tgaccatgac 12480

catcgacctg atgaacaacg ccatcatcga caattacttg gcggtggggc ggcagaacgg 12540

ggtcctggag agcgatatcg gcgtgaagtt cgacactagg aacttcaggc tgggctggga 12600

ccccgtgacc gagctggtca tgcccggggt gtacaccaac gaggccttcc accccgatat 12660

tgtcttgctg cccggctgcg gggtggactt caccgagagc cgcctcagca acctgctggg 12720

cattcgcaag aggcagccct tccaggaggg cttccagatc atgtacgagg atctggaggg 12780

gggcaacatc cccgcgctcc tggatgtcga cgcctatgag aaaagcaagg aggagagcgc 12840

cgccgcggcg actgcagctg tagccaccgc ctctaccgag gtcaggggcg ataattttgc 12900

cagccctgca gcagtggcag cggccgaggc ggctgaaacc gaaagtaaga tagtcattca 12960

gccggtggag aaggatagca aggacaggag ctacaacgtg ctgccggaca agataaacac 13020

cgcctaccgc agctggtacc tggcctacaa ctatggcgac cccgagaagg gcgtgcgctc 13080

ctggacgctg ctcaccacct cggacgtcac ctgcggcgtg gagcaagtct actggtcgct 13140

gcccgacatg atgcaagacc cggtcacctt ccgctccacg cgtcaagtta gcaactaccc 13200

ggtggtgggc gccgagctcc tgcccgtcta ctccaagagc ttcttcaacg agcaggccgt 13260

ctactcgcag cagctgcgcg ccttcacctc gctcacgcac gtcttcaacc gcttccccga 13320

gaaccagatc ctcgtccgcc cgcccgcgcc caccattacc accgtcagtg aaaacgttcc 13380

tgctctcaca gatcacggga ccctgccgct gcgcagcagt atccggggag tccagcgcgt 13440

gaccgttact gacgccagac gccgcacctg cccctacgtc tacaaggccc tgggcatagt 13500

cgcgccgcgc gtcctctcga gccgcacctt ctaaaaaatg tccattctca tctcgcccag 13560

taataacacc ggttggggcc tgcgcgcgcc cagcaagatg tacggaggcg ctcgccaacg 13620

ctccacgcaa caccccgtgc gcgtgcgcgg gcacttccgc gctccctggg gcgccctcaa 13680

gggccgcgtg cggtcgcgca ccaccgtcga cgacgtgatc gaccaggtgg tggccgacgc 13740

gcgcaactac acccccgccg ccgcgcccgt ctccaccgtg gacgccgtca tcgacagcgt 13800

ggtggccgac gcgcgccggt acgcccgcgc caagagccgg cggcggcgca tcgcccggcg 13860

gcaccggagc acccccgcca tgcgcgcggc gcgagccttg ctgcgcaggg ccaggcgcac 13920

gggacgcagg gccatgctca gggcggccag acgcgcggcc tcaggcgcca gcgccggcag 13980
gacccggaga cgcgcggcca cggcggcggc agcggccatc gccagcatgt cccgcccgcg 14040
gcgagggaac gtgtactggg tgcgcgacgc cgccaccggt gtgcgcgtgc ccgtgcgcac 14100
ccgccccccct cgcacttgaa gatgttcact tcgcgatgtt gatgtgtccc agcggcgagg 14160
atgtccaagc gcaaattcaa ggaagagatg ctccaggtca tcgcgcctga gatctacggc 14220
cccgcggtgg tgaaggagga aagaaagccc cgcaaaatca agcgggtcaa aaaggacaaa 14280
aaggaagaag aaagtgatgt ggacggactg gtggagtttg tgcgcgagtt cgcccccggg 14340
cggcgcgtgc agtggcgcgg gcggaaggtg cgcccggtgc tgagaccagg cactacggtg 14400
gtcttcacgc ccggcgagcg ctccggcacc gcttccaagc gctcctacga cgaggtgtac 14460
ggggacgagg acatcctcga gcaggcggcc gagcgcctgg gcgagtttgc ttacggcaag 14520
cgcagccgct ccgcgccgaa ggaagaggcg gtgtccatcc cgctggacca cggcaacccc 14580
acgccgagcc tcaagcccgt gaccctgcag caggtgctgc cgaccgcggc gccgcgccgg 14640
gggttcaagc gcgagggcga ggatctgtac cccaccatgc agctgatggt gcccaagcgc 14700
cagaagctgg aagacgtgct ggagaccatg aaggtggacc cggacgtgca gcccgaggtc 14760
aaggtgcggc ccatcaagca ggtggccccg ggcctgggcg tgcagaccgt ggacatcaag 14820
atccccacgg agcccatgga aacgcagacc gagcccgtga aacccagcac cagcaccatg 14880
gaggtgcaga cggatccttg gatgccatcg gctactagcc gaagaccccg gcgcaagtac 14940
ggcgcggcca gcctgctgat gcccaactac gcgctgcatc cttccatcat ccccacgccg 15000
ggctaccgcg gcacgcgctt ctaccgcggt catacaagcc gccgccgcaa gaccaccacc 15060
cgccgccgcc gtcgccgcac aaccgctgct gcatctaccc ctgccgccct ggtgcggaga 15120
gtgtaccgcc gcggccgcgc gcctctgacc ctgccgcgcg cgcgctacca cccgagcatt 15180
gccatttaaa ctttcgcctg ctttgcagat caatggccct cacatgccgc ctccgcgttc 15240
ccattacggg ctaccgagga agaaaaccgc gccgtagaag gctggcgggg aacgggatgc 15300
gtcgccacca ccaccggcgg cggcgcgcca tcagcaagcg gttgggggga ggcttcctgc 15360
ccgcgctgat ccccatcatc gccgcggcga tcggggcgat ccccggcatt gcttccgtgg 15420
cggtgcaggc ctctcagcgc cactgagaca cacttggaaa catcttgtaa taaaccaatg 15480
gactctgacg ctcctggtcc tgtgatgtgt tttcgtagac agatggaaga catcaatttt 15540
tcgtccctgg ctccgcgaca cggcacgcgg ccgttcatgg gcacctggag cgacatcggc 15600
accagccaac tgaacggggg cgccttcaat tggagcagtc tctggagcgg gcttaagaat 15660
ttcgggtcca cgcttaaaac ctatggcagc aaggcgtgga acagcaccac agggcaggcg 15720
ctgagggata agctgaaaga gcagaacttc cagcagaagg tggtcgatgg cctggcctcg 15780
ggcatcaacg gggtggtgga cctggccaac caggccgtgc agcggcagat caacagccgc 15840
ctggacccgg tgccgcccgc cggctccgtg gagatgccgc aggtggagga ggagctgcct 15900
cccctggaca agcggggcga gaagcgaccc cgccccgacg cggaggagac gctgctgacg 15960

cacacggacg agccgccccc gtacgaggag gcggtgaaac tgggcctgcc caccacgcgg 16020
cccatcgcgc ctctggccac cggggtgctg aaacccgaaa gtagtaagcc cgcgaccctg 16080
gacttgcctc ctccccagcc ttcccgcccc tccacagtgg ctaagcctct gccgccggtg 16140
gccgtggccc gcgcgcgacc cgggggcacc gcccgccctc atgcgaactg gcagagcact 16200
ctgaacagca tcgtgggtct gggagtgcag agtgtgaagc gccgccgctg ctattaaacc 16260
taccgtagcg cttaacttgc ttgtctgtgt gtgtatgtat tatgtcgccg ccgctgtcgc 16320
cagaaggagg agtgaagagg cgcgtcgccg agttgcaaga tggccacccc atcgatgctg 16380
ccccagtggg cgtacatgca catcgccgga caggacgctt cggagtacct gagtccgggt 16440
ctggtgcagt tcgcccgcgc cacagacacc tacttcagtc tggggaacaa gtttaggaac 16500
cccacggtgg cgcccacgca cgatgtgacc accgaccgca gccagcggct gacgctgcgc 16560
ttcgtgcccg tggaccgcga ggacaacacc tactcgtaca aagtgcgcta cacgctggcc 16620
gtgggcgaca accgcgtgct ggacatggcc agcacctact ttgacatccg cggcgtgctg 16680
gaccggggcc ctagcttcaa accctactcc ggcaccgcct acaatgctct ggcccccaag 16740
ggagcaccca acacttgcca gtggacatac acagataagc aaaccgaaaa aacagccacg 16800
tatgggaatg cgcctgtaca aggcattgcc atcacaaaag atggtattca acttggaact 16860
gacagtgatg gaaatcctgt atatgctcaa aagacatttg aacccgaacc tcaagtgggt 16920
gatgcagaat ggcatgacac tacaggtaca gatgaaaagt atggaggcag ggcacttaag 16980
cctgacacca aaatgaagcc ttgctatggt tcttttgcca aacccactaa caaagaaggt 17040
ggacaggcaa agaacagaac aaaaactgat ggaactggcg aagagcctga tattgatatg 17100
gcatttttg acggcagaaa tgcaactaca gctggtttgg ctccagaaat tgttttgtat 17160
actgagaatg tggatctgga gactccagat acccatattg tatacaaagc aggcacagat 17220
gacagcagct cttcgattaa tttggggcag caatccatgc ccaacagacc caactacatt 17280
gggttcagag acaactttat cgggctcatg tactacaaca gcactggcaa tatgggggtg 17340
ctggccggtc aggcttctca gctgaatgct gtggttgact tgcaagacag aaacaccgaa 17400
ctgtcctacc agctcttgct tgactctctg ggcgacagaa ccctgtattt cagtatgtgg 17460
aatcaggcgg tggacagcta tgatcctgat gtgcgcatta ttgaaaacca tggtgtggaa 17520
gatgaacttc ccaactattg cttccctctg gatgctgttg gtaggacaga tacttatcag 17580
ggaattaagc ccaatggagg cgatccagcc acatgggcca aagatgacag cgccaatgat 17640
gctaatgaaa tgggcaaggg caatccattc gccatggaaa tcaacatcca agccaacctg 17700
tggaggaact tcctctacgc caacgtggcc ctgtacctac ccgattctta caagtacacg 17760
ccggccaacg tcaccctgcc caccaacacc aacacctacg attatatgaa cggccgggtg 17820
gtggcgcctt cgctggtgga ctcctacatc aacatcgggg cgcgctggtc gctggacccc 17880
atggacaacg tcaatccctt caaccaccac cgcaacgcgg gcttgcgcta ccgctccatg 17940
ctcctgggca acgggcgcta cgtgcccttc cacatccagg tgccccagaa attttcgcc 18000
atcaagagcc tcctgctcct gcccgggtcc tacacctacg agtggaactt ccgcaaggac 18060

gtcaacatga tcctgcagag ctccctcggc aacgacctgc gcacggacgg ggcctccatc 18120
tccttcacca gcatcaacct ctacgccacc ttcttcccca tggcgcacaa cacggcctcc 18180
acgctcgagg ccatgctgcg caacgacacc aacgaccagt ccttcaacga ctacctctcg 18240
gcggccaaca tgctctaccc catcccggcc aacgccacca acgtgcccat ctccatcccc 18300
tcgcgcaact gggccgcctt ccgcggctgg tccttcacgc gcctcaagac caaggagacg 18360
ccctcgctgg gctccgggtt cgacccctac ttcgtctact cgggctccat cccctacctc 18420
gacggcacct tctacctcaa ccacaccttc aagaaggtct ccatcacctt cgactcctcc 18480
gtcagctggc ccggcaacga ccggctcctg acgcccaacg agttcgaaat caagcgcacc 18540
gtcgacggcg agggctacaa cgtggcccag tgcaacatga ccaaggactg gttcctggtc 18600
cagatgctgg cccactacaa catcggctac cagggcttct acgtgcccga gggctacaag 18660
gaccgcatgt actccttctt ccgcaacttc cagcccatga gccgccaggt ggtggacgag 18720
gtcaactaca aggactacca ggccgtcacc ctggcctacc agcacaacaa ctcgggcttc 18780
gtcggctacc tcgcgcccac catgcgccag ggccagccct accccgccaa ctacccgtac 18840
ccgctcatcg gcaagagcgc cgtcaccagc gtcacccaga aaaagttcct ctgcgacagg 18900
gtcatgtggc gcatcccctt ctccagcaac ttcatgtcca tgggcgcgct caccgacctc 18960
ggccagaaca tgctctatgc caactccgcc cacgcgctag acatgaattt cgaagtcgac 19020
cccatggatg agtccaccct tctctatgtt gtcttcgaag tcttcgacgt cgtccgagtg 19080
caccagcccc accgcggcgt catcgaggcc gtctacctgc gcacccccct ctcggccggt 19140
aacgccacca cctaaattgc tacttgcatg atggctgagg ccgcgggctc cggcgagcag 19200
gagctcaggg ccatcatccg cgacctgggc tgcgggccct acttcctggg caccttcgat 19260
aagcgcttcc cgggattcat ggccccgcac aagctggcct gcgccatcgt caacacggcc 19320
ggtcgcgaga ccgggggcga gcactggctg gccttcgcct ggaacccgcg ctcgaacacc 19380
tgctacctct tcgacccctt cgggttctcg gacgagcgcc tcaagcagat ctaccagttc 19440
gagtacgagg gcctgctgcg ccgcagcgcc ctggccaccg aggaccgctg cgtcaccctg 19500
gaaaagtcca cccagaccgt gcagggtccg cgctcggccg cctgcgggct cttctgctgc 19560
atgttcctgc acgccttcgt gcactggccc gaccgcccca tggacaagaa ccccaccatg 19620
aacttgctga cgggggtgcc caacggcatg ctccagtcgc cccaggtgga acccaccctg 19680
cgccgcaacc aggaggcgct ctaccgcttc ctcaactccc actccgccta ctttcgctcc 19740
caccgcgcgc gcatcgagaa ggccaccgcc ttcgatcgca tgaacaatca agacatgtaa 19800
accgtgtgtg tatgtttaaa atatctttta ataaacagca ctttcatgtt acacatgcat 19860
ctgagatgat tatttagaaa tcgaaagggt tctgccgggt ctcggcatgg cccgcgggca 19920
gggacacgtt gcggaactgg tacttggcca gccacttgaa ctcggggatc agcagtttcg 19980
gcagcggggt gtcggggaag gagtcggtcc acagcttccg cgtcagttgc agggcgccca 20040
gcaggtcggg cgcggagatc ttgaaatcgc agttgggacc cgcgttctgc gcgcgagagt 20100

tgcggtacac ggggttgcag cactggaaca ccatcagggc cgggtgcttc acgctcgcca 20160

gcaccgtcgc gtcggtgatg ctctccacgt cgaggtcctc ggcgttggcc atcccgaagg 20220

gggtcatctt gcaggtctgc cttcccatag tgggcacgca cccgggcttg tggttgcaat 20280

cgcagtgcag ggggatcagc atcatctggg cctggtcggc gttcatcccc gggtacatgg 20340

ccttcatgaa agcctccaat tgcctgaaag cctgctgggc cttggctccc tcggtgaaga 20400

agaccccgca ggacttgcta gagaactggt tggtagcgca cccggcgtcg tgcacgcagc 20460

agcgcgcgtc gttgttggcc agctgcacca cgctgcgccc ccagcggttc tgggtgatct 20520

tggcccggtc ggggttctcc ttcagcgcgc gctgcccgtt ctcgctcgcc acatccatct 20580

cgatcatgtg ctccttctgg atcatggtgg tcccgtgcag gcaccgcagc ttgccctcgg 20640

tctcggtgca cccgtgcagc cacagcgcgc acccggtgca ctcccagttc ttgtgggcga 20700

tctgggaatg cgcgtgcacg aacccctgca ggaagcggcc catcatggtg gtcagggtct 20760

tgttgctagt gaaggtcagc gggatgccgc ggtgctcctc gttgatgtac aggtggcaga 20820

tgcggcggta cacctcgccc tgctcgggca tcagctggaa gttggctttc aggtcggtct 20880

ccacgcggta gcggtccatc agtatagtca tgatttccat acccttctcc caggccgaga 20940

cgatgggcag gctcataggg ttcttcacca tcatcttagc actagcagcc gcggccaggg 21000

ggtcgctctc atccagggtc tcaaagctcc gcttgccgtc cttctcggtg atccgcaccg 21060

gggggtagct gaagcccacg gccgccagct cctcctcggc ctgcctttcg tcctcgctgt 21120

cctggctgac gtcctgcagg accacatgct tggtcttgcg gggtttcttc ttgggcggca 21180

gcggcggcgg agatgcttgt ggcgaggggg agcgcgagtt ctcgctcacc actactatct 21240

cttcctcttc gtggtccgag gccacgcggc ggtaggtatg tctcttcggg ggcagaggcg 21300

gaggcgacgg gctctcgccg ccgcgacttg gcggatggct ggcagagccc cttccgcgat 21360

cgggggtgcg ctcccggcgg cgctctgact gacttcctcc gcggccggcc attgtgttct 21420

cctagggagg aacaacaagc atggagactc agccatcgcc aacctcgcca tctgccccca 21480

ccaccgccga cgagaagcag cagaatgaaa gcttaaccgc cccgccgccc agccccgcca 21540

cctccgacgc agccgcggtc ccagacatgc aagagatgga ggaatccatc gagattgacc 21600

tgggctatgt gacgcccgcg gagcacgagg aggagctggc agtgcgcttt caatcgtcaa 21660

gccaggaaga taaagaacag ccagagcagg aagcagaaaa cgagcagagt caggctgggc 21720

tcgagcatga cggcgactac ctccacctga gcggggagga ggacgcgctc atcaagcatc 21780

tggcccggca ggccatcatc gtcaaggatg cgctgctcga ccgcaccgag gtgcccctca 21840

gcgtggagga gctcagccgc gcctacgagc tcaacctctt ctcgccgcgc gtgccccca 21900

agcgccagcc caacggcacc tgcgagccca acccgcgcct caacttctac ccggtcttcg 21960

cggtgcccga ggccctggcc acctaccaca tctttttcaa gaaccaaaag atccccgtct 22020

cctgtcgcgc caaccgcacc cgcgccgacg ccctcttcaa cctgggcccc ggcgcccgcc 22080

tacctgatat cgcctccttg gaagaggttc ccaagatctt cgagggtctg ggcagcgacg 22140

agactcgggc cgcaaacgct ctgcaaggag aaggaggaga gcatgagcac cacagcgccc 22200

```
tggtcgagtt ggaaggcgac aacgcgcggc tggcggtgct caaacgcacg gtcgagctga    22260

cccatttcgc ctacccggct ctgaacctgc cccccaaagt catgagcgcg gtcatggacc    22320

aggtgctcat caagcgcgcg tcgcccatct ccgaggacga gggcatgcaa gactccgagg    22380

atggcaagcc cgtggtcagc gacgagcagc tggcccggtg gctgggtcct aatgctagtc    22440

cccagagttt ggaagagcgg cgcaagctca tgatggccgt ggtcctggtg accgtggagc    22500

tggagtgcct gcgccgcttc ttcgccgacg cggagaccct gcgcaaggtc gaggagaacc    22560

tgcactacct cttcaggcac gggttcgtgc gccaggcctg caagatctcc aacgtggagc    22620

tgaccaacct ggtctcctac atgggcatct tgcacgagaa ccgcctgggg cagaacgtgc    22680

tgcacaccac cctgcgcggg gaggcccgcc gcgactacat ccgcgactgc gtctacctct    22740

acctctgcca cacctggcag acgggcatgg gcgtgtggca gcagtgtctg gaggagcaga    22800

acctgaaaga gctctgcaag ctcctgcaga agaacctcaa gggtctgtgg accgggttcg    22860

acgagcggac caccgcctcg gacctggccg acctcatctt ccccgagcgc ctcaggctga    22920

cgctgcgcaa cggcctgccc gactttatga gccaaagcat gttgcaaaac tttcgctctt    22980

tcatcctcga acgctccgga atcctgcccg ccacctgctc cgcgctgccc tcggacttcg    23040

tgccgctgac cttccgcgag tgccccccgc cgctgtggag ccactgctac ctgctgcgcc    23100

tggccaacta cctggcctac cactcggacg tgatcgagga cgtcagcggc gagggcctgc    23160

ttgagtgcca ctgccgctgc aacctctgca cgccgcaccg ctccctggcc tgcaaccccc    23220

agctgctgag cgagacccag atcatcggca ccttcgagtt gcaagggccc agcgatgacg    23280

gcgagggagc caaggggggt ctgaaactca ccccggggct gtggacctcg gcctacttgc    23340

gcaagttcgt gcccgaggac taccatccct tcgagatcag gttctacgag gaccaatccc    23400

agccgcctaa ggccgagctg tcggcctgcg tcatcaccca gggggccatc ctggcccaat    23460

tgcaagccat ccagaaatcc cgccaagaat tcttgctgaa aaagggccgc ggggtctacc    23520

tcgaccccca gaccggtgag gagctcaacc ccggcttccc ccagg atg ccc cga gga    23577
                                                  Met Pro Arg Gly
                                                  1

aac aag aag ctg aaa gtg gag ctg ccg ccc gtg gag gat ttg gag gaa      23625
Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val Glu Asp Leu Glu Glu
5                   10                  15                  20

gac tgg gag aac agc agt cag gca gag gag gag atg gag gaa gac tgg      23673
Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Glu Met Glu Glu Asp Trp
                25                  30                  35

gac agc act cag gca gag gag gac agc ctg caa gac agt ctg gag gaa      23721
Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu Glu Glu
            40                  45                  50

gac gag gag gag gca gag gtg gaa gaa gca gcc gcc gcc aga ccg tcg      23769
Asp Glu Glu Glu Ala Glu Val Glu Glu Ala Ala Ala Ala Arg Pro Ser
        55                  60                  65

tcc tcg gcg ggg gag aaa gca agc agc acg gat acc atc tcc gct ccg      23817
Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr Asp Thr Ile Ser Ala Pro
    70                  75                  80
```

```
ggt cgg ggt ccc gct cgg ccc cac agt aga tgg gac gag acc ggg cga      23865
Gly Arg Gly Pro Ala Arg Pro His Ser Arg Trp Asp Glu Thr Gly Arg
85                  90                  95                  100

ttc ccg aac ccc acc atc cag acc ggt aag aag gag cgg cag gga tac      23913
Phe Pro Asn Pro Thr Ile Gln Thr Gly Lys Lys Glu Arg Gln Gly Tyr
                105                 110                 115

aag tcc tgg cgg ggg cac aaa aac gcc atc gtc tcc tgc ttg cag gcc      23961
Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser Cys Leu Gln Ala
            120                 125                 130

tgc ggg ggc aac atc tcc ttc acc agg cgc tac ctg ctc ttc cac cgc      24009
Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu Leu Phe His Arg
        135                 140                 145

ggg gtg aac ttc ccc cgc aac atc ttg cat tac tac cgt cac ctc cac      24057
Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr Arg His Leu His
    150                 155                 160

agc ccc tac tac ttc caa gaa gag gca gca gca gaa aaa gac cag cag      24105
Ser Pro Tyr Tyr Phe Gln Glu Glu Ala Ala Ala Glu Lys Asp Gln Gln
165                 170                 175                 180

aaa acc agc agc tagaaaatcc acagcggcag caggtggact gaggatcgcg          24157
Lys Thr Ser Ser

gcgaacgagc cggcgcagac ccgggagctg aggaaccgga tctttcccac cctctatgcc    24217

atcttccagc agagtcgggg gcaggagcag gaactgaaag tcaagaaccg ttctctgcgc    24277

tcgctcaccc gcagttgtct gtatcacaag agcgaagacc aacttcagcg cactctcgag    24337

gacgccgagg ctctcttcaa caagtactgc gcgctcactc ttaaagagta gcccgcgccc    24397

gcccagtcgc agaaaaaggc gggaattacg tcacctgtgc ccttcgccct agccgcctcc    24457

acccatcatg agcaaagaga ttcccacgcc ttacatgtgg agctaccagc cccagatggg    24517

cctggccgcc ggcgccgccc aggactactc cacccgcatg aattggctca gcgccgggcc    24577

cgcgatgatc tcacgggtga atgacatccg cgcccaccga aaccagatac tcctagaaca    24637

gtcagcgctc accgccacgc cccgcaatca cctcaatccg cgtaattggc ccgccgccct    24697

ggtgtaccag gaaattcccc agcccacgac cgtactactt ccgcgagacg cccaggccga    24757

agtccagctg actaactcag gtgtccagct ggcgggcggc gccaccctgt gtcgtcaccg    24817

ccccgctcag ggtataaagc ggctggtgat ccggggcaga ggcacacagc tcaacgacga    24877

ggtggtgagc tcttcgctgg gtctgcgacc tgacggagtc ttccaaatcg ccggatcggg    24937

gagatcttcc ttcacgcctc gtcaggcggt cctgactttg gagagttcgt cctcgcagcc    24997

ccgctcgggc ggcatcggca ctctccagtt cgtggaggag ttcactccct cggtctactt    25057

caaccccttc tccggctccc ccggccacta cccggacgag ttcatcccga actttgacgc    25117

catcagcgag tcggtggacg gctacgattg aatgtcccat ggtggcgcgg ctgacctagc    25177

tcggcttcga cacctggacc actgccgccg ctttcgctgc ttcgctcggg acctcgccga    25237

gttcacctac ttcgagctgc ccgaggagca tcctcagggc ccggcccacg gagtgcggat    25297

cgtcgtcgaa gggggcctag actcccacct gcttcggatc ttcagccagc gcccgatcct    25357

ggtcgagcgc caacagggca acaccctcct gaccctctac tgcatctgcg accaccccgg    25417
```

```
cctgc atg aaa gtc ttt gtt gtc tgc tgt gta ctg agt ata ata aaa gct    25467
      Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala
      185                 190                 195

gag atc agc gac tac tcc gga ctc aac tgt ggt gtt tct gca tcc atc      25515
Glu Ile Ser Asp Tyr Ser Gly Leu Asn Cys Gly Val Ser Ala Ser Ile
200                 205                 210                 215

aac cag tct ctg acc ttc acc ggg aac gag acc gag ctc cag ctc cag      25563
Asn Gln Ser Leu Thr Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln
                220                 225                 230

tgt aag ccc cac aag aag tac ctc acc tgg ctg tac cag ggc tcc ccg      25611
Cys Lys Pro His Lys Lys Tyr Leu Thr Trp Leu Tyr Gln Gly Ser Pro
            235                 240                 245

atc gcc gtt gtt aac cac tgc gac gac gac gga gtc ctg ctg aac ggc      25659
Ile Ala Val Val Asn His Cys Asp Asp Asp Gly Val Leu Leu Asn Gly
        250                 255                 260

ccc gcc aac ctt act ttt tcc acc cgc aga agc aag cta ctg ctc ttc      25707
Pro Ala Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Leu Leu Phe
    265                 270                 275

aga ccc ttc ctc ccc ggg atc tat cag tgc atc tcg gga ccc tgc cat      25755
Arg Pro Phe Leu Pro Gly Ile Tyr Gln Cys Ile Ser Gly Pro Cys His
280                 285                 290                 295

cac acc ttc cac ctg atc ccg aat acc acc tct tcc cca gca ccg ctc      25803
His Thr Phe His Leu Ile Pro Asn Thr Thr Ser Ser Pro Ala Pro Leu
                300                 305                 310

ccc act aac aac caa act aac cac caa cgc cac cgt cga gac ctt tcc      25851
Pro Thr Asn Asn Gln Thr Asn His Gln Arg His Arg Arg Asp Leu Ser
            315                 320                 325

tct gat tct aat acc act acc gga ggt gag ctc cga ggt act aag aag      25899
Ser Asp Ser Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Thr Lys Lys
        330                 335                 340

tcc tca cct ggg att tat tac ggc ccc tgg gag gtg gtg ggg tta ata      25947
Ser Ser Pro Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile
    345                 350                 355

gct tta ggc tta gta gcg ggt ggg ctt ttg gct ctc tgc tac cta tac      25995
Ala Leu Gly Leu Val Ala Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr
360                 365                 370                 375

ctc cct tgc tgt tcc tac tta gtg gtg ctt tgt tgc tgg ttt aag aaa      26043
Leu Pro Cys Cys Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys
                380                 385                 390

tgg gga aga tca ccc tagtgtgcgg tgtgctggtg acggtggtgc tttcgattct      26098
Trp Gly Arg Ser Pro
            395

gggaggggga agcgcggctg tagtgacgga gaagaaggcc gatccctgct tgactttcaa    26158

tcccgataaa tgccggctga gttttcagcc agatggcaat cggtgcacgg tgctgatcaa    26218

gtgcggatgg gaatgcgaga gcgtggcgat ccagtataaa aacaagacgc ggaacaatac    26278

tctcgcgtcc acatggcagc ccggggaccc cgagtggtac accgtctctg tccctggtgc    26338

tgacggctcc ctccacacgg tgaacaacac tttcattttt gagcacatgt gcgaaaccgc    26398

catgttcatg agcaagcagt acggtatgtg gcccccacga aaagagaata tcgtggtctt    26458
```

ctccatcgct tacagcgcgt gcacggtgct aatcaccgcg atcgtgtgcc tgagcattca 26518

catgctcatc gctattcgcc ccagaaataa tgccgagaaa gagaaacagc cataacacac 26578

ttttttcaca caccttgttt tttacagaca atgcgtctgt taatttttgt tatcattaca 26638

ctcagcttta actatgccca tggctatgca aatatacaaa aaaccctcta tgtaggctct 26698

gactctacat tagaaggtac tcaatctcaa gccagggttt catggtattt ttataaaggc 26758

tctgatgacc caattactct ttgcaaaggt gatcaggggc gcataacaaa gccacctatc 26818

acatttagct gcaccagaac aaacctcacg cttttatcca ttacaaaaga atatgctggc 26878

acttattaca gcacaaattt tcatcgtggg caagataaat attatactgt taaggtagaa 26938

aaccctacca cccctagaac aactacaaag cccaccacaa ctaagaagcc cactacacct 26998

aagaagccta ccacacccaa aaccactaag acaacaactg ctaagaccac taccacaaag 27058

ccaaccacaa ccagcaccac acttgctata actacacaca cacacactga gctgacctca 27118

caggcaacta ctgaaaatga tttggttgcc ctgttgcaaa agggggagaa cagtagcagc 27178

agtcctctgc ctactacccc cagtgaggaa atacccaagt ccatggttgg cattatcgct 27238

gctgtagtgg tgtgtatgct gattatcatc ttgtgcatga tgtactatgc ctgctactac 27298

agaaaacaca ggctgaacaa caaactggac cccttactga gtgttgattt ttaatttttt 27358

agaaccatga agatcctaag ccttttttgtt ttttctataa ttattacctc tgctatttgt 27418

gaatcagtgg ataaggacgt tactgtcacc actggctcta attatacact aaaagggcct 27478

tcctcaggta tgctttcgtg gtattgttat tttggaaatg atgataaaca gacagagcta 27538

tgtaactttc agaacggcaa aaccaaaaat tctaaaatag ataactatca atgccagggt 27598

actaatttag tactgatgaa tatcacgaaa gcatatgctg gcagttattc ctgtcctgga 27658

caaaacaccg aggaaatgat tttttacaaa ttaattgtag ttgaccctac tactccagca 27718

ccacccacca caaccaaggc acataccaca gacacacagg aaaccactcc agaggcagaa 27778

gtagcagagt tagcaaagca gattcatgaa gattcatttg ttgccaatac ccccacacac 27838

cccggaccgc aatgtccagg gccattagtc agcggcattg tcggtgtgct ttgcgggtta 27898

gcagttataa tcatctgcat gttcattttt gcttgctgct acagaaggct tcaccgacaa 27958

aaatcagacc cactgctgaa cctctatgtt taatttttga ttttccagag ccatgaaggc 28018

acttagcact ttagtatttt tgtccttgat tggcattgtt ttcagtgctg ggtttttgaa 28078

aaatcttacc attattgaag gtgataatgc aacactggta ggaatcagcg gtcagaatgt 28138

tagttggcta aaatatcatc tagatgggtg gaaacctatt tgcacctgga atgtcagtgt 28198

gtacacatgc catggtgtta acctcaccat taccaatgcc acccaagatc agaatggcag 28258

gtttaagggt cagagtttca ctagcaacaa tgggtatgaa acccataaca tgttcatcta 28318

tgatgtcact gtcatatcaa ataagactac acctaccaca cagacaccca ctacacatag 28378

ctcaactcat gccatgcaga ccactcagac aaccacatac actacatcta ctgagtccac 28438

caccaccact acagcagagg tatccagcac agcgcctcag ccccaggcat tggctttgat 28498

ggctcagcct agcagcatga ctgctaaaac caatgagcag actactgaat ttttgtccac 28558

```
tattcagagc agcaccacag ctacctcgag tgccttctct agcaccgcca atctcacctc    28618

gctttcctct acgccaatca gtaacgctac tacctccccc gctcctcttc ccactcctct    28678

gaagcaatcc gagtctagca cgcagctgca gatcaccctg ctcattgtga tcggggtggt    28738

catcctggca gtgctgctct actttatctt ctgccgccgc atccccaacg cgaaaccggc    28798

ctacaagccc attgttatcg ggacgccgga gccgcttcag gtggagggag gtctaaggaa    28858

tcttctcttc tcttttacag tatggtgatt tgaactatga ttcctagaca tttcattatc    28918

acttctctaa tctgtgtgct ccaagtctgt gccaccctcg ctctcgtggc taacgcgagt    28978

ccagactgca ttggagcgtt cgcctcctac gtgctctttg ccttcatcac ctgcatctgc    29038

tgctgtagca tagtctgcct gcttatcacc ttcttccagt tcgttgactg ggtctttgtg    29098

cgcatcgcct acctgcgcca ccacccccag taccgcgacc agagagtggc gcaactgttg    29158

agactcatct gatgataagc atgcgggctc tgctactact tctcgcgctt ctgctagctc    29218

ccctcgccgc ccccctatcc ctcaaatccc ccacccagtc ccctgaagag gttcgaaaat    29278

gtaaattcca agaaccctgg aaattccttt catgctacaa actcaaatca gaaatgcacc    29338

ccagctggat catgatcgtt ggaatcgtaa acatccttgc ctgtaccctc ttctcctttg    29398

tgatttaccc ccgctttgac tttgggtgga acgcacccga ggcgctctgg ctcccgcctg    29458

atcccgacac accaccacag cagcagcaaa atcaggcaca ggcacatgca ccaccacagc    29518

ctaggccaca atacatgccc atcttagact atgaggccga gccacagcga gccatgcttc    29578

ctgctattag ttacttcaat ctaaccggcg gag atg act gac ccc atg gcc aac    29632
                                      Met Thr Asp Pro Met Ala Asn
                                                      400

aac acc gtc aac gac ctc ctg gac atg gac ggc cgc gcc tcg gag cag      29680
Asn Thr Val Asn Asp Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln
    405                 410                 415

cga ctc gcc caa ctc cgc atc cgc cag cag cag gag aga gcc gtc aag      29728
Arg Leu Ala Gln Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys
420                 425                 430                 435

gag ctg cag gac gcg gtg gcc atc cac cag tgc aag aga ggc atc ttc      29776
Glu Leu Gln Asp Ala Val Ala Ile His Gln Cys Lys Arg Gly Ile Phe
                440                 445                 450

tgc ctg gtg aag cag gcc aag atc tcc ttc gag gtc acg tcc acc gac      29824
Cys Leu Val Lys Gln Ala Lys Ile Ser Phe Glu Val Thr Ser Thr Asp
            455                 460                 465

cat cgc ctc tcc tac gag ctc ctg cag cag cgc cag aag ttc acc tgc      29872
His Arg Leu Ser Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe Thr Cys
        470                 475                 480

ctg gtc gga gtc aac ccc atc gtc atc acc cag cag tct ggc gat acc      29920
Leu Val Gly Val Asn Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr
    485                 490                 495

aag ggt tgc atc cac tgc tcc tgc gac tcc ccc gag tgc gtt cac acc      29968
Lys Gly Cys Ile His Cys Ser Cys Asp Ser Pro Glu Cys Val His Thr
500                 505                 510                 515

ctg atc aag acc ctc tgc ggc ctc cgc gac ctc ctc ccc atg aac          30013
Leu Ile Lys Thr Leu Cys Gly Leu Arg Asp Leu Leu Pro Met Asn
```

taatcaacta accccctacc cctttaccct ccagtaaaaa taaagattaa aaatgattga 30073

attgatcaat aaagaatcac ttacttgaaa tctgaaacca ggtctctgtc catgttttct 30133

gtcagcagca cttcactccc ctcttcccaa ctctggtact gcaggccccg gcgggctgca 30193

aacttcctcc acactctgaa ggggatgtca aattcctcct gtccctcaat cttcattttt 30253

atcttctatc agatgtccaa aaagcgcgcg cgggtggatg atggcttcga ccccgtgtac 30313

ccctacgatg cagacaacgc accgactgtg cccttcatca accctccctt cgtctcttca 30373

gatggattcc aagaaaagcc cctgggggtg ttgtccctgc gactggccga ccccgtcacc 30433

accaagaatg gggctgtcac cctcaagctg ggggaggggg tggacctcga cgactcggga 30493

aaactcatct ccaaaaatgc caccaaggcc actgcccctc tcagtatttc caacggcacc 30553

atttccctta acatggccgc ccctttttac aacaacaatg gaacgttaag tctcaatgtt 30613

tctacaccat tagcagtatt tcccactttt aacactttag gtatcagtct tggaaacggt 30673

cttcaaactt ctaataagtt gctgactgta cagttaactc atcctcttac attcagctca 30733

aatagcatca cagtaaaaac agacaaagga ctctatatta attctagtgg aaacagaggg 30793

cttgaggcta acataagcct aaaaagagga ctgatttttg atggtaatgc tattgcaaca 30853

taccttggaa gtggtttaga ctatggatcc tatgatagcg atgggaaaac aagacccatc 30913

atcaccaaaa ttggagcagg tttgaatttt gatgctaata atgccatggc tgtgaagcta 30973

ggcacaggtt taagttttga ctctgccggt gccttaacag ctggaaacaa agaggatgac 31033

aagctaacac tttggactac acctgaccca agccctaatt gtcaattact ttcagacaga 31093

gatgccaaat ttaccctatg tcttacaaaa tgcggtagtc aaatactagg cactgttgca 31153

gtagctgctg ttactgtagg ttcagcacta aatccaatta atgacacagt aaaaagcgcc 31213

atagtattcc ttagatttga ctctgacggt gtgctcatgt caaactcatc aatggtaggt 31273

gattactgga actttaggga aggacagacc acccaaagtg tggcctatac aaatgctgtg 31333

ggattcatgc ccaatctagg tgcatatcct aaaacccaaa gcaaaacacc aaaaaatagt 31393

atagtaagtc aggtatattt aaatggagaa actactatgc caatgacact gacaataact 31453

ttcaatggca ctgatgaaaa agacacaaca cctgtgagca cttactccat gacttttaca 31513

tggcagtgga ctggagacta taaggacaag aatattacct ttgctaccaa ctcctttact 31573

ttctcctaca tggcccaaga ataaaccctg catgccaacc ccattgttcc caccactatg 31633

gaaaactctg aagcagaaaa aaataaagtt caagtgtttt attgattcaa cagttttcac 31693

agaattcgag tagttatttt ccctcctccc tcccaactca tggaatacac caccctctcc 31753

ccacgcacag ccttaaacat ctgaatgcca ttggtaatgg acatggtttt ggtctccaca 31813

ttccacacag tttcagagcg agccagtctc gggtcggtca gggagatgaa accctccggg 31873

cactcctgca tctgcacctc aaagttcagt agctgagggc tgtcctcggt ggtcgggatc 31933

acagttatct ggaagaagag cggtgagagt cataatccgc gaacgggatc gggcggttgt 31993

ggcgcatcag gccccgcagc agtcgctgtc tgcgccgctc cgtcaagctg ctgctcaagg 32053

```
ggtctgggtc cagggactcc ctgcgcatga tgccgatggc cctgagcatc agtcgcctgg    32113

tgcggcgggc gcagcagcgg atgcggatct cactcaggtc ggagcagtac gtgcagcaca    32173

gcactaccaa gttgttcaac agtccatagt tcaacgtgct ccagccaaaa ctcatctgtg    32233

gaactatgct gcccacatgt ccatcgtacc agatcctgat gtaaatcagg tggcgccccc    32293

tccagaacac actgcccatg tacatgatct ccttgggcat gtgcaggttc accacctccc    32353

ggtaccacat cacccgctgg ttgaacatgc agccctggat aatcctgcgg aaccagatgg    32413

ccagcaccgc cccgcccgcc atgcagcgca gggaccccgg gtcctggcaa tggcagtgga    32473

gcacccaccg ctcacggccg tggattaact gggagctgaa caagtctatg ttggcacagc    32533

acaggcacac gctcatgcat gtcttcagca ctctcagttc ctcgggggtc aggaccatgt    32593

cccagggcac ggggaactct tgcaggacag tgaacccggc agaacagggc agccctcgca    32653

cacaacttac attgtgcatg gacagggtat cgcaatcagg cagcaccgga tgatcctcca    32713

ccagagaagc gcgggtctcg gtctcctca cag cga ggt aag ggg gcc ggc ggt      32766
                               Gln Arg Gly Lys Gly Ala Gly Gly
                                                   535

tgg tac gga tga tgg cgg gat gac gct aat cgt gtt ctg gat cgt gtc      32814
Trp Tyr Gly     Trp Arg Asp Asp Ala Asn Arg Val Leu Asp Arg Val
    540                     545                 550

atg atg gag ctg ttt cct gac att ttc gta ctt cac gaa gca gaa cct      32862
Met Met Glu Leu Phe Pro Asp Ile Phe Val Leu His Glu Ala Glu Pro
    555                 560                 565

ggt acg ggc act gca cac cgc tcg ccg gcg acg gtc tcg gcg ctt cga      32910
Gly Thr Gly Thr Ala His Arg Ser Pro Ala Thr Val Ser Ala Leu Arg
570                 575                 580                 585

gcg ctc ggt gtt gaa gtt ata gaa cag cca ctc cct cag agc gtg cag      32958
Ala Leu Gly Val Glu Val Ile Glu Gln Pro Leu Pro Gln Ser Val Gln
                590                 595                 600

tat ctc ctg agc ctc ttg ggt gat gaa aat ccc atc cgc tct gat ggc      33006
Tyr Leu Leu Ser Leu Leu Gly Asp Glu Asn Pro Ile Arg Ser Asp Gly
            605                 610                 615

tct gat cac atc ggc cac ggt gga atg ggc cag acc cag cca gat gat      33054
Ser Asp His Ile Gly His Gly Gly Met Gly Gln Thr Gln Pro Asp Asp
        620                 625                 630

gca att ttg ttg ggt ttc ggt gac gga ggg aga ggg aag aac agg aag      33102
Ala Ile Leu Leu Gly Phe Gly Asp Gly Gly Arg Gly Lys Asn Arg Lys
    635                 640                 645

aac cat gattaacttt attccaaacg gtctcggagc acttcaaaat gcaggtcccg       33158
Asn His
650

gaggtggcac ctctcgcccc cactgtgttg gtggaaaata acagccaggt caaaggtgac    33218

acggttctcg agatgttcca cggtggcttc cagcaaagcc tccacgcgca catccagaaa    33278

caagaggaca gcgaaagcgg gagcgttttc taattcctca atcatcatat tacactcctg    33338

caccatcccc agataatttt catttttcca gccttgaatg attcgtatta gttcctgagg    33398

taaatccaag ccagccatga taaaaagctc gcgcagagcg ccctccaccg gcattcttaa    33458
```

```
gcacaccctc a taa ttc caa gag att ctg ctc ctg gtt cac ctg cag cag     33508
                 Phe Gln Glu Ile Leu Leu Leu Val His Leu Gln Gln
                             655                 660

att aac aat ggg aat atc aaa atc tct gcc gcg atc cct aag ctc ctc     33556
Ile Asn Asn Gly Asn Ile Lys Ile Ser Ala Ala Ile Pro Lys Leu Leu
    665                 670                 675

cct caa caa taa ctg tat gta atc ttt cat atc atc tcc gaa att ttt     33604
Pro Gln Gln     Leu Tyr Val Ile Phe His Ile Ile Ser Glu Ile Phe
680                 685                 690

agc cat agg gcc gcc agg aat aag agc agg gca agc cac att aca gat     33652
Ser His Arg Ala Ala Arg Asn Lys Ser Arg Ala Ser His Ile Thr Asp
695                 700                 705                 710

aaa gcg aag tcc tcc cca gtg agc att gcc aaa tgt aag att gaa ata     33700
Lys Ala Lys Ser Ser Pro Val Ser Ile Ala Lys Cys Lys Ile Glu Ile
                715                 720                 725

agc atg ctg gct aga ccc tgt gat atc ttc cag ata act gga cag aaa     33748
Ser Met Leu Ala Arg Pro Cys Asp Ile Phe Gln Ile Thr Gly Gln Lys
            730                 735                 740

atc agg caa gca att ttt aag aaa atc aac aaa aga aaa gtc gtc cag     33796
Ile Arg Gln Ala Ile Phe Lys Lys Ile Asn Lys Arg Lys Val Val Gln
        745                 750                 755

gtg cag gtt tag agc ctc agg aac aac gat gga ata agt gca agg agt     33844
Val Gln Val     Ser Leu Arg Asn Asn Asp Gly Ile Ser Ala Arg Ser
    760                 765                 770

gcg ttc cag cat ggttagtgtt tttttggtga tctgtagaac aaaaaataaa         33896
Ala Phe Gln His
    775

catgcaatat taaaccatgc tagcctggcg aacaggtggg taaatcactc tttccagcac    33956

caggcaggct acggggtctc cggcgcgacc ctcgtagaag ctgtcgccat gattgaaaag    34016

catcaccgag agaccttccc ggtggccggc atggatgatt cgagaagaag catacactcc    34076

gggaacattg gcatccgtga gtgaaaaaaa gcgacctata aagcctcggg gcactacaat    34136

gctcaatctc aattccagca aagccacccc atgcggatgg agcacaaaat tggcaggtgc    34196

gtaaaaaatg taattactcc cctcctgcac aggcagcaaa gcccccgctc cctccagaaa    34256

cacatacaaa gcctcagcgt ccatagctta ccgagcacgg caggcgcaag agtcagagaa    34316

aaggctgagc tctaacctga ctgcccgctc ctgtgctcaa tatatagccc taacctacac    34376

tgacgtaaag gccaaagtct aaaaataccc gccaaaatga cacacacgcc cagcacacgc    34436

ccagaaaccg gtgacacact caaaaaaata cgtgcgcttc ctcaaacgcc caaaccggcg    34496

tcatttccgg gttcccacgc tacgtcaccg ctcagcgact ttcaaattcc gtcgaccgtt    34556

aaaaacgtca ctcgccccgc ccctaacggt cgcccttctc tcggccaatc accttcctcc    34616

cttcccaaat tcaaacgcct catttgcata ttaacgcgca caaaaagttt gaggtatatt    34676

attgatgatg atcgtttaaa ctatgcggtg tgaaataccg cacagatgcg taaggagaaa    34736

ataccgcatc aggcgctctt ccgcttcctc gctcactgac tcgctgcgct cggtcgttcg    34796

gctgcggcga gcggtatcag ctcactcaaa ggcggtaata cggttatcca cagaatcagg    34856

ggataacgca ggaaagaaca tgtgagcaaa aggccagcaa aaggccagga accgtaaaaa    34916
```

ggccgcgttg ctggcgtttt tccataggct ccgccccccct gacgagcatc acaaaaatcg 34976

acgctcaagt cagaggtggc gaaacccgac aggactataa agataccagg cgtttccccc 35036

tggaagctcc ctcgtgcgct ctcctgttcc gaccctgccg cttaccggat acctgtccgc 35096

ctttctccct tcgggaagcg tggcgctttc tcatagctca cgctgtaggt atctcagttc 35156

ggtgtaggtc gttcgctcca agctgggctg tgtgcacgaa ccccccgttc agcccgaccg 35216

ctgcgcctta tccggtaact atcgtcttga gtccaacccg gtaagacacg acttatcgcc 35276

actggcagca gccactggta acaggattag cagagcgagg tatgtaggcg gtgctacaga 35336

gttcttgaag tggtggccta actacggcta cactagaagg acagtatttg gtatctgcgc 35396

tctgctgaag ccagttacct tcggaaaaag agttggtagc tcttgatccg gcaaacaaac 35456

caccgctggt agcggtggtt tttttgtttg caagcagcag attacgcgca gaaaaaaagg 35516

atctcaagaa gatcctttga tcttttctac ggggtctgac gctcagtgga acgaaaactc 35576

acgttaaggg attttggtca tgagattatc aaaaaggatc ttcacctaga tccttttaaa 35636

ttaaaaatga agttttaaat caatctaaag tatatatgag taaacttggt ctgacagtta 35696

ccaatgctta atcagtgagg cacctatctc agcgatctgt ctatttcgtt catccatagt 35756

tgcctgactc cccgtcgtgt agataactac gatacgggag ggcttaccat ctggccccag 35816

tgctgcaatg ataccgcgag acccacgctc accggctcca gatttatcag caataaacca 35876

gccagccgga agggccgagc gcagaagtgg tcctgcaact ttatccgcct ccatccagtc 35936

tattaattgt tgccgggaag ctagagtaag tagttcgcca gttaatagtt tgcgcaacgt 35996

tgttgccatt gctgcaggca tcgtggtgtc acgctcgtcg tttggtatgg cttcattcag 36056

ctccggttcc caacgatcaa ggcgagttac atgatccccc atgttgtgca aaaaagcggt 36116

tagctccttc ggtcctccga tcgttgtcag aagtaagttg gccgcagtgt tatcactcat 36176

ggttatggca gcactgcata attctcttac tgtcatgcca tccgtaagat gcttttctgt 36236

gactggtgag tactcaacca agtcattctg agaatagtgt atgcggcgac cgagttgctc 36296

ttgcccggcg tcaacacggg ataataccgc gccacatagc agaactttaa aagtgctcat 36356

cattggaaaa cgttcttcgg ggcgaaaact ctcaaggatc ttaccgctgt tgagatccag 36416

ttcgatgtaa cccactcgtg cacccaactg atcttcagca tcttttactt tcaccagcgt 36476

ttctgggtga gcaaaaacag gaaggcaaaa tgccgcaaaa aagggaataa gggcgacacg 36536

gaaatgttga atactcatac tcttcctttt tcaatattat tgaagcattt atcagggtta 36596

ttgtctcatg agcggataca tatttgaatg tatttagaaa aataaacaaa taggggttcc 36656

gcgcacattt ccccgaaaag tgccacctga cgtctaagaa accattatta tcatgacatt 36716

aacctataaa aataggcgta tcacgaggcc ctttcgtctt caagaattgt ttaaactacc 36776

atcat 36781

<210> 328
<211> 184
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 328

Met Pro Arg Gly Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val Glu
1 5 10 15

