SEQUENCE LISTING

<110> The Trustees of the University of Pennsylvania

<120> Simian E Adenoviruses SAdV-39, -25.2, -26, -30, -37, and -38

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Asn Ser His Met Leu Ala Thr Val His Val Ala Ser His Ala Arg Lys
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Pro Trp Pro Glu Phe Glu His Asn Val Met Thr Arg Cys Asn Met His
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ctggtactgc gcccggagaa gactggcgtg agcgacgacg cgacggttga cgtcctggat 8629

ctgacgcctc tgggtgaagg ccacgggacc cgtgagtttg aacctgaaag agagttcgac 8689

agaatcaatc tcggtatcgt tgacggcggc ctgccgcagg atctcttgca cgtcgcccga 8749

gttgtcctgg taggcgatct cggtcatgaa ctgctcgatc tcctcctcct gaaggtctcc 8809

gcggccggcg cgctcgacgg tggccgcgag gtcgttggag atgcggccca tgagctgcga 8869

gaaggcgttc atgccggcct cgttccagac gcggctgtag accacggctc cgtcggggtc 8929

gcgcgcgcgc atgaccacct gggcgaggtt gagctcgacg tggcgcgtga agaccgcgta 8989

gttgcagagg cgctggtaga ggtagttgag cgtggtggcg atgtgctcgg tgacgaagaa 9049

gtacatgatc cagcggcgga gcggcatctc gctgacgtcg cccagggctt ccaagcgctc 9109

catggcctcg tagaagtcca cggcgaagtt gaaaaactgg gagttgcgcg ccgagacggt 9169

caactcctcc tccagaagac ggatgagctc ggcgatggtg gcgcgcacct cgcgctcgaa 9229

ggccccgggg ggctcctctt cttccatctc ctcctcctct tcctcctcca ctaacatctc 9289

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gggcagacgg tcgatgaagc gctcgatggt ctccccgcgc cggcgacgca tggtctcggt 9409

gacggcgcgc ccgtcctcgc ggggccgcag cgtgaagacg ccgccgcgca tctccaggtg 9469

gccgccgggg gggcctccgt tgggcaggga gagggcgctg acgatgcatc ttatcaattg 9529

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ggcctgctgg atctgggtga gggtggtctg gaagtcgtcg aagtcgacga agcggtggta 10009

ggctccggtg ttgatggtgt aggagcagtt ggccatgacg gaccagttga cggtctggtg 10069

gccggggcgc acgagctcgt ggtacttgag gcgcgagtag gcgcgcgtgt cgaagatgta 10129

gtcgttgcag gtgcgcacga ggtactggta tccgacgagg aagtgcggcg gcggctggcg 10189

gtagagcggc catcgctcgg tggcgggggc gccgggcgcg aggtcctcga gcatgaggcg 10249

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gtggtagccg tagatgtacc tggacatcca ggtgatgccg gcggcggtgg tggaggcgcg    10309

cgggaactcg cggacgcggt tccagatgtt gcgcagcggc aggaagtagt tcatggtggc    10369

cgcggtctgg cccgtgaggc gcgcgcagtc gtggatgctc tagacatacg ggcaaaaacg    10429

aaagcggtca gcggctcgac tccgtggcct ggaggctaag cgaacgggtt gggctgcgcg    10489

tgtaccccgg ttcgaatctc gaatcaggct ggagccgcag ctaacgtggt actggcactc    10549

ccgtctcgac ccaagcctgc taacgaaacc tccaggatac ggaggcgggt cgtttttgg     10609

ccttggccgc tggtcatgaa aaactagtaa gcgcggaaag cggccgtccg cgatggctcg    10669

ctgccgtagt ctggagaaag aatcgccagg gttgcgttgc ggtgtgcccc ggttcgagcc    10729

tcagcgctcg gcgccggccg gattccgcgg ctaacgtggg cgtggctgcc ccgtcgtttc    10789

caagacccct tagccagccg acttctccag ttacggagcg agcccctctt tttcttgtgt    10849

ttttgccag atg cat ccc gta ctg cgg cag atg cgc ccc cac cct cca cca     10900
          Met His Pro Val Leu Arg Gln Met Arg Pro His Pro Pro Pro
                      650                 655                 660