Asp Leu Glu Glu Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Glu Met
20 25 30

Glu Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp
35 40 45

Ser Leu Glu Glu Asp Glu Glu Glu Ala Glu Val Glu Glu Ala Ala Ala
50 55 60

Ala Arg Pro Ser Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr Asp Thr
65 70 75 80

Ile Ser Ala Pro Gly Arg Gly Pro Ala Arg Pro His Ser Arg Trp Asp
85 90 95

Glu Thr Gly Arg Phe Pro Asn Pro Thr Ile Gln Thr Gly Lys Lys Glu
100 105 110

Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser
115 120 125

Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu
130 135 140

Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr
145 150 155 160

Arg His Leu His Ser Pro Tyr Tyr Phe Gln Glu Glu Ala Ala Ala Glu
165 170 175

Lys Asp Gln Gln Lys Thr Ser Ser
180

<210> 329
<211> 212
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 329

Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1 5 10 15

```
Ile Ser Asp Tyr Ser Gly Leu Asn Cys Gly Val Ser Ala Ser Ile Asn
            20                  25                  30

Gln Ser Leu Thr Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys
        35                  40                  45

Lys Pro His Lys Lys Tyr Leu Thr Trp Leu Tyr Gln Gly Ser Pro Ile
    50                  55                  60

Ala Val Val Asn His Cys Asp Asp Asp Gly Val Leu Leu Asn Gly Pro
65                  70                  75                  80

Ala Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Leu Leu Phe Arg
                85                  90                  95

Pro Phe Leu Pro Gly Ile Tyr Gln Cys Ile Ser Gly Pro Cys His His
            100                 105                 110

Thr Phe His Leu Ile Pro Asn Thr Thr Ser Ser Pro Ala Pro Leu Pro
        115                 120                 125

Thr Asn Asn Gln Thr Asn His Gln Arg His Arg Arg Asp Leu Ser Ser
    130                 135                 140

Asp Ser Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Thr Lys Lys Ser
145                 150                 155                 160

Ser Pro Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala
                165                 170                 175

Leu Gly Leu Val Ala Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu
            180                 185                 190

Pro Cys Cys Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp
        195                 200                 205

Gly Arg Ser Pro
    210


<210>  330
<211>  134
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  330

Met Thr Asp Pro Met Ala Asn Asn Thr Val Asn Asp Leu Leu Asp Met
1               5                   10                  15

Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg Gln
            20                  25                  30
```

```
Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Ala Val Ala Ile His
        35                  40                  45

Gln Cys Lys Arg Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile Ser
    50                  55                  60

Phe Glu Val Thr Ser Thr Asp His Arg Leu Ser Tyr Glu Leu Leu Gln
65                  70                  75                  80

Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val Ile
                85                  90                  95

Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys Asp
            100                 105                 110

Ser Pro Glu Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu Arg
        115                 120                 125

Asp Leu Leu Pro Met Asn
    130
```

<210> 331
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 331

```
Gln Arg Gly Lys Gly Ala Gly Gly Trp Tyr Gly
1               5                   10
```

<210> 332
<211> 110
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 332

```
Trp Arg Asp Asp Ala Asn Arg Val Leu Asp Arg Val Met Met Glu Leu
1               5                   10                  15

Phe Pro Asp Ile Phe Val Leu His Glu Ala Glu Pro Gly Thr Gly Thr
            20                  25                  30

Ala His Arg Ser Pro Ala Thr Val Ser Ala Leu Arg Ala Leu Gly Val
        35                  40                  45

Glu Val Ile Glu Gln Pro Leu Pro Gln Ser Val Gln Tyr Leu Leu Ser
    50                  55                  60
```

Leu Leu Gly Asp Glu Asn Pro Ile Arg Ser Asp Gly Ser Asp His Ile
65 70 75 80

Gly His Gly Gly Met Gly Gln Thr Gln Pro Asp Asp Ala Ile Leu Leu
85 90 95

Gly Phe Gly Asp Gly Gly Arg Gly Lys Asn Arg Lys Asn His
100 105 110

<210> 333
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 333

Phe Gln Glu Ile Leu Leu Leu Val His Leu Gln Gln Ile Asn Asn Gly
1 5 10 15

Asn Ile Lys Ile Ser Ala Ala Ile Pro Lys Leu Leu Pro Gln Gln
20 25 30

<210> 334
<211> 79
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 334

Leu Tyr Val Ile Phe His Ile Ile Ser Glu Ile Phe Ser His Arg Ala
1 5 10 15

Ala Arg Asn Lys Ser Arg Ala Ser His Ile Thr Asp Lys Ala Lys Ser
20 25 30

Ser Pro Val Ser Ile Ala Lys Cys Lys Ile Glu Ile Ser Met Leu Ala
35 40 45

Arg Pro Cys Asp Ile Phe Gln Ile Thr Gly Gln Lys Ile Arg Gln Ala
50 55 60

Ile Phe Lys Lys Ile Asn Lys Arg Lys Val Val Gln Val Gln Val
65 70 75

<210> 335
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 335

Ser Leu Arg Asn Asn Asp Gly Ile Ser Ala Arg Ser Ala Phe Gln His
1 5 10 15

<210> 336
<211> 38700
<212> DNA
<213> Artificial Sequence

<220>
<223> p2878 - E1 deleted molecular clone with HIVgagshort insertion, based on Simian Adenovirus A1337

<220>
<221> repeat_region
<222> (1)..(123)
<223> ITR

<220>
<221> enhancer
<222> (840)..(1100)
<223> Enhancer

<220>
<221> misc_feature
<222> (1101)..(1328)
<223> CMV\promoter

<220>
<221> TATA_signal
<222> (1302)..(1305)
<223> TATA

<220>
<221> CDS
<222> (1424)..(2515)
<223> Gag\short

<220>
<221> polyA_signal
<222> (2668)..(2870)
<223> BGH-PolyA (bovine growth hormone (bGH) polyadenylation signal)

<220>
<221> misc_feature
<222> (2957)..(2957)
<223> PI-Sce\I\recognition\site

<220>
<221> misc_feature
<222> (3949)..(5570)
<223> IVa2 complement (3949..5279, 5559..5570)

<220>
<221> misc_feature
<222> (5559)..(13810)
<223> pol complement (5559..8624, 13802..13810)

<220>
<221> misc_feature
<222> (8432)..(13810)
<223> pTP complement (8432..10360, 13802..13810)

<220>
<221> CDS
<222> (10797)..(11978)
<223> 52K

<220>
<221> CDS
<222> (12005)..(13771)
<223> pIIIa

<220>
<221> CDS
<222> (13855)..(15450)
<223> penton

<220>
<221> CDS
<222> (15457)..(16035)
<223> pVII

<220>
<221> CDS
<222> (16080)..(17105)
<223> V

<220>
<221> CDS
<222> (17132)..(17362)
<223> pX

<220>
<221> CDS
<222> (17397)..(18173)
<223> pVI

<220>
<221> CDS
<222> (18279)..(21071)
<223> hexon

<220>
<221> CDS
<222> (21087)..(21716)
<223> protease

<220>
<221> CDS
<222> (21796)..(23331)
<223> DBP

<220>
<221> CDS
<222> (25485)..(26036)
<223> 22K

<220>
<221> CDS
<222> (26384)..(27064)
<223> pVIII

<220>
<221> CDS
<222> (27068)..(27385)
<223> E3\12.5K

<220>
<221> CDS
<222> (27962)..(28489)
<223> E3\gp19K

<220>
<221> CDS
<222> (28528)..(29268)

<223> E3\CR1-beta

<220>
<221> CDS
<222> (29284)..(29907)
<223> E3\CR1-gamma

<220>
<221> CDS
<222> (29930)..(30802)
<223> E3\CR1-delta

<220>
<221> CDS
<222> (31531)..(31932)
<223> E3\14.7K

<220>
<221> CDS
<222> (32044)..(33513)
<223> fiber

<220>
<221> misc_feature
<222> (33609)..(34936)
<223> E4 orf 6/7 complement (33609..33859, 34583..34936)

<220>
<221> CDS
<222> (33860)..(34756)
<223> E4/orf6 (compliment 33860..34756)

<220>
<221> CDS
<222> (35039)..(35389)
<223> E4/orf3 (compliment 35039..35389)

<220>
<221> CDS
<222> (35828)..(36199)
<223> E4/orf1 (compliment 35828..36199)

<220>
<221> repeat_region
<222> (36477)..(36599)
<223> ITR

<220>
<221> misc_feature
<222> (36845)..(36851)
<223> pMB1\ORI:\low\copy\number   complement (36845..36851)

<220>
<221> misc_feature
<222> (36845)..(37442)
<223> pMB1\ori   complement (36845..37442)

<220>
<221> rep_origin
<222> (36855)..(36855)
<223> ORI

<220>
<221> CDS
<222> (37613)..(38476)
<223> AP(R)   [Note: E-286] complement (37613..38476)

<400> 336
caataatata cctcaaactt tttgtgcgcg ttaatatgca aatgaggcgt ttgaatttgg   60

```
gaagggagga aggtgattgg ccgagagaag ggcgaccgtt aggggcgggg cgagtgacgt      120

tttgatgacg tggccgcgag gaggagccag tttgcaagtt ctcgtgggaa aagtgacgtc      180

aaacgaggtg tggtttgaac acggaaatac tcaattttcc cgcgctctct gacaggaaat      240

gaggtgtttt tgggcggatg caagttaaaa cgggccattt tcgcgcgaaa actgaatgag      300

gaagtgaaaa tctgagtaat ttcgcgttta tggcagggag gagtatttgc cgagggccga      360

gtagactttg accgattacg tgggggtttc gattaccgtg tttttcacct aaatttccgc      420

gtacggtgtc aaagtccggt gtttttacat catttccccg aaaagtgcca cctgacgtaa      480

ctataacggt cctaaggtag cgaaagctca gatctcccga tcccctatgg tgcactctca      540

gtacaatctg ctctgatgcc gcatagttaa gccagtatct gctccctgct tgtgtgttgg      600

aggtcgctga gtagtgcgcg agcaaaattt aagctacaac aaggcaaggc ttgaccgaca      660

attgcatgaa gaatctgctt agggttaggc gttttgcgct gcttcgcgat gtacgggcca      720

gatatacgcg ttgacattga ttattgacta gttattaata gtaatcaatt acggggtcat      780

tagttcatag cccatatatg gagttccgcg ttacataact tacggtaaat ggcccgcctg      840

gctgaccgcc caacgacccc cgcccattga cgtcaataat gacgtatgtt cccatagtaa      900

cgccaatagg gactttccat tgacgtcaat gggtggagta tttacggtaa actgcccact      960

tggcagtaca tcaagtgtat catatgccaa gtacgccccc tattgacgtc aatgacggta     1020

aatggcccgc ctggcattat gcccagtaca tgaccttatg ggactttcct acttggcagt     1080

acatctacgt attagtcatc gctattacca tggtgatgcg gttttggcag tacatcaatg     1140

ggcgtggata gcggtttgac tcacggggat ttccaagtct ccaccccatt gacgtcaatg     1200

ggagtttgtt ttggcaccaa aatcaacggg actttccaaa atgtcgtaac aactccgccc     1260

cattgacgca aatgggcggt aggcgtgtac ggtgggaggt ctatataagc agagctcgtt     1320

tagtgaaccg tcagatcgcc tggagacgcc atccacgctg ttttgacctc catagaagac     1380

accgggaccg atccagcctc cgcgggcgcg cgtcgacaga gag atg ggt gcg aga       1435
                                                Met Gly Ala Arg
                                                1

gcg tca gta tta agc ggg gga gaa tta gat cga tgg gaa aaa att cgg       1483
Ala Ser Val Leu Ser Gly Gly Glu Leu Asp Arg Trp Glu Lys Ile Arg
5                   10                  15                  20

tta agg cca ggg gga aag aag aag tac aag cta aag cac atc gta tgg       1531
Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys His Ile Val Trp
                25                  30                  35

gca agc agg gag cta gaa cga ttc gca gtt aat cct ggc ctg tta gaa       1579
Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro Gly Leu Leu Glu
            40                  45                  50

aca tca gaa ggc tgt aga caa ata ctg gga cag cta caa cca tcc ctt       1627
Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu Gln Pro Ser Leu
        55                  60                  65

cag aca gga tca gag gag ctt cga tca cta tac aac aca gta gca acc       1675
Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn Thr Val Ala Thr
    70                  75                  80
```

```
ctc tat tgt gtg cac cag cgg atc gag atc aag gac acc aag gaa gct       1723
Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp Thr Lys Glu Ala
85                  90                  95                  100

tta gac aag ata gag gaa gag caa aac aag tcc aag aag aag gcc cag       1771
Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys Lys Lys Ala Gln
                105                 110                 115

cag gca gca gct gac aca gga cac agc aat cag gtc agc caa aat tac       1819
Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr
            120                 125                 130

cct ata gtg cag aac atc cag ggg caa atg gta cat cag gcc ata tca       1867
Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile Ser
        135                 140                 145

cct aga act tta aat gca tgg gta aaa gta gta gaa gag aag gct ttc       1915
Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe
    150                 155                 160

agc cca gaa gtg ata ccc atg ttt tca gca tta tca gaa gga gcc acc       1963
Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr
165                 170                 175                 180

cca cag gac ctg aac acg atg ttg aac acc gtg ggg gga cat caa gca       2011
Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala
                185                 190                 195

gcc atg caa atg tta aaa gag acc atc aat gag gaa gct gca gaa tgg       2059
Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp
            200                 205                 210

gat aga gtg cat cca gtg cat gca ggg cct att gca cca ggc cag atg       2107
Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln Met
        215                 220                 225

aga gaa cca agg gga agt gac ata gca gga act act agt acc ctt cag       2155
Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln
    230                 235                 240

gaa caa ata gga tgg atg aca aat aat cca cct atc cca gta gga gag       2203
Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly Glu
245                 250                 255                 260

atc tac aag agg tgg ata atc ctg gga ttg aac aag atc gtg agg atg       2251
Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met
                265                 270                 275

tat agc cct acc agc att ctg gac ata aga caa gga cca aaa gaa ccc       2299
Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro
            280                 285                 290

ttt aga gac tat gta gac cgg ttc tat aaa act cta aga gct gag caa       2347
Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln
        295                 300                 305

gct tca cag gag gta aaa aat tgg atg aca gaa acc ttg ttg gtc caa       2395
Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln
    310                 315                 320

aat gcg aac cca gat tgt aag acc atc ctg aag gct ctc ggc cca gcg       2443
Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Ala
325                 330                 335                 340

gct aca cta gaa gaa atg atg aca gca tgt cag gga gta gga gga ccc       2491
Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro
                345                 350                 355

ggc cat aag gca aga gtt ttg tag ggatccacta gttctagact cgagggggg       2545
```

Gly His Lys Ala Arg Val Leu
360

cccggtacct ttaagaccaa tgacttacaa ggcagctgta gatcttagcc acttttaaa 2605

agaaaagggg ggactggaag ggctaattca ctcccaaaga agacaagata aaccgctgat 2665

cagcctcgac tgtgccttct agttgccagc catctgttgt ttgcccctcc cccgtgcctt 2725

ccttgaccct ggaaggtgcc actcccactg tcctttccta ataaaatgag gaaattgcat 2785

cgcattgtct gagtaggtgt cattctattc tgggggggtgg ggtggggcag gacagcaagg 2845

gggaggattg ggaagacaat agcaggcatg ctggggatgc ggtgggctct atggcttctg 2905

aggcggaaag aaccagcaga tctgcagatc tgaattcatc tatgtcgggt gcggagaaag 2965

aggtaatgaa atggcacata tgctggccac cgtgcatgtg gcttcccatg cccgcaagcc 3025

ctggcccgag ttcgagcaca atgtcatgac caggtgcaat atgcatctgg ggtctcgccg 3085

aggcatgttc atgccctacc agtgcaacct gaattatgtg aaggtgctgc tggagcccga 3145

tgccatgtcc agagtgagcc tgacgggggt gtttgacatg aatgtggagg tgtggaagat 3205

tctgagatat gatgaatcca agaccaggtg ccgagcctgc gagtgcggag ggaagcatgc 3265

caggttccag cccgtgtgtg tggatgtgac ggaggacctg cgacccgatc atttggtgtt 3325

gtcctgcacc gggacggagt tcggttccag cggggaagaa tctgactaga gtgagtagtg 3385

ttctggggcg ggggaggacc tgcatgaggg ccagaatgat tgaaatctgt gcttttctgt 3445

gtgttgcagc agcatgagcg gaagcggctc ctttgaggga ggggtattca gcccttatct 3505

gacggggcgt ctcccctcct gggcgggagt gcgtcagaat gtgatgggat ccacggtgga 3565

cggccggccc gtgcagcccg cgaactcttc aaccctgacc tatgcaaccc tgagctcttc 3625

gtcggtggac gcagctgccg ccgcagctgc tgcatctgcc gccagcgccg tgcgcggaat 3685

ggccatgggc gccggctact acggcactct ggtggccaac tcgagttcca ccaataatcc 3745

cgccagcctg aacgaggaga agctgctgct gctgatggcc cagctcgagg ccttgaccca 3805

gcgcctgggc gagctgaccc agcaggtggc tcagctgcag gagcagacgc gggccgcggt 3865

tgccacggtg aaatccaaat aaaaaatgaa tcaataaata aacggagacg gttgttgatt 3925

ttaacacaga gtctgaatct ttatttgatt tttcgcgcgc ggtaggccct ggaccaccgg 3985

tctcgatcat tgagcactcg gtggatcttt tccaggaccc ggtagaggtg ggcttggatg 4045

ttgaggtaca tgggcatgag cccgtcccgg gggtggaggt agctccattg cagggcctcg 4105

tgctcggggg tggtgttgta aatcacccag tcatagcagg ggcgcagggc atggtgttgc 4165

acaatatctt tgaggaggag actgatggcc acgggcagcc ctttggtgta ggtgtttaca 4225

aatctgttga gctgggaggg atgcatgcgg ggggagatga ggtgcatctt ggcctggatc 4285

ttgagattgg cgatgttacc gcccagatcc cgcctggggt tcatgttgtg caggaccacc 4345

agcacggtgt atccggtgca cttggggaat ttatcatgca acttggaagg gaaggcgtga 4405

aagaatttgg cgacgccctt gtgcccgccc aggttttcca tgcactcatc catgatgatg 4465

gcgatggggc cgtgggcggc ggcctgggca aaaacgtttc gggggtcgga cacatcatag 4525

ttgtggtcct gggtgagatc atcataggcc attttaatga atttggggcg gagggtgccg 4585

gactggggga caaaggtacc ctcgatcccg ggggcgtagt tcccctcaca gatctgcatc 4645

tcccaggctt tgagctcgga ggggggggatc atgtccacct gcggggcgat aaagaacacg 4705

gtttccgggg cgggagagat gagctgggcc gaaagcaagt tccggagcag ctgggacttg 4765

ccgcagccgg tggggccgta gatgaccccg atgaccggtt gcaggtggta gttgagggag 4825

agacagctgc cgtcctcccg gaggaggggg gccacctcgt tcatcatctc gcgcacgtgc 4885

atgttctcgc gcaccagttc cgccaggagg cgctctcccc ccagggatag gagctcctgg 4945

agcgaggcga agtttttcag cggcttgagt ccgtcggcca tgggcatttt ggagagggtc 5005

tgttgcaaga gttccaagcg gtcccagagc tcggtgatgt gctctacggc atctcgatcc 5065

agcagacctc ctcgtttcgc gggttggggc ggctgcggga gtagggcacc agacgatggg 5125

cgtccagcgc agccagggtc cggtccttcc agggtcgcag cgtccgcgtc agggtggtct 5185

ccgtcacggt gaaggggtgc gcgccgggct gggcgcttgc gagggtgcgc ttcaggctca 5245

tccggctggt cgaaaaccgc tcccgatcgg cgccctgcgc gtcggccagg tagcaattga 5305

ccatgagttc gtaattgagc gcctcggccg cgtgaccttt ggcgcggagc ttacctttgg 5365

aagtctgccc gcaggtggga cagaggaggg acttgagggc gtagagcttg ggggcgagga 5425

agacggactc gggggcgtag gcgtccgcgc cgcagtgggc gcagacggtc tcgcactcca 5485

cgagccaggt gaggtcgggc tggtcggggt caaaaaccag tttcccgccg ttctttttga 5545

tgcgtttctt acctttggtc tccatgagct cgtgtccccg ctgggtgaca aagaggctgt 5605

ccgtgtcccc gtagaccgac tttatgggcc ggtcctcgag cggtgtgccg cggtcctcct 5665

cgtagaggaa ccccgcccac tccgagacga aagcccgggt ccaggccagc acgaaggagg 5725

ccacgtggga cgggtagcgg tcgttgtcca ccagcgggtc caccttctcc agggtatgca 5785

aacacatgtc cccctcgtcc acatccagga aggtgattgg cttgtaagtg taggccacgt 5845

gaccgggggt cccagccggg ggggtataaa agggggcggg cccctgctcg tcctcactgt 5905

cttccggatc gctgtccagg agcgccagct gttggggtag gtattccctc tcgaaggcgg 5965

gcatgacctc ggcactcagg ttgtcagttt ctagaaacga ggaggatttg atattgacgg 6025

tgccggcgga gatgcctttc aagagcccct cgtccatctg gtcagaaaag acgatctttt 6085

tgttgtcgag tttggtggcg aaggagccgt agagggcatt ggagaggagc ttggcgatag 6145

agcgcatggt ctggtttttt tccttgtcgg cgcgctcctt ggccgcgatg ttgagctgca 6205

cgtactcgcg cgccacgcac ttccattcgg ggaagacggt ggtcagctcg tcgggcacga 6265

ttctgacttg ccagccccgg ttatgcaggg tgatgaggtc cacactggtg cccacctcgc 6325

cgcgcagggg ctcgttggtc cagcagagtc gaccgccctt gcgcgagcag aaggggggca 6385

gggggtccag catgacctcg tcgggggggt cggcatcgat ggtgaagatg cctggcagga 6445

gatcggggtc gaagtagctg atggaagtgg ccagatcgtc cagggcagct tgccattcgc 6505

gcacggccag cgcgcgctcg tagggactga ggggcgtgcc ccaaggcatg gggtgtgtga 6565

gcgcggaggc gtacatgccg cagatgtcgt agacgtagag gggctcctcg aggatgccga 6625

tgtaggtggg gtaacagcgc cccccgcgga tgctggcgcg cacgtagtca tacagctcat 6685
gcgagggggc gaggagcccc gggcccaggt tggtgcgact gggcttttcg gcgcggtaga 6745
cgatctggcg aaagatggca tgcgagttgg aggagatggt gggcctttgg aagatgttga 6805
agtgggcgtg gggcagaccg accgagtcgc ggatgaagtg ggcgtaggag tcttgcagtt 6865
tggcgacgag ctcggcggtg acgaggacgt ccagagcgca gtagtcgagg gtctcctgga 6925
tgatgtcata cttgagctgg ccctttttgtt tccacagctc gcggttgaga aggaactctt 6985
cgcggtcctt ccagtactct tcgaggggga acccgtcctg atctgcacgg taagagccta 7045
gcatgtagaa ctggttgacg gccttgtagg cgcagcagcc cttctccacg gggagggcgt 7105
aggcctgggc ggccttgcgc agggaggtgt gcgtgagggc gaaggtgtcc ctgaccatga 7165
ccttgaggaa ctggtgcttg aaatcgatat cgtcgcagcc cccctgctcc cagagctgga 7225
agtccgtgcg cttcttgtag gcggggttgg gcaaagcgaa agtaacatcg ttgaaaagga 7285
tcttgcccgc gcggggcata aagttgcgag tgatgcggaa aggctggggc acctcggccc 7345
ggttgttgat gacctgggcg gcgagcacga tctcgtcgaa accgttgatg ttgtggccca 7405
cgatgtagag ttccacgaat cgcgggcggc ccttgacgtg gggcagcttc ttgagctcct 7465
cgtaggtgag ctcgtcgggg tcgctgagac cgtgctgctc gagcgcccag tcggcgagat 7525
gggggttggc gcggaggaag gaagtccaga gatccacggc cagggcggtt tgcagacggt 7585
cccggtactg acggaactgc tgcccgacgg ccatttttc gggggtgacg cagtagaagg 7645
tgcgggggtc cccgtgccag cggtcccatt tgagctggag ggcgagatcg agggcgagct 7705
cgacgaggcg gtcgtccccg gagagtttca tgaccagcat gaaggggacg agctgcttgc 7765
cgaaggaccc catccaggtg taggtttcca catcgtaggt gaggaagagc ctttcggtgc 7825
gaggatgcga gccgatgggg aagaactgga tctcctgcca ccaattggag gaatggctgt 7885
tgatgtgatg gaagtagaaa tgccgacggc gcgccgaaca ctcgtgcttg tgtttataca 7945
agcggccaca gtgctcgcaa cgctgcacgg gatgcacgtg ctgcacgagc tgtacctgag 8005
ttcctttgac gaggaatttc agtgggaagt ggagtcgtgg cgcctgcatc tcgtgctgta 8065
ctacgtcgtg gtggtcggcc tggccctctt ctgcctcgat ggtggtcatg ctgacgagcc 8125
cgcgcgggag gcaggtccag acctcggcgc gagcgggtcg gagagcgagg acgagggcgc 8185
gcaggccgga gctgtccagg gtcctgagac gctgcggagt caggtcagtg ggcagcggcg 8245
gcgcgcggtt gacttgcagg agtttttcca gggcgcgcgg gaggtccaga tggtacttga 8305
tctccaccgc gccgttggtg gcgacgtcga tggcttgcag ggtcccgtgc ccctggggtg 8365
tgaccaccgt cccccgtttc ttcttgggcg gctggggcga cgggggcggt gcctcttcca 8425
tggttagaag cggcggcgag gacgcgcgcc gggcggcaga ggcggctcgg ggcccggagg 8485
caggggcggc aggggcacgt cggcgccgcg cgcgggtagg ttctggtact gcgcccggag 8545
aagactggcg tgagcgacga cgcgacggtt gacgtcctgg atctgacgcc tctgggtgaa 8605
ggccacggga cccgtgagtt tgaacctgaa agagagttcg acagaatcaa tctcggtatc 8665

gttgacggcg gcctgccgca ggatctcttg cacgtcgccc gagttgtcct ggtaggcgat 8725
ctcggtcatg aactgctcga tctcctcctc ctgaaggtct ccgcggccgg cgcgctccac 8785
ggtggccgcg aggtcgttgg agatgcggcc catgagctgc gagaaggcgt tcatgcccgc 8845
ctcgttccag acgcggctgt agaccacgac gccctcggga tcgcgggcgc gcatgaccac 8905
ctgggcgagg ttgagctcca cgtggcgcgt gaagaccgcg tagttgcaga ggcgctggta 8965
gaggtagttg agcgtggtgg cgatgtgctc ggtgacgaag aaatacatga tccagcggcg 9025
gagcggcatc tcgctgacgt cgcccagcgc ctccaagcgt tccatggcct cgtaaaagtc 9085
cacggcgaag ttgaaaaact gggagttgcg cgccgagacg gtcaactcct cctccagaag 9145
acggatgagc tcggcgatgg tggcgcgcac ctcgcgctcg aaggcccccg ggagttcctc 9205
ctcttccatc tcctcttctt cctcctccac taacatctct tctacttcct cctcaggcgg 9265
tggtggcggg ggaggggggcc tgcgtcgccg gcggcgcacg ggcagacggt cgatgaagcg 9325
ctcgatggtc tcgccgcgcc ggcgtcgcat ggtctcggtg acggcgcgcc cgtcctcgcg 9385
gggccgcagc gtgaagacgc cgccgcgcat ctccaggtgg ccgggggggt ccccgttggg 9445
cagggagagg gcgctgacga tgcatcttat caattgcccc gtagggactc cgcgcaagga 9505
cctgagcgtc tcgagatcca cgggatctga aaaccgttga acgaaggctt cgagccagtc 9565
gcagtcgcaa ggtaggctga gcacggtttc ttctggcggg tcatgttggg gagcggggcg 9625
ggcgatgctg ctggtgatga agttgaaata ggcggttctg agacggcgga tggtggcgag 9685
gagcaccagg tctttgggcc cggcttgctg gatgcgcaga cggtcggcca tgccccaggc 9745
gtggtcctga cacctggcca ggtccttgta gtagtcctgc atgagccgct ccacgggcac 9805
ctcctcctcg cccgcgcggc cgtgcatgcg cgtgagcccg aagccgcgct ggggctggac 9865
gagcgccagg tcggcgacga cgcgctcggc gaggatggcc tgctggatct gggtgagggt 9925
ggtctggaag tcgtcaaagt cgacgaagcg gtggtaggct ccggtgttga tggtgtagga 9985
gcagttggcc atgacggacc agttgacggt ctggtggccc ggacgcacga gctcgtggta 10045
cttgaggcgc gagtaggcgc gcgtgtcgaa gatgtagtcg ttgcaggtgc gcaccaggta 10105
ctggtagccg atgaggaagt gcggcggcgg ctggcggtag agcggccatc gctcggtggc 10165
gggggcgccg ggcgcgaggt cctcgagcat ggtgcggtgg tagccgtaga tgtacctgga 10225
catccaggtg atgccggcgg cggtggtgga ggcgcgcggg aactcgcgga cgcggttcca 10285
gatgttgcgc agcggcagga agtagttcat ggtgggcacg gtctggcccg tgaggcgcgc 10345
gcagtcgtgg atgctctata cgggcaaaaa cgaaagcggt cagcggctcg actccgtggc 10405
ctggaggcta agcgaacggg ttgggctgcg cgtgtacccc ggttcgaatc tcgaatcagg 10465
ctggagccgc agctaacgtg gtactggcac tcccgtctcg acccaagcct gcaccaaccc 10525
tccaggatac ggaggcgggt cgttttgcaa ctttttttcg gaggccggaa atgaagacta 10585
gtaagcgcgg aaagcggccg accgcgatgg ctcgctgccg tagtctggag aagaatcgcc 10645
agggttgcgt tgcggtgtgc cccggttcga ggccggccgg attccgcggc taacgagggc 10705
gtggctgccc cgtcgtttcc aagacccccct agccagccga cttctccagt tacggagcga 10765

```
gcccctcttt tgttttgttt gtttttgcca g atg cat ccc gta ctg cgg cag       10817
                                    Met His Pro Val Leu Arg Gln
                                        365                 370

atg cgc ccc cac cac cct cca ccg caa caa cag ccc cct cca cag ccg       10865
Met Arg Pro His His Pro Pro Pro Gln Gln Gln Pro Pro Pro Gln Pro
                375                 380                 385

gcg ctt ctg ccc ccg ccc cag cag cag cag caa ctt cca gcc acg acc       10913
Ala Leu Leu Pro Pro Pro Gln Gln Gln Gln Gln Leu Pro Ala Thr Thr
            390                 395                 400

gcc gcg gcc gcc gtg agc ggg gct gga cag act tct cag tat gac ctg       10961
Ala Ala Ala Ala Val Ser Gly Ala Gly Gln Thr Ser Gln Tyr Asp Leu
        405                 410                 415

gcc ttg gaa gag ggc gag ggg ctg gcg cgc ctg ggg gcg tcg tcg ccg       11009
Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser Pro
    420                 425                 430

gag cgg cac ccg cgc gtg cag atg aaa agg gac gct cgc gag gcc tac       11057
Glu Arg His Pro Arg Val Gln Met Lys Arg Asp Ala Arg Glu Ala Tyr
435                 440                 445                 450

gtg ccc aag cag aac ctg ttc aga gac agg agc ggc gag gag ccc gag       11105
Val Pro Lys Gln Asn Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro Glu
                455                 460                 465

gag atg cgc gcg gcc cgg ttc cac gcg ggg cgg gag ctg cgg cgc ggc       11153
Glu Met Arg Ala Ala Arg Phe His Ala Gly Arg Glu Leu Arg Arg Gly
            470                 475                 480

ctg gac cga aag agg gtg ctg agg gac gag gat ttc gag gcg gac gag       11201
Leu Asp Arg Lys Arg Val Leu Arg Asp Glu Asp Phe Glu Ala Asp Glu
        485                 490                 495

ctg acg ggg atc agc ccc gcg cgc gcg cac gtg gcc gcg gcc aac ctg       11249
Leu Thr Gly Ile Ser Pro Ala Arg Ala His Val Ala Ala Ala Asn Leu
    500                 505                 510

gtc acg gcg tac gag cag acc gtg aag gag gag agc aac ttc caa aaa       11297
Val Thr Ala Tyr Glu Gln Thr Val Lys Glu Glu Ser Asn Phe Gln Lys
515                 520                 525                 530

tcc ttc aac aac cac gtg cgc acc ctg atc gcg cgc gag gag gtg acc       11345
Ser Phe Asn Asn His Val Arg Thr Leu Ile Ala Arg Glu Glu Val Thr
                535                 540                 545

ctg ggc ctg atg cac ctg tgg gac ctg ctg gag gcc atc gtg cag aac       11393
Leu Gly Leu Met His Leu Trp Asp Leu Leu Glu Ala Ile Val Gln Asn
            550                 555                 560

ccc acc agc aag ccg ctg acg gcg cag ctg ttc ctg gtg gtg cag cat       11441
Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu Phe Leu Val Val Gln His
        565                 570                 575

agt cgg gac aac gag gcg ttc agg gag gcg ctg ctg aat atc acc gag       11489
Ser Arg Asp Asn Glu Ala Phe Arg Glu Ala Leu Leu Asn Ile Thr Glu
    580                 585                 590

ccc gag ggc cgc tgg ctc ctg gac ctg gtg aac att ctg cag agc atc       11537
Pro Glu Gly Arg Trp Leu Leu Asp Leu Val Asn Ile Leu Gln Ser Ile
595                 600                 605                 610

gtg gtg cag gag cgc ggg ctg ccg ctg tcc gag aag ctg gcg gcc atc       11585
Val Val Gln Glu Arg Gly Leu Pro Leu Ser Glu Lys Leu Ala Ala Ile
                615                 620                 625
```

```
aac ttc tcg gtg ctg agt ctg ggc aag tac tac gct agg aag atc tac      11633
Asn Phe Ser Val Leu Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile Tyr
            630                 635                 640

aag acc ccg tac gtg ccc ata gac aag gag gtg aag atc gac ggg ttt      11681
Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu Val Lys Ile Asp Gly Phe
        645                 650                 655

tac atg cgc atg acc ctg aaa gtg ctg acc ctg agc gac gat ctg ggg      11729
Tyr Met Arg Met Thr Leu Lys Val Leu Thr Leu Ser Asp Asp Leu Gly
    660                 665                 670

gtg tac cgc aac gac agg atg cac cgc gcg gtg agc gcc agc agg cgg      11777
Val Tyr Arg Asn Asp Arg Met His Arg Ala Val Ser Ala Ser Arg Arg
675                 680                 685                 690

cgc gag ctg agc gac cag gag ctg atg cat agt ctg cag cgg gcc ctg      11825
Arg Glu Leu Ser Asp Gln Glu Leu Met His Ser Leu Gln Arg Ala Leu
                695                 700                 705

acc ggg gcc ggg acc gag ggg gag agc tac ttt gac atg ggc gcg gac      11873
Thr Gly Ala Gly Thr Glu Gly Glu Ser Tyr Phe Asp Met Gly Ala Asp
            710                 715                 720

ctg cac tgg cag ccc agc cgc cgg gcc ttg gag gcg gca ggc ggt ccc      11921
Leu His Trp Gln Pro Ser Arg Arg Ala Leu Glu Ala Ala Gly Gly Pro
        725                 730                 735

ccc tac ata gaa gag gtg gac gat gag gtg gac gag gag ggc gag tac      11969
Pro Tyr Ile Glu Glu Val Asp Asp Glu Val Asp Glu Glu Gly Glu Tyr
    740                 745                 750

ctg gaa gac tgatggcgcg accgtatttt tgctag atg caa caa cag cca cct     12022
Leu Glu Asp                             Met Gln Gln Gln Pro Pro
755                                             760

cct gat ccc gcg atg cgg gcg gcg ctg cag agc cag ccg tcc ggc att      12070
Pro Asp Pro Ala Met Arg Ala Ala Leu Gln Ser Gln Pro Ser Gly Ile
    765                 770                 775

aac tcc tcg gac gat tgg acc cag gcc atg caa cgc atc atg gcg ctg      12118
Asn Ser Ser Asp Asp Trp Thr Gln Ala Met Gln Arg Ile Met Ala Leu
780                 785                 790                 795

acg acc cgc aac ccc gaa gcc ttt aga cag cag ccc cag gcc aac cgg      12166
Thr Thr Arg Asn Pro Glu Ala Phe Arg Gln Gln Pro Gln Ala Asn Arg
                800                 805                 810

ctc tcg gcc atc ctg gag gcc gtg gtg ccc tcg cgc tcc aac ccc acg      12214
Leu Ser Ala Ile Leu Glu Ala Val Val Pro Ser Arg Ser Asn Pro Thr
            815                 820                 825

cac gag aag gtc ctg gcc atc gtg aac gcg ctg gtg gag aac aag gcc      12262
His Glu Lys Val Leu Ala Ile Val Asn Ala Leu Val Glu Asn Lys Ala
        830                 835                 840

atc cgc ggc gac gag gcc ggc ctg gtg tac aac gcg ctg ctg gag cgc      12310
Ile Arg Gly Asp Glu Ala Gly Leu Val Tyr Asn Ala Leu Leu Glu Arg
    845                 850                 855

gtg gcc cgc tac aac agc acc aac gtg cag acc aac ctg gac cgc atg      12358
Val Ala Arg Tyr Asn Ser Thr Asn Val Gln Thr Asn Leu Asp Arg Met
860                 865                 870                 875

gtg acc gac gtg cgc gag gcc gtg gcc cag cgc gag cgg ttc cac cgc      12406
Val Thr Asp Val Arg Glu Ala Val Ala Gln Arg Glu Arg Phe His Arg
                880                 885                 890

gag tcc aac ctg gga tcc atg gtg gcg ctg aac gcc ttc ctc agc acc      12454
```

```
Glu Ser Asn Leu Gly Ser Met Val Ala Leu Asn Ala Phe Leu Ser Thr
            895                 900                 905

cag ccc gcc aac gtg ccc cgg ggc cag gag gac tac acc aac ttc atc      12502
Gln Pro Ala Asn Val Pro Arg Gly Gln Glu Asp Tyr Thr Asn Phe Ile
        910                 915                 920

agc gcc ctg cgc ctg atg gtg acc gag gtg ccc cag agc gag gtg tac      12550
Ser Ala Leu Arg Leu Met Val Thr Glu Val Pro Gln Ser Glu Val Tyr
    925                 930                 935

cag tcc ggg ccg gac tac ttc ttc cag acc agt cgc cag ggc ttg cag      12598
Gln Ser Gly Pro Asp Tyr Phe Phe Gln Thr Ser Arg Gln Gly Leu Gln
940                 945                 950                 955

acc gtg aac ctg agc cag gcg ttc aag aac ttg cag ggc ctg tgg ggc      12646
Thr Val Asn Leu Ser Gln Ala Phe Lys Asn Leu Gln Gly Leu Trp Gly
                960                 965                 970

gtg cag gcc ccg gtc ggg gac cgc gcg acg gtg tcg agc ctg ctg acg      12694
Val Gln Ala Pro Val Gly Asp Arg Ala Thr Val Ser Ser Leu Leu Thr
            975                 980                 985

ccg aac tcg cgc ctg ctg ctg ctg ctg gtg gcc ccc ttc  acg gac agc     12742
Pro Asn Ser Arg Leu Leu Leu Leu Leu Val Ala Pro Phe  Thr Asp Ser
        990                 995                 1000

ggc agc  atc aac cgc aac tcg  tac ctg ggc tac ctg  att aac ctg       12787
Gly Ser  Ile Asn Arg Asn Ser  Tyr Leu Gly Tyr Leu  Ile Asn Leu
    1005                1010                1015

tac cgc  gag gcc atc ggc cag  gcg cac gtg gac gag  cag acc tac       12832
Tyr Arg  Glu Ala Ile Gly Gln  Ala His Val Asp Glu  Gln Thr Tyr
    1020                1025                1030

cag gag  atc acc cac gtg agc  cgc gcc ctg ggc cag  gac gac ccg       12877
Gln Glu  Ile Thr His Val Ser  Arg Ala Leu Gly Gln  Asp Asp Pro
    1035                1040                1045

ggc aat  ctg gaa gcc acc ctg  aac ttt ttg ctg acc  aac cgg tcg       12922
Gly Asn  Leu Glu Ala Thr Leu  Asn Phe Leu Leu Thr  Asn Arg Ser
    1050                1055                1060

cag aag  atc ccg ccc cag tac  acg ctc agc gcc gag  gag gag cgc       12967
Gln Lys  Ile Pro Pro Gln Tyr  Thr Leu Ser Ala Glu  Glu Glu Arg
    1065                1070                1075

atc ctg  cga tac gtg cag cag  agc gtg ggc ctg ttc  ctg atg cag       13012
Ile Leu  Arg Tyr Val Gln Gln  Ser Val Gly Leu Phe  Leu Met Gln
    1080                1085                1090

gag ggg  gcc acc ccc agc gcc  gcg ctc gac atg acc  gcg cgc aac       13057
Glu Gly  Ala Thr Pro Ser Ala  Ala Leu Asp Met Thr  Ala Arg Asn
    1095                1100                1105

atg gag  ccc agc atg tac gcc  agc aac cgc ccg ttc  atc aat aaa       13102
Met Glu  Pro Ser Met Tyr Ala  Ser Asn Arg Pro Phe  Ile Asn Lys
    1110                1115                1120

ctg atg  gac tac ttg cat cgg  gcg gcc gcc atg aac  tct gac tat       13147
Leu Met  Asp Tyr Leu His Arg  Ala Ala Ala Met Asn  Ser Asp Tyr
    1125                1130                1135

ttc acc  aac gcc atc ctg aat  ccc cac tgg ctc ccg  ccg ccg ggg       13192
Phe Thr  Asn Ala Ile Leu Asn  Pro His Trp Leu Pro  Pro Pro Gly
    1140                1145                1150

ttc tac  acg ggc gag tac gac  atg ccc gac ccc aat  gac ggg ttc       13237
Phe Tyr  Thr Gly Glu Tyr Asp  Met Pro Asp Pro Asn  Asp Gly Phe
```

```
    1155                1160                1165

ctg tgg  gac gat gtg gac agc  agc gtg ttc tcc ccc  cga ccg ggt       13282
Leu Trp  Asp Asp Val Asp Ser  Ser Val Phe Ser Pro  Arg Pro Gly
    1170                1175                1180

gct aac  gag cgc ccc ttg tgg  aag aag gaa ggc agc  gac cga cgc       13327
Ala Asn  Glu Arg Pro Leu Trp  Lys Lys Glu Gly Ser  Asp Arg Arg
    1185                1190                1195

ccg tcc  tcg gcg ctg tcc ggc  cgc gag ggt gct gcc  gcg gcg gtg       13372
Pro Ser  Ser Ala Leu Ser Gly  Arg Glu Gly Ala Ala  Ala Ala Val
    1200                1205                1210

ccc gag  gcc gcc agt cct ttc  ccg agc ttg ccc ttc  tcg ctg aac       13417
Pro Glu  Ala Ala Ser Pro Phe  Pro Ser Leu Pro Phe  Ser Leu Asn
    1215                1220                1225

agt att  cgc agc agc gag ctg  ggc agg atc acg cgc  ccg cgc ttg       13462
Ser Ile  Arg Ser Ser Glu Leu  Gly Arg Ile Thr Arg  Pro Arg Leu
    1230                1235                1240

ctg ggc  gag gag gag tac ttg  aat gac tcg ctg ttg  aga ccc gag       13507
Leu Gly  Glu Glu Glu Tyr Leu  Asn Asp Ser Leu Leu  Arg Pro Glu
    1245                1250                1255

cgg gag  aag aac ttc ccc aat  aac ggg ata gag agc  ctg gtg gac       13552
Arg Glu  Lys Asn Phe Pro Asn  Asn Gly Ile Glu Ser  Leu Val Asp
    1260                1265                1270

aag atg  agc cgc tgg aag acg  tat gcg cag gag cac  agg gac gat       13597
Lys Met  Ser Arg Trp Lys Thr  Tyr Ala Gln Glu His  Arg Asp Asp
    1275                1280                1285

ccg tcg  cag ggg gcc acg agc  cgg ggc agc gcc gcc  cgt aaa cgc       13642
Pro Ser  Gln Gly Ala Thr Ser  Arg Gly Ser Ala Ala  Arg Lys Arg
    1290                1295                1300

cgg tgg  cac gac agg cag cgg  gga ctg atg tgg gac  gat gag gat       13687
Arg Trp  His Asp Arg Gln Arg  Gly Leu Met Trp Asp  Asp Glu Asp
    1305                1310                1315

tcc gcc  gac gac agc agc gtg  ttg gac ttg ggt ggg  agt ggt aac       13732
Ser Ala  Asp Asp Ser Ser Val  Leu Asp Leu Gly Gly  Ser Gly Asn
    1320                1325                1330

ccg ttc  gct cac ctg cgc ccc  cgc atc ggg cgc atg  atg taagagaaac    13781
Pro Phe  Ala His Leu Arg Pro  Arg Ile Gly Arg Met  Met
    1335                1340                1345

cgaaaataaa tgatactcac caaggccatg gcgaccagcg tgcgttcgtt tcttctctgt    13841

tgttgtatct agt atg atg agg cgt  gcg tac ccg gag ggt  cct cct ccc     13890
              Met Met Arg Arg  Ala Tyr Pro Glu Gly  Pro Pro Pro
                          1350                1355

tcg tac  gag agc gtg atg cag  cag gcg atg gcg gcg  gcg gcg gcg       13935
Ser Tyr  Glu Ser Val Met Gln  Gln Ala Met Ala Ala  Ala Ala Ala
    1360                1365                1370

atg cag  ccc ccg ctg gag gct  cct tac gtg ccc ccg  cgg tac ctg       13980
Met Gln  Pro Pro Leu Glu Ala  Pro Tyr Val Pro Pro  Arg Tyr Leu
    1375                1380                1385

gcg cct  acg gag ggg cgg aac  agc att cgt tac tcg  gag ctg gca       14025
Ala Pro  Thr Glu Gly Arg Asn  Ser Ile Arg Tyr Ser  Glu Leu Ala
    1390                1395                1400

ccc ttg  tac gat acc acc cgg  ttg tac ctg gtg gac  aac aag tcg       14070
```

```
Pro Leu  Tyr Asp Thr Thr Arg  Leu Tyr Leu Val Asp  Asn Lys Ser
    1405                 1410                 1415

gcg gac  atc gcc tcg ctg aac  tac cag aac gac cac  agc aac ttc       14115
Ala Asp  Ile Ala Ser Leu Asn  Tyr Gln Asn Asp His  Ser Asn Phe
    1420                 1425                 1430

ctg acc  acc gtg gtg cag aac  aat gac ttc acc ccc  acg gag gcc       14160
Leu Thr  Thr Val Val Gln Asn  Asn Asp Phe Thr Pro  Thr Glu Ala
    1435                 1440                 1445

agc acc  cag acc atc aac ttt  gac gag cgc tcg cgg  tgg ggc ggt       14205
Ser Thr  Gln Thr Ile Asn Phe  Asp Glu Arg Ser Arg  Trp Gly Gly
    1450                 1455                 1460

cag ctg  aaa acc atc atg cac  acc aac atg ccc aac  gtg aac gag       14250
Gln Leu  Lys Thr Ile Met His  Thr Asn Met Pro Asn  Val Asn Glu
    1465                 1470                 1475

ttc atg  tac agc aac aag ttc  aag gcg cgg gtg atg  gtc tcc cgc       14295
Phe Met  Tyr Ser Asn Lys Phe  Lys Ala Arg Val Met  Val Ser Arg
    1480                 1485                 1490

aag acc  ccc aac ggg gtg aca  gtg aca gat ggt agt  cag gat atc       14340
Lys Thr  Pro Asn Gly Val Thr  Val Thr Asp Gly Ser  Gln Asp Ile
    1495                 1500                 1505

ttg gag  tat gaa tgg gtg gag  ttt gag ctg ccc gaa  ggc aac ttc       14385
Leu Glu  Tyr Glu Trp Val Glu  Phe Glu Leu Pro Glu  Gly Asn Phe
    1510                 1515                 1520

tcg gtg  acc atg acc atc gac  ctg atg aac aac gcc  atc atc gac       14430
Ser Val  Thr Met Thr Ile Asp  Leu Met Asn Asn Ala  Ile Ile Asp
    1525                 1530                 1535

aat tac  ttg gcg gtg ggg cgg  cag aac ggg gtc ctg  gag agc gat       14475
Asn Tyr  Leu Ala Val Gly Arg  Gln Asn Gly Val Leu  Glu Ser Asp
    1540                 1545                 1550

atc ggc  gtg aag ttc gac act  agg aac ttc agg ctg  ggc tgg gac       14520
Ile Gly  Val Lys Phe Asp Thr  Arg Asn Phe Arg Leu  Gly Trp Asp
    1555                 1560                 1565

ccc gtg  acc gag ctg gtc atg  ccc ggg gtg tac acc  aac gag gcc       14565
Pro Val  Thr Glu Leu Val Met  Pro Gly Val Tyr Thr  Asn Glu Ala
    1570                 1575                 1580

ttc cac  ccc gat att gtc ttg  ctg ccc ggc tgc ggg  gtg gac ttc       14610
Phe His  Pro Asp Ile Val Leu  Leu Pro Gly Cys Gly  Val Asp Phe
    1585                 1590                 1595

acc gag  agc cgc ctc agc aac  ctg ctg ggc att cgc  aag agg cag       14655
Thr Glu  Ser Arg Leu Ser Asn  Leu Leu Gly Ile Arg  Lys Arg Gln
    1600                 1605                 1610

ccc ttc  cag gag ggc ttc cag  atc atg tac gag gat  ctg gag ggg       14700
Pro Phe  Gln Glu Gly Phe Gln  Ile Met Tyr Glu Asp  Leu Glu Gly
    1615                 1620                 1625

ggc aac  atc ccc gcg ctc ctg  gat gtc gac gcc tat  gag aaa agc       14745
Gly Asn  Ile Pro Ala Leu Leu  Asp Val Asp Ala Tyr  Glu Lys Ser
    1630                 1635                 1640

aag gag  gag agc gcc gcc gcg  gcg act gca gct gta  gcc acc gcc       14790
Lys Glu  Glu Ser Ala Ala Ala  Ala Thr Ala Ala Val  Ala Thr Ala
    1645                 1650                 1655

tct acc  gag gtc agg ggc gat  aat ttt gcc agc cct  gca gca gtg       14835
Ser Thr  Glu Val Arg Gly Asp  Asn Phe Ala Ser Pro  Ala Ala Val
```

```
    1660                1665                1670

gca gcg  gcc gag gcg gct gaa  acc gaa agt aag ata  gtc att cag       14880
Ala Ala  Ala Glu Ala Ala Glu  Thr Glu Ser Lys Ile  Val Ile Gln
    1675                1680                1685

ccg gtg  gag aag gat agc aag  gac agg agc tac aac  gtg ctg ccg       14925
Pro Val  Glu Lys Asp Ser Lys  Asp Arg Ser Tyr Asn  Val Leu Pro
    1690                1695                1700

gac aag  ata aac acc gcc tac  cgc agc tgg tac ctg  gcc tac aac       14970
Asp Lys  Ile Asn Thr Ala Tyr  Arg Ser Trp Tyr Leu  Ala Tyr Asn
    1705                1710                1715

tat ggc  gac ccc gag aag ggc  gtg cgc tcc tgg acg  ctg ctc acc       15015
Tyr Gly  Asp Pro Glu Lys Gly  Val Arg Ser Trp Thr  Leu Leu Thr
    1720                1725                1730

acc tcg  gac gtc acc tgc ggc  gtg gag caa gtc tac  tgg tcg ctg       15060
Thr Ser  Asp Val Thr Cys Gly  Val Glu Gln Val Tyr  Trp Ser Leu
    1735                1740                1745

ccc gac  atg atg caa gac ccg  gtc acc ttc cgc tcc  acg cgt caa       15105
Pro Asp  Met Met Gln Asp Pro  Val Thr Phe Arg Ser  Thr Arg Gln
    1750                1755                1760

gtt agc  aac tac ccg gtg gtg  ggc gcc gag ctc ctg  ccc gtc tac       15150
Val Ser  Asn Tyr Pro Val Val  Gly Ala Glu Leu Leu  Pro Val Tyr
    1765                1770                1775

tcc aag  agc ttc ttc aac gag  cag gcc gtc tac tcg  cag cag ctg       15195
Ser Lys  Ser Phe Phe Asn Glu  Gln Ala Val Tyr Ser  Gln Gln Leu
    1780                1785                1790

cgc gcc  ttc acc tcg ctc acg  cac gtc ttc aac cgc  ttc ccc gag       15240
Arg Ala  Phe Thr Ser Leu Thr  His Val Phe Asn Arg  Phe Pro Glu
    1795                1800                1805

aac cag  atc ctc gtc cgc ccg  ccc gcg ccc acc att  acc acc gtc       15285
Asn Gln  Ile Leu Val Arg Pro  Pro Ala Pro Thr Ile  Thr Thr Val
    1810                1815                1820

agt gaa  aac gtt cct gct ctc  aca gat cac ggg acc  ctg ccg ctg       15330
Ser Glu  Asn Val Pro Ala Leu  Thr Asp His Gly Thr  Leu Pro Leu
    1825                1830                1835

cgc agc  agt atc cgg gga gtc  cag cgc gtg acc gtt  act gac gcc       15375
Arg Ser  Ser Ile Arg Gly Val  Gln Arg Val Thr Val  Thr Asp Ala
    1840                1845                1850

aga cgc  cgc acc tgc ccc tac  gtc tac aag gcc ctg  ggc ata gtc       15420
Arg Arg  Arg Thr Cys Pro Tyr  Val Tyr Lys Ala Leu  Gly Ile Val
    1855                1860                1865

gcg ccg  cgc gtc ctc tcg agc  cgc acc ttc taaaaa atg tcc  att ctc    15468
Ala Pro  Arg Val Leu Ser Ser  Arg Thr Phe        Met Ser  Ile Leu
    1870                1875                    1880

atc tcg ccc  agt aat aac acc ggt  tgg ggc ctg cgc gcg  ccc agc       15513
Ile Ser Pro  Ser Asn Asn Thr Gly  Trp Gly Leu Arg Ala  Pro Ser
        1885                1890                1895

aag atg tac  gga ggc gct cgc caa  cgc tcc acg caa cac  ccc gtg       15558
Lys Met Tyr  Gly Gly Ala Arg Gln  Arg Ser Thr Gln His  Pro Val
        1900                1905                1910

cgc gtg cgc  ggg cac ttc cgc gct  ccc tgg ggc gcc ctc  aag ggc       15603
Arg Val Arg  Gly His Phe Arg Ala  Pro Trp Gly Ala Leu  Lys Gly
        1915                1920                1925
```

```
cgc gtg cgg  tcg cgc acc acc gtc  gac gac gtg atc gac  cag gtg       15648
Arg Val Arg  Ser Arg Thr Thr Val  Asp Asp Val Ile Asp  Gln Val
        1930                 1935                 1940

gtg gcc gac  gcg cgc aac tac acc  ccc gcc gcc gcg ccc  gtc tcc       15693
Val Ala Asp  Ala Arg Asn Tyr Thr  Pro Ala Ala Ala Pro  Val Ser
        1945                 1950                 1955

acc gtg gac  gcc gtc atc gac agc  gtg gtg gcc gac gcg  cgc cgg       15738
Thr Val Asp  Ala Val Ile Asp Ser  Val Val Ala Asp Ala  Arg Arg
        1960                 1965                 1970

tac gcc cgc  gcc aag agc cgg cgg  cgg cgc atc gcc cgg  cgg cac       15783
Tyr Ala Arg  Ala Lys Ser Arg Arg  Arg Arg Ile Ala Arg  Arg His
        1975                 1980                 1985

cgg agc acc  ccc gcc atg cgc gcg  gcg cga gcc ttg ctg  cgc agg       15828
Arg Ser Thr  Pro Ala Met Arg Ala  Ala Arg Ala Leu Leu  Arg Arg
        1990                 1995                 2000

gcc agg cgc  acg gga cgc agg gcc  atg ctc agg gcg gcc  aga cgc       15873
Ala Arg Arg  Thr Gly Arg Arg Ala  Met Leu Arg Ala Ala  Arg Arg
        2005                 2010                 2015

gcg gcc tca  ggc gcc agc gcc ggc  agg acc cgg aga cgc  gcg gcc       15918
Ala Ala Ser  Gly Ala Ser Ala Gly  Arg Thr Arg Arg Arg  Ala Ala
        2020                 2025                 2030

acg gcg gcg  gca gcg gcc atc gcc  agc atg tcc cgc ccg  cgg cga       15963
Thr Ala Ala  Ala Ala Ala Ile Ala  Ser Met Ser Arg Pro  Arg Arg
        2035                 2040                 2045

ggg aac gtg  tac tgg gtg cgc gac  gcc gcc acc ggt gtg  cgc gtg       16008
Gly Asn Val  Tyr Trp Val Arg Asp  Ala Ala Thr Gly Val  Arg Val
        2050                 2055                 2060

ccc gtg cgc  acc cgc ccc cct cgc  act tgaagatgtt cacttcgcga         16055
Pro Val Arg  Thr Arg Pro Pro Arg  Thr
        2065                 2070

tgttgatgtg tcccagcggc gagg atg tcc aag cgc  aaa ttc aag gaa gag     16106
                          Met Ser Lys Arg  Lys Phe Lys Glu Glu
                                       2075                 2080

atg ctc cag gtc atc  gcg cct gag atc tac  ggc ccc gcg gtg gtg       16151
Met Leu Gln Val Ile  Ala Pro Glu Ile Tyr  Gly Pro Ala Val Val
                2085                 2090                 2095

aag gag gaa aga aag  ccc cgc aaa atc aag  cgg gtc aaa aag gac       16196
Lys Glu Glu Arg Lys  Pro Arg Lys Ile Lys  Arg Val Lys Lys Asp
                2100                 2105                 2110

aaa aag gaa gaa gaa  agt gat gtg gac gga  ctg gtg gag ttt gtg       16241
Lys Lys Glu Glu Glu  Ser Asp Val Asp Gly  Leu Val Glu Phe Val
                2115                 2120                 2125

cgc gag ttc gcc ccc  cgg cgg cgc gtg cag  tgg cgc ggg cgg aag       16286
Arg Glu Phe Ala Pro  Arg Arg Arg Val Gln  Trp Arg Gly Arg Lys
                2130                 2135                 2140

gtg cgc ccg gtg ctg  aga cca ggc act acg  gtg gtc ttc acg ccc       16331
Val Arg Pro Val Leu  Arg Pro Gly Thr Thr  Val Val Phe Thr Pro
                2145                 2150                 2155

ggc gag cgc tcc ggc  acc gct tcc aag cgc  tcc tac gac gag gtg       16376
Gly Glu Arg Ser Gly  Thr Ala Ser Lys Arg  Ser Tyr Asp Glu Val
                2160                 2165                 2170
```

```
tac ggg gac gag gac  atc ctc gag cag gcg  gcc gag cgc ctg ggc        16421
Tyr Gly Asp Glu Asp  Ile Leu Glu Gln Ala  Ala Glu Arg Leu Gly
                2175                2180                2185

gag ttt gct tac ggc  aag cgc agc cgc tcc  gcg ccg aag gaa gag        16466
Glu Phe Ala Tyr Gly  Lys Arg Ser Arg Ser  Ala Pro Lys Glu Glu
                2190                2195                2200

gcg gtg tcc atc ccg  ctg gac cac ggc aac  ccc acg ccg agc ctc        16511
Ala Val Ser Ile Pro  Leu Asp His Gly Asn  Pro Thr Pro Ser Leu
                2205                2210                2215

aag ccc gtg acc ctg  cag cag gtg ctg ccg  acc gcg gcg ccg cgc        16556
Lys Pro Val Thr Leu  Gln Gln Val Leu Pro  Thr Ala Ala Pro Arg
                2220                2225                2230

cgg ggg ttc aag cgc  gag ggc gag gat ctg  tac ccc acc atg cag        16601
Arg Gly Phe Lys Arg  Glu Gly Glu Asp Leu  Tyr Pro Thr Met Gln
                2235                2240                2245

ctg atg gtg ccc aag  cgc cag aag ctg gaa  gac gtg ctg gag acc        16646
Leu Met Val Pro Lys  Arg Gln Lys Leu Glu  Asp Val Leu Glu Thr
                2250                2255                2260

atg aag gtg gac ccg  gac gtg cag ccc gag  gtc aag gtg cgg ccc        16691
Met Lys Val Asp Pro  Asp Val Gln Pro Glu  Val Lys Val Arg Pro
                2265                2270                2275

atc aag cag gtg gcc  ccg ggc ctg ggc gtg  cag acc gtg gac atc        16736
Ile Lys Gln Val Ala  Pro Gly Leu Gly Val  Gln Thr Val Asp Ile
                2280                2285                2290

aag atc ccc acg gag  ccc atg gaa acg cag  acc gag ccc gtg aaa        16781
Lys Ile Pro Thr Glu  Pro Met Glu Thr Gln  Thr Glu Pro Val Lys
                2295                2300                2305

ccc agc acc agc acc  atg gag gtg cag acg  gat cct tgg atg cca        16826
Pro Ser Thr Ser Thr  Met Glu Val Gln Thr  Asp Pro Trp Met Pro
                2310                2315                2320

tcg gct act agc cga  aga ccc cgg cgc aag  tac ggc gcg gcc agc        16871
Ser Ala Thr Ser Arg  Arg Pro Arg Arg Lys  Tyr Gly Ala Ala Ser
                2325                2330                2335

ctg ctg atg ccc aac  tac gcg ctg cat cct  tcc atc atc ccc acg        16916
Leu Leu Met Pro Asn  Tyr Ala Leu His Pro  Ser Ile Ile Pro Thr
                2340                2345                2350

ccg ggc tac cgc ggc  acg cgc ttc tac cgc  ggt cat aca agc cgc        16961
Pro Gly Tyr Arg Gly  Thr Arg Phe Tyr Arg  Gly His Thr Ser Arg
                2355                2360                2365

cgc cgc aag acc acc  acc cgc cgc cgc cgt  cgc cgc aca acc gct        17006
Arg Arg Lys Thr Thr  Thr Arg Arg Arg Arg  Arg Arg Thr Thr Ala
                2370                2375                2380

gct gca tct acc cct  gcc gcc ctg gtg cgg  aga gtg tac cgc cgc        17051
Ala Ala Ser Thr Pro  Ala Ala Leu Val Arg  Arg Val Tyr Arg Arg
                2385                2390                2395

ggc cgc gcg cct ctg  acc ctg ccg cgc gcg  cgc tac cac ccg agc        17096
Gly Arg Ala Pro Leu  Thr Leu Pro Arg Ala  Arg Tyr His Pro Ser
                2400                2405                2410

att gcc att taaactttcg cctgctttgc agatca atg gcc  ctc aca tgc cgc    17149
Ile Ala Ile                               Met Ala  Leu Thr Cys Arg
                                              2415

ctc  cgc gtt ccc att acg  ggc tac cga gga aga  aaa ccg cgc cgt       17194
```

```
Leu  Arg Val Pro Ile Thr  Gly Tyr Arg Gly Arg  Lys Pro Arg Arg
2420                2425                2430

aga  agg ctg gcg ggg aac  ggg atg cgt cgc cac  cac cac cgg cgg       17239
Arg  Arg Leu Ala Gly Asn  Gly Met Arg Arg His  His His Arg Arg
2435                2440                2445

cgg  cgc gcc atc agc aag  cgg ttg ggg gga ggc  ttc ctg ccc gcg       17284
Arg  Arg Ala Ile Ser Lys  Arg Leu Gly Gly Gly  Phe Leu Pro Ala
2450                2455                2460

ctg  atc ccc atc atc gcc  gcg gcg atc ggg gcg  atc ccc ggc att       17329
Leu  Ile Pro Ile Ile Ala  Ala Ala Ile Gly Ala  Ile Pro Gly Ile
2465                2470                2475

gct  tcc gtg gcg gtg cag  gcc tct cag cgc cac  tgagacacac           17372
Ala  Ser Val Ala Val Gln  Ala Ser Gln Arg His
2480                2485                2490

ttggaaacat cttgtaataa acca atg gac tct gac gct  cct ggt cct gtg      17423
                           Met Asp Ser Asp Ala  Pro Gly Pro Val
                                               2495

atg  tgt ttt cgt aga cag  atg gaa gac atc aat  ttt tcg tcc ctg       17468
Met  Cys Phe Arg Arg Gln  Met Glu Asp Ile Asn  Phe Ser Ser Leu
2500                2505                2510

gct  ccg cga cac ggc acg  cgg ccg ttc atg ggc  acc tgg agc gac       17513
Ala  Pro Arg His Gly Thr  Arg Pro Phe Met Gly  Thr Trp Ser Asp
2515                2520                2525

atc  ggc acc agc caa ctg  aac ggg ggc gcc ttc  aat tgg agc agt       17558
Ile  Gly Thr Ser Gln Leu  Asn Gly Gly Ala Phe  Asn Trp Ser Ser
2530                2535                2540

ctc  tgg agc ggg ctt aag  aat ttc ggg tcc acg  ctt aaa acc tat       17603
Leu  Trp Ser Gly Leu Lys  Asn Phe Gly Ser Thr  Leu Lys Thr Tyr
2545                2550                2555

ggc  agc aag gcg tgg aac  agc acc aca ggg cag  gcg ctg agg gat       17648
Gly  Ser Lys Ala Trp Asn  Ser Thr Thr Gly Gln  Ala Leu Arg Asp
2560                2565                2570

aag  ctg aaa gag cag aac  ttc cag cag aag gtg  gtc gat ggc ctg       17693
Lys  Leu Lys Glu Gln Asn  Phe Gln Gln Lys Val  Val Asp Gly Leu
2575                2580                2585

gcc  tcg ggc atc aac ggg  gtg gtg gac ctg gcc  aac cag gcc gtg       17738
Ala  Ser Gly Ile Asn Gly  Val Val Asp Leu Ala  Asn Gln Ala Val
2590                2595                2600

cag  cgg cag atc aac agc  cgc ctg gac ccg gtg  ccg ccc gcc ggc       17783
Gln  Arg Gln Ile Asn Ser  Arg Leu Asp Pro Val  Pro Pro Ala Gly
2605                2610                2615

tcc  gtg gag atg ccg cag  gtg gag gag gag ctg  cct ccc ctg gac       17828
Ser  Val Glu Met Pro Gln  Val Glu Glu Glu Leu  Pro Pro Leu Asp
2620                2625                2630

aag  cgg ggc gag aag cga  ccc cgc ccc gac gcg  gag gag acg ctg       17873
Lys  Arg Gly Glu Lys Arg  Pro Arg Pro Asp Ala  Glu Glu Thr Leu
2635                2640                2645

ctg  acg cac acg gac gag  ccg ccc ccg tac gag  gag gcg gtg aaa       17918
Leu  Thr His Thr Asp Glu  Pro Pro Pro Tyr Glu  Glu Ala Val Lys
2650                2655                2660

ctg  ggc ctg ccc acc acg  cgg ccc atc gcg cct  ctg gcc acc ggg       17963
Leu  Gly Leu Pro Thr Thr  Arg Pro Ile Ala Pro  Leu Ala Thr Gly
```

```
2665                 2670                 2675

gtg  ctg aaa ccc gaa agt  agt aag ccc gcg acc  ctg gac ttg cct       18008
Val  Leu Lys Pro Glu Ser  Ser Lys Pro Ala Thr  Leu Asp Leu Pro
2680                 2685                 2690

cct  ccc cag cct tcc cgc  ccc tcc aca gtg gct  aag cct ctg ccg       18053
Pro  Pro Gln Pro Ser Arg  Pro Ser Thr Val Ala  Lys Pro Leu Pro
2695                 2700                 2705

ccg  gtg gcc gtg gcc cgc  gcg cga ccc ggg ggc  acc gcc cgc cct       18098
Pro  Val Ala Val Ala Arg  Ala Arg Pro Gly Gly  Thr Ala Arg Pro
2710                 2715                 2720

cat  gcg aac tgg cag agc  act ctg aac agc atc  gtg ggt ctg gga       18143
His  Ala Asn Trp Gln Ser  Thr Leu Asn Ser Ile  Val Gly Leu Gly
2725                 2730                 2735

gtg  cag agt gtg aag cgc  cgc cgc tgc tat taaacctacc gtagcgctta      18193
Val  Gln Ser Val Lys Arg  Arg Arg Cys Tyr
2740                 2745

acttgcttgt ctgtgtgtgt atgtattatg tcgccgccgc tgtcgccaga aggaggagtg    18253

aagaggcgcg tcgccgagtt gcaag atg  gcc acc cca tcg atg  ctg ccc cag    18305
                            Met  Ala Thr Pro Ser Met  Leu Pro Gln
                            2750                 2755

tgg gcg  tac atg cac atc gcc  gga cag gac gct tcg  gag tac ctg       18350
Trp Ala  Tyr Met His Ile Ala  Gly Gln Asp Ala Ser  Glu Tyr Leu
    2760                 2765                 2770

agt ccg  ggt ctg gtg cag ttc  gcc cgc gcc aca gac  acc tac ttc       18395
Ser Pro  Gly Leu Val Gln Phe  Ala Arg Ala Thr Asp  Thr Tyr Phe
    2775                 2780                 2785

agt ctg  ggg aac aag ttt agg  aac ccc acg gtg gcg  ccc acg cac       18440
Ser Leu  Gly Asn Lys Phe Arg  Asn Pro Thr Val Ala  Pro Thr His
    2790                 2795                 2800

gat gtg  acc acc gac cgc agc  cag cgg ctg acg ctg  cgc ttc gtg       18485
Asp Val  Thr Thr Asp Arg Ser  Gln Arg Leu Thr Leu  Arg Phe Val
    2805                 2810                 2815

ccc gtg  gac cgc gag gac aac  acc tac tcg tac aaa  gtg cgc tac       18530
Pro Val  Asp Arg Glu Asp Asn  Thr Tyr Ser Tyr Lys  Val Arg Tyr
    2820                 2825                 2830

acg ctg  gcc gtg ggc gac aac  cgc gtg ctg gac atg  gcc agc acc       18575
Thr Leu  Ala Val Gly Asp Asn  Arg Val Leu Asp Met  Ala Ser Thr
    2835                 2840                 2845

tac ttt  gac atc cgc ggc gtg  ctg gac cgg ggc cct  agc ttc aaa       18620
Tyr Phe  Asp Ile Arg Gly Val  Leu Asp Arg Gly Pro  Ser Phe Lys
    2850                 2855                 2860

ccc tac  tcc ggc acc gcc tac  aat gct ctg gcc ccc  aag gga gca       18665
Pro Tyr  Ser Gly Thr Ala Tyr  Asn Ala Leu Ala Pro  Lys Gly Ala
    2865                 2870                 2875

ccc aac  act tgc cag tgg aca  tac aca gat aag caa  acc gaa aaa       18710
Pro Asn  Thr Cys Gln Trp Thr  Tyr Thr Asp Lys Gln  Thr Glu Lys
    2880                 2885                 2890

aca gcc  acg tat ggg aat gcg  cct gta caa ggc att  gcc atc aca       18755
Thr Ala  Thr Tyr Gly Asn Ala  Pro Val Gln Gly Ile  Ala Ile Thr
    2895                 2900                 2905

aaa gat  ggt att caa ctt gga  act gac agt gat gga  aat cct gta       18800
```

```
Lys Asp  Gly Ile Gln Leu Gly  Thr Asp Ser Asp Gly  Asn Pro Val
    2910                 2915                 2920

tat gct  caa aag aca ttt gaa  ccc gaa cct caa gtg  ggt gat gca       18845
Tyr Ala  Gln Lys Thr Phe Glu  Pro Glu Pro Gln Val  Gly Asp Ala
    2925                 2930                 2935

gaa tgg  cat gac act aca ggt  aca gat gaa aag tat  gga ggc agg       18890
Glu Trp  His Asp Thr Thr Gly  Thr Asp Glu Lys Tyr  Gly Gly Arg
    2940                 2945                 2950

gca ctt  aag cct gac acc aaa  atg aag cct tgc tat  ggt tct ttt       18935
Ala Leu  Lys Pro Asp Thr Lys  Met Lys Pro Cys Tyr  Gly Ser Phe
    2955                 2960                 2965

gcc aaa  ccc act aac aaa gaa  ggt gga cag gca aag  aac aga aca       18980
Ala Lys  Pro Thr Asn Lys Glu  Gly Gly Gln Ala Lys  Asn Arg Thr
    2970                 2975                 2980

aaa act  gat gga act ggc gaa  gag cct gat att gat  atg gca ttt       19025
Lys Thr  Asp Gly Thr Gly Glu  Glu Pro Asp Ile Asp  Met Ala Phe
    2985                 2990                 2995

ttt gac  ggc aga aat gca act  aca gct ggt ttg gct  cca gaa att       19070
Phe Asp  Gly Arg Asn Ala Thr  Thr Ala Gly Leu Ala  Pro Glu Ile
    3000                 3005                 3010

gtt ttg  tat act gag aat gtg  gat ctg gag act cca  gat acc cat       19115
Val Leu  Tyr Thr Glu Asn Val  Asp Leu Glu Thr Pro  Asp Thr His
    3015                 3020                 3025

att gta  tac aaa gca ggc aca  gat gac agc agc tct  tcg att aat       19160
Ile Val  Tyr Lys Ala Gly Thr  Asp Asp Ser Ser Ser  Ser Ile Asn
    3030                 3035                 3040

ttg ggg  cag caa tcc atg ccc  aac aga ccc aac tac  att ggg ttc       19205
Leu Gly  Gln Gln Ser Met Pro  Asn Arg Pro Asn Tyr  Ile Gly Phe
    3045                 3050                 3055

aga gac  aac ttt atc ggg ctc  atg tac tac aac agc  act ggc aat       19250
Arg Asp  Asn Phe Ile Gly Leu  Met Tyr Tyr Asn Ser  Thr Gly Asn
    3060                 3065                 3070

atg ggg  gtg ctg gcc ggt cag  gct tct cag ctg aat  gct gtg gtt       19295
Met Gly  Val Leu Ala Gly Gln  Ala Ser Gln Leu Asn  Ala Val Val
    3075                 3080                 3085

gac ttg  caa gac aga aac acc  gaa ctg tcc tac cag  ctc ttg ctt       19340
Asp Leu  Gln Asp Arg Asn Thr  Glu Leu Ser Tyr Gln  Leu Leu Leu
    3090                 3095                 3100

gac tct  ctg ggc gac aga acc  ctg tat ttc agt atg  tgg aat cag       19385
Asp Ser  Leu Gly Asp Arg Thr  Leu Tyr Phe Ser Met  Trp Asn Gln
    3105                 3110                 3115

gcg gtg  gac agc tat gat cct  gat gtg cgc att att  gaa aac cat       19430
Ala Val  Asp Ser Tyr Asp Pro  Asp Val Arg Ile Ile  Glu Asn His
    3120                 3125                 3130

ggt gtg  gaa gat gaa ctt ccc  aac tat tgc ttc cct  ctg gat gct       19475
Gly Val  Glu Asp Glu Leu Pro  Asn Tyr Cys Phe Pro  Leu Asp Ala
    3135                 3140                 3145

gtt ggt  agg aca gat act tat  cag gga att aag ccc  aat gga ggc       19520
Val Gly  Arg Thr Asp Thr Tyr  Gln Gly Ile Lys Pro  Asn Gly Gly
    3150                 3155                 3160

gat cca  gcc aca tgg gcc aaa  gat gac agc gcc aat  gat gct aat       19565
Asp Pro  Ala Thr Trp Ala Lys  Asp Asp Ser Ala Asn  Asp Ala Asn
```

```
    3165                3170                3175

gaa atg  ggc aag ggc aat cca  ttc gcc atg gaa atc  aac atc caa       19610
Glu Met  Gly Lys Gly Asn Pro  Phe Ala Met Glu Ile  Asn Ile Gln
    3180                3185                3190

gcc aac  ctg tgg agg aac ttc  ctc tac gcc aac gtg  gcc ctg tac       19655
Ala Asn  Leu Trp Arg Asn Phe  Leu Tyr Ala Asn Val  Ala Leu Tyr
    3195                3200                3205

cta ccc  gat tct tac aag tac  acg ccg gcc aac gtc  acc ctg ccc       19700
Leu Pro  Asp Ser Tyr Lys Tyr  Thr Pro Ala Asn Val  Thr Leu Pro
    3210                3215                3220

acc aac  acc aac acc tac gat  tat atg aac ggc cgg  gtg gtg gcg       19745
Thr Asn  Thr Asn Thr Tyr Asp  Tyr Met Asn Gly Arg  Val Val Ala
    3225                3230                3235

cct tcg  ctg gtg gac tcc tac  atc aac atc ggg gcg  cgc tgg tcg       19790
Pro Ser  Leu Val Asp Ser Tyr  Ile Asn Ile Gly Ala  Arg Trp Ser
    3240                3245                3250

ctg gac  ccc atg gac aac gtc  aat ccc ttc aac cac  cac cgc aac       19835
Leu Asp  Pro Met Asp Asn Val  Asn Pro Phe Asn His  His Arg Asn
    3255                3260                3265

gcg ggc  ttg cgc tac cgc tcc  atg ctc ctg ggc aac  ggg cgc tac       19880
Ala Gly  Leu Arg Tyr Arg Ser  Met Leu Leu Gly Asn  Gly Arg Tyr
    3270                3275                3280

gtg ccc  ttc cac atc cag gtg  ccc cag aaa ttt ttc  gcc atc aag       19925
Val Pro  Phe His Ile Gln Val  Pro Gln Lys Phe Phe  Ala Ile Lys
    3285                3290                3295

agc ctc  ctg ctc ctg ccc ggg  tcc tac acc tac gag  tgg aac ttc       19970
Ser Leu  Leu Leu Leu Pro Gly  Ser Tyr Thr Tyr Glu  Trp Asn Phe
    3300                3305                3310

cgc aag  gac gtc aac atg atc  ctg cag agc tcc ctc  ggc aac gac       20015
Arg Lys  Asp Val Asn Met Ile  Leu Gln Ser Ser Leu  Gly Asn Asp
    3315                3320                3325

ctg cgc  acg gac ggg gcc tcc  atc tcc ttc acc agc  atc aac ctc       20060
Leu Arg  Thr Asp Gly Ala Ser  Ile Ser Phe Thr Ser  Ile Asn Leu
    3330                3335                3340

tac gcc  acc ttc ttc ccc atg  gcg cac aac acg gcc  tcc acg ctc       20105
Tyr Ala  Thr Phe Phe Pro Met  Ala His Asn Thr Ala  Ser Thr Leu
    3345                3350                3355

gag gcc  atg ctg cgc aac gac  acc aac gac cag tcc  ttc aac gac       20150
Glu Ala  Met Leu Arg Asn Asp  Thr Asn Asp Gln Ser  Phe Asn Asp
    3360                3365                3370

tac ctc  tcg gcg gcc aac atg  ctc tac ccc atc ccg  gcc aac gcc       20195
Tyr Leu  Ser Ala Ala Asn Met  Leu Tyr Pro Ile Pro  Ala Asn Ala
    3375                3380                3385

acc aac  gtg ccc atc tcc atc  ccc tcg cgc aac tgg  gcc gcc ttc       20240
Thr Asn  Val Pro Ile Ser Ile  Pro Ser Arg Asn Trp  Ala Ala Phe
    3390                3395                3400

cgc ggc  tgg tcc ttc acg cgc  ctc aag acc aag gag  acg ccc tcg       20285
Arg Gly  Trp Ser Phe Thr Arg  Leu Lys Thr Lys Glu  Thr Pro Ser
    3405                3410                3415

ctg ggc  tcc ggg ttc gac ccc  tac ttc gtc tac tcg  ggc tcc atc       20330
Leu Gly  Ser Gly Phe Asp Pro  Tyr Phe Val Tyr Ser  Gly Ser Ile
    3420                3425                3430
```

```
ccc tac  ctc gac ggc acc ttc  tac ctc aac cac acc  ttc aag aag       20375
Pro Tyr  Leu Asp Gly Thr Phe  Tyr Leu Asn His Thr  Phe Lys Lys
    3435                 3440                 3445

gtc tcc  atc acc ttc gac tcc  tcc gtc agc tgg ccc  ggc aac gac       20420
Val Ser  Ile Thr Phe Asp Ser  Ser Val Ser Trp Pro  Gly Asn Asp
    3450                 3455                 3460

cgg ctc  ctg acg ccc aac gag  ttc gaa atc aag cgc  acc gtc gac       20465
Arg Leu  Leu Thr Pro Asn Glu  Phe Glu Ile Lys Arg  Thr Val Asp
    3465                 3470                 3475

ggc gag  ggc tac aac gtg gcc  cag tgc aac atg acc  aag gac tgg       20510
Gly Glu  Gly Tyr Asn Val Ala  Gln Cys Asn Met Thr  Lys Asp Trp
    3480                 3485                 3490

ttc ctg  gtc cag atg ctg gcc  cac tac aac atc ggc  tac cag ggc       20555
Phe Leu  Val Gln Met Leu Ala  His Tyr Asn Ile Gly  Tyr Gln Gly
    3495                 3500                 3505

ttc tac  gtg ccc gag ggc tac  aag gac cgc atg tac  tcc ttc ttc       20600
Phe Tyr  Val Pro Glu Gly Tyr  Lys Asp Arg Met Tyr  Ser Phe Phe
    3510                 3515                 3520

cgc aac  ttc cag ccc atg agc  cgc cag gtg gtg gac  gag gtc aac       20645
Arg Asn  Phe Gln Pro Met Ser  Arg Gln Val Val Asp  Glu Val Asn
    3525                 3530                 3535

tac aag  gac tac cag gcc gtc  acc ctg gcc tac cag  cac aac aac       20690
Tyr Lys  Asp Tyr Gln Ala Val  Thr Leu Ala Tyr Gln  His Asn Asn
    3540                 3545                 3550

tcg ggc  ttc gtc ggc tac ctc  gcg ccc acc atg cgc  cag ggc cag       20735
Ser Gly  Phe Val Gly Tyr Leu  Ala Pro Thr Met Arg  Gln Gly Gln
    3555                 3560                 3565

ccc tac  ccc gcc aac tac ccg  tac ccg ctc atc ggc  aag agc gcc       20780
Pro Tyr  Pro Ala Asn Tyr Pro  Tyr Pro Leu Ile Gly  Lys Ser Ala
    3570                 3575                 3580

gtc acc  agc gtc acc cag aaa  aag ttc ctc tgc gac  agg gtc atg       20825
Val Thr  Ser Val Thr Gln Lys  Lys Phe Leu Cys Asp  Arg Val Met
    3585                 3590                 3595

tgg cgc  atc ccc ttc tcc agc  aac ttc atg tcc atg  ggc gcg ctc       20870
Trp Arg  Ile Pro Phe Ser Ser  Asn Phe Met Ser Met  Gly Ala Leu
    3600                 3605                 3610

acc gac  ctc ggc cag aac atg  ctc tat gcc aac tcc  gcc cac gcg       20915
Thr Asp  Leu Gly Gln Asn Met  Leu Tyr Ala Asn Ser  Ala His Ala
    3615                 3620                 3625

cta gac  atg aat ttc gaa gtc  gac ccc atg gat gag  tcc acc ctt       20960
Leu Asp  Met Asn Phe Glu Val  Asp Pro Met Asp Glu  Ser Thr Leu
    3630                 3635                 3640

ctc tat  gtt gtc ttc gaa gtc  ttc gac gtc gtc cga  gtg cac cag       21005
Leu Tyr  Val Val Phe Glu Val  Phe Asp Val Val Arg  Val His Gln
    3645                 3650                 3655

ccc cac  cgc ggc gtc atc gag  gcc gtc tac ctg cgc  acc ccc ttc       21050
Pro His  Arg Gly Val Ile Glu  Ala Val Tyr Leu Arg  Thr Pro Phe
    3660                 3665                 3670

tcg gcc  ggt aac gcc acc acc  taaattgcta cttgc atg atg gct gag       21098
Ser Ala  Gly Asn Ala Thr Thr                  Met Met Ala Glu
    3675                 3680
```

```
gcc  gcg ggc tcc ggc gag  cag gag ctc agg gcc  atc atc cgc gac       21143
Ala  Ala Gly Ser Gly Glu  Gln Glu Leu Arg Ala  Ile Ile Arg Asp
3685                 3690                 3695

ctg  ggc tgc ggg ccc tac  ttc ctg ggc acc ttc  gat aag cgc ttc       21188
Leu  Gly Cys Gly Pro Tyr  Phe Leu Gly Thr Phe  Asp Lys Arg Phe
3700                 3705                 3710

ccg  gga ttc atg gcc ccg  cac aag ctg gcc tgc  gcc atc gtc aac       21233
Pro  Gly Phe Met Ala Pro  His Lys Leu Ala Cys  Ala Ile Val Asn
3715                 3720                 3725

acg  gcc ggt cgc gag acc  ggg ggc gag cac tgg  ctg gcc ttc gcc       21278
Thr  Ala Gly Arg Glu Thr  Gly Gly Glu His Trp  Leu Ala Phe Ala
3730                 3735                 3740

tgg  aac ccg cgc tcg aac  acc tgc tac ctc ttc  gac ccc ttc ggg       21323
Trp  Asn Pro Arg Ser Asn  Thr Cys Tyr Leu Phe  Asp Pro Phe Gly
3745                 3750                 3755

ttc  tcg gac gag cgc ctc  aag cag atc tac cag  ttc gag tac gag       21368
Phe  Ser Asp Glu Arg Leu  Lys Gln Ile Tyr Gln  Phe Glu Tyr Glu
3760                 3765                 3770

ggc  ctg ctg cgc cgc agc  gcc ctg gcc acc gag  gac cgc tgc gtc       21413
Gly  Leu Leu Arg Arg Ser  Ala Leu Ala Thr Glu  Asp Arg Cys Val
3775                 3780                 3785

acc  ctg gaa aag tcc acc  cag acc gtg cag ggt  ccg cgc tcg gcc       21458
Thr  Leu Glu Lys Ser Thr  Gln Thr Val Gln Gly  Pro Arg Ser Ala
3790                 3795                 3800

gcc  tgc ggg ctc ttc tgc  tgc atg ttc ctg cac  gcc ttc gtg cac       21503
Ala  Cys Gly Leu Phe Cys  Cys Met Phe Leu His  Ala Phe Val His
3805                 3810                 3815

tgg  ccc gac cgc ccc atg  gac aag aac ccc acc  atg aac ttg ctg       21548
Trp  Pro Asp Arg Pro Met  Asp Lys Asn Pro Thr  Met Asn Leu Leu
3820                 3825                 3830

acg  ggg gtg ccc aac ggc  atg ctc cag tcg ccc  cag gtg gaa ccc       21593
Thr  Gly Val Pro Asn Gly  Met Leu Gln Ser Pro  Gln Val Glu Pro
3835                 3840                 3845

acc  ctg cgc cgc aac cag  gag gcg ctc tac cgc  ttc ctc aac tcc       21638
Thr  Leu Arg Arg Asn Gln  Glu Ala Leu Tyr Arg  Phe Leu Asn Ser
3850                 3855                 3860

cac  tcc gcc tac ttt cgc  tcc cac cgc gcg cgc  atc gag aag gcc       21683
His  Ser Ala Tyr Phe Arg  Ser His Arg Ala Arg  Ile Glu Lys Ala
3865                 3870                 3875

acc  gcc ttc gat cgc atg  aac aat caa gac atg  taaaccgtgt            21726
Thr  Ala Phe Asp Arg Met  Asn Asn Gln Asp Met
3880                 3885                 3890

gtgtatgttt aaaatatctt ttaataaaca gcactttcat gttacacatg catctgagat    21786

gattattta gaa atc gaa agg gtt  ctg ccg ggt ctc ggc  atg gcc cgc      21834
          Glu Ile Glu Arg Val  Leu Pro Gly Leu Gly  Met Ala Arg
                          3895                 3900

ggg cag  gga cac gtt gcg gaa  ctg gta ctt ggc cag  cca ctt gaa       21879
Gly Gln  Gly His Val Ala Glu  Leu Val Leu Gly Gln  Pro Leu Glu
    3905                 3910                 3915

ctc ggg  gat cag cag ttt cgg  cag cgg ggt gtc ggg  gaa gga gtc       21924
Leu Gly  Asp Gln Gln Phe Arg  Gln Arg Gly Val Gly  Glu Gly Val
    3920                 3925                 3930
```

```
ggt cca  cag ctt ccg cgt cag  ttg cag ggc gcc cag  cag gtc ggg       21969
Gly Pro  Gln Leu Pro Arg Gln  Leu Gln Gly Ala Gln  Gln Val Gly
    3935                 3940                 3945

cgc gga  gat ctt gaa atc gca  gtt ggg acc cgc gtt  ctg cgc gcg       22014
Arg Gly  Asp Leu Glu Ile Ala  Val Gly Thr Arg Val  Leu Arg Ala
    3950                 3955                 3960

aga gtt  gcg gta cac ggg gtt  gca gca ctg gaa cac  cat cag ggc       22059
Arg Val  Ala Val His Gly Val  Ala Ala Leu Glu His  His Gln Gly
    3965                 3970                 3975

cgg gtg  ctt cac gct cgc cag  cac cgt cgc gtc ggt  gat gct ctc       22104
Arg Val  Leu His Ala Arg Gln  His Arg Arg Val Gly  Asp Ala Leu
    3980                 3985                 3990

cac gtc  gag gtc ctc ggc gtt  ggc cat ccc gaa ggg  ggt cat ctt       22149
His Val  Glu Val Leu Gly Val  Gly His Pro Glu Gly  Gly His Leu
    3995                 4000                 4005

gca ggt  ctg cct tcc cat agt  ggg cac gca ccc ggg  ctt gtg gtt       22194
Ala Gly  Leu Pro Ser His Ser  Gly His Ala Pro Gly  Leu Val Val
    4010                 4015                 4020

gca atc  gca gtg cag ggg gat  cag cat cat ctg ggc  ctg gtc ggc       22239
Ala Ile  Ala Val Gln Gly Asp  Gln His His Leu Gly  Leu Val Gly
    4025                 4030                 4035

gtt cat  ccc cgg gta cat ggc  ctt cat gaa agc ctc  caa ttg cct       22284
Val His  Pro Arg Val His Gly  Leu His Glu Ser Leu  Gln Leu Pro
    4040                 4045                 4050

gaa agc  ctg ctg ggc ctt ggc  tcc ctc ggt gaa gaa  gac ccc gca       22329
Glu Ser  Leu Leu Gly Leu Gly  Ser Leu Gly Glu Glu  Asp Pro Ala
    4055                 4060                 4065

gga ctt  gct aga gaa ctg gtt  ggt agc gca ccc ggc  gtc gtg cac       22374
Gly Leu  Ala Arg Glu Leu Val  Gly Ser Ala Pro Gly  Val Val His
    4070                 4075                 4080

gca gca  gcg cgc gtc gtt gtt  ggc cag ctg cac cac  gct gcg ccc       22419
Ala Ala  Ala Arg Val Val Val  Gly Gln Leu His His  Ala Ala Pro
    4085                 4090                 4095

cca gcg  gtt ctg ggt gat ctt  ggc ccg gtc ggg gtt  ctc ctt cag       22464
Pro Ala  Val Leu Gly Asp Leu  Gly Pro Val Gly Val  Leu Leu Gln
    4100                 4105                 4110

cgc gcg  ctg ccc gtt ctc gct  cgc cac atc cat ctc  gat cat gtg       22509
Arg Ala  Leu Pro Val Leu Ala  Arg His Ile His Leu  Asp His Val
    4115                 4120                 4125

ctc ctt  ctg gat cat ggt ggt  ccc gtg cag gca ccg  cag ctt gcc       22554
Leu Leu  Leu Asp His Gly Gly  Pro Val Gln Ala Pro  Gln Leu Ala
    4130                 4135                 4140

ctc ggt  ctc ggt gca ccc gtg  cag cca cag cgc gca  ccc ggt gca       22599
Leu Gly  Leu Gly Ala Pro Val  Gln Pro Gln Arg Ala  Pro Gly Ala
    4145                 4150                 4155

ctc cca  gtt ctt gtg ggc gat  ctg gga atg cgc gtg  cac gaa ccc       22644