caa ccg ccc cta ccg ccg cag cag cag caa cag ccg gcg ctt ctg ccc      10948
Gln Pro Pro Leu Pro Pro Gln Gln Gln Gln Pro Ala Leu Leu Pro
                665                 670                 675

ccg ccc cag cag cag cag cag cca gcc act acc gcg gcg gcc gcc gtg      10996
Pro Pro Gln Gln Gln Gln Gln Pro Ala Thr Thr Ala Ala Ala Ala Val
            680                 685                 690

agc gga gcc ggc gtt cag tat gac ctg gcc ttg gaa gag ggc gag ggg      11044
Ser Gly Ala Gly Val Gln Tyr Asp Leu Ala Leu Glu Glu Gly Glu Gly
        695                 700                 705

ctg gcg cgg ctg ggg gcg tcg tcg ccg gag cgg cac ccg cgc gtg cag      11092
Leu Ala Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln
    710                 715                 720

atg aaa agg gac gct cgc gag gcc tac gtg ccc aag cag aac ctg ttc      11140
Met Lys Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe
725                 730                 735                 740

aga gac agg agc ggc gag gag ccc gag gag atg cgc gcg gcc cgg ttc      11188
Arg Asp Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ala Arg Phe
                745                 750                 755

cac gcg ggg cgg gag ctg cgg cgc ggc ctg gac cga aag agg gtg ctg      11236
His Ala Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu
            760                 765                 770

agg gac gag gat ttc gag gcg gac gag ctg acg ggg atc agc ccc gcg      11284
Arg Asp Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala
        775                 780                 785

cgc gcg cac gtg gcc gcg gcc aac ctg gtc acg gcg tac gag cag acc      11332
Arg Ala His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr
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    790                 795                 800

gtg aag gag gag agc aac ttc caa aaa tcc ttc aac aac cac gtg cgc      11380
Val Lys Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg
805                 810                 815                 820

acc ctg atc gcg cgc gag gag gtg acc ctg ggc ctg atg cac ctg tgg      11428
Thr Leu Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp
                825                 830                 835

gac ctg ctg gag gcc atc gtg cag aac ccc acc agc aag ccg ctg acg      11476
Asp Leu Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr
            840                 845                 850

gcg cag ctg ttc ctg gtg gtg cag cat agt cgg gac aac gag gcg ttc      11524
Ala Gln Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Ala Phe
        855                 860                 865

agg gag gcg ctg ctg aat atc acc gag ccc gag ggc cgc tgg ctc ctg      11572
Arg Glu Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu
    870                 875                 880

gac ctg gtg aac att ctg cag agc atc gtg gtg cag gag cgc ggg ctg      11620
Asp Leu Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu
885                 890                 895                 900

ccg ctg tcc gag aag ctg gcg gcc atc aac ttc tcg gtg ctg agt ctg      11668
Pro Leu Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu
                905                 910                 915

ggc aag tac tac gct agg aag atc tac aag acc ccg tac gtg ccc ata      11716
Gly Lys Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile
            920                 925                 930

gac aag gag gtg aag atc gac ggg ttt tac atg cgc atg acc ctg aaa      11764
Asp Lys Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys
        935                 940                 945

gtg ctg acc ctg agc gac gat ctg ggg gtg tac cgc aac gac agg atg      11812
Val Leu Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met
    950                 955                 960

cac cgc gcg gtg agc gcc agc agg cgg cgc gag ctg agc gac cag gag      11860
His Arg Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu
965                 970                 975                 980

ctg atg cac agc ctg cag cgg gcc ctg acc ggg gcc ggg acc gag ggg      11908
Leu Met His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly
                985                 990                 995

gag agc tac ttt  gac atg ggc gcg gac  ctg cac tgg cag ccc  agc       11953
Glu Ser Tyr Phe  Asp Met Gly Ala Asp  Leu His Trp Gln Pro  Ser
            1000                1005                1010

cgc cgg gcc ttg  gaa gcg gcg gca gga  ccc tac gta gaa gag  gtg       11998
Arg Arg Ala Leu  Glu Ala Ala Ala Gly  Pro Tyr Val Glu Glu  Val
            1015                1020                1025

gac gat gag gtg  gac gag gag ggc gag  tac ctg gaa gac tgatggcgcg     12047
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Asp Asp Glu Val  Asp Glu Glu Gly Glu  Tyr Leu Glu Asp
            1030                1035