Leu Pro  Val Leu Val Gly Asp  Leu Gly Met Arg Val  His Glu Pro
    4160                 4165                 4170

ctg cag  gaa gcg gcc cat cat  ggt ggt cag ggt ctt  gtt gct agt       22689
Leu Gln  Glu Ala Ala His His  Gly Gly Gln Gly Leu  Val Ala Ser
    4175                 4180                 4185
```

```
gaa ggt  cag cgg gat gcc gcg  gtg ctc ctc gtt gat  gta cag gtg       22734
Glu Gly  Gln Arg Asp Ala Ala  Val Leu Leu Val Asp  Val Gln Val
    4190                 4195                 4200

gca gat  gcg gcg gta cac ctc  gcc ctg ctc ggg cat  cag ctg gaa       22779
Ala Asp  Ala Ala Val His Leu  Ala Leu Leu Gly His  Gln Leu Glu
    4205                 4210                 4215

gtt ggc  ttt cag gtc ggt ctc  cac gcg gta gcg gtc  cat cag tat       22824
Val Gly  Phe Gln Val Gly Leu  His Ala Val Ala Val  His Gln Tyr
    4220                 4225                 4230

agt cat  gat ttc cat acc ctt  ctc cca ggc cga gac  gat ggg cag       22869
Ser His  Asp Phe His Thr Leu  Leu Pro Gly Arg Asp  Asp Gly Gln
    4235                 4240                 4245

gct cat  agg gtt ctt cac cat  cat ctt agc act agc  agc cgc ggc       22914
Ala His  Arg Val Leu His His  His Leu Ser Thr Ser  Ser Arg Gly
    4250                 4255                 4260

cag ggg  gtc gct ctc atc cag  ggt ctc aaa gct ccg  ctt gcc gtc       22959
Gln Gly  Val Ala Leu Ile Gln  Gly Leu Lys Ala Pro  Leu Ala Val
    4265                 4270                 4275

ctt ctc  ggt gat ccg cac cgg  ggg gta gct gaa gcc  cac ggc cgc       23004
Leu Leu  Gly Asp Pro His Arg  Gly Val Ala Glu Ala  His Gly Arg
    4280                 4285                 4290

cag ctc  ctc ctc ggc ctg cct  ttc gtc ctc gct gtc  ctg gct gac       23049
Gln Leu  Leu Leu Gly Leu Pro  Phe Val Leu Ala Val  Leu Ala Asp
    4295                 4300                 4305

gtc ctg  cag gac cac atg ctt  ggt ctt gcg ggg ttt  ctt ctt ggg       23094
Val Leu  Gln Asp His Met Leu  Gly Leu Ala Gly Phe  Leu Leu Gly
    4310                 4315                 4320

cgg cag  cgg cgg cgg aga tgc  ttg tgg cga ggg gga  gcg cga gtt       23139
Arg Gln  Arg Arg Arg Arg Cys  Leu Trp Arg Gly Gly  Ala Arg Val
    4325                 4330                 4335

ctc gct  cac cac tac tat ctc  ttc ctc ttc gtg gtc  cga ggc cac       23184
Leu Ala  His His Tyr Tyr Leu  Phe Leu Phe Val Val  Arg Gly His
    4340                 4345                 4350

gcg gcg  gta ggt atg tct ctt  cgg ggg cag agg cgg  agg cga cgg       23229
Ala Ala  Val Gly Met Ser Leu  Arg Gly Gln Arg Arg  Arg Arg Arg
    4355                 4360                 4365

gct ctc  gcc gcc gcg act tgg  cgg atg gct ggc aga  gcc cct tcc       23274
Ala Leu  Ala Ala Ala Thr Trp  Arg Met Ala Gly Arg  Ala Pro Ser
    4370                 4375                 4380

gcg atc  ggg ggt gcg ctc ccg  gcg gcg ctc tga ctg act  tcc tcc       23319
Ala Ile  Gly Gly Ala Leu Pro  Ala Ala Leu     Leu Thr  Ser Ser
    4385                 4390                     4395

gcg gcc ggc  cat tgtgttctcc tagggaggaa caacaagcat ggagactcag        23371
Ala Ala Gly  His
        4400

ccatcgccaa cctcgccatc tgcccccacc accgccgacg agaagcagca gaatgaaagc    23431

ttaaccgccc cgccgcccag ccccgccacc tccgacgcag ccgcggtccc agacatgcaa    23491

gagatggagg aatccatcga gattgacctg ggctatgtga cgcccgcgga gcacgaggag    23551

gagctggcag tgcgctttca atcgtcaagc caggaagata aagaacagcc agagcaggaa    23611

gcagaaaacg agcagagtca ggctgggctc gagcatgacg gcgactacct ccacctgagc    23671
```

```
ggggaggagg acgcgctcat caagcatctg gcccggcagg ccatcatcgt caaggatgcg    23731

ctgctcgacc gcaccgaggt gcccctcagc gtggaggagc tcagccgcgc ctacgagctc    23791

aacctcttct cgccgcgcgt gccccccaag cgccagccca acggcacctg cgagcccaac    23851

ccgcgcctca acttctaccc ggtcttcgcg gtgcccgagg ccctggccac ctaccacatc    23911

ttttcaaga accaaaagat ccccgtctcc tgtcgcgcca accgcacccg cgccgacgcc    23971

ctcttcaacc tgggccccgg cgcccgccta cctgatatcg cctccttgga agaggttccc    24031

aagatcttcg agggtctggg cagcgacgag actcgggccg caaacgctct gcaaggagaa    24091

ggaggagagc atgagcacca cagcgccctg gtcgagttgg aaggcgacaa cgcgcggctg    24151

gcggtgctca aacgcacggt cgagctgacc catttcgcct acccggctct gaacctgccc    24211

cccaaagtca tgagcgcggt catggaccag gtgctcatca agcgcgcgtc gcccatctcc    24271

gaggacgagg gcatgcaaga ctccgaggat ggcaagcccg tggtcagcga cgagcagctg    24331

gcccggtggc tgggtcctaa tgctagtccc cagagtttgg aagagcggcg caagctcatg    24391

atggccgtgg tcctggtgac cgtggagctg gagtgcctgc gccgcttctt cgccgacgcg    24451

gagaccctgc gcaaggtcga ggagaacctg cactacctct tcaggcacgg gttcgtgcgc    24511

caggcctgca agatctccaa cgtggagctg accaacctgg tctcctacat gggcatcttg    24571

cacgagaacc gcctggggca gaacgtgctg cacaccaccc tgcgcgggga ggcccgccgc    24631

gactacatcc gcgactgcgt ctacctctac ctctgccaca cctggcagac gggcatgggc    24691

gtgtggcagc agtgtctgga ggagcagaac ctgaaagagc tctgcaagct cctgcagaag    24751

aacctcaagg gtctgtggac cgggttcgac gagcggacca ccgcctcgga cctggccgac    24811

ctcatcttcc ccgagcgcct caggctgacg ctgcgcaacg gcctgcccga ctttatgagc    24871

caaagcatgt tgcaaaactt tcgctctttc atcctcgaac gctccggaat cctgcccgcc    24931

acctgctccg cgctgccctc ggacttcgtg ccgctgacct tccgcgagtg ccccccgccg    24991

ctgtggagcc actgctacct gctgcgcctg gccaactacc tggcctacca ctcggacgtg    25051

atcgaggacg tcagcggcga gggcctgctt gagtgccact gccgctgcaa cctctgcacg    25111

ccgcaccgct ccctggcctg caacccccag ctgctgagcg agacccagat catcggcacc    25171

ttcgagttgc aagggcccag cgatgacggc gagggagcca agggggtct gaaactcacc    25231

ccggggctgt ggacctcggc ctacttgcgc aagttcgtgc ccgaggacta ccatcccttc    25291

gagatcaggt tctacgagga ccaatcccag ccgcctaagg ccgagctgtc ggcctgcgtc    25351

atcacccagg gggccatcct ggcccaattg caagccatcc agaaatcccg ccaagaattc    25411

ttgctgaaaa agggccgcgg ggtctacctc gacccccaga ccggtgagga gctcaacccc    25471

ggcttccccc agg atg ccc cga gga  aac aag aag ctg aaa  gtg gag ctg     25520
              Met Pro Arg Gly  Asn Lys Lys Leu Lys  Val Glu Leu
                           4405                4410

ccg ccc  gtg gag gat ttg gag  gaa gac tgg gag aac  agc agt cag      25565
Pro Pro  Val Glu Asp Leu Glu  Glu Asp Trp Glu Asn  Ser Ser Gln
    4415                4420                4425
```

```
gca gag  gag gag atg gag gaa  gac tgg gac agc act  cag gca gag       25610
Ala Glu  Glu Glu Met Glu Glu  Asp Trp Asp Ser Thr  Gln Ala Glu
    4430                 4435                 4440

gag gac  agc ctg caa gac agt  ctg gag gaa gac gag  gag gag gca       25655
Glu Asp  Ser Leu Gln Asp Ser  Leu Glu Glu Asp Glu  Glu Glu Ala
    4445                 4450                 4455

gag gtg  gaa gaa gca gcc gcc  gcc aga ccg tcg tcc  tcg gcg ggg       25700
Glu Val  Glu Glu Ala Ala Ala  Ala Arg Pro Ser Ser  Ser Ala Gly
    4460                 4465                 4470

gag aaa  gca agc agc acg gat  acc atc tcc gct ccg  ggt cgg ggt       25745
Glu Lys  Ala Ser Ser Thr Asp  Thr Ile Ser Ala Pro  Gly Arg Gly
    4475                 4480                 4485

ccc gct  cgg ccc cac agt aga  tgg gac gag acc ggg  cga ttc ccg       25790
Pro Ala  Arg Pro His Ser Arg  Trp Asp Glu Thr Gly  Arg Phe Pro
    4490                 4495                 4500

aac ccc  acc atc cag acc ggt  aag aag gag cgg cag  gga tac aag       25835
Asn Pro  Thr Ile Gln Thr Gly  Lys Lys Glu Arg Gln  Gly Tyr Lys
    4505                 4510                 4515

tcc tgg  cgg ggg cac aaa aac  gcc atc gtc tcc tgc  ttg cag gcc       25880
Ser Trp  Arg Gly His Lys Asn  Ala Ile Val Ser Cys  Leu Gln Ala
    4520                 4525                 4530

tgc ggg  ggc aac atc tcc ttc  acc agg cgc tac ctg  ctc ttc cac       25925
Cys Gly  Gly Asn Ile Ser Phe  Thr Arg Arg Tyr Leu  Leu Phe His
    4535                 4540                 4545

cgc ggg  gtg aac ttc ccc cgc  aac atc ttg cat tac  tac cgt cac       25970
Arg Gly  Val Asn Phe Pro Arg  Asn Ile Leu His Tyr  Tyr Arg His
    4550                 4555                 4560

ctc cac  agc ccc tac tac ttc  caa gaa gag gca gca  gca gaa aaa       26015
Leu His  Ser Pro Tyr Tyr Phe  Gln Glu Glu Ala Ala  Ala Glu Lys
    4565                 4570                 4575

gac cag  cag aaa acc agc agc  tagaaaatcc acagcggcag caggtggact       26066
Asp Gln  Gln Lys Thr Ser Ser
    4580                 4585

gaggatcgcg gcgaacgagc cggcgcagac ccgggagctg aggaaccgga tctttcccac    26126

cctctatgcc atcttccagc agagtcgggg gcaggagcag gaactgaaag tcaagaaccg    26186

ttctctgcgc tcgctcaccc gcagttgtct gtatcacaag agcgaagacc aacttcagcg    26246

cactctcgag gacgccgagg ctctcttcaa caagtactgc gcgctcactc ttaaagagta    26306

gcccgcgccc gcccagtcgc agaaaaaggc gggaattacg tcacctgtgc ccttcgccct    26366

agccgcctcc acccatc atg agc aaa gag att  ccc acg cct tac atg  tgg     26416
                  Met Ser Lys Glu Ile  Pro Thr Pro Tyr Met  Trp
                                  4590                 4595

agc tac cag ccc  cag atg ggc ctg gcc  gcc ggc gcc gcc cag  gac       26461
Ser Tyr Gln Pro  Gln Met Gly Leu Ala  Ala Gly Ala Ala Gln  Asp
            4600                 4605                 4610

tac tcc acc cgc  atg aat tgg ctc agc  gcc ggg ccc gcg atg  atc       26506
Tyr Ser Thr Arg  Met Asn Trp Leu Ser  Ala Gly Pro Ala Met  Ile
            4615                 4620                 4625

tca cgg gtg aat  gac atc cgc gcc cac  cga aac cag ata ctc  cta       26551
Ser Arg Val Asn  Asp Ile Arg Ala His  Arg Asn Gln Ile Leu  Leu
            4630                 4635                 4640
```

```
gaa cag tca gcg  ctc acc gcc acg ccc  cgc aat cac ctc aat  ccg       26596
Glu Gln Ser Ala  Leu Thr Ala Thr Pro  Arg Asn His Leu Asn  Pro
            4645                 4650                 4655

cgt aat tgg ccc  gcc gcc ctg gtg tac  cag gaa att ccc cag  ccc       26641
Arg Asn Trp Pro  Ala Ala Leu Val Tyr  Gln Glu Ile Pro Gln  Pro
            4660                 4665                 4670

acg acc gta cta  ctt ccg cga gac gcc  cag gcc gaa gtc cag  ctg       26686
Thr Thr Val Leu  Leu Pro Arg Asp Ala  Gln Ala Glu Val Gln  Leu
            4675                 4680                 4685

act aac tca ggt  gtc cag ctg gcg ggc  ggc gcc acc ctg tgt  cgt       26731
Thr Asn Ser Gly  Val Gln Leu Ala Gly  Gly Ala Thr Leu Cys  Arg
            4690                 4695                 4700

cac cgc ccc gct  cag ggt ata aag cgg  ctg gtg atc cgg ggc  aga       26776
His Arg Pro Ala  Gln Gly Ile Lys Arg  Leu Val Ile Arg Gly  Arg
            4705                 4710                 4715

ggc aca cag ctc  aac gac gag gtg gtg  agc tct tcg ctg ggt  ctg       26821
Gly Thr Gln Leu  Asn Asp Glu Val Val  Ser Ser Ser Leu Gly  Leu
            4720                 4725                 4730

cga cct gac gga  gtc ttc caa atc gcc  gga tcg ggg aga tct  tcc       26866
Arg Pro Asp Gly  Val Phe Gln Ile Ala  Gly Ser Gly Arg Ser  Ser
            4735                 4740                 4745

ttc acg cct cgt  cag gcg gtc ctg act  ttg gag agt tcg tcc  tcg       26911
Phe Thr Pro Arg  Gln Ala Val Leu Thr  Leu Glu Ser Ser Ser  Ser
            4750                 4755                 4760

cag ccc cgc tcg  ggc ggc atc ggc act  ctc cag ttc gtg gag  gag       26956
Gln Pro Arg Ser  Gly Gly Ile Gly Thr  Leu Gln Phe Val Glu  Glu
            4765                 4770                 4775

ttc act ccc tcg  gtc tac ttc aac ccc  ttc tcc ggc tcc ccc  ggc       27001
Phe Thr Pro Ser  Val Tyr Phe Asn Pro  Phe Ser Gly Ser Pro  Gly
            4780                 4785                 4790

cac tac ccg gac  gag ttc atc ccg aac  ttt gac gcc atc agc  gag       27046
His Tyr Pro Asp  Glu Phe Ile Pro Asn  Phe Asp Ala Ile Ser  Glu
            4795                 4800                 4805

tcg gtg gac ggc  tac gat tga atg tcc cat  ggt ggc gcg gct gac       27091
Ser Val Asp Gly  Tyr Asp     Met Ser His  Gly Gly Ala Ala Asp
            4810                      4815                 4820

cta gct cgg ctt cga  cac ctg gac cac tgc  cgc cgc ttt cgc tgc       27136
Leu Ala Arg Leu Arg  His Leu Asp His Cys  Arg Arg Phe Arg Cys
                4825                 4830                 4835

ttc gct cgg gac ctc  gcc gag ttc acc tac  ttc gag ctg ccc gag       27181
Phe Ala Arg Asp Leu  Ala Glu Phe Thr Tyr  Phe Glu Leu Pro Glu
                4840                 4845                 4850

gag cat cct cag ggc  ccg gcc cac gga gtg  cgg atc gtc gtc gaa       27226
Glu His Pro Gln Gly  Pro Ala His Gly Val  Arg Ile Val Val Glu
                4855                 4860                 4865

ggg ggc cta gac tcc  cac ctg ctt cgg atc  ttc agc cag cgc ccg       27271
Gly Gly Leu Asp Ser  His Leu Leu Arg Ile  Phe Ser Gln Arg Pro
                4870                 4875                 4880

atc ctg gtc gag cgc  caa cag ggc aac acc  ctc ctg acc ctc tac       27316
Ile Leu Val Glu Arg  Gln Gln Gly Asn Thr  Leu Leu Thr Leu Tyr
                4885                 4890                 4895
```

```
tgc atc tgc gac cac  ccc ggc ctg cat gaa  agt ctt tgt tgt ctg        27361
Cys Ile Cys Asp His  Pro Gly Leu His Glu  Ser Leu Cys Cys Leu
                4900                4905                4910

ctg tgt act gag tat  aat aaa agc tgagatcagc gactactccg gactcaactg    27415
Leu Cys Thr Glu Tyr  Asn Lys Ser
                4915

tggtgtttct gcatccatca accagtctct gaccttcacc gggaacgaga ccgagctcca    27475

gctccagtgt aagccccaca agaagtacct cacctggctg taccagggct ccccgatcgc    27535

cgttgttaac cactgcgacg acgacggagt cctgctgaac ggccccgcca accttacttt    27595

ttccacccgc agaagcaagc tactgctctt cagacccttc ctccccggga tctatcagtg    27655

catctcggga ccctgccatc acaccttcca cctgatcccg aataccacct cttccccagc    27715

accgctcccc actaacaacc aaactaacca ccaacgccac cgtcgagacc tttcctctga    27775

ttctaatacc actaccggag gtgagctccg aggtactaag aagtcctcac ctgggattta    27835

ttacggcccc tgggaggtgg tggggttaat agctttaggc ttagtagcgg gtgggctttt    27895

ggctctctgc tacctatacc tcccttgctg ttcctactta gtggtgcttt gttgctggtt    27955

taagaa atg ggg  aag atc acc cta gtg  tgc ggt gtg ctg gtg  acg gtg    28003
       Met Gly  Lys Ile Thr Leu Val  Cys Gly Val Leu Val  Thr Val
           4920                4925                4930

gtg ctt tcg  att ctg gga ggg gga  agc gcg gct gta gtg  acg gag       28048
Val Leu Ser  Ile Leu Gly Gly Gly  Ser Ala Ala Val Val  Thr Glu
        4935                4940                4945

aag aag gcc  gat ccc tgc ttg act  ttc aat ccc gat aaa  tgc cgg       28093
Lys Lys Ala  Asp Pro Cys Leu Thr  Phe Asn Pro Asp Lys  Cys Arg
        4950                4955                4960

ctg agt ttt  cag cca gat ggc aat  cgg tgc acg gtg ctg  atc aag       28138
Leu Ser Phe  Gln Pro Asp Gly Asn  Arg Cys Thr Val Leu  Ile Lys
        4965                4970                4975

tgc gga tgg  gaa tgc gag agc gtg  gcg atc cag tat aaa  aac aag       28183
Cys Gly Trp  Glu Cys Glu Ser Val  Ala Ile Gln Tyr Lys  Asn Lys
        4980                4985                4990

acg cgg aac  aat act ctc gcg tcc  aca tgg cag ccc ggg  gac ccc       28228
Thr Arg Asn  Asn Thr Leu Ala Ser  Thr Trp Gln Pro Gly  Asp Pro
        4995                5000                5005

gag tgg tac  acc gtc tct gtc cct  ggt gct gac ggc tcc  ctc cac       28273
Glu Trp Tyr  Thr Val Ser Val Pro  Gly Ala Asp Gly Ser  Leu His
        5010                5015                5020

acg gtg aac  aac act ttc att ttt  gag cac atg tgc gaa  acc gcc       28318
Thr Val Asn  Asn Thr Phe Ile Phe  Glu His Met Cys Glu  Thr Ala
        5025                5030                5035

atg ttc atg  agc aag cag tac ggt  atg tgg ccc cca cga  aaa gag       28363
Met Phe Met  Ser Lys Gln Tyr Gly  Met Trp Pro Pro Arg  Lys Glu
        5040                5045                5050

aat atc gtg  gtc ttc tcc atc gct  tac agc gcg tgc acg  gtg cta       28408
Asn Ile Val  Val Phe Ser Ile Ala  Tyr Ser Ala Cys Thr  Val Leu
        5055                5060                5065

atc acc gcg  atc gtg tgc ctg agc  att cac atg ctc atc  gct att       28453
Ile Thr Ala  Ile Val Cys Leu Ser  Ile His Met Leu Ile  Ala Ile
        5070                5075                5080
```

```
cgc ccc aga  aat aat gcc gag aaa  gag aaa cag cca taacacactt         28499
Arg Pro Arg  Asn Asn Ala Glu Lys  Glu Lys Gln Pro
        5085                 5090

ttttcacaca ccttgttttt tacagaca atg  cgt ctg tta att ttt  gtt atc     28551
                                Met  Arg Leu Leu Ile Phe  Val Ile
                                5095                 5100

att aca ctc  agc ttt aac tat gcc  cat ggc tat gca aat  ata caa       28596
Ile Thr Leu  Ser Phe Asn Tyr Ala  His Gly Tyr Ala Asn  Ile Gln
        5105                 5110                 5115

aaa acc ctc  tat gta ggc tct gac  tct aca tta gaa ggt  act caa       28641
Lys Thr Leu  Tyr Val Gly Ser Asp  Ser Thr Leu Glu Gly  Thr Gln
        5120                 5125                 5130

tct caa gcc  agg gtt tca tgg tat  ttt tat aaa ggc tct  gat gac       28686
Ser Gln Ala  Arg Val Ser Trp Tyr  Phe Tyr Lys Gly Ser  Asp Asp
        5135                 5140                 5145

cca att act  ctt tgc aaa ggt gat  cag ggg cgc ata aca  aag cca       28731
Pro Ile Thr  Leu Cys Lys Gly Asp  Gln Gly Arg Ile Thr  Lys Pro
        5150                 5155                 5160

cct atc aca  ttt agc tgc acc aga  aca aac ctc acg ctt  tta tcc       28776
Pro Ile Thr  Phe Ser Cys Thr Arg  Thr Asn Leu Thr Leu  Leu Ser
        5165                 5170                 5175

att aca aaa  gaa tat gct ggc act  tat tac agc aca aat  ttt cat       28821
Ile Thr Lys  Glu Tyr Ala Gly Thr  Tyr Tyr Ser Thr Asn  Phe His
        5180                 5185                 5190

cgt ggg caa  gat aaa tat tat act  gtt aag gta gaa aac  cct acc       28866
Arg Gly Gln  Asp Lys Tyr Tyr Thr  Val Lys Val Glu Asn  Pro Thr
        5195                 5200                 5205

acc cct aga  aca act aca aag ccc  acc aca act aag aag  ccc act       28911
Thr Pro Arg  Thr Thr Thr Lys Pro  Thr Thr Thr Lys Lys  Pro Thr
        5210                 5215                 5220

aca cct aag  aag cct acc aca ccc  aaa acc act aag aca  aca act       28956
Thr Pro Lys  Lys Pro Thr Thr Pro  Lys Thr Thr Lys Thr  Thr Thr
        5225                 5230                 5235

gct aag acc  act acc aca aag cca  acc aca acc agc acc  aca ctt       29001
Ala Lys Thr  Thr Thr Thr Lys Pro  Thr Thr Thr Ser Thr  Thr Leu
        5240                 5245                 5250

gct ata act  aca cac aca cac act  gag ctg acc tca cag  gca act       29046
Ala Ile Thr  Thr His Thr His Thr  Glu Leu Thr Ser Gln  Ala Thr
        5255                 5260                 5265

act gaa aat  gat ttg gtt gcc ctg  ttg caa aag ggg gag  aac agt       29091
Thr Glu Asn  Asp Leu Val Ala Leu  Leu Gln Lys Gly Glu  Asn Ser
        5270                 5275                 5280

agc agc agt  cct ctg cct act acc  ccc agt gag gaa ata  ccc aag       29136
Ser Ser Ser  Pro Leu Pro Thr Thr  Pro Ser Glu Glu Ile  Pro Lys
        5285                 5290                 5295

tcc atg gtt  ggc att atc gct gct  gta gtg gtg tgt atg  ctg att       29181
Ser Met Val  Gly Ile Ile Ala Ala  Val Val Val Cys Met  Leu Ile
        5300                 5305                 5310

atc atc ttg  tgc atg atg tac tat  gcc tgc tac tac aga  aaa cac       29226
Ile Ile Leu  Cys Met Met Tyr Tyr  Ala Cys Tyr Tyr Arg  Lys His
        5315                 5320                 5325
```

```
agg ctg aac  aac aaa ctg gac ccc  tta ctg agt gtt gat  ttt           29268
Arg Leu Asn  Asn Lys Leu Asp Pro  Leu Leu Ser Val Asp  Phe
        5330                 5335                 5340

taatttttta gaacc atg aag atc cta  agc ctt ttt gtt ttt  tct ata       29316
                Met Lys Ile Leu  Ser Leu Phe Val Phe  Ser Ile
                             5345                 5350

att att acc  tct gct att tgt gaa  tca gtg gat aag gac  gtt act       29361
Ile Ile Thr  Ser Ala Ile Cys Glu  Ser Val Asp Lys Asp  Val Thr
        5355                 5360                 5365

gtc acc act  ggc tct aat tat aca  cta aaa ggg cct tcc  tca ggt       29406
Val Thr Thr  Gly Ser Asn Tyr Thr  Leu Lys Gly Pro Ser  Ser Gly
        5370                 5375                 5380

atg ctt tcg  tgg tat tgt tat ttt  gga aat gat gat aaa  cag aca       29451
Met Leu Ser  Trp Tyr Cys Tyr Phe  Gly Asn Asp Asp Lys  Gln Thr
        5385                 5390                 5395

gag cta tgt  aac ttt cag aac ggc  aaa acc aaa aat tct  aaa ata       29496
Glu Leu Cys  Asn Phe Gln Asn Gly  Lys Thr Lys Asn Ser  Lys Ile
        5400                 5405                 5410

gat aac tat  caa tgc cag ggt act  aat tta gta ctg atg  aat atc       29541
Asp Asn Tyr  Gln Cys Gln Gly Thr  Asn Leu Val Leu Met  Asn Ile
        5415                 5420                 5425

acg aaa gca  tat gct ggc agt tat  tcc tgt cct gga caa  aac acc       29586
Thr Lys Ala  Tyr Ala Gly Ser Tyr  Ser Cys Pro Gly Gln  Asn Thr
        5430                 5435                 5440

gag gaa atg  att ttt tac aaa tta  att gta gtt gac cct  act act       29631
Glu Glu Met  Ile Phe Tyr Lys Leu  Ile Val Val Asp Pro  Thr Thr
        5445                 5450                 5455

cca gca cca  ccc acc aca acc aag  gca cat acc aca gac  aca cag       29676
Pro Ala Pro  Pro Thr Thr Thr Lys  Ala His Thr Thr Asp  Thr Gln
        5460                 5465                 5470

gaa acc act  cca gag gca gaa gta  gca gag tta gca aag  cag att       29721
Glu Thr Thr  Pro Glu Ala Glu Val  Ala Glu Leu Ala Lys  Gln Ile
        5475                 5480                 5485

cat gaa gat  tca ttt gtt gcc aat  acc ccc aca cac ccc  gga ccg       29766
His Glu Asp  Ser Phe Val Ala Asn  Thr Pro Thr His Pro  Gly Pro
        5490                 5495                 5500

caa tgt cca  ggg cca tta gtc agc  ggc att gtc ggt gtg  ctt tgc       29811
Gln Cys Pro  Gly Pro Leu Val Ser  Gly Ile Val Gly Val  Leu Cys
        5505                 5510                 5515

ggg tta gca  gtt ata atc atc tgc  atg ttc att ttt gct  tgc tgc       29856
Gly Leu Ala  Val Ile Ile Ile Cys  Met Phe Ile Phe Ala  Cys Cys
        5520                 5525                 5530

tac aga agg  ctt cac cga caa aaa  tca gac cca ctg ctg  aac ctc       29901
Tyr Arg Arg  Leu His Arg Gln Lys  Ser Asp Pro Leu Leu  Asn Leu
        5535                 5540                 5545

tat gtt taatttttga ttttccagag cc atg  aag gca ctt agc act  tta       29950
Tyr Val                         Met  Lys Ala Leu Ser Thr  Leu
                                5550                 5555

gta ttt ttg tcc  ttg att ggc att gtt  ttc agt gct ggg ttt  ttg       29995
Val Phe Leu Ser  Leu Ile Gly Ile Val  Phe Ser Ala Gly Phe  Leu
            5560                 5565                 5570

aaa aat ctt acc  att att gaa ggt gat  aat gca aca ctg gta  gga       30040
```

```
Lys Asn Leu Thr  Ile Ile Glu Gly Asp  Asn Ala Thr Leu Val  Gly
            5575                5580                5585

atc agc ggt cag  aat gtt agt tgg cta  aaa tat cat cta gat  ggg       30085
Ile Ser Gly Gln  Asn Val Ser Trp Leu  Lys Tyr His Leu Asp  Gly
            5590                5595                5600

tgg aaa cct att  tgc acc tgg aat gtc  agt gtg tac aca tgc  cat       30130
Trp Lys Pro Ile  Cys Thr Trp Asn Val  Ser Val Tyr Thr Cys  His
            5605                5610                5615

ggt gtt aac ctc  acc att acc aat gcc  acc caa gat cag aat  ggc       30175
Gly Val Asn Leu  Thr Ile Thr Asn Ala  Thr Gln Asp Gln Asn  Gly
            5620                5625                5630

agg ttt aag ggt  cag agt ttc act agc  aac aat ggg tat gaa  acc       30220
Arg Phe Lys Gly  Gln Ser Phe Thr Ser  Asn Asn Gly Tyr Glu  Thr
            5635                5640                5645

cat aac atg ttc  atc tat gat gtc act  gtc ata tca aat aag  act       30265
His Asn Met Phe  Ile Tyr Asp Val Thr  Val Ile Ser Asn Lys  Thr
            5650                5655                5660

aca cct acc aca  cag aca ccc act aca  cat agc tca act cat  gcc       30310
Thr Pro Thr Thr  Gln Thr Pro Thr Thr  His Ser Ser Thr His  Ala
            5665                5670                5675

atg cag acc act  cag aca acc aca tac  act aca tct act gag  tcc       30355
Met Gln Thr Thr  Gln Thr Thr Thr Tyr  Thr Thr Ser Thr Glu  Ser
            5680                5685                5690

acc acc acc act  aca gca gag gta tcc  agc aca gcg cct cag  ccc       30400
Thr Thr Thr Thr  Thr Ala Glu Val Ser  Ser Thr Ala Pro Gln  Pro
            5695                5700                5705

cag gca ttg gct  ttg atg gct cag cct  agc agc atg act gct  aaa       30445
Gln Ala Leu Ala  Leu Met Ala Gln Pro  Ser Ser Met Thr Ala  Lys
            5710                5715                5720

acc aat gag cag  act act gaa ttt ttg  tcc act att cag agc  agc       30490
Thr Asn Glu Gln  Thr Thr Glu Phe Leu  Ser Thr Ile Gln Ser  Ser
            5725                5730                5735

acc aca gct acc  tcg agt gcc ttc tct  agc acc gcc aat ctc  acc       30535
Thr Thr Ala Thr  Ser Ser Ala Phe Ser  Ser Thr Ala Asn Leu  Thr
            5740                5745                5750

tcg ctt tcc tct  acg cca atc agt aac  gct act acc tcc ccc  gct       30580
Ser Leu Ser Ser  Thr Pro Ile Ser Asn  Ala Thr Thr Ser Pro  Ala
            5755                5760                5765

cct ctt ccc act  cct ctg aag caa tcc  gag tct agc acg cag  ctg       30625
Pro Leu Pro Thr  Pro Leu Lys Gln Ser  Glu Ser Ser Thr Gln  Leu
            5770                5775                5780

cag atc acc ctg  ctc att gtg atc ggg  gtg gtc atc ctg gca  gtg       30670
Gln Ile Thr Leu  Leu Ile Val Ile Gly  Val Val Ile Leu Ala  Val
            5785                5790                5795

ctg ctc tac ttt  atc ttc tgc cgc cgc  atc ccc aac gcg aaa  ccg       30715
Leu Leu Tyr Phe  Ile Phe Cys Arg Arg  Ile Pro Asn Ala Lys  Pro
            5800                5805                5810

gcc tac aag ccc  att gtt atc ggg acg  ccg gag ccg ctt cag  gtg       30760
Ala Tyr Lys Pro  Ile Val Ile Gly Thr  Pro Glu Pro Leu Gln  Val
            5815                5820                5825

gag gga ggt cta  agg aat ctt ctc ttc  tct ttt aca gta tgg            30802
Glu Gly Gly Leu  Arg Asn Leu Leu Phe  Ser Phe Thr Val Trp
```

```
            5830                5835                5840

tgatttgaac tatgattcct agacatttca ttatcacttc tctaatctgt gtgctccaag    30862

tctgtgccac cctcgctctc gtggctaacg cgagtccaga ctgcattgga gcgttcgcct    30922

cctacgtgct ctttgccttc atcacctgca tctgctgctg tagcatagtc tgcctgctta    30982

tcaccttctt ccagttcgtt gactgggtct ttgtgcgcat cgcctacctg cgccaccacc    31042

cccagtaccg cgaccagaga gtggcgcaac tgttgagact catctgatga taagcatgcg    31102

ggctctgcta ctacttctcg cgcttctgct agctcccctc gccgcccccc tatccctcaa    31162

atcccccacc cagtcccctg aagaggttcg aaaatgtaaa ttccaagaac cctggaaatt    31222

cctttcatgc tacaaactca aatcagaaat gcaccccagc tggatcatga tcgttggaat    31282

cgtaaacatc cttgcctgta ccctcttctc ctttgtgatt tacccccgct ttgactttgg    31342

gtggaacgca cccgaggcgc tctggctccc gcctgatccc gacacaccac cacagcagca    31402

gcaaaatcag gcacaggcac atgcaccacc acagcctagg ccacaataca tgcccatctt    31462

agactatgag gccgagccac agcgagccat gcttcctgct attagttact tcaatctaac    31522

cggcggag atg act gac ccc atg  gcc aac aac acc gtc  aac gac ctc       31569
         Met Thr Asp Pro Met  Ala Asn Asn Thr Val  Asn Asp Leu
                        5845                5850

ctg gac  atg gac ggc cgc gcc  tcg gag cag cga ctc  gcc caa ctc       31614
Leu Asp  Met Asp Gly Arg Ala  Ser Glu Gln Arg Leu  Ala Gln Leu
    5855                5860                5865

cgc atc  cgc cag cag cag gag  aga gcc gtc aag gag  ctg cag gac       31659
Arg Ile  Arg Gln Gln Gln Glu  Arg Ala Val Lys Glu  Leu Gln Asp
    5870                5875                5880

gcg gtg  gcc atc cac cag tgc  aag aga ggc atc ttc  tgc ctg gtg       31704
Ala Val  Ala Ile His Gln Cys  Lys Arg Gly Ile Phe  Cys Leu Val
    5885                5890                5895

aag cag  gcc aag atc tcc ttc  gag gtc acg tcc acc  gac cat cgc       31749
Lys Gln  Ala Lys Ile Ser Phe  Glu Val Thr Ser Thr  Asp His Arg
    5900                5905                5910

ctc tcc  tac gag ctc ctg cag  cag cgc cag aag ttc  acc tgc ctg       31794
Leu Ser  Tyr Glu Leu Leu Gln  Gln Arg Gln Lys Phe  Thr Cys Leu
    5915                5920                5925

gtc gga  gtc aac ccc atc gtc  atc acc cag cag tct  ggc gat acc       31839
Val Gly  Val Asn Pro Ile Val  Ile Thr Gln Gln Ser  Gly Asp Thr
    5930                5935                5940

aag ggt  tgc atc cac tgc tcc  tgc gac tcc ccc gag  tgc gtt cac       31884
Lys Gly  Cys Ile His Cys Ser  Cys Asp Ser Pro Glu  Cys Val His
    5945                5950                5955

acc ctg  atc aag acc ctc tgc  ggc ctc cgc gac ctc  ctc ccc atg       31929
Thr Leu  Ile Lys Thr Leu Cys  Gly Leu Arg Asp Leu  Leu Pro Met
    5960                5965                5970

aac taatcaacta acccccctacc cctttaccct ccagtaaaaa taaagattaa          31982
Asn


aaatgattga attgatcaat aaagaatcac ttacttgaaa tctgaaacca ggtctctgtc    32042

c atg  ttt tct gtc agc agc  act tca ctc ccc tct  tcc caa ctc tgg     32088
```

```
  Met  Phe Ser Val Ser Ser  Thr Ser Leu Pro Ser  Ser Gln Leu Trp
  5975                5980                5985

tac  tgc agg ccc cgg cgg  gct gca aac ttc ctc  cac act ctg aag       32133
Tyr  Cys Arg Pro Arg Arg  Ala Ala Asn Phe Leu  His Thr Leu Lys
5990                5995                6000

ggg  atg tca aat tcc tcc  tgt ccc tca atc ttc  att ttt atc ttc       32178
Gly  Met Ser Asn Ser Ser  Cys Pro Ser Ile Phe  Ile Phe Ile Phe
6005                6010                6015

tat  cag atg tcc aaa aag  cgc gcg cgg gtg gat  gat ggc ttc gac       32223
Tyr  Gln Met Ser Lys Lys  Arg Ala Arg Val Asp  Asp Gly Phe Asp
6020                6025                6030

ccc  gtg tac ccc tac gat  gca gac aac gca ccg  act gtg ccc ttc       32268
Pro  Val Tyr Pro Tyr Asp  Ala Asp Asn Ala Pro  Thr Val Pro Phe
6035                6040                6045

atc  aac cct ccc ttc gtc  tct tca gat gga ttc  caa gaa aag ccc       32313
Ile  Asn Pro Pro Phe Val  Ser Ser Asp Gly Phe  Gln Glu Lys Pro
6050                6055                6060

ctg  ggg gtg ttg tcc ctg  cga ctg gcc gac ccc  gtc acc acc aag       32358
Leu  Gly Val Leu Ser Leu  Arg Leu Ala Asp Pro  Val Thr Thr Lys
6065                6070                6075

aat  ggg gct gtc acc ctc  aag ctg ggg gag ggg  gtg gac ctc gac       32403
Asn  Gly Ala Val Thr Leu  Lys Leu Gly Glu Gly  Val Asp Leu Asp
6080                6085                6090

gac  tcg gga aaa ctc atc  tcc aaa aat gcc acc  aag gcc act gcc       32448
Asp  Ser Gly Lys Leu Ile  Ser Lys Asn Ala Thr  Lys Ala Thr Ala
6095                6100                6105

cct  ctc agt att tcc aac  ggc acc att tcc ctt  aac atg gcc gcc       32493
Pro  Leu Ser Ile Ser Asn  Gly Thr Ile Ser Leu  Asn Met Ala Ala
6110                6115                6120

cct  ttt tac aac aac aat  gga acg tta agt ctc  aat gtt tct aca       32538
Pro  Phe Tyr Asn Asn Asn  Gly Thr Leu Ser Leu  Asn Val Ser Thr
6125                6130                6135

cca  tta gca gta ttt ccc  act ttt aac act tta  ggt atc agt ctt       32583
Pro  Leu Ala Val Phe Pro  Thr Phe Asn Thr Leu  Gly Ile Ser Leu
6140                6145                6150

gga  aac ggt ctt caa act  tct aat aag ttg ctg  act gta cag tta       32628
Gly  Asn Gly Leu Gln Thr  Ser Asn Lys Leu Leu  Thr Val Gln Leu
6155                6160                6165

act  cat cct ctt aca ttc  agc tca aat agc atc  aca gta aaa aca       32673
Thr  His Pro Leu Thr Phe  Ser Ser Asn Ser Ile  Thr Val Lys Thr
6170                6175                6180

gac  aaa gga ctc tat att  aat tct agt gga aac  aga ggg ctt gag       32718
Asp  Lys Gly Leu Tyr Ile  Asn Ser Ser Gly Asn  Arg Gly Leu Glu
6185                6190                6195

gct  aac ata agc cta aaa  aga gga ctg att ttt  gat ggt aat gct       32763
Ala  Asn Ile Ser Leu Lys  Arg Gly Leu Ile Phe  Asp Gly Asn Ala
6200                6205                6210

att  gca aca tac ctt gga  agt ggt tta gac tat  gga tcc tat gat       32808
Ile  Ala Thr Tyr Leu Gly  Ser Gly Leu Asp Tyr  Gly Ser Tyr Asp
6215                6220                6225

agc  gat ggg aaa aca aga  ccc atc atc acc aaa  att gga gca ggt       32853
Ser  Asp Gly Lys Thr Arg  Pro Ile Ile Thr Lys  Ile Gly Ala Gly
```

```
6230                6235                6240

ttg  aat ttt gat gct aat  aat gcc atg gct gtg  aag cta ggc aca       32898
Leu  Asn Phe Asp Ala Asn  Asn Ala Met Ala Val  Lys Leu Gly Thr
6245                6250                6255

ggt  tta agt ttt gac tct  gcc ggt gcc tta aca  gct gga aac aaa       32943
Gly  Leu Ser Phe Asp Ser  Ala Gly Ala Leu Thr  Ala Gly Asn Lys
6260                6265                6270

gag  gat gac aag cta aca  ctt tgg act aca cct  gac cca agc cct       32988
Glu  Asp Asp Lys Leu Thr  Leu Trp Thr Thr Pro  Asp Pro Ser Pro
6275                6280                6285

aat  tgt caa tta ctt tca  gac aga gat gcc aaa  ttt acc cta tgt       33033
Asn  Cys Gln Leu Leu Ser  Asp Arg Asp Ala Lys  Phe Thr Leu Cys
6290                6295                6300

ctt  aca aaa tgc ggt agt  caa ata cta ggc act  gtt gca gta gct       33078
Leu  Thr Lys Cys Gly Ser  Gln Ile Leu Gly Thr  Val Ala Val Ala
6305                6310                6315

gct  gtt act gta ggt tca  gca cta aat cca att  aat gac aca gta       33123
Ala  Val Thr Val Gly Ser  Ala Leu Asn Pro Ile  Asn Asp Thr Val
6320                6325                6330

aaa  agc gcc ata gta ttc  ctt aga ttt gac tct  gac ggt gtg ctc       33168
Lys  Ser Ala Ile Val Phe  Leu Arg Phe Asp Ser  Asp Gly Val Leu
6335                6340                6345

atg  tca aac tca tca atg  gta ggt gat tac tgg  aac ttt agg gaa       33213
Met  Ser Asn Ser Ser Met  Val Gly Asp Tyr Trp  Asn Phe Arg Glu
6350                6355                6360

gga  cag acc acc caa agt  gtg gcc tat aca aat  gct gtg gga ttc       33258
Gly  Gln Thr Thr Gln Ser  Val Ala Tyr Thr Asn  Ala Val Gly Phe
6365                6370                6375

atg  ccc aat cta ggt gca  tat cct aaa acc caa  agc aaa aca cca       33303
Met  Pro Asn Leu Gly Ala  Tyr Pro Lys Thr Gln  Ser Lys Thr Pro
6380                6385                6390

aaa  aat agt ata gta agt  cag gta tat tta aat  gga gaa act act       33348
Lys  Asn Ser Ile Val Ser  Gln Val Tyr Leu Asn  Gly Glu Thr Thr
6395                6400                6405

atg  cca atg aca ctg aca  ata act ttc aat ggc  act gat gaa aaa       33393
Met  Pro Met Thr Leu Thr  Ile Thr Phe Asn Gly  Thr Asp Glu Lys
6410                6415                6420

gac  aca aca cct gtg agc  act tac tcc atg act  ttt aca tgg cag       33438
Asp  Thr Thr Pro Val Ser  Thr Tyr Ser Met Thr  Phe Thr Trp Gln
6425                6430                6435

tgg  act gga gac tat aag  gac aag aat att acc  ttt gct acc aac       33483
Trp  Thr Gly Asp Tyr Lys  Asp Lys Asn Ile Thr  Phe Ala Thr Asn
6440                6445                6450

tcc  ttt act ttc tcc tac  atg gcc caa gaa taaaccctgc atgccaaccc      33533
Ser  Phe Thr Phe Ser Tyr  Met Ala Gln Glu
6455                6460

cattgttccc accactatgg aaaactctga agcagaaaaa aataaagttc aagtgtttta    33593

ttgattcaac agttttcaca gaattcgagt agttattttc cctcctccct cccaactcat    33653

ggaatacacc accctctccc cacgcacagc cttaaacatc tgaatgccat tggtaatgga    33713

catggttttg gtctccacat tccacacagt ttcagagcga gccagtctcg ggtcggtcag    33773
```

```
ggagatgaaa ccctccgggc actcctgcat ctgcacctca aagttcagta gctgagggct    33833

gtcctcggtg gtcgggatca cagtta tct  gga aga aga gcg gtg  aga gtc       33883
                              Ser  Gly Arg Arg Ala Val  Arg Val
                              6465                 6470

ata atc cgc  gaa cgg gat cgg gcg  gtt gtg gcg cat cag  gcc ccg       33928
Ile Ile Arg  Glu Arg Asp Arg Ala  Val Val Ala His Gln  Ala Pro
        6475                 6480                 6485

cag cag tcg  ctg tct gcg ccg ctc  cgt caa gct gct gct  caa ggg       33973
Gln Gln Ser  Leu Ser Ala Pro Leu  Arg Gln Ala Ala Ala  Gln Gly
        6490                 6495                 6500

gtc tgg gtc  cag gga ctc cct gcg  cat gat gcc gat ggc  cct gag       34018
Val Trp Val  Gln Gly Leu Pro Ala  His Asp Ala Asp Gly  Pro Glu
        6505                 6510                 6515

cat cag tcg  cct ggt gcg gcg ggc  gca gca gcg gat gcg  gat ctc       34063
His Gln Ser  Pro Gly Ala Ala Gly  Ala Ala Ala Asp Ala  Asp Leu
        6520                 6525                 6530

act cag gtc  gga gca gta cgt gca  gca cag cac tac caa  gtt gtt       34108
Thr Gln Val  Gly Ala Val Arg Ala  Ala Gln His Tyr Gln  Val Val
        6535                 6540                 6545

caa cag tcc  ata gtt caa cgt gct  cca gcc aaa act cat  ctg tgg       34153
Gln Gln Ser  Ile Val Gln Arg Ala  Pro Ala Lys Thr His  Leu Trp
        6550                 6555                 6560

aac tat gct  gcc cac atg tcc atc  gta cca gat cct gat  gta aat       34198
Asn Tyr Ala  Ala His Met Ser Ile  Val Pro Asp Pro Asp  Val Asn
        6565                 6570                 6575

cag gtg gcg  ccc cct cca gaa cac  act gcc cat gta cat  gat ctc       34243
Gln Val Ala  Pro Pro Pro Glu His  Thr Ala His Val His  Asp Leu
        6580                 6585                 6590

ctt ggg cat  gtg cag gtt cac cac  ctc ccg gta cca cat  cac ccg       34288
Leu Gly His  Val Gln Val His His  Leu Pro Val Pro His  His Pro
        6595                 6600                 6605

ctg gtt gaa  cat gca gcc ctg gat  aat cct gcg gaa cca  gat ggc       34333
Leu Val Glu  His Ala Ala Leu Asp  Asn Pro Ala Glu Pro  Asp Gly
        6610                 6615                 6620

cag cac cgc  ccc gcc cgc cat gca  gcg cag gga ccc cgg  gtc ctg       34378
Gln His Arg  Pro Ala Arg His Ala  Ala Gln Gly Pro Arg  Val Leu
        6625                 6630                 6635

gca atg gca  gtg gag cac cca ccg  ctc acg gcc gtg gat  taa ctg       34423
Ala Met Ala  Val Glu His Pro Pro  Leu Thr Ala Val Asp      Leu
        6640                 6645                 6650

gga gct gaa caa  gtc tat gtt ggc aca  gca cag gca cac gct  cat       34468
Gly Ala Glu Gln  Val Tyr Val Gly Thr  Ala Gln Ala His Ala  His
            6655                 6660                 6665

gca tgt ctt cag  cac tct cag ttc ctc  ggg ggt cag gac cat  gtc       34513
Ala Cys Leu Gln  His Ser Gln Phe Leu  Gly Gly Gln Asp His  Val
            6670                 6675                 6680

cca ggg cac ggg  gaa ctc ttg cag gac  agt gaa ccc ggc aga  aca       34558
Pro Gly His Gly  Glu Leu Leu Gln Asp  Ser Glu Pro Gly Arg  Thr
            6685                 6690                 6695

ggg cag ccc tcg  cac aca act tac att  gtg cat gga cag ggt  atc       34603
Gly Gln Pro Ser  His Thr Thr Tyr Ile  Val His Gly Gln Gly  Ile
```

```
            6700                6705                6710

gca atc agg cag  cac cgg atg atc ctc  cac cag aga agc gcg  ggt      34648
Ala Ile Arg Gln  His Arg Met Ile Leu  His Gln Arg Ser Ala  Gly
            6715                6720                6725

ctc ggt ctc ctc  aca gcg agg taa ggg ggc  cgg cgg ttg gta cgg      34693
Leu Gly Leu Leu  Thr Ala Arg     Gly Gly  Arg Arg Leu Val Arg
            6730                    6735                6740

atg atg gcg gga tga cgc  taa tcg tgt tct gga tcg  tgt cat gat gga   34741
Met Met Ala Gly     Arg      Ser Cys Ser Gly Ser  Cys His Asp Gly
                    6745                    6750

gct  gtt tcc tga cat tttcgtactt cacgaagcag aacctggtac gggcactgca    34796
Ala  Val Ser     His
6755

caccgctcgc cggcgacggt ctcggcgctt cgagcgctcg gtgttgaagt tatagaacag   34856

ccactccctc agagcgtgca gtatctcctg agcctcttgg gtgatgaaaa tcccatccgc   34916

tctgatggct ctgatcacat cggccacggt ggaatgggcc agacccagcc agatgatgca   34976

attttgttgg gtttcggtga cggagggaga gggaagaaca ggaagaacca tgattaactt   35036

ta ttc caa  acg gtc tcg gag cac  ttc aaa atg cag gtc  ccg gag gtg   35083
   Phe Gln  Thr Val Ser Glu His  Phe Lys Met Gln Val  Pro Glu Val
       6760                6765                6770

gca cct  ctc gcc ccc act gtg  ttg gtg gaa aat aac  agc cag gtc      35128
Ala Pro  Leu Ala Pro Thr Val  Leu Val Glu Asn Asn  Ser Gln Val
    6775                6780                6785

aaa ggt  gac acg gtt ctc gag  atg ttc cac ggt ggc  ttc cag caa      35173
Lys Gly  Asp Thr Val Leu Glu  Met Phe His Gly Gly  Phe Gln Gln
    6790                6795                6800

agc ctc  cac gcg cac atc cag  aaa caa gag gac agc  gaa agc ggg      35218
Ser Leu  His Ala His Ile Gln  Lys Gln Glu Asp Ser  Glu Ser Gly
    6805                6810                6815

agc gtt  ttc taa ttc ctc aat cat  cat att aca ctc ctg  cac cat      35263
Ser Val  Phe     Phe Leu Asn His  His Ile Thr Leu Leu  His His
    6820                    6825                6830

ccc cag ata  att ttc att ttt cca  gcc ttg aat gat tcg  tat tag      35308
Pro Gln Ile  Ile Phe Ile Phe Pro  Ala Leu Asn Asp Ser  Tyr
        6835                6840                6845

ttc ctg agg taa atc  caa gcc agc cat gat  aaa aag ctc gcg cag      35353
Phe Leu Arg     Ile  Gln Ala Ser His Asp  Lys Lys Leu Ala Gln
                6850                6855                6860

agc gcc ctc cac cgg  cat tct taa gca cac cct  cat aattccaaga       35399
Ser Ala Leu His Arg  His Ser     Ala His Pro  His
                6865                    6870

gattctgctc ctggttcacc tgcagcagat taacaatggg aatatcaaaa tctctgccgc   35459

gatccctaag ctcctccctc aacaataact gtatgtaatc tttcatatca tctccgaaat   35519

ttttagccat agggccgcca ggaataagag cagggcaagc cacattacag ataaagcgaa   35579

gtcctcccca gtgagcattg ccaaatgtaa gattgaaata agcatgctgg ctagaccctg   35639

tgatatcttc cagataactg gacagaaaat caggcaagca atttttaaga aaatcaacaa   35699

aagaaaagtc gtccaggtgc aggtttagag cctcaggaac aacgatggaa taagtgcaag   35759
```

```
gagtgcgttc cagcatggtt agtgtttttt tggtgatctg tagaacaaaa aataaacatg    35819

caatatta aac cat gct agc  ctg gcg aac agg tgg  gta aat cac tct       35866
         Asn His Ala Ser  Leu Ala Asn Arg Trp  Val Asn His Ser
                     6875                 6880

ttc  cag cac cag gca ggc  tac ggg gtc tcc ggc  gcg acc ctc gta       35911
Phe  Gln His Gln Ala Gly  Tyr Gly Val Ser Gly  Ala Thr Leu Val
6885                 6890                 6895

gaa  gct gtc gcc atg att  gaa aag cat cac cga  gag acc ttc ccg       35956
Glu  Ala Val Ala Met Ile  Glu Lys His His Arg  Glu Thr Phe Pro
6900                 6905                 6910

gtg  gcc ggc atg gat gat  tcg aga aga agc ata  cac tcc ggg aac       36001
Val  Ala Gly Met Asp Asp  Ser Arg Arg Ser Ile  His Ser Gly Asn
6915                 6920                 6925

att  ggc atc cgt gag tga aaa  aaa gcg acc tat aaa  gcc tcg ggg       36046
Ile  Gly Ile Arg Glu     Lys  Lys Ala Thr Tyr Lys  Ala Ser Gly
6930                     6935                 6940

cac tac  aat gct caa tct caa  ttc cag caa agc cac  ccc atg cgg       36091
His Tyr  Asn Ala Gln Ser Gln  Phe Gln Gln Ser His  Pro Met Arg
    6945                 6950                 6955

atg gag  cac aaa att ggc agg  tgc gta aaa aat gta  att act ccc       36136
Met Glu  His Lys Ile Gly Arg  Cys Val Lys Asn Val  Ile Thr Pro
    6960                 6965                 6970

ctc ctg  cac agg cag caa agc  ccc cgc tcc ctc cag  aaa cac ata       36181
Leu Leu  His Arg Gln Gln Ser  Pro Arg Ser Leu Gln  Lys His Ile
    6975                 6980                 6985

caa agc  ctc agc gtc cat agcttaccga gcacggcagg cgcaagagtc           36229
Gln Ser  Leu Ser Val His
    6990

agagaaaagg ctgagctcta acctgactgc ccgctcctgt gctcaatata tagccctaac    36289

ctacactgac gtaaaggcca aagtctaaaa atacccgcca aaatgacaca cacgcccagc    36349

acacgcccag aaaccggtga cacactcaaa aaaatacgtg cgcttcctca aacgcccaaa    36409

ccggcgtcat ttccgggttc ccacgctacg tcaccgctca gcgactttca aattccgtcg    36469

accgttaaaa acgtcactcg ccccgcccct aacggtcgcc cttctctcgg ccaatcacct    36529

tcctcccttc ccaaattcaa acgcctcatt tgcatattaa cgcgcacaaa aagtttgagg    36589

tatattattg atgatgatcg tttaaactat gcggtgtgaa ataccgcaca gatgcgtaag    36649

gagaaaatac cgcatcaggc gctcttccgc ttcctcgctc actgactcgc tgcgctcggt    36709

cgttcggctg cggcgagcgg tatcagctca ctcaaaggcg gtaatacggt tatccacaga    36769

atcaggggat aacgcaggaa agaacatgtg agcaaaaggc cagcaaaagg ccaggaaccg    36829

taaaaaggcc gcgttgctgg cgtttttcca taggctccgc ccccctgacg agcatcacaa    36889

aaatcgacgc tcaagtcaga ggtggcgaaa cccgacagga ctataaagat accaggcgtt    36949

tccccctgga agctccctcg tgcgctctcc tgttccgacc ctgccgctta ccggatacct    37009

gtccgccttt ctcccttcgg gaagcgtggc gctttctcat agctcacgct gtaggtatct    37069

cagttcggtg taggtcgttc gctccaagct gggctgtgtg cacgaacccc ccgttcagcc    37129
```

```
cgaccgctgc gccttatccg gtaactatcg tcttgagtcc aacccggtaa gacacgactt    37189

atcgccactg gcagcagcca ctggtaacag gattagcaga gcgaggtatg taggcggtgc    37249

tacagagttc ttgaagtggt ggcctaacta cggctacact agaaggacag tatttggtat    37309

ctgcgctctg ctgaagccag ttaccttcgg aaaaagagtt ggtagctctt gatccggcaa    37369

acaaaccacc gctggtagcg gtggtttttt tgtttgcaag cagcagatta cgcgcagaaa    37429

aaaaggatct caagaagatc ctttgatctt ttctacgggg tctgacgctc agtggaacga    37489

aaactcacgt taagggattt tggtcatgag attatcaaaa aggatcttca cctagatcct    37549

tttaaattaa aaatgaagtt ttaaatcaat ctaaagtata tatgagtaaa cttggtctga    37609

cag tta  cca atg ctt aat cag  tga ggc acc tat ctc agc  gat ctg       37654
    Leu  Pro Met Leu Asn Gln      Gly Thr Tyr Leu Ser  Asp Leu
    6995                 7000                      7005

tct att tcg  ttc atc cat agt tgc  ctg act ccc cgt cgt  gta gat       37699
Ser Ile Ser  Phe Ile His Ser Cys  Leu Thr Pro Arg Arg  Val Asp
        7010                 7015                  7020

aac tac gat  acg gga ggg ctt acc  atc tgg ccc cag tgc  tgc aat       37744
Asn Tyr Asp  Thr Gly Gly Leu Thr  Ile Trp Pro Gln Cys  Cys Asn
        7025                 7030                  7035

gat acc gcg  aga ccc acg ctc acc  ggc tcc aga ttt atc  agc aat       37789
Asp Thr Ala  Arg Pro Thr Leu Thr  Gly Ser Arg Phe Ile  Ser Asn
        7040                 7045                  7050

aaa cca gcc  agc cgg aag ggc cga  gcg cag aag tgg tcc  tgc aac       37834
Lys Pro Ala  Ser Arg Lys Gly Arg  Ala Gln Lys Trp Ser  Cys Asn
        7055                 7060                  7065

ttt atc cgc  ctc cat cca gtc tat  taa ttg ttg ccg gga agc  tag       37879
Phe Ile Arg  Leu His Pro Val Tyr      Leu Leu Pro Gly Ser
        7070                 7075                      7080

agt aag tag ttc gcc agt  taa tag ttt gcg caa cgt tgt  tgc cat tgc    37927
Ser Lys     Phe Ala Ser          Phe Ala Gln Arg Cys  Cys His Cys
                   7085                          7090

tgc agg  cat cgt ggt gtc acg  ctc gtc gtt tgg tat  ggc ttc att       37972
Cys Arg  His Arg Gly Val Thr  Leu Val Val Trp Tyr  Gly Phe Ile
    7095                 7100                  7105

cag ctc  cgg ttc cca acg atc  aag gcg agt tac atg  atc ccc cat       38017
Gln Leu  Arg Phe Pro Thr Ile  Lys Ala Ser Tyr Met  Ile Pro His
    7110                 7115                  7120

gtt gtg  caa aaa agc ggt tag ctc  ctt cgg tcc tcc gat  cgt tgt       38062
Val Val  Gln Lys Ser Gly     Leu  Leu Arg Ser Ser Asp  Arg Cys
    7125                      7130                  7135

cag aag taa gtt  ggc cgc agt gtt atc  act cat ggt tat ggc  agc       38107
Gln Lys     Val  Gly Arg Ser Val Ile  Thr His Gly Tyr Gly  Ser
            7140                 7145                  7150

act gca taa ttc tct  tac tgt cat gcc atc  cgt aag atg ctt ttc       38152
Thr Ala     Phe Ser  Tyr Cys His Ala Ile  Arg Lys Met Leu Phe
                7155                 7160                  7165

tgt gac tgg tga gta ctc  aac caa gtc att ctg  aga ata gtg tat       38197
Cys Asp Trp     Val Leu  Asn Gln Val Ile Leu  Arg Ile Val Tyr
                    7170                 7175

gcg  gcg acc gag ttg ctc  ttg ccc ggc gtc aac  acg gga taa tac       38242
```

```
Ala  Ala Thr Glu Leu Leu  Leu Pro Gly Val Asn  Thr Gly     Tyr
7180                7185                7190

cgc gcc  aca tag cag aac ttt aaa  agt gct cat cat tgg  aaa acg       38287
Arg Ala  Thr     Gln Asn Phe Lys  Ser Ala His His Trp  Lys Thr
    7195                    7200                7205

ttc ttc ggg  gcg aaa act ctc aag  gat ctt acc gct gtt  gag atc       38332
Phe Phe Gly  Ala Lys Thr Leu Lys  Asp Leu Thr Ala Val  Glu Ile
        7210                7215                7220

cag ttc gat  gta acc cac tcg tgc  acc caa ctg atc ttc  agc atc       38377
Gln Phe Asp  Val Thr His Ser Cys  Thr Gln Leu Ile Phe  Ser Ile
        7225                7230                7235

ttt tac ttt  cac cag cgt ttc tgg  gtg agc aaa aac agg  aag gca       38422
Phe Tyr Phe  His Gln Arg Phe Trp  Val Ser Lys Asn Arg  Lys Ala
        7240                7245                7250

aaa tgc cgc  aaa aaa ggg aat aag  ggc gac acg gaa atg  ttg aat       38467
Lys Cys Arg  Lys Lys Gly Asn Lys  Gly Asp Thr Glu Met  Leu Asn
        7255                7260                7265

act cat act  cttccttttt caatattatt gaagcattta tcagggttat             38516
Thr His Thr
        7270

tgtctcatga gcggatacat atttgaatgt atttagaaaa ataaacaaat aggggttccg    38576

cgcacatttc cccgaaaagt gccacctgac gtctaagaaa ccattattat catgacatta    38636

acctataaaa ataggcgtat cacgaggccc tttcgtcttc aagaattgtt taaactacca    38696

tcat                                                                 38700


<210>  337
<211>  363
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  337

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


Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
            20                  25                  30


His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
        35                  40                  45


Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
    50                  55                  60


Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65                  70                  75                  80


Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
                85                  90                  95
```

```
Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Gln Asn Lys Ser Lys
            100                 105                 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val
        115                 120                 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His
    130                 135                 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
145                 150                 155                 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
                165                 170                 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
            180                 185                 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
        195                 200                 205

Ala Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala
    210                 215                 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225                 230                 235                 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
                245                 250                 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
            260                 265                 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
        275                 280                 285

Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
    290                 295                 300

Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr
305                 310                 315                 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
                325                 330                 335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
            340                 345                 350

Val Gly Gly Pro Gly His Lys Ala Arg Val Leu
        355                 360
```

<210> 338
<211> 394
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 338

Met His Pro Val Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln
1 5 10 15

Gln Gln Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln
20 25 30

Gln Gln Leu Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly
35 40 45

Gln Thr Ser Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala
50 55 60

Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys
65 70 75 80

Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp
85 90 95

Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ala Arg Phe His Ala
100 105 110

Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp
115 120 125

Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala
130 135 140

His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys
145 150 155 160

Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu
165 170 175

Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu
180 185 190

Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln
195 200 205

Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Ala Phe Arg Glu
210 215 220

Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu
225 230 235 240

Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu
245 250 255

Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys
260 265 270

Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys
275 280 285

Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu
290 295 300

Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg
305 310 315 320

Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met
325 330 335

His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser
340 345 350

Tyr Phe Asp Met Gly Ala Asp Leu His Trp Gln Pro Ser Arg Arg Ala
355 360 365

Leu Glu Ala Ala Gly Gly Pro Pro Tyr Ile Glu Glu Val Asp Asp Glu
370 375 380

Val Asp Glu Glu Gly Glu Tyr Leu Glu Asp
385 390

<210> 339
<211> 589
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 339

Met Gln Gln Gln Pro Pro Pro Asp Pro Ala Met Arg Ala Ala Leu Gln
1 5 10 15

Ser Gln Pro Ser Gly Ile Asn Ser Ser Asp Asp Trp Thr Gln Ala Met
20 25 30

Gln Arg Ile Met Ala Leu Thr Thr Arg Asn Pro Glu Ala Phe Arg Gln
35 40 45

Gln Pro Gln Ala Asn Arg Leu Ser Ala Ile Leu Glu Ala Val Val Pro
50 55 60

Ser Arg Ser Asn Pro Thr His Glu Lys Val Leu Ala Ile Val Asn Ala
65 70 75 80

```
Leu Val Glu Asn Lys Ala Ile Arg Gly Asp Glu Ala Gly Leu Val Tyr
                85                  90                  95

Asn Ala Leu Leu Glu Arg Val Ala Arg Tyr Asn Ser Thr Asn Val Gln
            100                 105                 110

Thr Asn Leu Asp Arg Met Val Thr Asp Val Arg Glu Ala Val Ala Gln
        115                 120                 125

Arg Glu Arg Phe His Arg Glu Ser Asn Leu Gly Ser Met Val Ala Leu
    130                 135                 140

Asn Ala Phe Leu Ser Thr Gln Pro Ala Asn Val Pro Arg Gly Gln Glu
145                 150                 155                 160

Asp Tyr Thr Asn Phe Ile Ser Ala Leu Arg Leu Met Val Thr Glu Val
                165                 170                 175

Pro Gln Ser Glu Val Tyr Gln Ser Gly Pro Asp Tyr Phe Phe Gln Thr
            180                 185                 190

Ser Arg Gln Gly Leu Gln Thr Val Asn Leu Ser Gln Ala Phe Lys Asn
        195                 200                 205

Leu Gln Gly Leu Trp Gly Val Gln Ala Pro Val Gly Asp Arg Ala Thr
    210                 215                 220

Val Ser Ser Leu Leu Thr Pro Asn Ser Arg Leu Leu Leu Leu Leu Val
225                 230                 235                 240

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

Tyr Leu Ile Asn Leu Tyr Arg Glu Ala Ile Gly Gln Ala His Val Asp
            260                 265                 270

Glu Gln Thr Tyr Gln Glu Ile Thr His Val Ser Arg Ala Leu Gly Gln
        275                 280                 285

Asp Asp Pro Gly Asn Leu Glu Ala Thr Leu Asn Phe Leu Leu Thr Asn
    290                 295                 300

Arg Ser Gln Lys Ile Pro Pro Gln Tyr Thr Leu Ser Ala Glu Glu Glu
305                 310                 315                 320

Arg Ile Leu Arg Tyr Val Gln Gln Ser Val Gly Leu Phe Leu Met Gln
                325                 330                 335

Glu Gly Ala Thr Pro Ser Ala Ala Leu Asp Met Thr Ala Arg Asn Met
            340                 345                 350
```

```
Glu Pro Ser Met Tyr Ala Ser Asn Arg Pro Phe Ile Asn Lys Leu Met
        355                 360                 365

Asp Tyr Leu His Arg Ala Ala Ala Met Asn Ser Asp Tyr Phe Thr Asn
    370                 375                 380

Ala Ile Leu Asn Pro His Trp Leu Pro Pro Pro Gly Phe Tyr Thr Gly
385                 390                 395                 400

Glu Tyr Asp Met Pro Asp Pro Asn Asp Gly Phe Leu Trp Asp Asp Val
                405                 410                 415

Asp Ser Ser Val Phe Ser Pro Arg Pro Gly Ala Asn Glu Arg Pro Leu
            420                 425                 430

Trp Lys Lys Glu Gly Ser Asp Arg Arg Pro Ser Ser Ala Leu Ser Gly
        435                 440                 445

Arg Glu Gly Ala Ala Ala Ala Val Pro Glu Ala Ala Ser Pro Phe Pro
    450                 455                 460

Ser Leu Pro Phe Ser Leu Asn Ser Ile Arg Ser Ser Glu Leu Gly Arg
465                 470                 475                 480

Ile Thr Arg Pro Arg Leu Leu Gly Glu Glu Glu Tyr Leu Asn Asp Ser
                485                 490                 495

Leu Leu Arg Pro Glu Arg Glu Lys Asn Phe Pro Asn Asn Gly Ile Glu
            500                 505                 510

Ser Leu Val Asp Lys Met Ser Arg Trp Lys Thr Tyr Ala Gln Glu His
        515                 520                 525

Arg Asp Asp Pro Ser Gln Gly Ala Thr Ser Arg Gly Ser Ala Ala Arg
    530                 535                 540

Lys Arg Arg Trp His Asp Arg Gln Arg Gly Leu Met Trp Asp Asp Glu
545                 550                 555                 560

Asp Ser Ala Asp Asp Ser Ser Val Leu Asp Leu Gly Gly Ser Gly Asn
                565                 570                 575

Pro Phe Ala His Leu Arg Pro Arg Ile Gly Arg Met Met
            580                 585
```

<210> 340
<211> 532
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 340

```
Met Met Arg Arg Ala Tyr Pro Glu Gly Pro Pro Pro Ser Tyr Glu Ser
1               5                  10                  15

Val Met Gln Gln Ala Met Ala Ala Ala Ala Ala Met Gln Pro Pro Leu
            20                  25                  30

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

Asn Ser Ile Arg Tyr Ser Glu Leu Ala Pro Leu Tyr Asp Thr Thr Arg
    50                  55                  60

Leu Tyr Leu Val Asp Asn Lys Ser Ala Asp Ile Ala Ser Leu Asn Tyr
65                  70                  75                  80

Gln Asn Asp His Ser Asn Phe Leu Thr Thr Val Val Gln Asn Asn Asp
                85                  90                  95

Phe Thr Pro Thr Glu Ala Ser Thr Gln Thr Ile Asn Phe Asp Glu Arg
            100                 105                 110

Ser Arg Trp Gly Gly Gln Leu Lys Thr Ile Met His Thr Asn Met Pro
        115                 120                 125

Asn Val Asn Glu Phe Met Tyr Ser Asn Lys Phe Lys Ala Arg Val Met
    130                 135                 140

Val Ser Arg Lys Thr Pro Asn Gly Val Thr Val Thr Asp Gly Ser Gln
145                 150                 155                 160

Asp Ile Leu Glu Tyr Glu Trp Val Glu Phe Glu Leu Pro Glu Gly Asn
                165                 170                 175

Phe Ser Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala Ile Ile Asp
            180                 185                 190

Asn Tyr Leu Ala Val Gly Arg Gln Asn Gly Val Leu Glu Ser Asp Ile
        195                 200                 205

Gly Val Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp Asp Pro Val
    210                 215                 220

Thr Glu Leu Val Met Pro Gly Val Tyr Thr Asn Glu Ala Phe His Pro
225                 230                 235                 240

Asp Ile Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr Glu Ser Arg
                245                 250                 255

Leu Ser Asn Leu Leu Gly Ile Arg Lys Arg Gln Pro Phe Gln Glu Gly
            260                 265                 270
```

```
Phe Gln Ile Met Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala Leu
        275                 280                 285

Leu Asp Val Asp Ala Tyr Glu Lys Ser Lys Glu Glu Ser Ala Ala Ala
    290                 295                 300

Ala Thr Ala Ala Val Ala Thr Ala Ser Thr Glu Val Arg Gly Asp Asn
305                 310                 315                 320

Phe Ala Ser Pro Ala Ala Val Ala Ala Ala Glu Ala Ala Glu Thr Glu
                325                 330                 335

Ser Lys Ile Val Ile Gln Pro Val Glu Lys Asp Ser Lys Asp Arg Ser
            340                 345                 350

Tyr Asn Val Leu Pro Asp Lys Ile Asn Thr Ala Tyr Arg Ser Trp Tyr
        355                 360                 365

Leu Ala Tyr Asn Tyr Gly Asp Pro Glu Lys Gly Val Arg Ser Trp Thr
    370                 375                 380

Leu Leu Thr Thr Ser Asp Val Thr Cys Gly Val Glu Gln Val Tyr Trp
385                 390                 395                 400

Ser Leu Pro Asp Met Met Gln Asp Pro Val Thr Phe Arg Ser Thr Arg
                405                 410                 415

Gln Val Ser Asn Tyr Pro Val Val Gly Ala Glu Leu Leu Pro Val Tyr
            420                 425                 430

Ser Lys Ser Phe Phe Asn Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg
        435                 440                 445

Ala Phe Thr Ser Leu Thr His Val Phe Asn Arg Phe Pro Glu Asn Gln
    450                 455                 460

Ile Leu Val Arg Pro Pro Ala Pro Thr Ile Thr Thr Val Ser Glu Asn
465                 470                 475                 480

Val Pro Ala Leu Thr Asp His Gly Thr Leu Pro Leu Arg Ser Ser Ile
                485                 490                 495

Arg Gly Val Gln Arg Val Thr Val Thr Asp Ala Arg Arg Arg Thr Cys
            500                 505                 510

Pro Tyr Val Tyr Lys Ala Leu Gly Ile Val Ala Pro Arg Val Leu Ser
        515                 520                 525

Ser Arg Thr Phe
    530
```

<210> 341
<211> 193
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 341

Met Ser Ile Leu Ile Ser Pro Ser Asn Asn Thr Gly Trp Gly Leu Arg
1 5 10 15

Ala Pro Ser Lys Met Tyr Gly Gly Ala Arg Gln Arg Ser Thr Gln His
20 25 30

Pro Val Arg Val Arg Gly His Phe Arg Ala Pro Trp Gly Ala Leu Lys
35 40 45

Gly Arg Val Arg Ser Arg Thr Thr Val Asp Asp Val Ile Asp Gln Val
50 55 60

Val Ala Asp Ala Arg Asn Tyr Thr Pro Ala Ala Ala Pro Val Ser Thr
65 70 75 80

Val Asp Ala Val Ile Asp Ser Val Val Ala Asp Ala Arg Arg Tyr Ala
85 90 95

Arg Ala Lys Ser Arg Arg Arg Arg Ile Ala Arg Arg His Arg Ser Thr
100 105 110

Pro Ala Met Arg Ala Ala Arg Ala Leu Leu Arg Arg Ala Arg Arg Thr
115 120 125

Gly Arg Arg Ala Met Leu Arg Ala Ala Arg Arg Ala Ala Ser Gly Ala
130 135 140

Ser Ala Gly Arg Thr Arg Arg Arg Ala Ala Thr Ala Ala Ala Ala Ala
145 150 155 160

Ile Ala Ser Met Ser Arg Pro Arg Arg Gly Asn Val Tyr Trp Val Arg
165 170 175

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

Thr

<210> 342
<211> 342
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 342

```
Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu Gln Val Ile Ala Pro
1               5                  10                  15

Glu Ile Tyr Gly Pro Ala Val Val Lys Glu Glu Arg Lys Pro Arg Lys
            20                  25                  30

Ile Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Glu Ser Asp Val Asp
        35                  40                  45

Gly Leu Val Glu Phe Val Arg Glu Phe Ala Pro Arg Arg Arg Val Gln
    50                  55                  60

Trp Arg Gly Arg Lys Val Arg Pro Val Leu Arg Pro Gly Thr Thr Val
65                  70                  75                  80

Val Phe Thr Pro Gly Glu Arg Ser Gly Thr Ala Ser Lys Arg Ser Tyr
                85                  90                  95

Asp Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu Gln Ala Ala Glu Arg
            100                 105                 110

Leu Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg Ser Ala Pro Lys Glu
        115                 120                 125

Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn Pro Thr Pro Ser Leu
    130                 135                 140

Lys Pro Val Thr Leu Gln Gln Val Leu Pro Thr Ala Ala Pro Arg Arg
145                 150                 155                 160

Gly Phe Lys Arg Glu Gly Glu Asp Leu Tyr Pro Thr Met Gln Leu Met
                165                 170                 175

Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu Thr Met Lys Val
            180                 185                 190

Asp Pro Asp Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln Val
        195                 200                 205

Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile Lys Ile Pro Thr Glu
    210                 215                 220

Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro Ser Thr Ser Thr Met
225                 230                 235                 240

Glu Val Gln Thr Asp Pro Trp Met Pro Ser Ala Thr Ser Arg Arg Pro
                245                 250                 255

Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn Tyr Ala Leu
            260                 265                 270
```

```
His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg Gly Thr Arg Phe Tyr
        275                 280                 285

Arg Gly His Thr Ser Arg Arg Arg Lys Thr Thr Thr Arg Arg Arg Arg
    290                 295                 300

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

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

His Pro Ser Ile Ala Ile
            340
```

<210> 343
<211> 77
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 343

```
Met Ala Leu Thr Cys Arg Leu Arg Val Pro Ile Thr Gly Tyr Arg Gly
1               5                   10                  15

Arg Lys Pro Arg Arg Arg Arg Leu Ala Gly Asn Gly Met Arg Arg His
            20                  25                  30

His His Arg Arg Arg Arg Ala Ile Ser Lys Arg Leu Gly Gly Gly Phe
        35                  40                  45

Leu Pro Ala Leu Ile Pro Ile Ile Ala Ala Ala Ile Gly Ala Ile Pro
    50                  55                  60

Gly Ile Ala Ser Val Ala Val Gln Ala Ser Gln Arg His
65                  70                  75
```

<210> 344
<211> 259
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 344

```
Met Asp Ser Asp Ala Pro Gly Pro Val Met Cys Phe Arg Arg Gln Met
1               5                   10                  15

Glu Asp Ile Asn Phe Ser Ser Leu Ala Pro Arg His Gly Thr Arg Pro
            20                  25                  30
```

```
Phe Met Gly Thr Trp Ser Asp Ile Gly Thr Ser Gln Leu Asn Gly Gly
        35                  40                  45

Ala Phe Asn Trp Ser Ser Leu Trp Ser Gly Leu Lys Asn Phe Gly Ser
    50                  55                  60

Thr Leu Lys Thr Tyr Gly Ser Lys Ala Trp Asn Ser Thr Thr Gly Gln
65                  70                  75                  80

Ala Leu Arg Asp Lys Leu Lys Glu Gln Asn Phe Gln Gln Lys Val Val
                85                  90                  95

Asp Gly Leu Ala Ser Gly Ile Asn Gly Val Val Asp Leu Ala Asn Gln
            100                 105                 110

Ala Val Gln Arg Gln Ile Asn Ser Arg Leu Asp Pro Val Pro Pro Ala
        115                 120                 125

Gly Ser Val Glu Met Pro Gln Val Glu Glu Glu Leu Pro Pro Leu Asp
    130                 135                 140

Lys Arg Gly Glu Lys Arg Pro Arg Pro Asp Ala Glu Glu Thr Leu Leu
145                 150                 155                 160

Thr His Thr Asp Glu Pro Pro Pro Tyr Glu Glu Ala Val Lys Leu Gly
                165                 170                 175

Leu Pro Thr Thr Arg Pro Ile Ala Pro Leu Ala Thr Gly Val Leu Lys
            180                 185                 190

Pro Glu Ser Ser Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Gln Pro
        195                 200                 205

Ser Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val Ala
    210                 215                 220

Arg Ala Arg Pro Gly Gly Thr Ala Arg Pro His Ala Asn Trp Gln Ser
225                 230                 235                 240

Thr Leu Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg Arg
                245                 250                 255

Arg Cys Tyr
```

<210> 345
<211> 931
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 345

```
Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Met His Ile Ala
1               5                  10                  15

Gly Gln Asp Ala Ser Glu Tyr Leu Ser Pro Gly Leu Val Gln Phe Ala
            20                  25                  30

Arg Ala Thr Asp Thr Tyr Phe Ser Leu Gly Asn Lys Phe Arg Asn Pro
        35                  40                  45

Thr Val Ala Pro Thr His Asp Val Thr Thr Asp Arg Ser Gln Arg Leu
    50                  55                  60

Thr Leu Arg Phe Val Pro Val Asp Arg Glu Asp Asn Thr Tyr Ser Tyr
65                  70                  75                  80

Lys Val Arg Tyr Thr Leu Ala Val Gly Asp Asn Arg Val Leu Asp Met
                85                  90                  95

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

Phe Lys Pro Tyr Ser Gly Thr Ala Tyr Asn Ala Leu Ala Pro Lys Gly
        115                 120                 125

Ala Pro Asn Thr Cys Gln Trp Thr Tyr Thr Asp Lys Gln Thr Glu Lys
    130                 135                 140

Thr Ala Thr Tyr Gly Asn Ala Pro Val Gln Gly Ile Ala Ile Thr Lys
145                 150                 155                 160

Asp Gly Ile Gln Leu Gly Thr Asp Ser Asp Gly Asn Pro Val Tyr Ala
                165                 170                 175

Gln Lys Thr Phe Glu Pro Glu Pro Gln Val Gly Asp Ala Glu Trp His
            180                 185                 190

Asp Thr Thr Gly Thr Asp Glu Lys Tyr Gly Gly Arg Ala Leu Lys Pro
        195                 200                 205

Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys Pro Thr Asn
    210                 215                 220

Lys Glu Gly Gly Gln Ala Lys Asn Arg Thr Lys Thr Asp Gly Thr Gly
225                 230                 235                 240

Glu Glu Pro Asp Ile Asp Met Ala Phe Phe Asp Gly Arg Asn Ala Thr
                245                 250                 255

Thr Ala Gly Leu Ala Pro Glu Ile Val Leu Tyr Thr Glu Asn Val Asp
            260                 265                 270
```

```
Leu Glu Thr Pro Asp Thr His Ile Val Tyr Lys Ala Gly Thr Asp Asp
        275                 280                 285

Ser Ser Ser Ser Ile Asn Leu Gly Gln Gln Ser Met Pro Asn Arg Pro
    290                 295                 300

Asn Tyr Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn
305                 310                 315                 320

Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn
                325                 330                 335

Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu
            340                 345                 350

Leu Leu Asp Ser Leu Gly Asp Arg Thr Leu Tyr Phe Ser Met Trp Asn
        355                 360                 365

Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His
    370                 375                 380

Gly Val Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asp Ala Val
385                 390                 395                 400

Gly Arg Thr Asp Thr Tyr Gln Gly Ile Lys Pro Asn Gly Gly Asp Pro
                405                 410                 415

Ala Thr Trp Ala Lys Asp Asp Ser Ala Asn Asp Ala Asn Glu Met Gly
            420                 425                 430

Lys Gly Asn Pro Phe Ala Met Glu Ile Asn Ile Gln Ala Asn Leu Trp
        435                 440                 445

Arg Asn Phe Leu Tyr Ala Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr
    450                 455                 460

Lys Tyr Thr Pro Ala Asn Val Thr Leu Pro Thr Asn Thr Asn Thr Tyr
465                 470                 475                 480

Asp Tyr Met Asn Gly Arg Val Val Ala Pro Ser Leu Val Asp Ser Tyr
                485                 490                 495

Ile Asn Ile Gly Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn
            500                 505                 510

Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu
        515                 520                 525

Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys
    530                 535                 540
```

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

Glu Trp Asn Phe Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu
                565                 570                 575

Gly Asn Asp Leu Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr Ser Ile
            580                 585                 590

Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr
        595                 600                 605

Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp
    610                 615                 620

Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr
625                 630                 635                 640

Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly
                645                 650                 655

Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser
            660                 665                 670

Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp
        675                 680                 685

Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe
    690                 695                 700

Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn
705                 710                 715                 720

Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala
                725                 730                 735

Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His
            740                 745                 750

Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp
        755                 760                 765

Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val
    770                 775                 780

Val Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr
785                 790                 795                 800

Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg
                805                 810                 815

Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys
```

820 825 830

Ser Ala Val Thr Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val
835 840 845

Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu
850 855 860

Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu
865 870 875 880

Asp Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr Leu Leu Tyr
885 890 895

Val Val Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg
900 905 910

Gly Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn
915 920 925

Ala Thr Thr
930

<210> 346
<211> 210
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 346

Met Met Ala Glu Ala Ala Gly Ser Gly Glu Gln Glu Leu Arg Ala Ile
1 5 10 15

Ile Arg Asp Leu Gly Cys Gly Pro Tyr Phe Leu Gly Thr Phe Asp Lys
20 25 30

Arg Phe Pro Gly Phe Met Ala Pro His Lys Leu Ala Cys Ala Ile Val
35 40 45

Asn Thr Ala Gly Arg Glu Thr Gly Gly Glu His Trp Leu Ala Phe Ala
50 55 60

Trp Asn Pro Arg Ser Asn Thr Cys Tyr Leu Phe Asp Pro Phe Gly Phe
65 70 75 80

Ser Asp Glu Arg Leu Lys Gln Ile Tyr Gln Phe Glu Tyr Glu Gly Leu
85 90 95

Leu Arg Arg Ser Ala Leu Ala Thr Glu Asp Arg Cys Val Thr Leu Glu
100 105 110

```
Lys Ser Thr Gln Thr Val Gln Gly Pro Arg Ser Ala Ala Cys Gly Leu
        115                 120                 125

Phe Cys Cys Met Phe Leu His Ala Phe Val His Trp Pro Asp Arg Pro
    130                 135                 140

Met Asp Lys Asn Pro Thr Met Asn Leu Leu Thr Gly Val Pro Asn Gly
145                 150                 155                 160

Met Leu Gln Ser Pro Gln Val Glu Pro Thr Leu Arg Arg Asn Gln Glu
                165                 170                 175

Ala Leu Tyr Arg Phe Leu Asn Ser His Ser Ala Tyr Phe Arg Ser His
            180                 185                 190

Arg Ala Arg Ile Glu Lys Ala Thr Ala Phe Asp Arg Met Asn Asn Gln
        195                 200                 205

Asp Met
    210
```

<210> 347
<211> 503
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 347

```
Glu Ile Glu Arg Val Leu Pro Gly Leu Gly Met Ala Arg Gly Gln Gly
1               5                   10                  15

His Val Ala Glu Leu Val Leu Gly Gln Pro Leu Glu Leu Gly Asp Gln
            20                  25                  30

Gln Phe Arg Gln Arg Gly Val Gly Glu Gly Val Gly Pro Gln Leu Pro
        35                  40                  45

Arg Gln Leu Gln Gly Ala Gln Gln Val Gly Arg Gly Asp Leu Glu Ile
    50                  55                  60

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

Ala Ala Leu Glu His His Gln Gly Arg Val Leu His Ala Arg Gln His
                85                  90                  95

Arg Arg Val Gly Asp Ala Leu His Val Glu Val Leu Gly Val Gly His
            100                 105                 110

Pro Glu Gly Gly His Leu Ala Gly Leu Pro Ser His Ser Gly His Ala
        115                 120                 125
```

```
Pro Gly Leu Val Val Ala Ile Ala Val Gln Gly Asp Gln His His Leu
    130                 135                 140

Gly Leu Val Gly Val His Pro Arg Val His Gly Leu His Glu Ser Leu
145                 150                 155                 160

Gln Leu Pro Glu Ser Leu Leu Gly Leu Gly Ser Leu Gly Glu Glu Asp
                165                 170                 175

Pro Ala Gly Leu Ala Arg Glu Leu Val Gly Ser Ala Pro Gly Val Val
            180                 185                 190

His Ala Ala Ala Arg Val Val Val Gly Gln Leu His His Ala Ala Pro
        195                 200                 205

Pro Ala Val Leu Gly Asp Leu Gly Pro Val Gly Val Leu Leu Gln Arg
    210                 215                 220

Ala Leu Pro Val Leu Ala Arg His Ile His Leu Asp His Val Leu Leu
225                 230                 235                 240

Leu Asp His Gly Gly Pro Val Gln Ala Pro Gln Leu Ala Leu Gly Leu
                245                 250                 255

Gly Ala Pro Val Gln Pro Gln Arg Ala Pro Gly Ala Leu Pro Val Leu
            260                 265                 270

Val Gly Asp Leu Gly Met Arg Val His Glu Pro Leu Gln Glu Ala Ala
        275                 280                 285

His His Gly Gly Gln Gly Leu Val Ala Ser Glu Gly Gln Arg Asp Ala
    290                 295                 300

Ala Val Leu Leu Val Asp Val Gln Val Ala Asp Ala Ala Val His Leu
305                 310                 315                 320

Ala Leu Leu Gly His Gln Leu Glu Val Gly Phe Gln Val Gly Leu His
                325                 330                 335

Ala Val Ala Val His Gln Tyr Ser His Asp Phe His Thr Leu Leu Pro
            340                 345                 350

Gly Arg Asp Asp Gly Gln Ala His Arg Val Leu His His His Leu Ser
        355                 360                 365

Thr Ser Ser Arg Gly Gln Gly Val Ala Leu Ile Gln Gly Leu Lys Ala
    370                 375                 380

Pro Leu Ala Val Leu Leu Gly Asp Pro His Arg Gly Val Ala Glu Ala
385                 390                 395                 400
```

```
His Gly Arg Gln Leu Leu Leu Gly Leu Pro Phe Val Leu Ala Val Leu
                405                 410                 415

Ala Asp Val Leu Gln Asp His Met Leu Gly Leu Ala Gly Phe Leu Leu
            420                 425                 430

Gly Arg Gln Arg Arg Arg Arg Cys Leu Trp Arg Gly Gly Ala Arg Val
        435                 440                 445

Leu Ala His His Tyr Tyr Leu Phe Leu Phe Val Val Arg Gly His Ala
    450                 455                 460

Ala Val Gly Met Ser Leu Arg Gly Gln Arg Arg Arg Arg Arg Ala Leu
465                 470                 475                 480

Ala Ala Ala Thr Trp Arg Met Ala Gly Arg Ala Pro Ser Ala Ile Gly
                485                 490                 495

Gly Ala Leu Pro Ala Ala Leu
            500
```

<210> 348
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 348

```
Leu Thr Ser Ser Ala Ala Gly His
1               5
```

<210> 349
<211> 184
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 349

```
Met Pro Arg Gly Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val Glu
1               5                   10                  15

Asp Leu Glu Glu Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Glu Met
            20                  25                  30

Glu Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp
        35                  40                  45

Ser Leu Glu Glu Asp Glu Glu Glu Ala Glu Val Glu Glu Ala Ala Ala
    50                  55                  60

Ala Arg Pro Ser Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr Asp Thr
```

65 70 75 80

Ile Ser Ala Pro Gly Arg Gly Pro Ala Arg Pro His Ser Arg Trp Asp
85 90 95

Glu Thr Gly Arg Phe Pro Asn Pro Thr Ile Gln Thr Gly Lys Lys Glu
100 105 110

Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile Val Ser
115 120 125

Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg Tyr Leu
130 135 140

Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His Tyr Tyr
145 150 155 160

Arg His Leu His Ser Pro Tyr Tyr Phe Gln Glu Glu Ala Ala Ala Glu
165 170 175

Lys Asp Gln Gln Lys Thr Ser Ser
180

<210> 350
<211> 227
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 350

Met Ser Lys Glu Ile Pro Thr Pro Tyr Met Trp Ser Tyr Gln Pro Gln
1 5 10 15

Met Gly Leu Ala Ala Gly Ala Ala Gln Asp Tyr Ser Thr Arg Met Asn
20 25 30

Trp Leu Ser Ala Gly Pro Ala Met Ile Ser Arg Val Asn Asp Ile Arg
35 40 45

Ala His Arg Asn Gln Ile Leu Leu Glu Gln Ser Ala Leu Thr Ala Thr
50 55 60

Pro Arg Asn His Leu Asn Pro Arg Asn Trp Pro Ala Ala Leu Val Tyr
65 70 75 80

Gln Glu Ile Pro Gln Pro Thr Thr Val Leu Leu Pro Arg Asp Ala Gln
85 90 95

Ala Glu Val Gln Leu Thr Asn Ser Gly Val Gln Leu Ala Gly Gly Ala
100 105 110

```
Thr Leu Cys Arg His Arg Pro Ala Gln Gly Ile Lys Arg Leu Val Ile
        115                 120                 125

Arg Gly Arg Gly Thr Gln Leu Asn Asp Glu Val Val Ser Ser Ser Leu
    130                 135                 140

Gly Leu Arg Pro Asp Gly Val Phe Gln Ile Ala Gly Ser Gly Arg Ser
145                 150                 155                 160

Ser Phe Thr Pro Arg Gln Ala Val Leu Thr Leu Glu Ser Ser Ser Ser
                165                 170                 175

Gln Pro Arg Ser Gly Gly Ile Gly Thr Leu Gln Phe Val Glu Glu Phe
            180                 185                 190

Thr Pro Ser Val Tyr Phe Asn Pro Phe Ser Gly Ser Pro Gly His Tyr
        195                 200                 205

Pro Asp Glu Phe Ile Pro Asn Phe Asp Ala Ile Ser Glu Ser Val Asp
    210                 215                 220

Gly Tyr Asp
225
```

<210> 351
<211> 106
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 351

```
Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu Asp
1               5                   10                  15

His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe Thr
            20                  25                  30

Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly Val
        35                  40                  45

Arg Ile Val Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile Phe
    50                  55                  60

Ser Gln Arg Pro Ile Leu Val Glu Arg Gln Gln Gly Asn Thr Leu Leu
65                  70                  75                  80

Thr Leu Tyr Cys Ile Cys Asp His Pro Gly Leu His Glu Ser Leu Cys
                85                  90                  95

Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
            100                 105
```

<210> 352
<211> 176
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 352

Met Gly Lys Ile Thr Leu Val Cys Gly Val Leu Val Thr Val Val Leu
1 5 10 15

Ser Ile Leu Gly Gly Gly Ser Ala Ala Val Val Thr Glu Lys Lys Ala
20 25 30

Asp Pro Cys Leu Thr Phe Asn Pro Asp Lys Cys Arg Leu Ser Phe Gln
35 40 45

Pro Asp Gly Asn Arg Cys Thr Val Leu Ile Lys Cys Gly Trp Glu Cys
50 55 60

Glu Ser Val Ala Ile Gln Tyr Lys Asn Lys Thr Arg Asn Asn Thr Leu
65 70 75 80

Ala Ser Thr Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
85 90 95

Pro Gly Ala Asp Gly Ser Leu His Thr Val Asn Asn Thr Phe Ile Phe
100 105 110

Glu His Met Cys Glu Thr Ala Met Phe Met Ser Lys Gln Tyr Gly Met
115 120 125

Trp Pro Pro Arg Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
130 135 140

Ala Cys Thr Val Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145 150 155 160

Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
165 170 175

<210> 353
<211> 247
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 353

Met Arg Leu Leu Ile Phe Val Ile Ile Thr Leu Ser Phe Asn Tyr Ala
1 5 10 15

```
His Gly Tyr Ala Asn Ile Gln Lys Thr Leu Tyr Val Gly Ser Asp Ser
            20                  25                  30

Thr Leu Glu Gly Thr Gln Ser Gln Ala Arg Val Ser Trp Tyr Phe Tyr
        35                  40                  45

Lys Gly Ser Asp Asp Pro Ile Thr Leu Cys Lys Gly Asp Gln Gly Arg
    50                  55                  60

Ile Thr Lys Pro Pro Ile Thr Phe Ser Cys Thr Arg Thr Asn Leu Thr
65                  70                  75                  80

Leu Leu Ser Ile Thr Lys Glu Tyr Ala Gly Thr Tyr Tyr Ser Thr Asn
                85                  90                  95

Phe His Arg Gly Gln Asp Lys Tyr Tyr Thr Val Lys Val Glu Asn Pro
            100                 105                 110

Thr Thr Pro Arg Thr Thr Thr Lys Pro Thr Thr Thr Lys Lys Pro Thr
        115                 120                 125

Thr Pro Lys Lys Pro Thr Thr Pro Lys Thr Thr Lys Thr Thr Thr Ala
    130                 135                 140

Lys Thr Thr Thr Thr Lys Pro Thr Thr Thr Ser Thr Thr Leu Ala Ile
145                 150                 155                 160

Thr Thr His Thr His Thr Glu Leu Thr Ser Gln Ala Thr Thr Glu Asn
                165                 170                 175

Asp Leu Val Ala Leu Leu Gln Lys Gly Glu Asn Ser Ser Ser Ser Pro
            180                 185                 190

Leu Pro Thr Thr Pro Ser Glu Glu Ile Pro Lys Ser Met Val Gly Ile
        195                 200                 205

Ile Ala Ala Val Val Val Cys Met Leu Ile Ile Ile Leu Cys Met Met
    210                 215                 220

Tyr Tyr Ala Cys Tyr Tyr Arg Lys His Arg Leu Asn Asn Lys Leu Asp
225                 230                 235                 240

Pro Leu Leu Ser Val Asp Phe
                245
```

<210> 354
<211> 208
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 354

Met Lys Ile Leu Ser Leu Phe Val Phe Ser Ile Ile Ile Thr Ser Ala
1 5 10 15

Ile Cys Glu Ser Val Asp Lys Asp Val Thr Val Thr Thr Gly Ser Asn
20 25 30

Tyr Thr Leu Lys Gly Pro Ser Ser Gly Met Leu Ser Trp Tyr Cys Tyr
35 40 45

Phe Gly Asn Asp Asp Lys Gln Thr Glu Leu Cys Asn Phe Gln Asn Gly
50 55 60

Lys Thr Lys Asn Ser Lys Ile Asp Asn Tyr Gln Cys Gln Gly Thr Asn
65 70 75 80

Leu Val Leu Met Asn Ile Thr Lys Ala Tyr Ala Gly Ser Tyr Ser Cys
85 90 95

Pro Gly Gln Asn Thr Glu Glu Met Ile Phe Tyr Lys Leu Ile Val Val
100 105 110

Asp Pro Thr Thr Pro Ala Pro Pro Thr Thr Thr Lys Ala His Thr Thr
115 120 125

Asp Thr Gln Glu Thr Thr Pro Glu Ala Glu Val Ala Glu Leu Ala Lys
130 135 140

Gln Ile His Glu Asp Ser Phe Val Ala Asn Thr Pro Thr His Pro Gly
145 150 155 160

Pro Gln Cys Pro Gly Pro Leu Val Ser Gly Ile Val Gly Val Leu Cys
165 170 175

Gly Leu Ala Val Ile Ile Ile Cys Met Phe Ile Phe Ala Cys Cys Tyr
180 185 190

Arg Arg Leu His Arg Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
195 200 205

<210> 355
<211> 291
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 355

Met Lys Ala Leu Ser Thr Leu Val Phe Leu Ser Leu Ile Gly Ile Val
1 5 10 15

Phe Ser Ala Gly Phe Leu Lys Asn Leu Thr Ile Ile Glu Gly Asp Asn
20 25 30

```
Ala Thr Leu Val Gly Ile Ser Gly Gln Asn Val Ser Trp Leu Lys Tyr
        35                  40                  45

His Leu Asp Gly Trp Lys Pro Ile Cys Thr Trp Asn Val Ser Val Tyr
    50                  55                  60

Thr Cys His Gly Val Asn Leu Thr Ile Thr Asn Ala Thr Gln Asp Gln
65                  70                  75                  80

Asn Gly Arg Phe Lys Gly Gln Ser Phe Thr Ser Asn Asn Gly Tyr Glu
                85                  90                  95

Thr His Asn Met Phe Ile Tyr Asp Val Thr Val Ile Ser Asn Lys Thr
            100                 105                 110

Thr Pro Thr Thr Gln Thr Pro Thr Thr His Ser Ser Thr His Ala Met
        115                 120                 125

Gln Thr Thr Gln Thr Thr Thr Tyr Thr Thr Ser Thr Glu Ser Thr Thr
    130                 135                 140

Thr Thr Thr Ala Glu Val Ser Ser Thr Ala Pro Gln Pro Gln Ala Leu
145                 150                 155                 160

Ala Leu Met Ala Gln Pro Ser Ser Met Thr Ala Lys Thr Asn Glu Gln
                165                 170                 175

Thr Thr Glu Phe Leu Ser Thr Ile Gln Ser Ser Thr Thr Ala Thr Ser
            180                 185                 190

Ser Ala Phe Ser Ser Thr Ala Asn Leu Thr Ser Leu Ser Ser Thr Pro
        195                 200                 205

Ile Ser Asn Ala Thr Thr Ser Pro Ala Pro Leu Pro Thr Pro Leu Lys
    210                 215                 220

Gln Ser Glu Ser Ser Thr Gln Leu Gln Ile Thr Leu Leu Ile Val Ile
225                 230                 235                 240

Gly Val Val Ile Leu Ala Val Leu Leu Tyr Phe Ile Phe Cys Arg Arg
                245                 250                 255

Ile Pro Asn Ala Lys Pro Ala Tyr Lys Pro Ile Val Ile Gly Thr Pro
            260                 265                 270

Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser Phe
        275                 280                 285

Thr Val Trp
    290
```

<210> 356
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 356

Met Thr Asp Pro Met Ala Asn Asn Thr Val Asn Asp Leu Leu Asp Met
1 5 10 15

Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg Gln
20 25 30

Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Ala Val Ala Ile His
35 40 45

Gln Cys Lys Arg Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile Ser
50 55 60

Phe Glu Val Thr Ser Thr Asp His Arg Leu Ser Tyr Glu Leu Leu Gln
65 70 75 80

Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val Ile
85 90 95

Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys Asp
100 105 110

Ser Pro Glu Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly Leu Arg
115 120 125

Asp Leu Leu Pro Met Asn
130

<210> 357
<211> 490
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 357

Met Phe Ser Val Ser Ser Thr Ser Leu Pro Ser Ser Gln Leu Trp Tyr
1 5 10 15

Cys Arg Pro Arg Arg Ala Ala Asn Phe Leu His Thr Leu Lys Gly Met
20 25 30

Ser Asn Ser Ser Cys Pro Ser Ile Phe Ile Phe Ile Phe Tyr Gln Met
35 40 45

```
Ser Lys Lys Arg Ala Arg Val Asp Asp Gly Phe Asp Pro Val Tyr Pro
    50                  55                  60

Tyr Asp Ala Asp Asn Ala Pro Thr Val Pro Phe Ile Asn Pro Pro Phe
65                  70                  75                  80

Val Ser Ser Asp Gly Phe Gln Glu Lys Pro Leu Gly Val Leu Ser Leu
                85                  90                  95

Arg Leu Ala Asp Pro Val Thr Thr Lys Asn Gly Ala Val Thr Leu Lys
            100                 105                 110

Leu Gly Glu Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ser Lys
        115                 120                 125

Asn Ala Thr Lys Ala Thr Ala Pro Leu Ser Ile Ser Asn Gly Thr Ile
    130                 135                 140

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

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

Gly Ile Ser Leu Gly Asn Gly Leu Gln Thr Ser Asn Lys Leu Leu Thr
            180                 185                 190

Val Gln Leu Thr His Pro Leu Thr Phe Ser Ser Asn Ser Ile Thr Val
        195                 200                 205

Lys Thr Asp Lys Gly Leu Tyr Ile Asn Ser Ser Gly Asn Arg Gly Leu
    210                 215                 220

Glu Ala Asn Ile Ser Leu Lys Arg Gly Leu Ile Phe Asp Gly Asn Ala
225                 230                 235                 240

Ile Ala Thr Tyr Leu Gly Ser Gly Leu Asp Tyr Gly Ser Tyr Asp Ser
                245                 250                 255

Asp Gly Lys Thr Arg Pro Ile Ile Thr Lys Ile Gly Ala Gly Leu Asn
            260                 265                 270

Phe Asp Ala Asn Asn Ala Met Ala Val Lys Leu Gly Thr Gly Leu Ser
        275                 280                 285

Phe Asp Ser Ala Gly Ala Leu Thr Ala Gly Asn Lys Glu Asp Asp Lys
    290                 295                 300

Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Gln Leu Leu
305                 310                 315                 320

Ser Asp Arg Asp Ala Lys Phe Thr Leu Cys Leu Thr Lys Cys Gly Ser
```

```
                325                 330                 335

Gln Ile Leu Gly Thr Val Ala Val Ala Ala Val Thr Val Gly Ser Ala
            340                 345                 350

Leu Asn Pro Ile Asn Asp Thr Val Lys Ser Ala Ile Val Phe Leu Arg
        355                 360                 365

Phe Asp Ser Asp Gly Val Leu Met Ser Asn Ser Ser Met Val Gly Asp
    370                 375                 380

Tyr Trp Asn Phe Arg Glu Gly Gln Thr Thr Gln Ser Val Ala Tyr Thr
385                 390                 395                 400

Asn Ala Val Gly Phe Met Pro Asn Leu Gly Ala Tyr Pro Lys Thr Gln
                405                 410                 415

Ser Lys Thr Pro Lys Asn Ser Ile Val Ser Gln Val Tyr Leu Asn Gly
            420                 425                 430

Glu Thr Thr Met Pro Met Thr Leu Thr Ile Thr Phe Asn Gly Thr Asp
        435                 440                 445

Glu Lys Asp Thr Thr Pro Val Ser Thr Tyr Ser Met Thr Phe Thr Trp
    450                 455                 460