accgtatttt tgctag atg  caa caa cag cca cct  cct gat ccc gcg atg      12096
                  Met  Gln Gln Gln Pro Pro  Pro Asp Pro Ala Met
                  1040                1045                1050

cgg gcg gcg ctg cag  agc cag ccg tcc ggc  att aac tcc tcg gac        12141
Arg Ala Ala Leu Gln  Ser Gln Pro Ser Gly  Ile Asn Ser Ser Asp
                1055                1060                1065

gat tgg acc cag gcc  atg caa cgc atc atg  gcg ctg acg acc cgc        12186
Asp Trp Thr Gln Ala  Met Gln Arg Ile Met  Ala Leu Thr Thr Arg
                1070                1075                1080

aac ccc gaa gcc ttt  aga cag cag ccc cag  gcc aac cgg ctc tcg        12231
Asn Pro Glu Ala Phe  Arg Gln Gln Pro Gln  Ala Asn Arg Leu Ser
                1085                1090                1095

gcc atc ctg gag gcc  gtg gtg ccc tcg cgc  tcc aac ccc acg cac        12276
Ala Ile Leu Glu Ala  Val Val Pro Ser Arg  Ser Asn Pro Thr His
                1100                1105                1110

gag aag gtc ctg gcc  atc gtg aac gcg ctg  gtg gag aac aag gcc        12321
Glu Lys Val Leu Ala  Ile Val Asn Ala Leu  Val Glu Asn Lys Ala
                1115                1120                1125

atc cgc ggc gac gag  gcc ggc ctg gtg tac  aac gcg ctg ctg gag        12366
Ile Arg Gly Asp Glu  Ala Gly Leu Val Tyr  Asn Ala Leu Leu Glu
                1130                1135                1140

cgc gtg gcc cgc tac  aac agc acc aac gtg  cag acc aac ctg gac        12411
Arg Val Ala Arg Tyr  Asn Ser Thr Asn Val  Gln Thr Asn Leu Asp
                1145                1150                1155

cgc atg gtg acc gac  gtg cgc gag gcc gtg  gcc cag cgc gag cgg        12456
Arg Met Val Thr Asp  Val Arg Glu Ala Val  Ala Gln Arg Glu Arg
                1160                1165                1170

ttc cac cgc gag tcc  aac ctg gga tcc ctg  gtg gcg ctg aac gcc        12501
Phe His Arg Glu Ser  Asn Leu Gly Ser Leu  Val Ala Leu Asn Ala
                1175                1180                1185

ttc ctc agc acc cag  ccc gcc aac gtg ccc  cgg ggc cag gag gac        12546
Phe Leu Ser Thr Gln  Pro Ala Asn Val Pro  Arg Gly Gln Glu Asp
                1190                1195                1200

tac acc aac ttc atc  agc gcc ctg cgc ctg  atg gtg acc gag gtg        12591
Tyr Thr Asn Phe Ile  Ser Ala Leu Arg Leu  Met Val Thr Glu Val
                1205                1210                1215

ccc cag agc gag gtg  tac cag tcc ggg ccg  gac tac ttc ttc cag        12636
Pro Gln Ser Glu Val  Tyr Gln Ser Gly Pro  Asp Tyr Phe Phe Gln
                1220                1225                1230

acc agt cgc cag ggc  ttg cag acc gtg aac  ctg agc cag gcg ttc        12681
Thr Ser Arg Gln Gly  Leu Gln Thr Val Asn  Leu Ser Gln Ala Phe
                1235                1240                1245
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aag aac ttg cag ggc  ctg tgg ggc gtg cag  gcc ccg gtc ggg gac        12726
Lys Asn Leu Gln Gly  Leu Trp Gly Val Gln  Ala Pro Val Gly Asp
                1250                1255                1260

cgc gcg acg gtg tcg  agc ctg ctg acg ccg  aac tcg cgc ctg ctg        12771
Arg Ala Thr Val Ser  Ser Leu Leu Thr Pro  Asn Ser Arg Leu Leu
                1265                1270                1275

ctg ctg ctg gtg gcc  ccc ttc acg gac agc  ggc agc atc aac cgc        12816
Leu Leu Leu Val Ala  Pro Phe Thr Asp Ser  Gly Ser Ile Asn Arg
                1280                1285                1290