Gln Trp Thr Gly Asp Tyr Lys Asp Lys Asn Ile Thr Phe Ala Thr Asn
465                 470                 475                 480

Ser Phe Thr Phe Ser Tyr Met Ala Gln Glu
                485                 490


<210>  358
<211>  186
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  358

Ser Gly Arg Arg Ala Val Arg Val Ile Ile Arg Glu Arg Asp Arg Ala
1               5                   10                  15

Val Val Ala His Gln Ala Pro Gln Gln Ser Leu Ser Ala Pro Leu Arg
            20                  25                  30

Gln Ala Ala Ala Gln Gly Val Trp Val Gln Gly Leu Pro Ala His Asp
        35                  40                  45

Ala Asp Gly Pro Glu His Gln Ser Pro Gly Ala Ala Gly Ala Ala Ala
    50                  55                  60
```

Asp Ala Asp Leu Thr Gln Val Gly Ala Val Arg Ala Ala Gln His Tyr
65 70 75 80

Gln Val Val Gln Gln Ser Ile Val Gln Arg Ala Pro Ala Lys Thr His
85 90 95

Leu Trp Asn Tyr Ala Ala His Met Ser Ile Val Pro Asp Pro Asp Val
100 105 110

Asn Gln Val Ala Pro Pro Pro Glu His Thr Ala His Val His Asp Leu
115 120 125

Leu Gly His Val Gln Val His His Leu Pro Val Pro His His Pro Leu
130 135 140

Val Glu His Ala Ala Leu Asp Asn Pro Ala Glu Pro Asp Gly Gln His
145 150 155 160

Arg Pro Ala Arg His Ala Ala Gln Gly Pro Arg Val Leu Ala Met Ala
165 170 175

Val Glu His Pro Pro Leu Thr Ala Val Asp
180 185

<210> 359
<211> 83
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 359

Leu Gly Ala Glu Gln Val Tyr Val Gly Thr Ala Gln Ala His Ala His
1 5 10 15

Ala Cys Leu Gln His Ser Gln Phe Leu Gly Gly Gln Asp His Val Pro
20 25 30

Gly His Gly Glu Leu Leu Gln Asp Ser Glu Pro Gly Arg Thr Gly Gln
35 40 45

Pro Ser His Thr Thr Tyr Ile Val His Gly Gln Gly Ile Ala Ile Arg
50 55 60

Gln His Arg Met Ile Leu His Gln Arg Ser Ala Gly Leu Gly Leu Leu
65 70 75 80

Thr Ala Arg

<210> 360
<211> 11
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 360

Gly Gly Arg Arg Leu Val Arg Met Met Ala Gly
1 5 10

<210> 361
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 361

Ser Cys Ser Gly Ser Cys His Asp Gly Ala Val Ser
1 5 10

<210> 362
<211> 63
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 362

Phe Gln Thr Val Ser Glu His Phe Lys Met Gln Val Pro Glu Val Ala
1 5 10 15

Pro Leu Ala Pro Thr Val Leu Val Glu Asn Asn Ser Gln Val Lys Gly
20 25 30

Asp Thr Val Leu Glu Met Phe His Gly Gly Phe Gln Gln Ser Leu His
35 40 45

Ala His Ile Gln Lys Gln Glu Asp Ser Glu Ser Gly Ser Val Phe
50 55 60

<210> 363
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 363

Phe Leu Asn His His Ile Thr Leu Leu His His Pro Gln Ile Ile Phe
1 5 10 15

Ile Phe Pro Ala Leu Asn Asp Ser Tyr
20 25

<210> 364
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 364

Ile Gln Ala Ser His Asp Lys Lys Leu Ala Gln Ser Ala Leu His Arg
1 5 10 15

His Ser

<210> 365
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 365

Ala His Pro His
1

<210> 366
<211> 63
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 366

Asn His Ala Ser Leu Ala Asn Arg Trp Val Asn His Ser Phe Gln His
1 5 10 15

Gln Ala Gly Tyr Gly Val Ser Gly Ala Thr Leu Val Glu Ala Val Ala
20 25 30

Met Ile Glu Lys His His Arg Glu Thr Phe Pro Val Ala Gly Met Asp
35 40 45

Asp Ser Arg Arg Ser Ile His Ser Gly Asn Ile Gly Ile Arg Glu
50 55 60

<210> 367
<211> 60
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 367

Lys Lys Ala Thr Tyr Lys Ala Ser Gly His Tyr Asn Ala Gln Ser Gln

1 5 10 15

Phe Gln Gln Ser His Pro Met Arg Met Glu His Lys Ile Gly Arg Cys
20 25 30

Val Lys Asn Val Ile Thr Pro Leu Leu His Arg Gln Gln Ser Pro Arg
35 40 45

Ser Leu Gln Lys His Ile Gln Ser Leu Ser Val His
50 55 60

<210> 368
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 368

Leu Pro Met Leu Asn Gln
1 5

<210> 369
<211> 75
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 369

Gly Thr Tyr Leu Ser Asp Leu Ser Ile Ser Phe Ile His Ser Cys Leu
1 5 10 15

Thr Pro Arg Arg Val Asp Asn Tyr Asp Thr Gly Gly Leu Thr Ile Trp
20 25 30

Pro Gln Cys Cys Asn Asp Thr Ala Arg Pro Thr Leu Thr Gly Ser Arg
35 40 45

Phe Ile Ser Asn Lys Pro Ala Ser Arg Lys Gly Arg Ala Gln Lys Trp
50 55 60

Ser Cys Asn Phe Ile Arg Leu His Pro Val Tyr
65 70 75

<210> 370
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 370

Leu Leu Pro Gly Ser
1 5

<210> 371
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 371

Phe Ala Gln Arg Cys Cys His Cys Cys Arg His Arg Gly Val Thr Leu
1 5 10 15

Val Val Trp Tyr Gly Phe Ile Gln Leu Arg Phe Pro Thr Ile Lys Ala
20 25 30

Ser Tyr Met Ile Pro His Val Val Gln Lys Ser Gly
35 40

<210> 372
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 372

Leu Leu Arg Ser Ser Asp Arg Cys Gln Lys
1 5 10

<210> 373
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 373

Val Gly Arg Ser Val Ile Thr His Gly Tyr Gly Ser Thr Ala
1 5 10

<210> 374
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 374

Phe Ser Tyr Cys His Ala Ile Arg Lys Met Leu Phe Cys Asp Trp
1 5 10 15

<210> 375

<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 375

Val Leu Asn Gln Val Ile Leu Arg Ile Val Tyr Ala Ala Thr Glu Leu
1 5 10 15

Leu Leu Pro Gly Val Asn Thr Gly
20

<210> 376
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 376

Tyr Arg Ala Thr
1

<210> 377
<211> 74
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 377

Gln Asn Phe Lys Ser Ala His His Trp Lys Thr Phe Phe Gly Ala Lys
1 5 10 15

Thr Leu Lys Asp Leu Thr Ala Val Glu Ile Gln Phe Asp Val Thr His
20 25 30

Ser Cys Thr Gln Leu Ile Phe Ser Ile Phe Tyr Phe His Gln Arg Phe
35 40 45

Trp Val Ser Lys Asn Arg Lys Ala Lys Cys Arg Lys Lys Gly Asn Lys
50 55 60

Gly Asp Thr Glu Met Leu Asn Thr His Thr
65 70

<210> 378
<211> 38700
<212> DNA
<213> Artificial Sequence

<220>
<223> p2878 - E1 deleted molecular clone with HIVgagshort insertion, based on Simian Adenovirus A1337

<220>
<221> CDS
<222> (15774)..(17369)
<223> Penton

<220>
<221> CDS
<222> (23360)..(25762)
<223> 100K

<220>
<221> CDS
<222> (27342)..(27977)
<223> E3\CR1-alpha

<220>
<221> CDS
<222> (31089)..(31535)
<223> E3\RID-beta

<220>
<221> CDS
<222> (34662)..(35027)
<223> orf4 complement (34662..35027)

<220>
<221> CDS
<222> (35389)..(35775)
<223> orf2 complement (35389..35775)

<400> 378
caataatata cctcaaactt tttgtgcgcg ttaatatgca aatgaggcgt ttgaatttgg 60

gaagggagga aggtgattgg ccgagagaag ggcgaccgtt aggggcgggg cgagtgacgt 120

tttgatgacg tggccgcgag gaggagccag tttgcaagtt ctcgtgggaa aagtgacgtc 180

aaacgaggtg tggtttgaac acggaaatac tcaattttcc cgcgctctct gacaggaaat 240

gaggtgtttt tgggcggatg caagttaaaa cgggccattt tcgcgcgaaa actgaatgag 300

gaagtgaaaa tctgagtaat ttcgcgttta tggcagggag gagtatttgc cgagggccga 360

gtagactttg accgattacg tgggggtttc gattaccgtg tttttcacct aaatttccgc 420

gtacggtgtc aaagtccggt gtttttacat catttccccg aaaagtgcca cctgacgtaa 480

ctataacggt cctaaggtag cgaaagctca gatctcccga tcccctatgg tgcactctca 540

gtacaatctg ctctgatgcc gcatagttaa gccagtatct gctccctgct tgtgtgttgg 600

aggtcgctga gtagtgcgcg agcaaaattt aagctacaac aaggcaaggc ttgaccgaca 660

attgcatgaa gaatctgctt agggttaggc gttttgcgct gcttcgcgat gtacgggcca 720

gatatacgcg ttgacattga ttattgacta gttattaata gtaatcaatt acggggtcat 780

tagttcatag cccatatatg gagttccgcg ttacataact tacggtaaat ggcccgcctg 840

gctgaccgcc caacgacccc cgcccattga cgtcaataat gacgtatgtt cccatagtaa 900

cgccaatagg gactttccat tgacgtcaat gggtggagta tttacggtaa actgcccact 960

tggcagtaca tcaagtgtat catatgccaa gtacgccccc tattgacgtc aatgacggta 1020

aatggcccgc ctggcattat gcccagtaca tgaccttatg ggactttcct acttggcagt 1080

acatctacgt attagtcatc gctattacca tggtgatgcg gttttggcag tacatcaatg 1140

ggcgtggata gcggtttgac tcacggggat ttccaagtct ccaccccatt gacgtcaatg 1200

ggagtttgtt ttggcaccaa aatcaacggg actttccaaa atgtcgtaac aactccgccc 1260

cattgacgca aatgggcggt aggcgtgtac ggtgggaggt ctatataagc agagctcgtt 1320

tagtgaaccg tcagatcgcc tggagacgcc atccacgctg ttttgacctc catagaagac 1380

accgggaccg atccagcctc cgcgggcgcg cgtcgacaga gagatgggtg cgagagcgtc 1440

agtattaagc gggggagaat tagatcgatg ggaaaaaatt cggttaaggc caggggggaaa 1500

gaagaagtac aagctaaagc acatcgtatg ggcaagcagg gagctagaac gattcgcagt 1560

taatcctggc ctgttagaaa catcagaagg ctgtagacaa atactgggac agctacaacc 1620

atcccttcag acaggatcag aggagcttcg atcactatac aacacagtag caaccctcta 1680

ttgtgtgcac cagcggatcg agatcaagga caccaaggaa gctttagaca agatagagga 1740

agagcaaaac aagtccaaga agaaggccca gcaggcagca gctgacacag gacacagcaa 1800

tcaggtcagc caaaattacc ctatagtgca gaacatccag gggcaaatgg tacatcaggc 1860

catatcacct agaactttaa atgcatgggt aaaagtagta gaagagaagg ctttcagccc 1920

agaagtgata cccatgtttt cagcattatc agaaggagcc accccacagg acctgaacac 1980

gatgttgaac accgtggggg gacatcaagc agccatgcaa atgttaaaag agaccatcaa 2040

tgaggaagct gcagaatggg atagagtgca tccagtgcat gcagggccta ttgcaccagg 2100

ccagatgaga gaaccaaggg gaagtgacat agcaggaact actagtaccc ttcaggaaca 2160

aataggatgg atgacaaata atccacctat cccagtagga gagatctaca agaggtggat 2220

aatcctggga ttgaacaaga tcgtgaggat gtatagccct accagcattc tggacataag 2280

acaaggacca aaagaaccct ttagagacta tgtagaccgg ttctataaaa ctctaagagc 2340

tgagcaagct tcacaggagg taaaaaattg gatgacagaa accttgttgg tccaaaatgc 2400

gaacccagat tgtaagacca tcctgaaggc tctcggccca gcggctacac tagaagaaat 2460

gatgacagca tgtcagggag taggaggacc cggccataag gcaagagttt tgtagggatc 2520

cactagttct agactcgagg gggggcccgg tacctttaag accaatgact tacaaggcag 2580

ctgtagatct tagccacttt ttaaaagaaa aggggggact ggaagggcta attcactccc 2640

aaagaagaca agataaaccg ctgatcagcc tcgactgtgc cttctagttg ccagccatct 2700

gttgtttgcc cctccccccgt gccttccttg accctggaag gtgccactcc cactgtcctt 2760

tcctaataaa atgaggaaat tgcatcgcat tgtctgagta ggtgtcattc tattctgggg 2820

ggtggggtgg ggcaggacag caaggggggag gattgggaag acaatagcag gcatgctggg 2880

gatgcggtgg gctctatggc ttctgaggcg gaaagaacca gcagatctgc agatctgaat 2940

tcatctatgt cgggtgcgga gaaagaggta atgaaatggc acatatgctg gccaccgtgc 3000

atgtggcttc ccatgcccgc aagccctggc ccgagttcga gcacaatgtc atgaccaggt 3060

gcaatatgca tctggggtct cgccgaggca tgttcatgcc ctaccagtgc aacctgaatt 3120

atgtgaaggt gctgctggag cccgatgcca tgtccagagt gagcctgacg ggggtgtttg 3180

acatgaatgt ggaggtgtgg aagattctga gatatgatga atccaagacc aggtgccgag 3240
cctgcgagtg cggagggaag catgccaggt tccagcccgt gtgtgtggat gtgacggagg 3300
acctgcgacc cgatcatttg gtgttgtcct gcaccgggac ggagttcggt tccagcgggg 3360
aagaatctga ctagagtgag tagtgttctg gggcggggga ggacctgcat gagggccaga 3420
atgattgaaa tctgtgcttt tctgtgtgtt gcagcagcat gagcggaagc ggctcctttg 3480
agggaggggt attcagccct tatctgacgg ggcgtctccc ctcctgggcg ggagtgcgtc 3540
agaatgtgat gggatccacg gtggacggcc ggcccgtgca gcccgcgaac tcttcaaccc 3600
tgacctatgc aaccctgagc tcttcgtcgg tggacgcagc tgccgccgca gctgctgcat 3660
ctgccgccag cgccgtgcgc ggaatggcca tgggcgccgg ctactacggc actctggtgg 3720
ccaactcgag ttccaccaat aatcccgcca gcctgaacga ggagaagctg ctgctgctga 3780
tggcccagct cgaggccttg acccagcgcc tgggcgagct gacccagcag gtggctcagc 3840
tgcaggagca gacgcgggcc gcggttgcca cggtgaaatc caaataaaaa atgaatcaat 3900
aaataaacgg agacggttgt tgattttaac acagagtctg aatctttatt tgatttttcg 3960
cgcgcggtag gccctggacc accggtctcg atcattgagc actcggtgga tcttttccag 4020
gacccggtag aggtgggctt ggatgttgag gtacatgggc atgagcccgt cccgggggtg 4080
gaggtagctc cattgcaggg cctcgtgctc gggggtggtg ttgtaaatca cccagtcata 4140
gcaggggcgc agggcatggt gttgcacaat atctttgagg aggagactga tggccacggg 4200
cagcccttg gtgtaggtgt ttacaaatct gttgagctgg gagggatgca tgcgggggga 4260
gatgaggtgc atcttggcct ggatcttgag attggcgatg ttaccgccca gatcccgcct 4320
ggggttcatg ttgtgcagga ccaccagcac ggtgtatccg gtgcacttgg ggaatttatc 4380
atgcaacttg gaagggaagg cgtgaaagaa tttggcgacg cccttgtgcc cgcccaggtt 4440
ttccatgcac tcatccatga tgatggcgat ggggccgtgg gcggcggcct gggcaaaaac 4500
gtttcggggg tcggacacat catagttgtg gtcctgggtg agatcatcat aggccatttt 4560
aatgaatttg gggcggaggg tgccggactg ggggacaaag gtaccctcga tcccgggggc 4620
gtagttcccc tcacagatct gcatctccca ggctttgagc tcggaggggg ggatcatgtc 4680
cacctgcggg gcgataaaga acacggtttc cggggcggga gagatgagct gggccgaaag 4740
caagttccgg agcagctggg acttgccgca gccggtgggg ccgtagatga ccccgatgac 4800
cggttgcagg tggtagttga gggagagaca gctgccgtcc tcccggagga ggggggccac 4860
ctcgttcatc atctcgcgca cgtgcatgtt ctcgcgcacc agttccgcca ggaggcgctc 4920
tccccccagg gataggagct cctggagcga ggcgaagttt ttcagcggct tgagtccgtc 4980
ggccatgggc attttggaga gggtctgttg caagagttcc aagcggtccc agagctcggt 5040
gatgtgctct acggcatctc gatccagcag acctcctcgt ttcgcgggtt ggggcggctg 5100
cgggagtagg gcaccagacg atgggcgtcc agcgcagcca gggtccggtc cttccagggt 5160
cgcagcgtcc gcgtcagggt ggtctccgtc acggtgaagg ggtgcgcgcc gggctgggcg 5220

cttgcgaggg tgcgcttcag gctcatccgg ctggtcgaaa accgctcccg atcggcgccc 5280

tgcgcgtcgg ccaggtagca attgaccatg agttcgtaat tgagcgcctc ggccgcgtga 5340

cctttggcgc ggagcttacc tttggaagtc tgcccgcagg tgggacagag gagggacttg 5400

agggcgtaga gcttgggggc gaggaagacg gactcggggg cgtaggcgtc cgcgccgcag 5460

tgggcgcaga cggtctcgca ctccacgagc caggtgaggt cgggctggtc ggggtcaaaa 5520

accagtttcc cgccgttctt tttgatgcgt ttcttacctt tggtctccat gagctcgtgt 5580

ccccgctggg tgacaaagag gctgtccgtg tccccgtaga ccgactttat gggccggtcc 5640

tcgagcggtg tgccgcggtc ctcctcgtag aggaaccccg cccactccga gacgaaagcc 5700

cgggtccagg ccagcacgaa ggaggccacg tgggacgggt agcggtcgtt gtccaccagc 5760

gggtccacct tctccagggt atgcaaacac atgtcccccc cgtccacatc caggaaggtg 5820

attggcttgt aagtgtaggc cacgtgaccg ggggtcccag ccgggggggt ataaaagggg 5880

gcgggcccct gctcgtcctc actgtcttcc ggatcgctgt ccaggagcgc cagctgttgg 5940

ggtaggtatt ccctctcgaa ggcgggcatg acctcggcac tcaggttgtc agtttctaga 6000

aacgaggagg atttgatatt gacggtgccg gcggagatgc ctttcaagag cccctcgtcc 6060

atctggtcag aaaagacgat ctttttgttg tcgagtttgg tggcgaagga gccgtagagg 6120

gcattggaga ggagcttggc gatagagcgc atggtctggt ttttttcctt gtcggcgcgc 6180

tccttggccg cgatgttgag ctgcacgtac tcgcgcgcca cgcacttcca ttcggggaag 6240

acggtggtca gctcgtcggg cacgattctg acttgccagc cccggttatg cagggtgatg 6300

aggtccacac tggtgcccac ctcgccgcgc aggggctcgt tggtccagca gagtcgaccg 6360

cccttgcgcg agcagaaggg gggcaggggg tccagcatga cctcgtcggg ggggtcggca 6420

tcgatggtga agatgcctgg caggagatcg gggtcgaagt agctgatgga agtggccaga 6480

tcgtccaggg cagcttgcca ttcgcgcacg gccagcgcgc gctcgtaggg actgaggggc 6540

gtgccccaag gcatggggtg tgtgagcgcg gaggcgtaca tgccgcagat gtcgtagacg 6600

tagaggggct cctcgaggat gccgatgtag gtggggtaac agcgcccccc gcggatgctg 6660

gcgcgcacgt agtcatacag ctcatgcgag ggggcgagga gccccgggcc caggttggtg 6720

cgactgggct tttcggcgcg gtagacgatc tggcgaaaga tggcatgcga gttggaggag 6780

atggtgggcc tttggaagat gttgaagtgg gcgtggggca gaccgaccga gtcgcggatg 6840

aagtgggcgt aggagtcttg cagtttggcg acgagctcgg cggtgacgag gacgtccaga 6900

gcgcagtagt cgagggtctc ctggatgatg tcatacttga gctggccctt ttgtttccac 6960

agctcgcggt tgagaaggaa ctcttcgcgg tccttccagt actcttcgag ggggaacccg 7020

tcctgatctg cacggtaaga gcctagcatg tagaactggt tgacggcctt gtaggcgcag 7080

cagcccttct ccacggggag ggcgtaggcc tgggcggcct tgcgcaggga ggtgtgcgtg 7140

agggcgaagg tgtccctgac catgaccttg aggaactggt gcttgaaatc gatatcgtcg 7200

cagcccccct gctcccagag ctggaagtcc gtgcgcttct tgtaggcggg gttgggcaaa 7260

gcgaaagtaa catcgttgaa aaggatcttg cccgcgcggg gcataaagtt gcgagtgatg 7320

cggaaaggct ggggcacctc ggcccggttg ttgatgacct gggcggcgag cacgatctcg 7380
tcgaaaccgt tgatgttgtg gcccacgatg tagagttcca cgaatcgcgg gcggcccttg 7440
acgtggggca gcttcttgag ctcctcgtag gtgagctcgt cggggtcgct gagaccgtgc 7500
tgctcgagcg cccagtcggc gagatggggg ttggcgcgga ggaaggaagt ccagagatcc 7560
acggccaggg cggtttgcag acggtcccgg tactgacgga actgctgccc gacggccatt 7620
ttttcggggg tgacgcagta gaaggtgcgg gggtccccgt gccagcggtc ccatttgagc 7680
tggagggcga gatcgagggc gagctcgacg aggcggtcgt ccccggagag tttcatgacc 7740
agcatgaagg ggacgagctg cttgccgaag gaccccatcc aggtgtaggt ttccacatcg 7800
taggtgagga agagcctttc ggtgcgagga tgcgagccga tggggaagaa ctggatctcc 7860
tgccaccaat tggaggaatg gctgttgatg tgatggaagt agaaatgccg acggcgcgcc 7920
gaacactcgt gcttgtgttt atacaagcgg ccacagtgct cgcaacgctg cacgggatgc 7980
acgtgctgca cgagctgtac ctgagttcct ttgacgagga atttcagtgg gaagtggagt 8040
cgtggcgcct gcatctcgtg ctgtactacg tcgtggtggt cggcctggcc ctcttctgcc 8100
tcgatggtgg tcatgctgac gagcccgcgc gggaggcagg tccagacctc ggcgcgagcg 8160
ggtcggagag cgaggacgag ggcgcgcagg ccggagctgt ccagggtcct gagacgctgc 8220
ggagtcaggt cagtgggcag cggcggcgcg cggttgactt gcaggagttt ttccagggcg 8280
cgcgggaggt ccagatggta cttgatctcc accgcgccgt tggtggcgac gtcgatggct 8340
tgcagggtcc cgtgcccctg gggtgtgacc accgtccccc gtttcttctt gggcggctgg 8400
ggcgacgggg gcggtgcctc ttccatggtt agaagcggcg gcgaggacgc gcgccgggcg 8460
gcagaggcgg ctcggggccc ggaggcaggg gcggcagggg cacgtcggcg ccgcgcgcgg 8520
gtaggttctg gtactgcgcc cggagaagac tggcgtgagc gacgacgcga cggttgacgt 8580
cctggatctg acgcctctgg gtgaaggcca cgggacccgt gagtttgaac ctgaaagaga 8640
gttcgacaga atcaatctcg gtatcgttga cggcggcctg ccgcaggatc tcttgcacgt 8700
cgcccgagtt gtcctggtag gcgatctcgg tcatgaactg ctcgatctcc tcctcctgaa 8760
ggtctccgcg gccggcgcgc tccacggtgg ccgcgaggtc gttggagatg cggcccatga 8820
gctgcgagaa ggcgttcatg cccgcctcgt tccagacgcg gctgtagacc acgacgccct 8880
cgggatcgcg ggcgcgcatg accacctggg cgaggttgag ctccacgtgg cgcgtgaaga 8940
ccgcgtagtt gcagaggcgc tggtagaggt agttgagcgt ggtggcgatg tgctcggtga 9000
cgaagaaata catgatccag cggcggagcg gcatctcgct gacgtcgccc agcgcctcca 9060
agcgttccat ggcctcgtaa aagtccacgg cgaagttgaa aaactgggag ttgcgcgccg 9120
agacggtcaa ctcctcctcc agaagacgga tgagctcggc gatggtggcg cgcacctcgc 9180
gctcgaaggc ccccgggagt tcctcctctt ccatctcctc ttcttcctcc tccactaaca 9240
tctcttctac ttcctcctca ggcggtggtg gcgggggagg gggcctgcgt cgccggcggc 9300
gcacgggcag acggtcgatg aagcgctcga tggtctcgcc gcgccggcgt cgcatggtct 9360

cggtgacggc gcgcccgtcc tcgcggggcc gcagcgtgaa gacgccgccg cgcatctcca 9420
ggtggccggg ggggtccccg ttgggcaggg agagggcgct gacgatgcat cttatcaatt 9480
gccccgtagg gactccgcgc aaggacctga gcgtctcgag atccacggga tctgaaaacc 9540
gttgaacgaa ggcttcgagc cagtcgcagt cgcaaggtag gctgagcacg gtttcttctg 9600
gcgggtcatg ttggggagcg gggcgggcga tgctgctggt gatgaagttg aaataggcgg 9660
ttctgagacg gcggatggtg gcgaggagca ccaggtcttt gggcccggct tgctggatgc 9720
gcagacggtc ggccatgccc caggcgtggt cctgacacct ggccaggtcc ttgtagtagt 9780
cctgcatgag ccgctccacg ggcacctcct cctcgcccgc gcggccgtgc atgcgcgtga 9840
gcccgaagcc gcgctggggc tggacgagcg ccaggtcggc gacgacgcgc tcggcgagga 9900
tggcctgctg gatctgggtg agggtggtct ggaagtcgtc aaagtcgacg aagcggtggt 9960
aggctccggt gttgatggtg taggagcagt tggccatgac ggaccagttg acggtctggt 10020
ggcccggacg cacgagctcg tggtacttga ggcgcgagta ggcgcgcgtg tcgaagatgt 10080
agtcgttgca ggtgcgcacc aggtactggt agccgatgag gaagtgcggc ggcggctggc 10140
ggtagagcgg ccatcgctcg gtggcggggg cgccgggcgc gaggtcctcg agcatggtgc 10200
ggtggtagcc gtagatgtac ctggacatcc aggtgatgcc ggcggcggtg gtggaggcgc 10260
gcgggaactc gcggacgcgg ttccagatgt tgcgcagcgg caggaagtag ttcatggtgg 10320
gcacggtctg gcccgtgagg cgcgcgcagt cgtggatgct ctatacgggc aaaaacgaaa 10380
gcggtcagcg gctcgactcc gtggcctgga ggctaagcga acgggttggg ctgcgcgtgt 10440
accccggttc gaatctcgaa tcaggctgga gccgcagcta acgtggtact ggcactcccg 10500
tctcgaccca agcctgcacc aaccctccag gatacggagg cgggtcgttt tgcaactttt 10560
tttcggaggc cggaaatgaa gactagtaag cgcggaaagc ggccgaccgc gatggctcgc 10620
tgccgtagtc tggagaagaa tcgccagggt tgcgttgcgg tgtgccccgg ttcgaggccg 10680
gccggattcc gcggctaacg agggcgtggc tgccccgtcg tttccaagac cccctagcca 10740
gccgacttct ccagttacgg agcgagcccc tcttttgttt tgtttgtttt tgccagatgc 10800
atcccgtact gcggcagatg cgcccccacc accctccacc gcaacaacag ccccctccac 10860
agccggcgct tctgcccccg ccccagcagc agcagcaact tccagccacg accgccgcgg 10920
ccgccgtgag cggggctgga cagacttctc agtatgacct ggccttggaa gagggcgagg 10980
ggctggcgcg cctgggggcg tcgtcgccgg agcggcaccc gcgcgtgcag atgaaaaggg 11040
acgctcgcga ggcctacgtg cccaagcaga acctgttcag agacaggagc ggcgaggagc 11100
ccgaggagat gcgcgcggcc cggttccacg cggggcggga gctgcggcgc ggcctggacc 11160
gaaagagggt gctgagggac gaggatttcg aggcggacga gctgacgggg atcagccccg 11220
cgcgcgcgca cgtggccgcg gccaacctgg tcacggcgta cgagcagacc gtgaaggagg 11280
agagcaactt ccaaaaatcc ttcaacaacc acgtgcgcac cctgatcgcg cgcgaggagg 11340
tgaccctggg cctgatgcac ctgtgggacc tgctggaggc catcgtgcag aaccccacca 11400
gcaagccgct gacggcgcag ctgttcctgg tggtgcagca tagtcgggac aacgaggcgt 11460

tcagggaggc gctgctgaat atcaccgagc ccgagggccg ctggctcctg gacctggtga 11520
acattctgca gagcatcgtg gtgcaggagc gcgggctgcc gctgtccgag aagctggcgg 11580
ccatcaactt ctcggtgctg agtctgggca agtactacgc taggaagatc tacaagaccc 11640
cgtacgtgcc catagacaag gaggtgaaga tcgacgggtt ttacatgcgc atgaccctga 11700
aagtgctgac cctgagcgac gatctggggg tgtaccgcaa cgacaggatg caccgcgcgg 11760
tgagcgccag caggcggcgc gagctgagcg accaggagct gatgcatagt ctgcagcggg 11820
ccctgaccgg ggccgggacc gaggggggaga gctactttga catgggcgcg gacctgcact 11880
ggcagcccag ccgccgggcc ttggaggcgg caggcggtcc cccctacata gaagaggtgg 11940
acgatgaggt ggacgaggag ggcgagtacc tggaagactg atggcgcgac cgtatttttg 12000
ctagatgcaa caacagccac ctcctgatcc cgcgatgcgg gcggcgctgc agagccagcc 12060
gtccggcatt aactcctcgg acgattggac ccaggccatg caacgcatca tggcgctgac 12120
gacccgcaac cccgaagcct ttagacagca gccccaggcc aaccggctct cggccatcct 12180
ggaggccgtg gtgccctcgc gctccaaccc cacgcacgag aaggtcctgg ccatcgtgaa 12240
cgcgctggtg gagaacaagg ccatccgcgg cgacgaggcc ggcctggtgt acaacgcgct 12300
gctggagcgc gtggcccgct acaacagcac caacgtgcag accaacctgg accgcatggt 12360
gaccgacgtg cgcgaggccg tggcccagcg cgagcggttc caccgcgagt ccaacctggg 12420
atccatggtg gcgctgaacg ccttcctcag cacccagccc gccaacgtgc cccggggcca 12480
ggaggactac accaacttca tcagcgccct gcgcctgatg gtgaccgagg tgccccagag 12540
cgaggtgtac cagtccgggc cggactactt cttccagacc agtcgccagg gcttgcagac 12600
cgtgaacctg agccaggcgt tcaagaactt gcagggcctg tggggcgtgc aggccccggt 12660
cggggaccgc gcgacggtgt cgagcctgct gacgccgaac tcgcgcctgc tgctgctgct 12720
ggtggccccc ttcacggaca gcggcagcat caaccgcaac tcgtacctgg gctacctgat 12780
taacctgtac cgcgaggcca tcggccaggc gcacgtggac gagcagacct accaggagat 12840
cacccacgtg agccgcgccc tgggccagga cgacccgggc aatctggaag ccaccctgaa 12900
ctttttgctg accaaccggt cgcagaagat cccgccccag tacacgctca gcgccgagga 12960
ggagcgcatc ctgcgatacg tgcagcagag cgtgggcctg ttcctgatgc aggagggggc 13020
caccccagc gccgcgctcg acatgaccgc gcgcaacatg gagcccagca tgtacgccag 13080
caaccgcccg ttcatcaata aactgatgga ctacttgcat cgggcggccg ccatgaactc 13140
tgactatttc accaacgcca tcctgaatcc ccactggctc ccgccgccgg ggttctacac 13200
gggcgagtac gacatgcccg accccaatga cgggttcctg tgggacgatg tggacagcag 13260
cgtgttctcc ccccgaccgg gtgctaacga gcgccccttg tggaagaagg aaggcagcga 13320
ccgacgcccg tcctcggcgc tgtccggccg cgagggtgct gccgcggcgg tgcccgaggc 13380
cgccagtcct ttcccgagct tgcccttctc gctgaacagt attcgcagca gcgagctggg 13440
caggatcacg cgcccgcgct tgctgggcga ggaggagtac ttgaatgact cgctgttgag 13500

acccgagcgg gagaagaact tccccaataa cgggatagag agcctggtgg acaagatgag 13560
ccgctggaag acgtatgcgc aggagcacag ggacgatccg tcgcaggggg ccacgagccg 13620
gggcagcgcc gcccgtaaac gccggtggca cgacaggcag cggggactga tgtgggacga 13680
tgaggattcc gccgacgaca gcagcgtgtt ggacttgggt gggagtggta acccgttcgc 13740
tcacctgcgc ccccgcatcg ggcgcatgat gtaagagaaa ccgaaaataa atgatactca 13800
ccaaggccat ggcgaccagc gtgcgttcgt ttcttctctg ttgttgtatc tagtatgatg 13860
aggcgtgcgt acccggaggg tcctcctccc tcgtacgaga gcgtgatgca gcaggcgatg 13920
gcggcggcgg cggcgatgca gcccccgctg gaggctcctt acgtgccccc gcggtacctg 13980
gcgcctacgg aggggcggaa cagcattcgt tactcggagc tggcaccctt gtacgatacc 14040
acccggttgt acctggtgga caacaagtcg gcggacatcg cctcgctgaa ctaccagaac 14100
gaccacagca acttcctgac caccgtggtg cagaacaatg acttcacccc cacggaggcc 14160
agcacccaga ccatcaactt tgacgagcgc tcgcggtggg gcggtcagct gaaaaccatc 14220
atgcacacca acatgcccaa cgtgaacgag ttcatgtaca gcaacaagtt caaggcgcgg 14280
gtgatggtct cccgcaagac ccccaacggg gtgacagtga cagatggtag tcaggatatc 14340
ttggagtatg aatgggtgga gtttgagctg cccgaaggca acttctcggt gaccatgacc 14400
atcgacctga tgaacaacgc catcatcgac aattacttgg cggtggggcg gcagaacggg 14460
gtcctggaga gcgatatcgg cgtgaagttc gacactagga acttcaggct gggctgggac 14520
cccgtgaccg agctggtcat gcccggggtg tacaccaacg aggccttcca ccccgatatt 14580
gtcttgctgc ccggctgcgg ggtggacttc accgagagcc gcctcagcaa cctgctgggc 14640
attcgcaaga ggcagccctt ccaggagggc ttccagatca tgtacgagga tctggagggg 14700
ggcaacatcc ccgcgctcct ggatgtcgac gcctatgaga aaagcaagga ggagagcgcc 14760
gccgcggcga ctgcagctgt agccaccgcc tctaccgagg tcaggggcga taattttgcc 14820
agccctgcag cagtggcagc ggccgaggcg gctgaaaccg aaagtaagat agtcattcag 14880
ccggtggaga aggatagcaa ggacaggagc tacaacgtgc tgccggacaa gataaacacc 14940
gcctaccgca gctggtacct ggcctacaac tatggcgacc ccgagaaggg cgtgcgctcc 15000
tggacgctgc tcaccacctc ggacgtcacc tgcggcgtgg agcaagtcta ctggtcgctg 15060
cccgacatga tgcaagaccc ggtcaccttc cgctccacgc gtcaagttag caactacccg 15120
gtggtgggcg ccgagctcct gcccgtctac tccaagagct tcttcaacga gcaggccgtc 15180
tactcgcagc agctgcgcgc cttcacctcg ctcacgcacg tcttcaaccg cttccccgag 15240
aaccagatcc tcgtccgccc gcccgcgccc accattacca ccgtcagtga aaacgttcct 15300
gctctcacag atcacgggac cctgccgctg cgcagcagta tccggggagt ccagcgcgtg 15360
accgttactg acgccagacg ccgcacctgc ccctacgtct acaaggccct gggcatagtc 15420
gcgccgcgcg tcctctcgag ccgcaccttc taaaaaatgt ccattctcat ctcgcccagt 15480
aataacaccg gttggggcct gcgcgcgccc agcaagatgt acggaggcgc tcgccaacgc 15540
tccacgcaac accccgtgcg cgtgcgcggg cacttccgcg ctccctgggg cgccctcaag 15600

```
ggccgcgtgc ggtcgcgcac caccgtcgac gacgtgatcg accaggtggt ggccgacgcg    15660

cgcaactaca cccccgccgc cgcgcccgtc tccaccgtgg acgccgtcat cgacagcgtg    15720

gtggccgacg cgcgccggta cgcccgcgcc aagagccggc ggcggcgcat cgc ccg       15776
                                                            Pro
                                                            1

gcg gca ccg gag cac ccc cgc cat gcg cgc ggc gcg agc ctt gct gcg      15824
Ala Ala Pro Glu His Pro Arg His Ala Arg Gly Ala Ser Leu Ala Ala
            5                   10                  15

cag ggc cag gcg cac ggg acg cag ggc cat gct cag ggc ggc cag acg      15872
Gln Gly Gln Ala His Gly Thr Gln Gly His Ala Gln Gly Gly Gln Thr
        20                  25                  30

cgc ggc ctc agg cgc cag cgc cgg cag gac ccg gag acg cgc ggc cac      15920
Arg Gly Leu Arg Arg Gln Arg Arg Gln Asp Pro Glu Thr Arg Gly His
    35                  40                  45

ggc ggc ggc agc ggc cat cgc cag cat gtc ccg ccc gcg gcg agg gaa      15968
Gly Gly Gly Ser Gly His Arg Gln His Val Pro Pro Ala Ala Arg Glu
50                  55                  60                  65

cgt gta ctg ggt gcg cga cgc cgc cac cgg tgt gcg cgt gcc cgt gcg      16016
Arg Val Leu Gly Ala Arg Arg Arg His Arg Cys Ala Arg Ala Arg Ala
                70                  75                  80

cac ccg ccc ccc tcg cac ttg aag atg ttc act tcg cga tgt tga tgt      16064
His Pro Pro Pro Ser His Leu Lys Met Phe Thr Ser Arg Cys     Cys
            85                  90                  95

gtc cca gcg gcg agg atg tcc aag cgc aaa ttc aag gaa gag atg ctc      16112
Val Pro Ala Ala Arg Met Ser Lys Arg Lys Phe Lys Glu Glu Met Leu
            100                 105                 110

cag gtc atc gcg cct gag atc tac ggc ccc gcg gtg gtg aag gag gaa      16160
Gln Val Ile Ala Pro Glu Ile Tyr Gly Pro Ala Val Val Lys Glu Glu
        115                 120                 125

aga aag ccc cgc aaa atc aag cgg gtc aaa aag gac aaa aag gaa gaa      16208
Arg Lys Pro Arg Lys Ile Lys Arg Val Lys Lys Asp Lys Lys Glu Glu
    130                 135                 140

gaa agt gat gtg gac gga ctg gtg gag ttt gtg cgc gag ttc gcc ccc      16256
Glu Ser Asp Val Asp Gly Leu Val Glu Phe Val Arg Glu Phe Ala Pro
145                 150                 155                 160

cgg cgg cgc gtg cag tgg cgc ggg cgg aag gtg cgc ccg gtg ctg aga      16304
Arg Arg Arg Val Gln Trp Arg Gly Arg Lys Val Arg Pro Val Leu Arg
                165                 170                 175

cca ggc act acg gtg gtc ttc acg ccc ggc gag cgc tcc ggc acc gct      16352
Pro Gly Thr Thr Val Val Phe Thr Pro Gly Glu Arg Ser Gly Thr Ala
            180                 185                 190

tcc aag cgc tcc tac gac gag gtg tac ggg gac gag gac atc ctc gag      16400
Ser Lys Arg Ser Tyr Asp Glu Val Tyr Gly Asp Glu Asp Ile Leu Glu
        195                 200                 205

cag gcg gcc gag cgc ctg ggc gag ttt gct tac ggc aag cgc agc cgc      16448
Gln Ala Ala Glu Arg Leu Gly Glu Phe Ala Tyr Gly Lys Arg Ser Arg
    210                 215                 220

tcc gcg ccg aag gaa gag gcg gtg tcc atc ccg ctg gac cac ggc aac      16496
Ser Ala Pro Lys Glu Glu Ala Val Ser Ile Pro Leu Asp His Gly Asn
225                 230                 235                 240
```

```
ccc acg ccg agc ctc aag ccc gtg acc ctg cag cag gtg ctg ccg acc      16544
Pro Thr Pro Ser Leu Lys Pro Val Thr Leu Gln Gln Val Leu Pro Thr
                245                 250                 255

gcg gcg ccg cgc cgg ggg ttc aag cgc gag ggc gag gat ctg tac ccc      16592
Ala Ala Pro Arg Arg Gly Phe Lys Arg Glu Gly Glu Asp Leu Tyr Pro
            260                 265                 270

acc atg cag ctg atg gtg ccc aag cgc cag aag ctg gaa gac gtg ctg      16640
Thr Met Gln Leu Met Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu
        275                 280                 285

gag acc atg aag gtg gac ccg gac gtg cag ccc gag gtc aag gtg cgg      16688
Glu Thr Met Lys Val Asp Pro Asp Val Gln Pro Glu Val Lys Val Arg
    290                 295                 300

ccc atc aag cag gtg gcc ccg ggc ctg ggc gtg cag acc gtg gac atc      16736
Pro Ile Lys Gln Val Ala Pro Gly Leu Gly Val Gln Thr Val Asp Ile
305                 310                 315                 320

aag atc ccc acg gag ccc atg gaa acg cag acc gag ccc gtg aaa ccc      16784
Lys Ile Pro Thr Glu Pro Met Glu Thr Gln Thr Glu Pro Val Lys Pro
                325                 330                 335

agc acc agc acc atg gag gtg cag acg gat cct tgg atg cca tcg gct      16832
Ser Thr Ser Thr Met Glu Val Gln Thr Asp Pro Trp Met Pro Ser Ala
            340                 345                 350

act agc cga aga ccc cgg cgc aag tac ggc gcg gcc agc ctg ctg atg      16880
Thr Ser Arg Arg Pro Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met
        355                 360                 365

ccc aac tac gcg ctg cat cct tcc atc atc ccc acg ccg ggc tac cgc      16928
Pro Asn Tyr Ala Leu His Pro Ser Ile Ile Pro Thr Pro Gly Tyr Arg
    370                 375                 380

ggc acg cgc ttc tac cgc ggt cat aca agc cgc cgc cgc aag acc acc      16976
Gly Thr Arg Phe Tyr Arg Gly His Thr Ser Arg Arg Arg Lys Thr Thr
385                 390                 395                 400

acc cgc cgc cgc cgt cgc cgc aca acc gct gct gca tct acc cct gcc      17024
Thr Arg Arg Arg Arg Arg Arg Thr Thr Ala Ala Ala Ser Thr Pro Ala
                405                 410                 415

gcc ctg gtg cgg aga gtg tac cgc cgc ggc cgc gcg cct ctg acc ctg      17072
Ala Leu Val Arg Arg Val Tyr Arg Arg Gly Arg Ala Pro Leu Thr Leu
            420                 425                 430

ccg cgc gcg cgc tac cac ccg agc att gcc att taa act ttc gcc tgc      17120
Pro Arg Ala Arg Tyr His Pro Ser Ile Ala Ile     Thr Phe Ala Cys
        435                 440                 445

ttt gca gat caa tgg ccc tca cat gcc gcc tcc gcg ttc cca tta cgg      17168
Phe Ala Asp Gln Trp Pro Ser His Ala Ala Ser Ala Phe Pro Leu Arg
        450                 455                 460

gct acc gag gaa gaa aac cgc gcc gta gaa ggc tgg cgg gga acg gga      17216
Ala Thr Glu Glu Glu Asn Arg Ala Val Glu Gly Trp Arg Gly Thr Gly
    465                 470                 475

tgc gtc gcc acc acc acc ggc ggc ggc gcg cca tca gca agc ggt tgg      17264
Cys Val Ala Thr Thr Thr Gly Gly Gly Ala Pro Ser Ala Ser Gly Trp
480                 485                 490                 495

ggg gag gct tcc tgc ccg cgc tga tcc cca tca tcg ccg cgg cga tcg      17312
Gly Glu Ala Ser Cys Pro Arg     Ser Pro Ser Ser Pro Arg Arg Ser
                500                 505                 510

ggg cga tcc ccg gca ttg ctt ccg tgg cgg tgc agg cct ctc agc gcc      17360
```

Gly Arg Ser Pro Ala Leu Leu Pro Trp Arg Cys Arg Pro Leu Ser Ala
515 520 525

act gag aca cacttggaaa catcttgtaa taaaccaatg gactctgacg 17409
Thr Glu Thr

ctcctggtcc tgtgatgtgt tttcgtagac agatggaaga catcaatttt tcgtccctgg 17469

ctccgcgaca cggcacgcgg ccgttcatgg gcacctggag cgacatcggc accagccaac 17529

tgaacggggg cgccttcaat tggagcagtc tctggagcgg gcttaagaat ttcgggtcca 17589

cgcttaaaac ctatggcagc aaggcgtgga acagcaccac agggcaggcg ctgagggata 17649

agctgaaaga gcagaacttc cagcagaagg tggtcgatgg cctggcctcg ggcatcaacg 17709

gggtggtgga cctggccaac caggccgtgc agcggcagat caacagccgc ctggacccgg 17769

tgccgcccgc cggctccgtg gagatgccgc aggtggagga ggagctgcct cccctggaca 17829

agcggggcga gaagcgaccc cgccccgacg cggaggagac gctgctgacg cacacggacg 17889

agccgccccc gtacgaggag gcggtgaaac tgggcctgcc caccacgcgg cccatcgcgc 17949

ctctggccac cggggtgctg aaacccgaaa gtagtaagcc cgcgaccctg gacttgcctc 18009

ctccccagcc ttcccgcccc tccacagtgg ctaagcctct gccgccggtg gccgtggccc 18069

gcgcgcgacc cgggggcacc gcccgccctc atgcgaactg gcagagcact ctgaacagca 18129

tcgtgggtct gggagtgcag agtgtgaagc gccgccgctg ctattaaacc taccgtagcg 18189

cttaacttgc ttgtctgtgt gtgtatgtat tatgtcgccg ccgctgtcgc cagaaggagg 18249

agtgaagagg cgcgtcgccg agttgcaaga tggccacccc atcgatgctg ccccagtggg 18309

cgtacatgca catcgccgga caggacgctt cggagtacct gagtccgggt ctggtgcagt 18369

tcgcccgcgc cacagacacc tacttcagtc tggggaacaa gtttaggaac cccacggtgg 18429

cgcccacgca cgatgtgacc accgaccgca gccagcggct gacgctgcgc ttcgtgcccg 18489

tggaccgcga ggacaacacc tactcgtaca aagtgcgcta cacgctggcc gtgggcgaca 18549

accgcgtgct ggacatggcc agcacctact ttgacatccg cggcgtgctg gaccggggcc 18609

ctagcttcaa accctactcc ggcaccgcct acaatgctct ggcccccaag ggagcaccca 18669

acacttgcca gtggacatac acagataagc aaaccgaaaa aacagccacg tatgggaatg 18729

cgcctgtaca aggcattgcc atcacaaaag atggtattca acttggaact gacagtgatg 18789

gaaatcctgt atatgctcaa aagacatttg aacccgaacc tcaagtgggt gatgcagaat 18849

ggcatgacac tacaggtaca gatgaaaagt atggaggcag ggcacttaag cctgacacca 18909

aaatgaagcc ttgctatggt tcttttgcca aacccactaa caaagaaggt ggacaggcaa 18969

agaacagaac aaaaactgat ggaactggcg aagagcctga tattgatatg gcatttttg 19029

acggcagaaa tgcaactaca gctggtttgg ctccagaaat tgttttgtat actgagaatg 19089

tggatctgga gactccagat acccatattg tatacaaagc aggcacagat gacagcagct 19149

cttcgattaa tttggggcag caatccatgc ccaacagacc caactacatt gggttcagag 19209

acaactttat cgggctcatg tactacaaca gcactggcaa tatgggggtg ctggccggtc 19269

aggcttctca gctgaatgct gtggttgact tgcaagacag aaacaccgaa ctgtcctacc 19329

agctcttgct tgactctctg ggcgacagaa ccctgtattt cagtatgtgg aatcaggcgg 19389

tggacagcta tgatcctgat gtgcgcatta ttgaaaacca tggtgtggaa gatgaacttc 19449

ccaactattg cttccctctg gatgctgttg gtaggacaga tacttatcag ggaattaagc 19509

ccaatggagg cgatccagcc acatgggcca aagatgacag cgccaatgat gctaatgaaa 19569

tgggcaaggg caatccattc gccatggaaa tcaacatcca agccaacctg tggaggaact 19629

tcctctacgc caacgtggcc ctgtacctac ccgattctta caagtacacg ccggccaacg 19689

tcaccctgcc caccaacacc aacacctacg attatatgaa cggccgggtg gtggcgcctt 19749

cgctggtgga ctcctacatc aacatcgggg cgcgctggtc gctggacccc atggacaacg 19809

tcaatccctt caaccaccac cgcaacgcgg gcttgcgcta ccgctccatg ctcctgggca 19869

acgggcgcta cgtgcccttc cacatccagg tgccccagaa atttttcgcc atcaagagcc 19929

tcctgctcct gcccgggtcc tacacctacg agtggaactt ccgcaaggac gtcaacatga 19989

tcctgcagag ctccctcggc aacgacctgc gcacggacgg ggcctccatc tccttcacca 20049

gcatcaacct ctacgccacc ttcttcccca tggcgcacaa cacggcctcc acgctcgagg 20109

ccatgctgcg caacgacacc aacgaccagt ccttcaacga ctacctctcg gcggccaaca 20169

tgctctaccc catcccggcc aacgccacca acgtgcccat ctccatcccc tcgcgcaact 20229

gggccgcctt ccgcggctgg tccttcacgc gcctcaagac caaggagacg ccctcgctgg 20289

gctccgggtt cgacccctac ttcgtctact cgggctccat cccctacctc gacggcacct 20349

tctacctcaa ccacaccttc aagaaggtct ccatcacctt cgactcctcc gtcagctggc 20409

ccggcaacga ccggctcctg acgcccaacg agttcgaaat caagcgcacc gtcgacggcg 20469

agggctacaa cgtggcccag tgcaacatga ccaaggactg gttcctggtc cagatgctgg 20529

cccactacaa catcggctac cagggcttct acgtgcccga gggctacaag gaccgcatgt 20589

actccttctt ccgcaacttc cagcccatga gccgccaggt ggtggacgag gtcaactaca 20649

aggactacca ggccgtcacc ctggcctacc agcacaacaa ctcgggcttc gtcggctacc 20709

tcgcgcccac catgcgccag ggccagccct accccgccaa ctacccgtac ccgctcatcg 20769

gcaagagcgc cgtcaccagc gtcacccaga aaaagttcct ctgcgacagg gtcatgtggc 20829

gcatcccctt ctccagcaac ttcatgtcca tgggcgcgct caccgacctc ggccagaaca 20889

tgctctatgc caactccgcc cacgcgctag acatgaattt cgaagtcgac cccatggatg 20949

agtccaccct tctctatgtt gtcttcgaag tcttcgacgt cgtccgagtg caccagcccc 21009

accgcggcgt catcgaggcc gtctacctgc gcacccccct ctcggccggt aacgccacca 21069

cctaaattgc tacttgcatg atggctgagg ccgcgggctc cggcgagcag gagctcaggg 21129

ccatcatccg cgacctgggc tgcgggccct acttcctggg caccttcgat aagcgcttcc 21189

cgggattcat ggccccgcac aagctggcct gcgccatcgt caacacggcc ggtcgcgaga 21249

ccgggggcga gcactggctg gccttcgcct ggaacccgcg ctcgaacacc tgctacctct 21309

tcgacccctt cgggttctcg gacgagcgcc tcaagcagat ctaccagttc gagtacgagg 21369

gcctgctgcg ccgcagcgcc ctggccaccg aggaccgctg cgtcaccctg gaaaagtcca 21429

cccagaccgt gcagggtccg cgctcggccg cctgcgggct cttctgctgc atgttcctgc 21489

acgccttcgt gcactggccc gaccgcccca tggacaagaa ccccaccatg aacttgctga 21549

cgggggtgcc caacggcatg ctccagtcgc cccaggtgga acccaccctg cgccgcaacc 21609

aggaggcgct ctaccgcttc ctcaactccc actccgccta ctttcgctcc caccgcgcgc 21669

gcatcgagaa ggccaccgcc ttcgatcgca tgaacaatca agacatgtaa accgtgtgtg 21729

tatgtttaaa atatctttta ataaacagca ctttcatgtt acacatgcat ctgagatgat 21789

tatttagaaa tcgaaagggt tctgccgggt ctcggcatgg cccgcgggca gggacacgtt 21849

gcggaactgg tacttggcca gccacttgaa ctcggggatc agcagtttcg gcagcggggt 21909

gtcggggaag gagtcggtcc acagcttccg cgtcagttgc agggcgccca gcaggtcggg 21969

cgcggagatc ttgaaatcgc agttgggacc cgcgttctgc gcgcgagagt tgcggtacac 22029

ggggttgcag cactggaaca ccatcagggc cgggtgcttc acgctcgcca gcaccgtcgc 22089

gtcggtgatg ctctccacgt cgaggtcctc ggcgttggcc atcccgaagg gggtcatctt 22149

gcaggtctgc cttcccatag tgggcacgca cccgggcttg tggttgcaat cgcagtgcag 22209

ggggatcagc atcatctggg cctggtcggc gttcatcccc gggtacatgg ccttcatgaa 22269

agcctccaat tgcctgaaag cctgctgggc cttggctccc tcggtgaaga agaccccgca 22329

ggacttgcta gagaactggt tggtagcgca cccggcgtcg tgcacgcagc agcgcgcgtc 22389

gttgttggcc agctgcacca cgctgcgccc ccagcggttc tgggtgatct tggcccggtc 22449

ggggttctcc ttcagcgcgc gctgcccgtt ctcgctcgcc acatccatct cgatcatgtg 22509

ctccttctgg atcatggtgg tcccgtgcag gcaccgcagc ttgccctcgg tctcggtgca 22569

cccgtgcagc cacagcgcgc acccggtgca ctcccagttc ttgtgggcga tctgggaatg 22629

cgcgtgcacg aacccctgca ggaagcggcc catcatggtg gtcagggtct tgttgctagt 22689

gaaggtcagc gggatgccgc ggtgctcctc gttgatgtac aggtggcaga tgcggcggta 22749

cacctcgccc tgctcgggca tcagctggaa gttggctttc aggtcggtct ccacgcggta 22809

gcggtccatc agtatagtca tgatttccat acccttctcc caggccgaga cgatgggcag 22869

gctcataggg ttcttcacca tcatcttagc actagcagcc gcggccaggg ggtcgctctc 22929

atccagggtc tcaaagctcc gcttgccgtc cttctcggtg atccgcaccg gggggtagct 22989

gaagcccacg gccgccagct cctcctcggc ctgcctttcg tcctcgctgt cctggctgac 23049

gtcctgcagg accacatgct tggtcttgcg gggtttcttc ttgggcggca gcggcggcgg 23109

agatgcttgt ggcgaggggg agcgcgagtt ctcgctcacc actactatct cttcctcttc 23169

gtggtccgag gccacgcggc ggtaggtatg tctcttcggg ggcagaggcg gaggcgacgg 23229

gctctcgccg ccgcgacttg gcggatggct ggcagagccc cttccgcgat cgggggtgcg 23289

ctcccggcgg cgctctgact gacttcctcc gcggccggcc attgtgttct cctagggagg 23349

aacaacaagc atg gag act cag cca tcg cca acc tcg cca tct gcc ccc 23398
Met Glu Thr Gln Pro Ser Pro Thr Ser Pro Ser Ala Pro

```
          530                 535                 540

acc acc gcc gac gag aag cag cag aat gaa agc tta acc gcc ccg ccg      23446
Thr Thr Ala Asp Glu Lys Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro
        545                 550                 555

ccc agc ccc gcc acc tcc gac gca gcc gcg gtc cca gac atg caa gag      23494
Pro Ser Pro Ala Thr Ser Asp Ala Ala Ala Val Pro Asp Met Gln Glu
    560                 565                 570

atg gag gaa tcc atc gag att gac ctg ggc tat gtg acg ccc gcg gag      23542
Met Glu Glu Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu
575                 580                 585                 590

cac gag gag gag ctg gca gtg cgc ttt caa tcg tca agc cag gaa gat      23590
His Glu Glu Glu Leu Ala Val Arg Phe Gln Ser Ser Ser Gln Glu Asp
                595                 600                 605

aaa gaa cag cca gag cag gaa gca gaa aac gag cag agt cag gct ggg      23638
Lys Glu Gln Pro Glu Gln Glu Ala Glu Asn Glu Gln Ser Gln Ala Gly
            610                 615                 620

ctc gag cat gac ggc gac tac ctc cac ctg agc ggg gag gag gac gcg      23686
Leu Glu His Asp Gly Asp Tyr Leu His Leu Ser Gly Glu Glu Asp Ala
        625                 630                 635

ctc atc aag cat ctg gcc cgg cag gcc atc atc gtc aag gat gcg ctg      23734
Leu Ile Lys His Leu Ala Arg Gln Ala Ile Ile Val Lys Asp Ala Leu
    640                 645                 650

ctc gac cgc acc gag gtg ccc ctc agc gtg gag gag ctc agc cgc gcc      23782
Leu Asp Arg Thr Glu Val Pro Leu Ser Val Glu Glu Leu Ser Arg Ala
655                 660                 665                 670

tac gag ctc aac ctc ttc tcg ccg cgc gtg ccc ccc aag cgc cag ccc      23830
Tyr Glu Leu Asn Leu Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro
                675                 680                 685

aac ggc acc tgc gag ccc aac ccg cgc ctc aac ttc tac ccg gtc ttc      23878
Asn Gly Thr Cys Glu Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe
            690                 695                 700

gcg gtg ccc gag gcc ctg gcc acc tac cac atc ttt ttc aag aac caa      23926
Ala Val Pro Glu Ala Leu Ala Thr Tyr His Ile Phe Phe Lys Asn Gln
        705                 710                 715

aag atc ccc gtc tcc tgt cgc gcc aac cgc acc cgc gcc gac gcc ctc      23974
Lys Ile Pro Val Ser Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu
    720                 725                 730

ttc aac ctg ggc ccc ggc gcc cgc cta cct gat atc gcc tcc ttg gaa      24022
Phe Asn Leu Gly Pro Gly Ala Arg Leu Pro Asp Ile Ala Ser Leu Glu
735                 740                 745                 750

gag gtt ccc aag atc ttc gag ggt ctg ggc agc gac gag act cgg gcc      24070
Glu Val Pro Lys Ile Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala
                755                 760                 765

gca aac gct ctg caa gga gaa gga gga gag cat gag cac cac agc gcc      24118
Ala Asn Ala Leu Gln Gly Glu Gly Gly Glu His Glu His His Ser Ala
            770                 775                 780

ctg gtc gag ttg gaa ggc gac aac gcg cgg ctg gcg gtg ctc aaa cgc      24166
Leu Val Glu Leu Glu Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg
        785                 790                 795

acg gtc gag ctg acc cat ttc gcc tac ccg gct ctg aac ctg ccc ccc      24214
Thr Val Glu Leu Thr His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro
    800                 805                 810
```

```
aaa gtc atg agc gcg gtc atg gac cag gtg ctc atc aag cgc gcg tcg      24262
Lys Val Met Ser Ala Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser
815                 820                 825                 830

ccc atc tcc gag gac gag ggc atg caa gac tcc gag gat ggc aag ccc      24310
Pro Ile Ser Glu Asp Glu Gly Met Gln Asp Ser Glu Asp Gly Lys Pro
                835                 840                 845

gtg gtc agc gac gag cag ctg gcc cgg tgg ctg ggt cct aat gct agt      24358
Val Val Ser Asp Glu Gln Leu Ala Arg Trp Leu Gly Pro Asn Ala Ser
            850                 855                 860

ccc cag agt ttg gaa gag cgg cgc aag ctc atg atg gcc gtg gtc ctg      24406
Pro Gln Ser Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu
        865                 870                 875

gtg acc gtg gag ctg gag tgc ctg cgc cgc ttc ttc gcc gac gcg gag      24454
Val Thr Val Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu
    880                 885                 890

acc ctg cgc aag gtc gag gag aac ctg cac tac ctc ttc agg cac ggg      24502
Thr Leu Arg Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly
895                 900                 905                 910

ttc gtg cgc cag gcc tgc aag atc tcc aac gtg gag ctg acc aac ctg      24550
Phe Val Arg Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu
                915                 920                 925

gtc tcc tac atg ggc atc ttg cac gag aac cgc ctg ggg cag aac gtg      24598
Val Ser Tyr Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val
            930                 935                 940

ctg cac acc acc ctg cgc ggg gag gcc cgc cgc gac tac atc cgc gac      24646
Leu His Thr Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp
        945                 950                 955

tgc gtc tac ctc tac ctc tgc cac acc tgg cag acg ggc atg ggc gtg      24694
Cys Val Tyr Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val
    960                 965                 970

tgg cag cag tgt ctg gag gag cag aac ctg aaa gag ctc tgc aag ctc      24742
Trp Gln Gln Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu
975                 980                 985                 990

ctg cag aag aac ctc aag ggt ctg tgg acc  ggg ttc gac gag cgg  acc    24790
Leu Gln Lys Asn Leu Lys Gly Leu Trp Thr  Gly Phe Asp Glu Arg  Thr
                995                 1000                1005

acc gcc tcg gac  ctg gcc gac ctc atc  ttc ccc gag cgc ctc  agg       24835
Thr Ala Ser Asp  Leu Ala Asp Leu Ile  Phe Pro Glu Arg Leu  Arg
            1010                1015                1020

ctg acg ctg cgc  aac ggc ctg ccc gac  ttt atg agc caa agc  atg       24880
Leu Thr Leu Arg  Asn Gly Leu Pro Asp  Phe Met Ser Gln Ser  Met
            1025                1030                1035

ttg caa aac ttt  cgc tct ttc atc ctc  gaa cgc tcc gga atc  ctg       24925
Leu Gln Asn Phe  Arg Ser Phe Ile Leu  Glu Arg Ser Gly Ile  Leu
            1040                1045                1050

ccc gcc acc tgc  tcc gcg ctg ccc tcg  gac ttc gtg ccg ctg  acc       24970
Pro Ala Thr Cys  Ser Ala Leu Pro Ser  Asp Phe Val Pro Leu  Thr
            1055                1060                1065

ttc cgc gag tgc  ccc ccg ccg ctg tgg  agc cac tgc tac ctg  ctg       25015
Phe Arg Glu Cys  Pro Pro Pro Leu Trp  Ser His Cys Tyr Leu  Leu
            1070                1075                1080
```

```
cgc ctg gcc aac  tac ctg gcc tac cac  tcg gac gtg atc gag  gac       25060
Arg Leu Ala Asn  Tyr Leu Ala Tyr His  Ser Asp Val Ile Glu  Asp
            1085                 1090                 1095

gtc agc ggc gag  ggc ctg ctt gag tgc  cac tgc cgc tgc aac  ctc       25105
Val Ser Gly Glu  Gly Leu Leu Glu Cys  His Cys Arg Cys Asn  Leu
            1100                 1105                 1110

tgc acg ccg cac  cgc tcc ctg gcc tgc  aac ccc cag ctg ctg  agc       25150
Cys Thr Pro His  Arg Ser Leu Ala Cys  Asn Pro Gln Leu Leu  Ser
            1115                 1120                 1125

gag acc cag atc  atc ggc acc ttc gag  ttg caa ggg ccc agc  gat       25195
Glu Thr Gln Ile  Ile Gly Thr Phe Glu  Leu Gln Gly Pro Ser  Asp
            1130                 1135                 1140

gac ggc gag gga  gcc aag ggg ggt ctg  aaa ctc acc ccg ggg  ctg       25240
Asp Gly Glu Gly  Ala Lys Gly Gly Leu  Lys Leu Thr Pro Gly  Leu
            1145                 1150                 1155

tgg acc tcg gcc  tac ttg cgc aag ttc  gtg ccc gag gac tac  cat       25285
Trp Thr Ser Ala  Tyr Leu Arg Lys Phe  Val Pro Glu Asp Tyr  His
            1160                 1165                 1170

ccc ttc gag atc  agg ttc tac gag gac  caa tcc cag ccg cct  aag       25330
Pro Phe Glu Ile  Arg Phe Tyr Glu Asp  Gln Ser Gln Pro Pro  Lys
            1175                 1180                 1185

gcc gag ctg tcg  gcc tgc gtc atc acc  cag ggg gcc atc ctg  gcc       25375
Ala Glu Leu Ser  Ala Cys Val Ile Thr  Gln Gly Ala Ile Leu  Ala
            1190                 1195                 1200

caa ttg caa gcc  atc cag aaa tcc cgc  caa gaa ttc ttg ctg  aaa       25420
Gln Leu Gln Ala  Ile Gln Lys Ser Arg  Gln Glu Phe Leu Leu  Lys
            1205                 1210                 1215

aag ggc cgc ggg  gtc tac ctc gac ccc  cag acc ggt gag gag  ctc       25465
Lys Gly Arg Gly  Val Tyr Leu Asp Pro  Gln Thr Gly Glu Glu  Leu
            1220                 1225                 1230

aac ccc ggc ttc  ccc cag gat gcc ccg  agg aaa caa gaa gct  gaa       25510
Asn Pro Gly Phe  Pro Gln Asp Ala Pro  Arg Lys Gln Glu Ala  Glu
            1235                 1240                 1245

agt gga gct gcc  gcc cgt gga gga ttt  gga gga aga ctg gga  gaa       25555
Ser Gly Ala Ala  Ala Arg Gly Gly Phe  Gly Gly Arg Leu Gly  Glu
            1250                 1255                 1260

cag cag tca ggc  aga gga gga gat gga  gga aga ctg gga cag  cac       25600
Gln Gln Ser Gly  Arg Gly Gly Asp Gly  Gly Arg Leu Gly Gln  His
            1265                 1270                 1275

tca ggc aga gga  gga cag cct gca aga  cag tct gga gga aga  cga       25645
Ser Gly Arg Gly  Gly Gln Pro Ala Arg  Gln Ser Gly Gly Arg  Arg
            1280                 1285                 1290

gga gga ggc aga  ggt gga aga agc agc  cgc cgc cag acc gtc  gtc       25690
Gly Gly Gly Arg  Gly Gly Arg Ser Ser  Arg Arg Gln Thr Val  Val
            1295                 1300                 1305

ctc ggc ggg gga  gaa agc aag cag cac  gga tac cat ctc cgc  tcc       25735
Leu Gly Gly Gly  Glu Ser Lys Gln His  Gly Tyr His Leu Arg  Ser
            1310                 1315                 1320

ggg tcg ggg tcc  cgc tcg gcc cca cag  tagatgggac gagaccgggc          25782
Gly Ser Gly Ser  Arg Ser Ala Pro Gln
            1325                 1330

gattcccgaa ccccaccatc cagaccggta agaaggagcg gcagggatac aagtcctggc    25842
```

```
gggggcacaa aaacgccatc gtctcctgct tgcaggcctg cgggggcaac atctccttca    25902

ccaggcgcta cctgctcttc caccgcgggg tgaacttccc ccgcaacatc ttgcattact    25962

accgtcacct ccacagcccc tactacttcc aagaagaggc agcagcagaa aaagaccagc    26022

agaaaaccag cagctagaaa atccacagcg gcagcaggtg gactgaggat cgcggcgaac    26082

gagccggcgc agacccggga gctgaggaac cggatctttc ccaccctcta tgccatcttc    26142

cagcagagtc gggggcagga gcaggaactg aaagtcaaga accgttctct gcgctcgctc    26202

acccgcagtt gtctgtatca caagagcgaa gaccaacttc agcgcactct cgaggacgcc    26262

gaggctctct tcaacaagta ctgcgcgctc actcttaaag agtagcccgc gcccgcccag    26322

tcgcagaaaa aggcgggaat tacgtcacct gtgcccttcg ccctagccgc ctccacccat    26382

catgagcaaa gagattccca cgccttacat gtggagctac cagccccaga tgggcctggc    26442

cgccggcgcc gcccaggact actccacccg catgaattgg ctcagcgccg ggcccgcgat    26502

gatctcacgg gtgaatgaca tccgcgccca ccgaaaccag atactcctag aacagtcagc    26562

gctcaccgcc acgccccgca atcacctcaa tccgcgtaat tggcccgccg ccctggtgta    26622

ccaggaaatt ccccagccca cgaccgtact acttccgcga gacgcccagg ccgaagtcca    26682

gctgactaac tcaggtgtcc agctggcggg cggcgccacc ctgtgtcgtc accgccccgc    26742

tcagggtata aagcggctgg tgatccgggg cagaggcaca cagctcaacg acgaggtggt    26802

gagctcttcg ctgggtctgc gacctgacgg agtcttccaa atcgccggat cggggagatc    26862

ttccttcacg cctcgtcagg cggtcctgac tttggagagt tcgtcctcgc agccccgctc    26922

gggcggcatc ggcactctcc agttcgtgga ggagttcact ccctcggtct acttcaaccc    26982

cttctccggc tcccccggcc actacccgga cgagttcatc ccgaactttg acgccatcag    27042

cgagtcggtg gacggctacg attgaatgtc ccatggtggc gcggctgacc tagctcggct    27102

tcgacacctg gaccactgcc gccgctttcg ctgcttcgct cgggacctcg ccgagttcac    27162

ctacttcgag ctgcccgagg agcatcctca gggcccggcc cacggagtgc ggatcgtcgt    27222

cgaaaggggc ctagactccc acctgcttcg gatcttcagc cagcgcccga tcctggtcga    27282

gcgccaacag ggcaacaccc tcctgaccct ctactgcatc tgcgaccacc ccggcctgc     27341

atg aaa gtc ttt gtt  gtc tgc tgt gta ctg  agt ata ata aaa gct        27386
Met Lys Val Phe Val  Val Cys Cys Val Leu  Ser Ile Ile Lys Ala
                1335                1340                1345

gag atc agc gac tac  tcc gga ctc aac tgt  ggt gtt tct gca tcc        27431
Glu Ile Ser Asp Tyr  Ser Gly Leu Asn Cys  Gly Val Ser Ala Ser
                1350                1355                1360

atc aac cag tct ctg  acc ttc acc ggg aac  gag acc gag ctc cag        27476
Ile Asn Gln Ser Leu  Thr Phe Thr Gly Asn  Glu Thr Glu Leu Gln
                1365                1370                1375

ctc cag tgt aag ccc  cac aag aag tac ctc  acc tgg ctg tac cag        27521
Leu Gln Cys Lys Pro  His Lys Lys Tyr Leu  Thr Trp Leu Tyr Gln
                1380                1385                1390

ggc tcc ccg atc gcc  gtt gtt aac cac tgc  gac gac gac gga gtc        27566
Gly Ser Pro Ile Ala  Val Val Asn His Cys  Asp Asp Asp Gly Val
```

```
                1395                1400                1405

ctg ctg aac ggc ccc  gcc aac ctt act ttt  tcc acc cgc aga agc        27611
Leu Leu Asn Gly Pro  Ala Asn Leu Thr Phe  Ser Thr Arg Arg Ser
                1410                1415                1420

aag cta ctg ctc ttc  aga ccc ttc ctc ccc  ggg atc tat cag tgc        27656
Lys Leu Leu Leu Phe  Arg Pro Phe Leu Pro  Gly Ile Tyr Gln Cys
                1425                1430                1435

atc tcg gga ccc tgc  cat cac acc ttc cac  ctg atc ccg aat acc        27701
Ile Ser Gly Pro Cys  His His Thr Phe His  Leu Ile Pro Asn Thr
                1440                1445                1450

acc tct tcc cca gca  ccg ctc ccc act aac  aac caa act aac cac        27746
Thr Ser Ser Pro Ala  Pro Leu Pro Thr Asn  Asn Gln Thr Asn His
                1455                1460                1465

caa cgc cac cgt cga  gac ctt tcc tct gat  tct aat acc act acc        27791
Gln Arg His Arg Arg  Asp Leu Ser Ser Asp  Ser Asn Thr Thr Thr
                1470                1475                1480

gga ggt gag ctc cga  ggt act aag aag tcc  tca cct ggg att tat        27836
Gly Gly Glu Leu Arg  Gly Thr Lys Lys Ser  Ser Pro Gly Ile Tyr
                1485                1490                1495

tac ggc ccc tgg gag  gtg gtg ggg tta ata  gct tta ggc tta gta        27881
Tyr Gly Pro Trp Glu  Val Val Gly Leu Ile  Ala Leu Gly Leu Val
                1500                1505                1510

gcg ggt ggg ctt ttg  gct ctc tgc tac cta  tac ctc cct tgc tgt        27926
Ala Gly Gly Leu Leu  Ala Leu Cys Tyr Leu  Tyr Leu Pro Cys Cys
                1515                1520                1525

tcc tac tta gtg gtg  ctt tgt tgc tgg ttt  aag aaa tgg gga aga        27971
Ser Tyr Leu Val Val  Leu Cys Cys Trp Phe  Lys Lys Trp Gly Arg
                1530                1535                1540

tca ccc tagtgtgcgg tgtgctggtg acggtggtgc tttcgattct gggaggggga       28027
Ser Pro

agcgcggctg tagtgacgga gaagaaggcc gatccctgct tgactttcaa tcccgataaa    28087

tgccggctga gttttcagcc agatggcaat cggtgcacgg tgctgatcaa gtgcggatgg    28147

gaatgcgaga gcgtggcgat ccagtataaa aacaagacgc ggaacaatac tctcgcgtcc    28207

acatggcagc ccggggaccc cgagtggtac accgtctctg tccctggtgc tgacggctcc    28267

ctccacacgg tgaacaacac tttcattttt gagcacatgt gcgaaaccgc catgttcatg    28327

agcaagcagt acggtatgtg gcccccacga aaagagaata tcgtggtctt ctccatcgct    28387

tacagcgcgt gcacggtgct aatcaccgcg atcgtgtgcc tgagcattca catgctcatc    28447

gctattcgcc ccagaaataa tgccgagaaa gagaaacagc cataacacac ttttttcaca    28507

caccttgttt tttacagaca atgcgtctgt taatttttgt tatcattaca ctcagcttta    28567

actatgccca tggctatgca aatatacaaa aaaccctcta tgtaggctct gactctacat    28627

tagaaggtac tcaatctcaa gccagggttt catggtattt ttataaaggc tctgatgacc    28687

caattactct ttgcaaaggt gatcaggggc gcataacaaa gccacctatc acatttagct    28747

gcaccagaac aaacctcacg cttttatcca ttacaaaaga atatgctggc acttattaca    28807

gcacaaattt tcatcgtggg caagataaat attatactgt taaggtagaa aaccctacca    28867
```

cccctagaac aactacaaag cccaccacaa ctaagaagcc cactacacct aagaagccta 28927

ccacacccaa aaccactaag acaacaactg ctaagaccac taccacaaag ccaaccacaa 28987

ccagcaccac acttgctata actacacaca cacacactga gctgacctca caggcaacta 29047

ctgaaaatga tttggttgcc ctgttgcaaa agggggagaa cagtagcagc agtcctctgc 29107

ctactacccc cagtgaggaa atacccaagt ccatggttgg cattatcgct gctgtagtgg 29167

tgtgtatgct gattatcatc ttgtgcatga tgtactatgc ctgctactac agaaaacaca 29227

ggctgaacaa caaactggac cccttactga gtgttgattt ttaatttttt agaaccatga 29287

agatcctaag ccttttttgtt ttttctataa ttattacctc tgctatttgt gaatcagtgg 29347

ataaggacgt tactgtcacc actggctcta attatacact aaaagggcct tcctcaggta 29407

tgctttcgtg gtattgttat tttggaaatg atgataaaca gacagagcta tgtaactttc 29467

agaacggcaa aaccaaaaat tctaaaatag ataactatca atgccagggt actaatttag 29527

tactgatgaa tatcacgaaa gcatatgctg gcagttattc ctgtcctgga caaaacaccg 29587

aggaaatgat tttttacaaa ttaattgtag ttgaccctac tactccagca ccacccacca 29647

caaccaaggc acataccaca gacacacagg aaaccactcc agaggcagaa gtagcagagt 29707

tagcaaagca gattcatgaa gattcatttg ttgccaatac ccccacacac cccggaccgc 29767

aatgtccagg gccattagtc agcggcattg tcggtgtgct ttgcgggtta gcagttataa 29827

tcatctgcat gttcattttt gcttgctgct acagaaggct tcaccgacaa aaatcagacc 29887

cactgctgaa cctctatgtt taatttttga ttttccagag ccatgaaggc acttagcact 29947

ttagtatttt tgtccttgat tggcattgtt ttcagtgctg ggtttttgaa aaatcttacc 30007

attattgaag gtgataatgc aacactggta ggaatcagcg gtcagaatgt tagttggcta 30067

aaatatcatc tagatgggtg gaaacctatt tgcacctgga atgtcagtgt gtacacatgc 30127

catggtgtta acctcaccat taccaatgcc acccaagatc agaatggcag gtttaagggt 30187

cagagtttca ctagcaacaa tgggtatgaa acccataaca tgttcatcta tgatgtcact 30247

gtcatatcaa ataagactac acctaccaca cagacaccca ctacacatag ctcaactcat 30307

gccatgcaga ccactcagac aaccacatac actacatcta ctgagtccac caccaccact 30367

acagcagagg tatccagcac agcgcctcag ccccaggcat tggctttgat ggctcagcct 30427

agcagcatga ctgctaaaac caatgagcag actactgaat ttttgtccac tattcagagc 30487

agcaccacag ctacctcgag tgccttctct agcaccgcca atctcacctc gctttcctct 30547

acgccaatca gtaacgctac tacctccccc gctcctcttc ccactcctct gaagcaatcc 30607

gagtctagca cgcagctgca gatcaccctg ctcattgtga tcggggtggt catcctggca 30667

gtgctgctct actttatctt ctgccgccgc atccccaacg cgaaaccggc ctacaagccc 30727

attgttatcg ggacgccgga gccgcttcag gtggagggag gtctaaggaa tcttctcttc 30787

tcttttacag tatggtgatt tgaactatga ttcctagaca tttcattatc acttctctaa 30847

tctgtgtgct ccaagtctgt gccaccctcg ctctcgtggc taacgcgagt ccagactgca 30907

```
ttggagcgtt cgcctcctac gtgctctttg ccttcatcac ctgcatctgc tgctgtagca    30967

tagtctgcct gcttatcacc ttcttccagt tcgttgactg ggtctttgtg cgcatcgcct    31027

acctgcgcca ccacccccag taccgcgacc agagagtggc gcaactgttg agactcatct    31087

g atg ata agc  atg cgg gct ctg cta  cta ctt ctc gcg ctt  ctg cta     31133
  Met Ile Ser  Met Arg Ala Leu Leu  Leu Leu Leu Ala Leu  Leu Leu
         1545                1550                1555

gct ccc ctc  gcc gcc ccc cta tcc  ctc aaa tcc ccc acc  cag tcc       31178
Ala Pro Leu  Ala Ala Pro Leu Ser  Leu Lys Ser Pro Thr  Gln Ser
        1560                1565                1570

cct gaa gag  gtt cga aaa tgt aaa  ttc caa gaa ccc tgg  aaa ttc       31223
Pro Glu Glu  Val Arg Lys Cys Lys  Phe Gln Glu Pro Trp  Lys Phe
        1575                1580                1585

ctt tca tgc  tac aaa ctc aaa tca  gaa atg cac ccc agc  tgg atc       31268
Leu Ser Cys  Tyr Lys Leu Lys Ser  Glu Met His Pro Ser  Trp Ile
        1590                1595                1600

atg atc gtt  gga atc gta aac atc  ctt gcc tgt acc ctc  ttc tcc       31313
Met Ile Val  Gly Ile Val Asn Ile  Leu Ala Cys Thr Leu  Phe Ser
        1605                1610                1615

ttt gtg att  tac ccc cgc ttt gac  ttt ggg tgg aac gca  ccc gag       31358
Phe Val Ile  Tyr Pro Arg Phe Asp  Phe Gly Trp Asn Ala  Pro Glu
        1620                1625                1630

gcg ctc tgg  ctc ccg cct gat ccc  gac aca cca cca cag  cag cag       31403
Ala Leu Trp  Leu Pro Pro Asp Pro  Asp Thr Pro Pro Gln  Gln Gln
        1635                1640                1645

caa aat cag  gca cag gca cat gca  cca cca cag cct agg  cca caa       31448
Gln Asn Gln  Ala Gln Ala His Ala  Pro Pro Gln Pro Arg  Pro Gln
        1650                1655                1660

tac atg ccc  atc tta gac tat gag  gcc gag cca cag cga  gcc atg       31493
Tyr Met Pro  Ile Leu Asp Tyr Glu  Ala Glu Pro Gln Arg  Ala Met
        1665                1670                1675

ctt cct gct  att agt tac ttc aat  cta acc ggc gga gat  gac           31535
Leu Pro Ala  Ile Ser Tyr Phe Asn  Leu Thr Gly Gly Asp  Asp
        1680                1685                1690

tgaccccatg gccaacaaca ccgtcaacga cctcctggac atggacggcc gcgcctcgga    31595

gcagcgactc gcccaactcc gcatccgcca gcagcaggag agagccgtca aggagctgca    31655

ggacgcggtg gccatccacc agtgcaagag aggcatcttc tgcctggtga agcaggccaa    31715

gatctccttc gaggtcacgt ccaccgacca tcgcctctcc tacgagctcc tgcagcagcg    31775

ccagaagttc acctgcctgg tcggagtcaa ccccatcgtc atcacccagc agtctggcga    31835

taccaagggt tgcatccact gctcctgcga ctcccccgag tgcgttcaca ccctgatcaa    31895

gaccctctgc ggcctccgcg acctcctccc catgaactaa tcaactaacc ccctacccct    31955

ttaccctcca gtaaaaataa agattaaaaa tgattgaatt gatcaataaa gaatcactta    32015

cttgaaatct gaaaccaggt ctctgtccat gttttctgtc agcagcactt cactcccctc    32075

ttcccaactc tggtactgca ggccccggcg ggctgcaaac ttcctccaca ctctgaaggg    32135

gatgtcaaat tcctcctgtc cctcaatctt catttttatc ttctatcaga tgtccaaaaa    32195

gcgcgcgcgg gtggatgatg gcttcgaccc cgtgtacccc tacgatgcag acaacgcacc    32255
```

gactgtgccc ttcatcaacc ctcccttcgt ctcttcagat ggattccaag aaaagcccct 32315
gggggtgttg tccctgcgac tggccgaccc cgtcaccacc aagaatgggg ctgtcaccct 32375
caagctgggg gaggggggtgg acctcgacga ctcgggaaaa ctcatctcca aaaatgccac 32435
caaggccact gcccctctca gtatttccaa cggcaccatt tcccttaaca tggccgcccc 32495
tttttacaac aacaatggaa cgttaagtct caatgtttct acaccattag cagtatttcc 32555
cacttttaac actttaggta tcagtcttgg aaacggtctt caaacttcta ataagttgct 32615
gactgtacag ttaactcatc ctcttacatt cagctcaaat agcatcacag taaaaacaga 32675
caaaggactc tatattaatt ctagtggaaa cagagggctt gaggctaaca taagcctaaa 32735
aagaggactg atttttgatg gtaatgctat tgcaacatac cttggaagtg gtttagacta 32795
tggatcctat gatagcgatg ggaaaacaag acccatcatc accaaaattg gagcaggttt 32855
gaattttgat gctaataatg ccatggctgt gaagctaggc acaggtttaa gttttgactc 32915
tgccggtgcc ttaacagctg gaaacaaaga ggatgacaag ctaacacttt ggactacacc 32975
tgacccaagc cctaattgtc aattactttc agacagagat gccaaattta ccctatgtct 33035
tacaaaatgc ggtagtcaaa tactaggcac tgttgcagta gctgctgtta ctgtaggttc 33095
agcactaaat ccaattaatg acacagtaaa aagcgccata gtattcctta gatttgactc 33155
tgacggtgtg ctcatgtcaa actcatcaat ggtaggtgat tactggaact ttagggaagg 33215
acagaccacc caaagtgtgg cctatacaaa tgctgtggga ttcatgccca atctaggtgc 33275
atatcctaaa acccaaagca aaacaccaaa aaatagtata gtaagtcagg tatatttaaa 33335
tggagaaact actatgccaa tgacactgac aataactttc aatggcactg atgaaaaaga 33395
cacaacacct gtgagcactt actccatgac ttttacatgg cagtggactg gagactataa 33455
ggacaagaat attacctttg ctaccaactc ctttactttc tcctacatgg cccaagaata 33515
aaccctgcat gccaacccca ttgttcccac cactatggaa aactctgaag cagaaaaaaa 33575
taaagttcaa gtgttttatt gattcaacag ttttcacaga attcgagtag ttattttccc 33635
tcctccctcc caactcatgg aatacaccac cctctcccca cgcacagcct taaacatctg 33695
aatgccattg gtaatggaca tggttttggt ctccacattc cacacagttt cagagcgagc 33755
cagtctcggg tcggtcaggg agatgaaacc ctccgggcac tcctgcatct gcacctcaaa 33815
gttcagtagc tgagggctgt cctcggtggt cgggatcaca gttatctgga agaagagcgg 33875
tgagagtcat aatccgcgaa cgggatcggg cggttgtggc gcatcaggcc ccgcagcagt 33935
cgctgtctgc gccgctccgt caagctgctg ctcaaggggt ctgggtccag ggactccctg 33995
cgcatgatgc cgatggccct gagcatcagt cgcctggtgc ggcgggcgca gcagcggatg 34055
cggatctcac tcaggtcgga gcagtacgtg cagcacagca ctaccaagtt gttcaacagt 34115
ccatagttca acgtgctcca gccaaaactc atctgtggaa ctatgctgcc cacatgtcca 34175
tcgtaccaga tcctgatgta aatcaggtgg cgccccctcc agaacacact gcccatgtac 34235
atgatctcct tgggcatgtg caggttcacc acctcccggt accacatcac ccgctggttg 34295

```
aacatgcagc cctggataat cctgcggaac cagatggcca gcaccgcccc gcccgccatg    34355

cagcgcaggg accccgggtc ctggcaatgg cagtggagca cccaccgctc acggccgtgg    34415

attaactggg agctgaacaa gtctatgttg gcacagcaca ggcacacgct catgcatgtc    34475

ttcagcactc tcagttcctc gggggtcagg accatgtccc agggcacggg gaactcttgc    34535

aggacagtga acccggcaga acagggcagc cctcgcacac aacttacatt gtgcatggac    34595

agggtatcgc aatcaggcag caccggatga tcctccacca gagaagcgcg ggtctcggtc    34655

tcctca cag cga ggt aag  ggg gcc ggc ggt tgg  tac gga tga tgg cgg     34703
       Gln Arg Gly Lys  Gly Ala Gly Gly Trp  Tyr Gly     Trp Arg
                  1695                1700

gat  gac gct aat cgt gtt  ctg gat cgt gtc atg  atg gag ctg ttt       34748
Asp  Asp Ala Asn Arg Val  Leu Asp Arg Val Met  Met Glu Leu Phe
1705                1710                1715

cct  gac att ttc gta ctt  cac gaa gca gaa cct  ggt acg ggc act       34793
Pro  Asp Ile Phe Val Leu  His Glu Ala Glu Pro  Gly Thr Gly Thr
1720                1725                1730

gca  cac cgc tcg ccg gcg  acg gtc tcg gcg ctt  cga gcg ctc ggt       34838
Ala  His Arg Ser Pro Ala  Thr Val Ser Ala Leu  Arg Ala Leu Gly
1735                1740                1745

gtt  gaa gtt ata gaa cag  cca ctc cct cag agc  gtg cag tat ctc       34883
Val  Glu Val Ile Glu Gln  Pro Leu Pro Gln Ser  Val Gln Tyr Leu
1750                1755                1760

ctg  agc ctc ttg ggt gat  gaa aat ccc atc cgc  tct gat ggc tct       34928
Leu  Ser Leu Leu Gly Asp  Glu Asn Pro Ile Arg  Ser Asp Gly Ser
1765                1770                1775

gat  cac atc ggc cac ggt  gga atg ggc cag acc  cag cca gat gat       34973
Asp  His Ile Gly His Gly  Gly Met Gly Gln Thr  Gln Pro Asp Asp
1780                1785                1790

gca  att ttg ttg ggt ttc  ggt gac gga ggg aga  ggg aag aac agg       35018
Ala  Ile Leu Leu Gly Phe  Gly Asp Gly Gly Arg  Gly Lys Asn Arg
1795                1800                1805

aag  aac cat gattaacttt attccaaacg gtctcggagc acttcaaaat            35067
Lys  Asn His
1810

gcaggtcccg gaggtggcac ctctcgcccc cactgtgttg gtggaaaata acagccaggt    35127

caaaggtgac acggttctcg agatgttcca cggtggcttc cagcaaagcc tccacgcgca    35187

catccagaaa caagaggaca gcgaaagcgg gagcgttttc taattcctca atcatcatat    35247

tacactcctg caccatcccc agataatttt catttttcca gccttgaatg attcgtatta    35307

gttcctgagg taaatccaag ccagccatga taaaaagctc gcgcagagcg ccctccaccg    35367

gcattcttaa gcacaccctc a taa ttc caa gag  att ctg ctc ctg gtt  cac    35418
                           Phe Gln Glu  Ile Leu Leu Leu Val  His
                                   1815                1820

ctg cag cag att  aac aat ggg aat atc  aaa atc tct gcc gcg  atc       35463
Leu Gln Gln Ile  Asn Asn Gly Asn Ile  Lys Ile Ser Ala Ala  Ile
           1825                1830                1835

cct aag ctc ctc  cct caa caa taa ctg tat  gta atc ttt cat atc       35508
Pro Lys Leu Leu  Pro Gln Gln     Leu Tyr  Val Ile Phe His Ile
           1840                    1845                1850
```

```
atc tcc gaa att ttt  agc cat agg gcc gcc  agg aat aag agc agg        35553
Ile Ser Glu Ile Phe  Ser His Arg Ala Ala  Arg Asn Lys Ser Arg
                1855                 1860                 1865

gca agc cac att aca  gat aaa gcg aag tcc  tcc cca gtg agc att        35598
Ala Ser His Ile Thr  Asp Lys Ala Lys Ser  Ser Pro Val Ser Ile
                1870                 1875                 1880

gcc aaa tgt aag att  gaa ata agc atg ctg  gct aga ccc tgt gat        35643
Ala Lys Cys Lys Ile  Glu Ile Ser Met Leu  Ala Arg Pro Cys Asp
                1885                 1890                 1895

atc ttc cag ata act  gga cag aaa atc agg  caa gca att ttt aag        35688
Ile Phe Gln Ile Thr  Gly Gln Lys Ile Arg  Gln Ala Ile Phe Lys
                1900                 1905                 1910

aaa atc aac aaa aga  aaa gtc gtc cag gtg  cag gtt tag agc ctc        35733
Lys Ile Asn Lys Arg  Lys Val Val Gln Val  Gln Val     Ser Leu
                1915                 1920

agg  aac aac gat gga ata  agt gca agg agt gcg  ttc cag cat          35775
Arg  Asn Asn Asp Gly Ile  Ser Ala Arg Ser Ala  Phe Gln His
1925                 1930                 1935

ggttagtgtt tttttggtga tctgtagaac aaaaaataaa catgcaatat taaaccatgc    35835

tagcctggcg aacaggtggg taaatcactc tttccagcac caggcaggct acggggtctc    35895

cggcgcgacc ctcgtagaag ctgtcgccat gattgaaaag catcaccgag agaccttccc    35955

ggtggccggc atggatgatt cgagaagaag catacactcc gggaacattg gcatccgtga    36015

gtgaaaaaaa gcgacctata aagcctcggg gcactacaat gctcaatctc aattccagca    36075

aagccacccc atgcggatgg agcacaaaat tggcaggtgc gtaaaaaatg taattactcc    36135

cctcctgcac aggcagcaaa gcccccgctc cctccagaaa cacatacaaa gcctcagcgt    36195

ccatagctta ccgagcacgg caggcgcaag agtcagagaa aaggctgagc tctaacctga    36255

ctgcccgctc ctgtgctcaa tatatagccc taacctacac tgacgtaaag gccaaagtct    36315

aaaaataccc gccaaaatga cacacacgcc cagcacacgc ccagaaaccg gtgacacact    36375

caaaaaaata cgtgcgcttc ctcaaacgcc caaaccggcg tcatttccgg gttcccacgc    36435

tacgtcaccg ctcagcgact ttcaaattcc gtcgaccgtt aaaaacgtca ctcgccccgc    36495

ccctaacggt cgcccttctc tcggccaatc accttcctcc cttcccaaat tcaaacgcct    36555

catttgcata ttaacgcgca caaaaagttt gaggtatatt attgatgatg atcgtttaaa    36615

ctatgcggtg tgaaataccg cacagatgcg taaggagaaa ataccgcatc aggcgctctt    36675

ccgcttcctc gctcactgac tcgctgcgct cggtcgttcg gctgcggcga gcggtatcag    36735

ctcactcaaa ggcggtaata cggttatcca cagaatcagg ggataacgca ggaaagaaca    36795

tgtgagcaaa aggccagcaa aaggccagga accgtaaaaa ggccgcgttg ctggcgtttt    36855

tccataggct ccgccccccct gacgagcatc acaaaaatcg acgctcaagt cagaggtggc    36915

gaaacccgac aggactataa agataccagg cgtttccccc tggaagctcc ctcgtgcgct    36975

ctcctgttcc gaccctgccg cttaccggat acctgtccgc ctttctccct tcgggaagcg    37035

tggcgctttc tcatagctca cgctgtaggt atctcagttc ggtgtaggtc gttcgctcca    37095
```

agctgggctg tgtgcacgaa ccccccgttc agcccgaccg ctgcgcctta tccggtaact 37155

atcgtcttga gtccaacccg gtaagacacg acttatcgcc actggcagca gccactggta 37215

acaggattag cagagcgagg tatgtaggcg gtgctacaga gttcttgaag tggtggccta 37275

actacggcta cactagaagg acagtatttg gtatctgcgc tctgctgaag ccagttacct 37335

tcggaaaaag agttggtagc tcttgatccg gcaaacaaac caccgctggt agcggtggtt 37395

tttttgtttg caagcagcag attacgcgca gaaaaaaagg atctcaagaa gatcctttga 37455

tcttttctac ggggtctgac gctcagtgga acgaaaactc acgttaaggg attttggtca 37515

tgagattatc aaaaaggatc ttcacctaga tccttttaaa ttaaaaatga agttttaaat 37575

caatctaaag tatatatgag taaacttggt ctgacagtta ccaatgctta atcagtgagg 37635

cacctatctc agcgatctgt ctatttcgtt catccatagt tgcctgactc cccgtcgtgt 37695

agataactac gatacgggag ggcttaccat ctggccccag tgctgcaatg ataccgcgag 37755

acccacgctc accggctcca gatttatcag caataaacca gccagccgga agggccgagc 37815

gcagaagtgg tcctgcaact ttatccgcct ccatccagtc tattaattgt tgccgggaag 37875

ctagagtaag tagttcgcca gttaatagtt tgcgcaacgt tgttgccatt gctgcaggca 37935

tcgtggtgtc acgctcgtcg tttggtatgg cttcattcag ctccggttcc caacgatcaa 37995

ggcgagttac atgatccccc atgttgtgca aaaaagcggt tagctccttc ggtcctccga 38055

tcgttgtcag aagtaagttg gccgcagtgt tatcactcat ggttatggca gcactgcata 38115

attctcttac tgtcatgcca tccgtaagat gcttttctgt gactggtgag tactcaacca 38175

agtcattctg agaatagtgt atgcggcgac cgagttgctc ttgcccggcg tcaacacggg 38235

ataataccgc gccacatagc agaactttaa aagtgctcat cattggaaaa cgttcttcgg 38295

ggcgaaaact ctcaaggatc ttaccgctgt tgagatccag ttcgatgtaa cccactcgtg 38355

cacccaactg atcttcagca tcttttactt tcaccagcgt ttctgggtga gcaaaaacag 38415

gaaggcaaaa tgccgcaaaa aagggaataa gggcgacacg gaaatgttga atactcatac 38475

tcttcctttt tcaatattat tgaagcattt atcagggtta ttgtctcatg agcggataca 38535

tatttgaatg tatttagaaa aataaacaaa taggggttcc gcgcacattt ccccgaaaag 38595

tgccacctga cgtctaagaa accattatta tcatgacatt aacctataaa aataggcgta 38655

tcacgaggcc ctttcgtctt caagaattgt ttaaactacc atcat 38700

<210> 379
<211> 95
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 379

Pro Ala Ala Pro Glu His Pro Arg His Ala Arg Gly Ala Ser Leu Ala
1 5 10 15

```
Ala Gln Gly Gln Ala His Gly Thr Gln Gly His Ala Gln Gly Gly Gln
            20                  25                  30

Thr Arg Gly Leu Arg Arg Gln Arg Arg Gln Asp Pro Glu Thr Arg Gly
        35                  40                  45

His Gly Gly Gly Ser Gly His Arg Gln His Val Pro Pro Ala Ala Arg
    50                  55                  60

Glu Arg Val Leu Gly Ala Arg Arg Arg His Arg Cys Ala Arg Ala Arg
65                  70                  75                  80

Ala His Pro Pro Pro Ser His Leu Lys Met Phe Thr Ser Arg Cys
                85                  90                  95


<210>  380
<211>  348
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  380

Cys Val Pro Ala Ala Arg Met Ser Lys Arg Lys Phe Lys Glu Glu Met
1               5                   10                  15

Leu Gln Val Ile Ala Pro Glu Ile Tyr Gly Pro Ala Val Val Lys Glu
            20                  25                  30

Glu Arg Lys Pro Arg Lys Ile Lys Arg Val Lys Lys Asp Lys Lys Glu
        35                  40                  45

Glu Glu Ser Asp Val Asp Gly Leu Val Glu Phe Val Arg Glu Phe Ala
    50                  55                  60

Pro Arg Arg Arg Val Gln Trp Arg Gly Arg Lys Val Arg Pro Val Leu
65                  70                  75                  80

Arg Pro Gly Thr Thr Val Val Phe Thr Pro Gly Glu Arg Ser Gly Thr
                85                  90                  95

Ala Ser Lys Arg Ser Tyr Asp Glu Val Tyr Gly Asp Glu Asp Ile Leu
            100                 105                 110

Glu Gln Ala Ala Glu Arg Leu Gly Glu Phe Ala Tyr Gly Lys Arg Ser
        115                 120                 125

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

Asn Pro Thr Pro Ser Leu Lys Pro Val Thr Leu Gln Gln Val Leu Pro
145                 150                 155                 160
```

```
Thr Ala Ala Pro Arg Arg Gly Phe Lys Arg Glu Gly Glu Asp Leu Tyr
                165                 170                 175

Pro Thr Met Gln Leu Met Val Pro Lys Arg Gln Lys Leu Glu Asp Val
            180                 185                 190

Leu Glu Thr Met Lys Val Asp Pro Asp Val Gln Pro Glu Val Lys Val
        195                 200                 205

Arg Pro Ile Lys Gln Val Ala Pro Gly Leu Gly Val Gln Thr Val Asp
    210                 215                 220

Ile Lys Ile Pro Thr Glu Pro Met Glu Thr Gln Thr Glu Pro Val Lys
225                 230                 235                 240

Pro Ser Thr Ser Thr Met Glu Val Gln Thr Asp Pro Trp Met Pro Ser
                245                 250                 255

Ala Thr Ser Arg Arg Pro Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu
            260                 265                 270

Met Pro Asn Tyr Ala Leu His Pro Ser Ile Ile Pro Thr Pro Gly Tyr
        275                 280                 285

Arg Gly Thr Arg Phe Tyr Arg Gly His Thr Ser Arg Arg Arg Lys Thr
    290                 295                 300

Thr Thr Arg Arg Arg Arg Arg Arg Thr Thr Ala Ala Ala Ser Thr Pro
305                 310                 315                 320

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

Leu Pro Arg Ala Arg Tyr His Pro Ser Ile Ala Ile
            340                 345


<210>  381
<211>  59
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct

<400>  381

Thr Phe Ala Cys Phe Ala Asp Gln Trp Pro Ser His Ala Ala Ser Ala
1               5                   10                  15

Phe Pro Leu Arg Ala Thr Glu Glu Glu Asn Arg Ala Val Glu Gly Trp
            20                  25                  30

Arg Gly Thr Gly Cys Val Ala Thr Thr Thr Gly Gly Gly Ala Pro Ser
        35                  40                  45
```

Ala Ser Gly Trp Gly Glu Ala Ser Cys Pro Arg
50 55

<210> 382
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 382

Ser Pro Ser Ser Pro Arg Arg Ser Gly Arg Ser Pro Ala Leu Leu Pro
1 5 10 15

Trp Arg Cys Arg Pro Leu Ser Ala Thr Glu Thr
20 25

<210> 383
<211> 801
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 383

Met Glu Thr Gln Pro Ser Pro Thr Ser Pro Ser Ala Pro Thr Thr Ala
1 5 10 15

Asp Glu Lys Gln Gln Asn Glu Ser Leu Thr Ala Pro Pro Pro Ser Pro
20 25 30

Ala Thr Ser Asp Ala Ala Ala Val Pro Asp Met Gln Glu Met Glu Glu
35 40 45

Ser Ile Glu Ile Asp Leu Gly Tyr Val Thr Pro Ala Glu His Glu Glu
50 55 60

Glu Leu Ala Val Arg Phe Gln Ser Ser Ser Gln Glu Asp Lys Glu Gln
65 70 75 80

Pro Glu Gln Glu Ala Glu Asn Glu Gln Ser Gln Ala Gly Leu Glu His
85 90 95

Asp Gly Asp Tyr Leu His Leu Ser Gly Glu Glu Asp Ala Leu Ile Lys
100 105 110

His Leu Ala Arg Gln Ala Ile Ile Val Lys Asp Ala Leu Leu Asp Arg
115 120 125

Thr Glu Val Pro Leu Ser Val Glu Glu Leu Ser Arg Ala Tyr Glu Leu
130 135 140

```
Asn Leu Phe Ser Pro Arg Val Pro Pro Lys Arg Gln Pro Asn Gly Thr
145                 150                 155                 160

Cys Glu Pro Asn Pro Arg Leu Asn Phe Tyr Pro Val Phe Ala Val Pro
                165                 170                 175

Glu Ala Leu Ala Thr Tyr His Ile Phe Phe Lys Asn Gln Lys Ile Pro
            180                 185                 190

Val Ser Cys Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Phe Asn Leu
        195                 200                 205

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

Lys Ile Phe Glu Gly Leu Gly Ser Asp Glu Thr Arg Ala Ala Asn Ala
225                 230                 235                 240

Leu Gln Gly Glu Gly Gly Glu His Glu His His Ser Ala Leu Val Glu
                245                 250                 255

Leu Glu Gly Asp Asn Ala Arg Leu Ala Val Leu Lys Arg Thr Val Glu
            260                 265                 270

Leu Thr His Phe Ala Tyr Pro Ala Leu Asn Leu Pro Pro Lys Val Met
        275                 280                 285

Ser Ala Val Met Asp Gln Val Leu Ile Lys Arg Ala Ser Pro Ile Ser
    290                 295                 300

Glu Asp Glu Gly Met Gln Asp Ser Glu Asp Gly Lys Pro Val Val Ser
305                 310                 315                 320

Asp Glu Gln Leu Ala Arg Trp Leu Gly Pro Asn Ala Ser Pro Gln Ser
                325                 330                 335

Leu Glu Glu Arg Arg Lys Leu Met Met Ala Val Val Leu Val Thr Val
            340                 345                 350

Glu Leu Glu Cys Leu Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu Arg
        355                 360                 365

Lys Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val Arg
    370                 375                 380

Gln Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr
385                 390                 395                 400

Met Gly Ile Leu His Glu Asn Arg Leu Gly Gln Asn Val Leu His Thr
                405                 410                 415
```

```
Thr Leu Arg Gly Glu Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val Tyr
            420                 425                 430

Leu Tyr Leu Cys His Thr Trp Gln Thr Gly Met Gly Val Trp Gln Gln
        435                 440                 445

Cys Leu Glu Glu Gln Asn Leu Lys Glu Leu Cys Lys Leu Leu Gln Lys
    450                 455                 460

Asn Leu Lys Gly Leu Trp Thr Gly Phe Asp Glu Arg Thr Thr Ala Ser
465                 470                 475                 480

Asp Leu Ala Asp Leu Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu Arg
                485                 490                 495

Asn Gly Leu Pro Asp Phe Met Ser Gln Ser Met Leu Gln Asn Phe Arg
            500                 505                 510

Ser Phe Ile Leu Glu Arg Ser Gly Ile Leu Pro Ala Thr Cys Ser Ala
        515                 520                 525

Leu Pro Ser Asp Phe Val Pro Leu Thr Phe Arg Glu Cys Pro Pro Pro
    530                 535                 540

Leu Trp Ser His Cys Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala Tyr
545                 550                 555                 560

His Ser Asp Val Ile Glu Asp Val Ser Gly Glu Gly Leu Leu Glu Cys
                565                 570                 575

His Cys Arg Cys Asn Leu Cys Thr Pro His Arg Ser Leu Ala Cys Asn
            580                 585                 590

Pro Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu Gln
        595                 600                 605

Gly Pro Ser Asp Asp Gly Glu Gly Ala Lys Gly Gly Leu Lys Leu Thr
    610                 615                 620

Pro Gly Leu Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp
625                 630                 635                 640

Tyr His Pro Phe Glu Ile Arg Phe Tyr Glu Asp Gln Ser Gln Pro Pro
                645                 650                 655

Lys Ala Glu Leu Ser Ala Cys Val Ile Thr Gln Gly Ala Ile Leu Ala
            660                 665                 670

Gln Leu Gln Ala Ile Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys
        675                 680                 685

Gly Arg Gly Val Tyr Leu Asp Pro Gln Thr Gly Glu Glu Leu Asn Pro
```

690 695 700

Gly Phe Pro Gln Asp Ala Pro Arg Lys Gln Glu Ala Glu Ser Gly Ala
705 710 715 720

Ala Ala Arg Gly Gly Phe Gly Gly Arg Leu Gly Glu Gln Gln Ser Gly
725 730 735

Arg Gly Gly Asp Gly Gly Arg Leu Gly Gln His Ser Gly Arg Gly Gly
740 745 750

Gln Pro Ala Arg Gln Ser Gly Gly Arg Arg Gly Gly Gly Arg Gly Gly
755 760 765

Arg Ser Ser Arg Arg Gln Thr Val Val Leu Gly Gly Gly Glu Ser Lys
770 775 780

Gln His Gly Tyr His Leu Arg Ser Gly Ser Gly Ser Arg Ser Ala Pro
785 790 795 800

Gln

<210> 384
<211> 212
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 384

Met Lys Val Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu
1 5 10 15

Ile Ser Asp Tyr Ser Gly Leu Asn Cys Gly Val Ser Ala Ser Ile Asn
20 25 30

Gln Ser Leu Thr Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys
35 40 45

Lys Pro His Lys Lys Tyr Leu Thr Trp Leu Tyr Gln Gly Ser Pro Ile
50 55 60

Ala Val Val Asn His Cys Asp Asp Asp Gly Val Leu Leu Asn Gly Pro
65 70 75 80

Ala Asn Leu Thr Phe Ser Thr Arg Arg Ser Lys Leu Leu Leu Phe Arg
85 90 95

Pro Phe Leu Pro Gly Ile Tyr Gln Cys Ile Ser Gly Pro Cys His His
100 105 110

```
Thr Phe His Leu Ile Pro Asn Thr Thr Ser Ser Pro Ala Pro Leu Pro
        115                 120                 125

Thr Asn Asn Gln Thr Asn His Gln Arg His Arg Arg Asp Leu Ser Ser
    130                 135                 140

Asp Ser Asn Thr Thr Thr Gly Gly Glu Leu Arg Gly Thr Lys Lys Ser
145                 150                 155                 160

Ser Pro Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala
                165                 170                 175

Leu Gly Leu Val Ala Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu
            180                 185                 190

Pro Cys Cys Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp
        195                 200                 205

Gly Arg Ser Pro
    210
```

<210> 385
<211> 149
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 385

```
Met Ile Ser Met Arg Ala Leu Leu Leu Leu Leu Ala Leu Leu Leu Ala
1               5                   10                  15

Pro Leu Ala Ala Pro Leu Ser Leu Lys Ser Pro Thr Gln Ser Pro Glu
            20                  25                  30

Glu Val Arg Lys Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Ser Cys
        35                  40                  45

Tyr Lys Leu Lys Ser Glu Met His Pro Ser Trp Ile Met Ile Val Gly
    50                  55                  60

Ile Val Asn Ile Leu Ala Cys Thr Leu Phe Ser Phe Val Ile Tyr Pro
65                  70                  75                  80

Arg Phe Asp Phe Gly Trp Asn Ala Pro Glu Ala Leu Trp Leu Pro Pro
                85                  90                  95

Asp Pro Asp Thr Pro Pro Gln Gln Gln Gln Asn Gln Ala Gln Ala His
            100                 105                 110

Ala Pro Pro Gln Pro Arg Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu
        115                 120                 125
```

Ala Glu Pro Gln Arg Ala Met Leu Pro Ala Ile Ser Tyr Phe Asn Leu
130 135 140

Thr Gly Gly Asp Asp
145

<210> 386
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 386

Gln Arg Gly Lys Gly Ala Gly Gly Trp Tyr Gly
1 5 10

<210> 387
<211> 110
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 387

Trp Arg Asp Asp Ala Asn Arg Val Leu Asp Arg Val Met Met Glu Leu
1 5 10 15

Phe Pro Asp Ile Phe Val Leu His Glu Ala Glu Pro Gly Thr Gly Thr
20 25 30

Ala His Arg Ser Pro Ala Thr Val Ser Ala Leu Arg Ala Leu Gly Val
35 40 45

Glu Val Ile Glu Gln Pro Leu Pro Gln Ser Val Gln Tyr Leu Leu Ser
50 55 60

Leu Leu Gly Asp Glu Asn Pro Ile Arg Ser Asp Gly Ser Asp His Ile
65 70 75 80

Gly His Gly Gly Met Gly Gln Thr Gln Pro Asp Asp Ala Ile Leu Leu
85 90 95

Gly Phe Gly Asp Gly Gly Arg Gly Lys Asn Arg Lys Asn His
100 105 110

<210> 388
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 388

Phe Gln Glu Ile Leu Leu Leu Val His Leu Gln Gln Ile Asn Asn Gly
1 5 10 15

Asn Ile Lys Ile Ser Ala Ala Ile Pro Lys Leu Leu Pro Gln Gln
20 25 30

<210> 389
<211> 79
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 389

Leu Tyr Val Ile Phe His Ile Ile Ser Glu Ile Phe Ser His Arg Ala
1 5 10 15

Ala Arg Asn Lys Ser Arg Ala Ser His Ile Thr Asp Lys Ala Lys Ser
20 25 30

Ser Pro Val Ser Ile Ala Lys Cys Lys Ile Glu Ile Ser Met Leu Ala
35 40 45

Arg Pro Cys Asp Ile Phe Gln Ile Thr Gly Gln Lys Ile Arg Gln Ala
50 55 60

Ile Phe Lys Lys Ile Asn Lys Arg Lys Val Val Gln Val Gln Val
65 70 75

<210> 390
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 390

Ser Leu Arg Asn Asn Asp Gly Ile Ser Ala Arg Ser Ala Phe Gln His
1 5 10 15

<210> 391
<211> 5308
<212> DNA
<213> Artificial Sequence

<220>
<223> p2311 - vector based on HIV

<220>
<221> mutation
<222> (1)..(1)
<223> 8 bp deletion - TTCGCGTT

<220>

<221> enhancer
<222> (108)..(368)
<223> enhancer

<220>
<221> misc_feature
<222> (369)..(596)
<223> CMV promoter

<220>
<221> TATA_signal
<222> (570)..(573)
<223> TATA

<220>
<221> CDS
<222> (692)..(1783)
<223> Gag short

<220>
<221> primer_bind
<222> (1772)..(1801)
<223> BG166R

<220>
<221> polyA_signal
<222> (1936)..(2138)
<223> BGH-PolyA (bovine growth hormone (bGH) polyadenylation signal)

<220>
<221> mutation
<222> (2210)..(2210)
<223> C deletion

<220>
<221> misc_feature
<222> (2436)..(2460)
<223> I-CeuI recognition sequence

<220>
<221> mutation
<222> (2461)..(2461)
<223> A deletion

<220>
<221> CDS
<222> (2913)..(3728)
<223> Kanamycin-r

<220>
<221> misc_feature
<222> (4402)..(5045)
<223> ColE1-Ori complement (4402..5045)

<220>
<221> misc_feature
<222> (5291)..(5291)
<223> PI-SceI recognition site

<400> 391
gacattgatt attgactagt tattaatagt aatcaattac ggggtcatta gttcatagcc 60

catatatgga gttccgcgtt acataactta cggtaaatgg cccgcctggc tgaccgccca 120

acgacccccg cccattgacg tcaataatga cgtatgttcc catagtaacg ccaataggga 180

ctttccattg acgtcaatgg gtggagtatt tacggtaaac tgcccacttg gcagtacatc 240

aagtgtatca tatgccaagt acgccccta ttgacgtcaa tgacggtaaa tggcccgcct 300

```
ggcattatgc ccagtacatg accttatggg actttcctac ttggcagtac atctacgtat      360

tagtcatcgc tattaccatg gtgatgcggt tttggcagta catcaatggg cgtggatagc      420

ggtttgactc acggggattt ccaagtctcc accccattga cgtcaatggg agtttgtttt      480

ggcaccaaaa tcaacgggac tttccaaaat gtcgtaacaa ctccgcccca ttgacgcaaa      540

tgggcggtag gcgtgtacgg tgggaggtct atataagcag agctcgttta gtgaaccgtc      600

agatcgcctg gagacgccat ccacgctgtt ttgacctcca tagaagacac cgggaccgat      660

ccagcctccg cgggcgcgcg tcgacagaga g atg ggt gcg aga gcg tca gta          712
                                    Met Gly Ala Arg Ala Ser Val
                                    1               5

tta agc ggg gga gaa tta gat cga tgg gaa aaa att cgg tta agg cca          760
Leu Ser Gly Gly Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro
        10                  15                  20

ggg gga aag aag aag tac aag cta aag cac atc gta tgg gca agc agg          808
Gly Gly Lys Lys Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg
    25                  30                  35

gag cta gaa cga ttc gca gtt aat cct ggc ctg tta gaa aca tca gaa          856
Glu Leu Glu Arg Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu
40                  45                  50                  55

ggc tgt aga caa ata ctg gga cag cta caa cca tcc ctt cag aca gga          904
Gly Cys Arg Gln Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly
                60                  65                  70

tca gag gag ctt cga tca cta tac aac aca gta gca acc ctc tat tgt          952
Ser Glu Glu Leu Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys
            75                  80                  85

gtg cac cag cgg atc gag atc aag gac acc aag gaa gct tta gac aag         1000
Val His Gln Arg Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys
        90                  95                  100

ata gag gaa gag caa aac aag tcc aag aag aag gcc cag cag gca gca         1048
Ile Glu Glu Glu Gln Asn Lys Ser Lys Lys Lys Ala Gln Gln Ala Ala
    105                 110                 115

gct gac aca gga cac agc aat cag gtc agc caa aat tac cct ata gtg         1096
Ala Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile Val
120                 125                 130                 135

cag aac atc cag ggg caa atg gta cat cag gcc ata tca cct aga act         1144
Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr
                140                 145                 150

tta aat gca tgg gta aaa gta gta gaa gag aag gct ttc agc cca gaa         1192
Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro Glu
            155                 160                 165

gtg ata ccc atg ttt tca gca tta tca gaa gga gcc acc cca cag gac         1240
Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp
        170                 175                 180

ctg aac acg atg ttg aac acc gtg ggg gga cat caa gca gcc atg caa         1288
Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met Gln
    185                 190                 195

atg tta aaa gag acc atc aat gag gaa gct gca gaa tgg gat aga gtg         1336
Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg Val
200                 205                 210                 215
```

```
cat cca gtg cat gca ggg cct att gca cca ggc cag atg aga gaa cca       1384
His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu Pro
                220                 225                 230

agg gga agt gac ata gca gga act act agt acc ctt cag gaa caa ata       1432
Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile
            235                 240                 245

gga tgg atg aca aat aat cca cct atc cca gta gga gag atc tac aag       1480
Gly Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr Lys
        250                 255                 260

agg tgg ata atc ctg gga ttg aac aag atc gtg agg atg tat agc cct       1528
Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr Ser Pro
    265                 270                 275

acc agc att ctg gac ata aga caa gga cca aaa gaa ccc ttt aga gac       1576
Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp
280                 285                 290                 295

tat gta gac cgg ttc tat aaa act cta aga gct gag caa gct tca cag       1624
Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala Ser Gln
                300                 305                 310

gag gta aaa aat tgg atg aca gaa acc ttg ttg gtc caa aat gcg aac       1672
Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn Ala Asn
            315                 320                 325

cca gat tgt aag acc atc ctg aag gct ctc ggc cca gcg gct aca cta       1720
Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Ala Ala Thr Leu
        330                 335                 340

gaa gaa atg atg aca gca tgt cag gga gta gga gga ccc ggc cat aag       1768
Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro Gly His Lys
    345                 350                 355

gca aga gtt ttg tag ggatccacta gttctagact cgaggggggg cccggtacct       1823
Ala Arg Val Leu
360

ttaagaccaa tgacttacaa ggcagctgta gatcttagcc acttttaaa agaaaagggg      1883

ggactggaag ggctaattca ctcccaaaga agacaagata aaccgctgat cagcctcgac     1943

tgtgccttct agttgccagc catctgttgt ttgcccctcc cccgtgcctt ccttgaccct     2003

ggaaggtgcc actcccactg tcctttccta ataaaatgag gaaattgcat cgcattgtct     2063

gagtaggtgt cattctattc tgggggggtgg ggtggggcag gacagcaagg gggaggattg    2123

ggaagacaat agcaggcatg ctggggatgc ggtgggctct atggcttctg aggcggaaag     2183

aaccagcaga tctgcagatc tgaattgcgt atatctggcc cgtacatcgc gaagcagcgc     2243

aaaacgccta accctaagca gattcttcat gcaattgtcg gtcaagcctt gccttgttgt     2303

agcttaaatt ttgctcgcgc actactcagc gacctccaac acacaagcag ggagcagata     2363

ctggcttaac tatgcggcat cagagcagat tgtactgaga gtgcaccata ggggatcggg     2423

agatctgagc tttcgctacc ttaggaccgt tatagttacg tcaggtggca cttttcgggg     2483

aaatgtgcgc ggaaccccta tttgtttatt tttctaaata cattcaaata tgtatccgct     2543

catgagacaa taaccctgat aaatgcttca ataatctagc gctgaggtct gcctcgtgaa     2603

gaaggtgttg ctgactcata ccaggcctga atcgccccat catccagcca gaaagtgagg     2663

gagccacggt tgatgagagc tttgttgtag gtggaccagt tggtgatttt gaacttttgc     2723
```

```
tttgccacgg aacggtctgc gttgtcggga agatgcgtga tctgatcctt caactcagca     2783

aaagttcgat ttattcaaca aagccacgtt gtgtctcaaa atctctgatg ttacattgca     2843

caagataaaa atatatcatc atgaacaata aaactgtctg cttacataaa cagtaataca     2903

aggggtgtt atg agc cat att caa cgg gaa acg tct tgc tcg agg ccg cga     2954
          Met Ser His Ile Gln Arg Glu Thr Ser Cys Ser Arg Pro Arg
              365                 370                 375

tta aat tcc aac atg gat gct gat tta tat ggg tat aaa tgg gct cgc       3002
Leu Asn Ser Asn Met Asp Ala Asp Leu Tyr Gly Tyr Lys Trp Ala Arg
        380                 385                 390

gat aat gtc ggg caa tca ggt gcg aca atc tat cga ttg tat ggg aag       3050
Asp Asn Val Gly Gln Ser Gly Ala Thr Ile Tyr Arg Leu Tyr Gly Lys
    395                 400                 405

ccc gat gcg cca gag ttg ttt ctg aaa cat ggc aaa ggt agc gtt gcc       3098
Pro Asp Ala Pro Glu Leu Phe Leu Lys His Gly Lys Gly Ser Val Ala
410                 415                 420                 425

aat gat gtt aca gat gag atg gtc aga cta aac tgg ctg acg gaa ttt       3146
Asn Asp Val Thr Asp Glu Met Val Arg Leu Asn Trp Leu Thr Glu Phe
                430                 435                 440

atg cct ctt ccg acc atc aag cat ttt atc cgt act cct gat gat gca       3194
Met Pro Leu Pro Thr Ile Lys His Phe Ile Arg Thr Pro Asp Asp Ala
            445                 450                 455

tgg tta ctc acc act gcg atc ccc ggg aaa aca gca ttc cag gta tta       3242
Trp Leu Leu Thr Thr Ala Ile Pro Gly Lys Thr Ala Phe Gln Val Leu
        460                 465                 470

gaa gaa tat cct gat tca ggt gaa aat att gtt gat gcg ctg gca gtg       3290
Glu Glu Tyr Pro Asp Ser Gly Glu Asn Ile Val Asp Ala Leu Ala Val
    475                 480                 485

ttc ctg cgc cgg ttg cat tcg att cct gtt tgt aat tgt cct ttt aac       3338
Phe Leu Arg Arg Leu His Ser Ile Pro Val Cys Asn Cys Pro Phe Asn
490                 495                 500                 505

agc gat cgc gta ttt cgt ctc gct cag gcg caa tca cga atg aat aac       3386
Ser Asp Arg Val Phe Arg Leu Ala Gln Ala Gln Ser Arg Met Asn Asn
                510                 515                 520

ggt ttg gtt gat gcg agt gat ttt gat gac gag cgt aat ggc tgg cct       3434
Gly Leu Val Asp Ala Ser Asp Phe Asp Asp Glu Arg Asn Gly Trp Pro
            525                 530                 535

gtt gaa caa gtc tgg aaa gaa atg cat aag ctt ttg cca ttc tca ccg       3482
Val Glu Gln Val Trp Lys Glu Met His Lys Leu Leu Pro Phe Ser Pro
        540                 545                 550

gat tca gtc gtc act cat ggt gat ttc tca ctt gat aac ctt att ttt       3530
Asp Ser Val Val Thr His Gly Asp Phe Ser Leu Asp Asn Leu Ile Phe
    555                 560                 565

gac gag ggg aaa tta ata ggt tgt att gat gtt gga cga gtc gga atc       3578
Asp Glu Gly Lys Leu Ile Gly Cys Ile Asp Val Gly Arg Val Gly Ile
570                 575                 580                 585

gca gac cga tac cag gat ctt gcc atc cta tgg aac tgc ctc ggt gag       3626
Ala Asp Arg Tyr Gln Asp Leu Ala Ile Leu Trp Asn Cys Leu Gly Glu
                590                 595                 600

ttt tct cct tca tta cag aaa cgg ctt ttt caa aaa tat ggt att gat       3674
Phe Ser Pro Ser Leu Gln Lys Arg Leu Phe Gln Lys Tyr Gly Ile Asp
```

605 610 615

aat cct gat atg aat aaa ttg cag ttt cat ttg atg ctc gat gag ttt 3722
Asn Pro Asp Met Asn Lys Leu Gln Phe His Leu Met Leu Asp Glu Phe
620 625 630

ttc taa tcagaattgg ttaattggtt gtaacactgg cagagcatta cgctgacttg 3778
Phe

acgggacggc ggctttgttg aataaatcga acttttgctg agttgaagga tcagatcacg 3838

catcttcccg acaacgcaga ccgttccgtg gcaaagcaaa agttcaaaat caccaactgg 3898

tccacctaca acaaagctct catcaaccgt ggctccctca ctttctggct ggatgatggg 3958

gcgattcagg cctggtatga gtcagcaaca ccttcttcac gaggcagacc tcagcgctca 4018

aagatgcagg ggtaaaagct aaccgcatct ttaccgacaa ggcatccggc agttcaacag 4078

atcgggaagg gctggatttg ctgaggatga aggtggagga aggtgatgtc attctggtga 4138

agaagctcga ccgtcttggc cgcgacaccg ccgacatgat ccaactgata aaagagtttg 4198

atgctcaggg tgtagcggtt cggtttattg acgacgggat cagtaccgac ggtgatatgg 4258

ggcaaatggt ggtcaccatc ctgtcggctg tggcacaggc tgaacgccgg aggatcaaaa 4318

ggatctaggt gaagatcctt tttgataatc tcatgaccaa aatcccttaa cgtgagtttt 4378

cgttccactg agcgtcagac cccgtagaaa agatcaaagg atcttcttga gatccttttt 4438

ttctgcgcgt aatctgctgc ttgcaaacaa aaaaaccacc gctaccagcg gtggtttgtt 4498

tgccggatca agagctacca actcttttc cgaaggtaac tggcttcagc agagcgcaga 4558

taccaaatac tgtccttcta gtgtagccgt agttaggcca ccacttcaag aactctgtag 4618

caccgcctac atacctcgct ctgctaatcc tgttaccagt ggctgctgcc agtggcgata 4678

agtcgtgtct taccgggttg gactcaagac gatagttacc ggataaggcg cagcggtcgg 4738

gctgaacggg gggttcgtgc acacagccca gcttggagcg aacgacctac accgaactga 4798

gatacctaca gcgtgagcat tgagaaagcg ccacgcttcc cgaagggaga aaggcggaca 4858

ggtatccggt aagcggcagg gtcggaacag gagagcgcac gagggagctt ccagggggaa 4918

acgcctggta tctttatagt cctgtcgggt ttcgccacct ctgacttgag cgtcgatttt 4978

tgtgatgctc gtcaggggggg cggagcctat ggaaaaacgc cagcaacgcg gccttttac 5038

ggttcctggc cttttgctgg ccttttgctc acatgttctt tcctgcgtta tcccctgatt 5098

ctgtggataa ccgtattacc gcctttgagt gagctgatac cgctcgccgc agccgaacga 5158

ccgagcgcag cgagtcagtg agcgaggaag cggaagagcg cccaatacgc aaaccgcctc 5218

tccccgcgcg ttggccgatt cattaatgca gacccataat acccataatg ccatttcatt 5278

acctctttct ccgcacccga catagatgaa 5308

<210> 392
<211> 363
<212> PRT
<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 392

```
Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Glu Leu Asp Arg Trp
1               5                  10                  15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
            20                  25                  30

His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
        35                  40                  45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
    50                  55                  60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65                  70                  75                  80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
                85                  90                  95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
            100                 105                 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val
        115                 120                 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His
    130                 135                 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
145                 150                 155                 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
                165                 170                 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
            180                 185                 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
        195                 200                 205

Ala Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala
    210                 215                 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225                 230                 235                 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
                245                 250                 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
```

260 265 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
275 280 285

Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
290 295 300

Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr
305 310 315 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
325 330 335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
340 345 350

Val Gly Gly Pro Gly His Lys Ala Arg Val Leu
355 360

<210> 393
<211> 271
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 393

Met Ser His Ile Gln Arg Glu Thr Ser Cys Ser Arg Pro Arg Leu Asn
1 5 10 15

Ser Asn Met Asp Ala Asp Leu Tyr Gly Tyr Lys Trp Ala Arg Asp Asn
20 25 30

Val Gly Gln Ser Gly Ala Thr Ile Tyr Arg Leu Tyr Gly Lys Pro Asp
35 40 45

Ala Pro Glu Leu Phe Leu Lys His Gly Lys Gly Ser Val Ala Asn Asp
50 55 60

Val Thr Asp Glu Met Val Arg Leu Asn Trp Leu Thr Glu Phe Met Pro
65 70 75 80

Leu Pro Thr Ile Lys His Phe Ile Arg Thr Pro Asp Asp Ala Trp Leu
85 90 95

Leu Thr Thr Ala Ile Pro Gly Lys Thr Ala Phe Gln Val Leu Glu Glu
100 105 110

Tyr Pro Asp Ser Gly Glu Asn Ile Val Asp Ala Leu Ala Val Phe Leu
115 120 125

```
Arg Arg Leu His Ser Ile Pro Val Cys Asn Cys Pro Phe Asn Ser Asp
    130                 135                 140

Arg Val Phe Arg Leu Ala Gln Ala Gln Ser Arg Met Asn Asn Gly Leu
145                 150                 155                 160

Val Asp Ala Ser Asp Phe Asp Asp Glu Arg Asn Gly Trp Pro Val Glu
                165                 170                 175

Gln Val Trp Lys Glu Met His Lys Leu Leu Pro Phe Ser Pro Asp Ser
            180                 185                 190

Val Val Thr His Gly Asp Phe Ser Leu Asp Asn Leu Ile Phe Asp Glu
        195                 200                 205

Gly Lys Leu Ile Gly Cys Ile Asp Val Gly Arg Val Gly Ile Ala Asp
    210                 215                 220

Arg Tyr Gln Asp Leu Ala Ile Leu Trp Asn Cys Leu Gly Glu Phe Ser
225                 230                 235                 240

Pro Ser Leu Gln Lys Arg Leu Phe Gln Lys Tyr Gly Ile Asp Asn Pro
                245                 250                 255

Asp Met Asn Lys Leu Gln Phe His Leu Met Leu Asp Glu Phe Phe
            260                 265                 270
```

<210> 394
<211> 5309
<212> DNA
<213> Artificial Sequence

<220>
<223> p0621 - vector based on HIV

<220>
<221> enhancer
<222> (345)..(605)
<223> enhancer

<220>
<221> misc_feature
<222> (606)..(833)
<223> CMV promoter

<220>
<221> TATA_signal
<222> (807)..(810)
<223> TATA

<220>
<221> CDS
<222> (929)..(2020)
<223> Gag short

<220>
<221> polyA_signal
<222> (2173)..(2375)
<223> BGH-PolyA (bovine growth hormone (bGH) polyadenylation signal)

<220>
<221> misc_feature
<222> (2462)..(2462)
<223> PI-SceI recognition site

<220>
<221> misc_feature
<222> (2708)..(3351)
<223> ColE1-Ori

<220>
<221> CDS
<222> (4025)..(4840)
<223> Kanamycin-r complement (4025..4840)

<220>
<221> misc_feature
<222> (5298)..(8)
<223> I-CeuI recognition sequence

<400> 394
ggtagcgaaa gctcagatct cccgatcccc tatggtgcac tctcagtaca atctgctctg 60

atgccgcata gttaagccag tatctgctcc ctgcttgtgt gttggaggtc gctgagtagt 120

gcgcgagcaa aatttaagct acaacaaggc aaggcttgac cgacaattgc atgaagaatc 180

tgcttagggt taggcgtttt gcgctgcttc gcgatgtacg ggccagatat acgcgttgac 240

attgattatt gactagttat taatagtaat caattacggg gtcattagtt catagcccat 300

atatggagtt ccgcgttaca taacttacgg taaatggccc gcctggctga ccgcccaacg 360

acccccgccc attgacgtca ataatgacgt atgttcccat agtaacgcca atagggactt 420

tccattgacg tcaatgggtg gagtatttac ggtaaactgc ccacttggca gtacatcaag 480

tgtatcatat gccaagtacg ccccctattg acgtcaatga cggtaaatgg cccgcctggc 540

attatgccca gtacatgacc ttatgggact ttcctacttg gcagtacatc tacgtattag 600

tcatcgctat taccatggtg atgcggtttt ggcagtacat caatgggcgt ggatagcggt 660

ttgactcacg gggatttcca agtctccacc ccattgacgt caatgggagt ttgttttggc 720

accaaaatca acgggacttt ccaaaatgtc gtaacaactc cgccccattg acgcaaatgg 780

gcggtaggcg tgtacggtgg gaggtctata taagcagagc tcgtttagtg aaccgtcaga 840

tcgcctggag acgccatcca cgctgttttg acctccatag aagacaccgg gaccgatcca 900

gcctccgcgg gcgcgcgtcg acagagag atg ggt gcg aga gcg tca gta tta 952
                              Met Gly Ala Arg Ala Ser Val Leu
                              1   5

agc ggg gga gaa tta gat cga tgg gaa aaa att cgg tta agg cca ggg 1000
Ser Gly Gly Glu Leu Asp Arg Trp Glu Lys Ile Arg Leu Arg Pro Gly
    10   15   20

gga aag aag aag tac aag cta aag cac atc gta tgg gca agc agg gag 1048
Gly Lys Lys Lys Tyr Lys Leu Lys His Ile Val Trp Ala Ser Arg Glu
25   30   35   40

cta gaa cga ttc gca gtt aat cct ggc ctg tta gaa aca tca gaa ggc 1096
Leu Glu Arg Phe Ala Val Asn Pro Gly Leu Leu Glu Thr Ser Glu Gly
                45   50   55

tgt aga caa ata ctg gga cag cta caa cca tcc ctt cag aca gga tca 1144

```
Cys Arg Gln Ile Leu Gly Gln Leu Gln Pro Ser Leu Gln Thr Gly Ser
            60                  65                  70

gag gag ctt cga tca cta tac aac aca gta gca acc ctc tat tgt gtg       1192
Glu Glu Leu Arg Ser Leu Tyr Asn Thr Val Ala Thr Leu Tyr Cys Val
        75                  80                  85

cac cag cgg atc gag atc aag gac acc aag gaa gct tta gac aag ata       1240
His Gln Arg Ile Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile
    90                  95                  100

gag gaa gag caa aac aag tcc aag aag aag gcc cag cag gca gca gct       1288
Glu Glu Glu Gln Asn Lys Ser Lys Lys Lys Ala Gln Gln Ala Ala Ala
105                 110                 115                 120

gac aca gga cac agc aat cag gtc agc caa aat tac cct ata gtg cag       1336
Asp Thr Gly His Ser Asn Gln Val Ser Gln Asn Tyr Pro Ile Val Gln
                125                 130                 135

aac atc cag ggg caa atg gta cat cag gcc ata tca cct aga act tta       1384
Asn Ile Gln Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu
            140                 145                 150

aat gca tgg gta aaa gta gta gaa gag aag gct ttc agc cca gaa gtg       1432
Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro Glu Val
        155                 160                 165

ata ccc atg ttt tca gca tta tca gaa gga gcc acc cca cag gac ctg       1480
Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala Thr Pro Gln Asp Leu
    170                 175                 180

aac acg atg ttg aac acc gtg ggg gga cat caa gca gcc atg caa atg       1528
Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala Met Gln Met
185                 190                 195                 200

tta aaa gag acc atc aat gag gaa gct gca gaa tgg gat aga gtg cat       1576
Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg Val His
                205                 210                 215

cca gtg cat gca ggg cct att gca cca ggc cag atg aga gaa cca agg       1624
Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln Met Arg Glu Pro Arg
            220                 225                 230

gga agt gac ata gca gga act act agt acc ctt cag gaa caa ata gga       1672
Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile Gly
        235                 240                 245

tgg atg aca aat aat cca cct atc cca gta gga gag atc tac aag agg       1720
Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly Glu Ile Tyr Lys Arg
    250                 255                 260

tgg ata atc ctg gga ttg aac aag atc gtg agg atg tat agc cct acc       1768
Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg Met Tyr Ser Pro Thr
265                 270                 275                 280

agc att ctg gac ata aga caa gga cca aaa gaa ccc ttt aga gac tat       1816
Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr
                285                 290                 295

gta gac cgg ttc tat aaa act cta aga gct gag caa gct tca cag gag       1864
Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu Gln Ala Ser Gln Glu
            300                 305                 310

gta aaa aat tgg atg aca gaa acc ttg ttg gtc caa aat gcg aac cca       1912
Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val Gln Asn Ala Asn Pro
        315                 320                 325

gat tgt aag acc atc ctg aag gct ctc ggc cca gcg gct aca cta gaa       1960
Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro Ala Ala Thr Leu Glu
```

```
    330                 335                 340

gaa atg atg aca gca tgt cag gga gta gga gga ccc ggc cat aag gca      2008
Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly Pro Gly His Lys Ala
345                 350                 355                 360

aga gtt ttg tag ggatccacta gttctagact cgaggggggg cccggtacct          2060
Arg Val Leu

ttaagaccaa tgacttacaa ggcagctgta gatcttagcc acttttaaa agaaaagggg     2120

ggactggaag ggctaattca ctcccaaaga agacaagata aaccgctgat cagcctcgac     2180

tgtgccttct agttgccagc catctgttgt ttgcccctcc cccgtgcctt ccttgaccct     2240

ggaaggtgcc actcccactg tcctttccta ataaaatgag gaaattgcat cgcattgtct     2300

gagtaggtgt cattctattc tgggggggtgg ggtggggcag gacagcaagg gggaggattg     2360

ggaagacaat agcaggcatg ctggggatgc ggtgggctct atggcttctg aggcggaaag     2420

aaccagcaga tctgcagatc tgaattcatc tatgtcgggt gcggagaaag aggtaatgaa     2480

atggcattat gggtattatg ggtctgcatt aatgaatcgg ccaacgcgcg gggagaggcg     2540

gtttgcgtat tgggcgctct tccgcttcct cgctcactga ctcgctgcgc tcggtcgttc     2600

ggctgcggcg agcggtatca gctcactcaa aggcggtaat acggttatcc acagaatcag     2660

gggataacgc aggaaagaac atgtgagcaa aaggccagca aaaggccagg aaccgtaaaa     2720

aggccgcgtt gctggcgttt ttccataggc tccgcccccc tgacgagcat cacaaaaatc     2780

gacgctcaag tcagaggtgg cgaaacccga caggactata aagataccag gcgtttcccc     2840

ctggaagctc cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga tacctgtccg     2900

cctttctccc ttcgggaagc gtggcgcttt ctcaatgctc acgctgtagg tatctcagtt     2960

cggtgtaggt cgttcgctcc aagctgggct gtgtgcacga acccccgtt cagcccgacc     3020

gctgcgcctt atccggtaac tatcgtcttg agtccaaccc ggtaagacac gacttatcgc     3080

cactggcagc agccactggt aacaggatta gcagagcgag gtatgtaggc ggtgctacag     3140

agttcttgaa gtggtggcct aactacggct acactagaag gacagtattt ggtatctgcg     3200

ctctgctgaa gccagttacc ttcggaaaaa gagttggtag ctcttgatcc ggcaaacaaa     3260

ccaccgctgg tagcggtggt ttttttgttt gcaagcagca gattacgcgc agaaaaaaag     3320

gatctcaaga agatcctttg atcttttcta cggggtctga cgctcagtgg aacgaaaact     3380

cacgttaagg gattttggtc atgagattat caaaaaggat cttcacctag atccttttga     3440

tcctccggcg ttcagcctgt gccacagccg acaggatggt gaccaccatt tgccccatat     3500

caccgtcggt actgatcccg tcgtcaataa accgaaccgc tacaccctga gcatcaaact     3560

cttttatcag ttggatcatg tcggcggtgt cgcggccaag acggtcgagc ttcttcacca     3620

gaatgacatc accttcctcc accttcatcc tcagcaaatc cagcccttcc cgatctgttg     3680

aactgccgga tgccttgtcg gtaaagatgc ggttagcttt tacccctgca tctttgagcg     3740

ctgaggtctg cctcgtgaag aaggtgttgc tgactcatac caggcctgaa tcgccccatc     3800

atccagccag aaagtgaggg agccacggtt gatgagagct ttgttgtagg tggaccagtt     3860
```

```
ggtgattttg aacttttgct ttgccacgga acggtctgcg ttgtcgggaa gatgcgtgat     3920

ctgatccttc aactcagcaa aagttcgatt tattcaacaa agccgccgtc ccgtcaagtc     3980

agcgtaatgc tctgccagtg ttacaaccaa ttaaccaatt ctga tta gaa aaa ctc      4036
                                                    Leu Glu Lys Leu
                                                        365

atc gag cat caa atg aaa ctg caa ttt att cat atc agg att atc aat       4084
Ile Glu His Gln Met Lys Leu Gln Phe Ile His Ile Arg Ile Ile Asn
        370                 375                 380

acc ata ttt ttg aaa aag ccg ttt ctg taa tga agg aga aaa ctc acc       4132
Thr Ile Phe Leu Lys Lys Pro Phe Leu         Arg Arg Lys Leu Thr
    385                 390                         395

gag gca gtt cca tag gat ggc aag atc ctg gta tcg gtc tgc gat tcc       4180
Glu Ala Val Pro     Asp Gly Lys Ile Leu Val Ser Val Cys Asp Ser
        400                     405                 410

gac tcg tcc aac atc aat aca acc tat taa ttt ccc ctc gtc aaa aat       4228
Asp Ser Ser Asn Ile Asn Thr Thr Tyr     Phe Pro Leu Val Lys Asn
        415                 420                 425

aag gtt atc aag tga gaa atc acc atg agt gac gac tga atc cgg tga       4276
Lys Val Ile Lys     Glu Ile Thr Met Ser Asp Asp     Ile Arg
        430                     435                     440

gaa tgg caa aag ctt atg cat ttc ttt cca gac ttg ttc aac agg cca       4324
Glu Trp Gln Lys Leu Met His Phe Phe Pro Asp Leu Phe Asn Arg Pro
                445                 450                 455

gcc att acg ctc gtc atc aaa atc act cgc atc aac caa acc gtt att       4372
Ala Ile Thr Leu Val Ile Lys Ile Thr Arg Ile Asn Gln Thr Val Ile
            460                 465                 470

cat tcg tga ttg cgc ctg agc gag acg aaa tac gcg atc gct gtt aaa       4420
His Ser     Leu Arg Leu Ser Glu Thr Lys Tyr Ala Ile Ala Val Lys
            475                 480                 485

agg aca att aca aac agg aat cga atg caa ccg gcg cag gaa cac tgc       4468
Arg Thr Ile Thr Asn Arg Asn Arg Met Gln Pro Ala Gln Glu His Cys
        490                 495                 500

cag cgc atc aac aat att ttc acc tga atc agg ata ttc ttc taa tac       4516
Gln Arg Ile Asn Asn Ile Phe Thr     Ile Arg Ile Phe Phe     Tyr
    505                 510                 515

ctg gaa tgc tgt ttt ccc ggg gat cgc agt ggt gag taa cca tgc atc       4564
Leu Glu Cys Cys Phe Pro Gly Asp Arg Ser Gly Glu     Pro Cys Ile
        520                 525                     530

atc agg agt acg gat aaa atg ctt gat ggt cgg aag agg cat aaa ttc       4612
Ile Arg Ser Thr Asp Lys Met Leu Asp Gly Arg Lys Arg His Lys Phe
        535                 540                 545

cgt cag cca gtt tag tct gac cat ctc atc tgt aac atc att ggc aac       4660
Arg Gln Pro Val     Ser Asp His Leu Ile Cys Asn Ile Ile Gly Asn
    550                 555                 560

gct acc ttt gcc atg ttt cag aaa caa ctc tgg cgc atc ggg ctt ccc       4708
Ala Thr Phe Ala Met Phe Gln Lys Gln Leu Trp Arg Ile Gly Leu Pro
    565                 570                 575

ata caa tcg ata gat tgt cgc acc tga ttg ccc gac att atc gcg agc       4756
Ile Gln Ser Ile Asp Cys Arg Thr     Leu Pro Asp Ile Ile Ala Ser
580                 585                     590
```

```
cca ttt ata ccc ata taa atc agc atc cat gtt gga att taa tcg cgg       4804
Pro Phe Ile Pro Ile     Ile Ser Ile His Val Gly Ile     Ser Arg
595                     600                 605

cct cga gca aga cgt ttc ccg ttg aat atg gct cat aacacccctt           4850
Pro Arg Ala Arg Arg Phe Pro Leu Asn Met Ala His
    610                 615                 620

gtattactgt ttatgtaagc agacagtttt attgttcatg atgatatatt tttatcttgt     4910

gcaatgtaac atcagagatt ttgagacaca acgtggcttt gttgaataaa tcgaactttt     4970

gctgagttga aggatcagat cacgcatctt cccgacaacg cagaccgttc cgtggcaaag     5030

caaaagttca aaatcaccaa ctggtccacc tacaacaaag ctctcatcaa ccgtggctcc     5090

ctcactttct ggctggatga tggggcgatt caggcctggt atgagtcagc aacaccttct     5150

tcacgaggca gacctcagcg ctagattatt gaagcattta tcagggttat tgtctcatga     5210

gcggatacat atttgaatgt atttagaaaa ataaacaaat aggggttccg cgcacatttc     5270

cccgaaaagt gccacctgac gtaactataa cggtcctaa                            5309
```

<210> 395
<211> 363
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 395

```
Met Gly Ala Arg Ala Ser Val Leu Ser Gly Gly Glu Leu Asp Arg Trp
1               5                   10                  15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys
            20                  25                  30

His Ile Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro
        35                  40                  45

Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
    50                  55                  60

Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
65                  70                  75                  80

Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
                85                  90                  95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
            100                 105                 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val
        115                 120                 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His
    130                 135                 140
```

```
Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
145                 150                 155                 160

Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
                165                 170                 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
            180                 185                 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
        195                 200                 205

Ala Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala
    210                 215                 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225                 230                 235                 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
                245                 250                 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
            260                 265                 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
        275                 280                 285

Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu
    290                 295                 300

Arg Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr
305                 310                 315                 320

Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
                325                 330                 335

Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
            340                 345                 350

Val Gly Gly Pro Gly His Lys Ala Arg Val Leu
        355                 360
```

<210> 396
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 396

```
Leu Glu Lys Leu Ile Glu His Gln Met Lys Leu Gln Phe Ile His Ile
```

1 5 10 15

Arg Ile Ile Asn Thr Ile Phe Leu Lys Lys Pro Phe Leu
20 25

<210> 397
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 397

Arg Arg Lys Leu Thr Glu Ala Val Pro
1 5

<210> 398
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 398

Asp Gly Lys Ile Leu Val Ser Val Cys Asp Ser Asp Ser Ser Asn Ile
1 5 10 15

Asn Thr Thr Tyr
20

<210> 399
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 399

Phe Pro Leu Val Lys Asn Lys Val Ile Lys
1 5 10

<210> 400
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 400

Glu Ile Thr Met Ser Asp Asp
1 5

<210> 401
<211> 34

<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 401

Glu Trp Gln Lys Leu Met His Phe Phe Pro Asp Leu Phe Asn Arg Pro
1 5 10 15

Ala Ile Thr Leu Val Ile Lys Ile Thr Arg Ile Asn Gln Thr Val Ile
20 25 30

His Ser

<210> 402
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 402

Leu Arg Leu Ser Glu Thr Lys Tyr Ala Ile Ala Val Lys Arg Thr Ile
1 5 10 15

Thr Asn Arg Asn Arg Met Gln Pro Ala Gln Glu His Cys Gln Arg Ile
20 25 30

Asn Asn Ile Phe Thr
35

<210> 403
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 403

Ile Arg Ile Phe Phe
1 5

<210> 404
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 404

Tyr Leu Glu Cys Cys Phe Pro Gly Asp Arg Ser Gly Glu
1 5 10

<210> 405
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 405

Pro Cys Ile Ile Arg Ser Thr Asp Lys Met Leu Asp Gly Arg Lys Arg
1 5 10 15

His Lys Phe Arg Gln Pro Val
20

<210> 406
<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 406

Ser Asp His Leu Ile Cys Asn Ile Ile Gly Asn Ala Thr Phe Ala Met
1 5 10 15

Phe Gln Lys Gln Leu Trp Arg Ile Gly Leu Pro Ile Gln Ser Ile Asp
20 25 30

Cys Arg Thr
35

<210> 407
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 407

Leu Pro Asp Ile Ile Ala Ser Pro Phe Ile Pro Ile
1 5 10

<210> 408
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 408

Ile Ser Ile His Val Gly Ile
1 5

<210> 409
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct

<400> 409

Ser Arg Pro Arg Ala Arg Arg Phe Pro Leu Asn Met Ala His
1 5 10

<210> 410
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> HIVgag short CD8 T cell epitope

<400> 410

Ala Met Gln Met Leu Lys Glu Thr Ile
1 5