aac tcg tac ctg ggc  tac ctg att aac ctg  tac cgc gag gcc atc        12861
Asn Ser Tyr Leu Gly  Tyr Leu Ile Asn Leu  Tyr Arg Glu Ala Ile
                1295                1300                1305

ggc cag gcg cac gtg  gac gag cag acc tac  cag gag atc acc cac        12906
Gly Gln Ala His Val  Asp Glu Gln Thr Tyr  Gln Glu Ile Thr His
                1310                1315                1320

gtg agc cgc gcc ctg  ggc cag gac gac ccg  ggc aat ctg gaa gcc        12951
Val Ser Arg Ala Leu  Gly Gln Asp Asp Pro  Gly Asn Leu Glu Ala
                1325                1330                1335

acc ctg aac ttt ttg  ctg acc aac cgg tcg  cag aaa atc ccg ccc        12996
Thr Leu Asn Phe Leu  Leu Thr Asn Arg Ser  Gln Lys Ile Pro Pro
                1340                1345                1350

cag tac gcc ctc agc  gcc gag gag gag cgc  att ctg cga tac gtg        13041
Gln Tyr Ala Leu Ser  Ala Glu Glu Glu Arg  Ile Leu Arg Tyr Val
                1355                1360                1365

cag cag agc gtg ggc  ctg ttc ctg atg cag  gag ggg gcc acc ccc        13086
Gln Gln Ser Val Gly  Leu Phe Leu Met Gln  Glu Gly Ala Thr Pro
                1370                1375                1380

agc gcc gcg ctc gac  atg acc gcg cgc aac  atg gag ccc agc atg        13131
Ser Ala Ala Leu Asp  Met Thr Ala Arg Asn  Met Glu Pro Ser Met
                1385                1390                1395

tac gcc agc aac cgc  ccg ttc atc aat aaa  ctg atg gac tac ttg        13176
Tyr Ala Ser Asn Arg  Pro Phe Ile Asn Lys  Leu Met Asp Tyr Leu
                1400                1405                1410

cat cgg gcg gcc gcc  atg aac tcg gac tat  ttc acc aac gcc atc        13221
His Arg Ala Ala Ala  Met Asn Ser Asp Tyr  Phe Thr Asn Ala Ile
                1415                1420                1425

ctg aat ccc cac tgg  ctc ccg ccg ccg ggg  ttt tac acg ggc gag        13266
Leu Asn Pro His Trp  Leu Pro Pro Pro Gly  Phe Tyr Thr Gly Glu
                1430                1435                1440

tac gac atg ccc gac  ccc aat gac ggg ttc  ctg tgg gac gat gtg        13311
Tyr Asp Met Pro Asp  Pro Asn Asp Gly Phe  Leu Trp Asp Asp Val
                1445                1450                1455

gac agc agc gtg ttc  tcc ccc cga ccg ggt  gct aac gag cgc ccc        13356
Asp Ser Ser Val Phe  Ser Pro Arg Pro Gly  Ala Asn Glu Arg Pro
                1460                1465                1470
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ttg tgg aag aag gaa  ggc agc gac cga cgc  ccg tcc tcg gcg ctg        13401
Leu Trp Lys Lys Glu  Gly Ser Asp Arg Arg  Pro Ser Ser Ala Leu
                1475                1480                1485

tcc ggc cgc gag ggt  gct gcc gcg gcg gtg  ccc gag gcc gcc agt        13446
Ser Gly Arg Glu Gly  Ala Ala Ala Ala Val  Pro Glu Ala Ala Ser
                1490                1495                1500

cct ttc ccg agc ttg  ccc ttc tcg ctg aac  agt att cgc agc agc        13491
Pro Phe Pro Ser Leu  Pro Phe Ser Leu Asn  Ser Ile Arg Ser Ser
                1505                1510                1515

gag ctg ggc agg atc  acg cgc ccg cgt ttg  ctg ggc gag gag gag        13536
Glu Leu Gly Arg Ile  Thr Arg Pro Arg Leu  Leu Gly Glu Glu Glu
                1520                1525                1530

tac ttg aat gac tcg  ctg ttg aga ccc gag  cgg gag aag aac ttc        13581
Tyr Leu Asn Asp Ser  Leu Leu Arg Pro Glu  Arg Glu Lys Asn Phe
                1535                1540                1545

ccc aat aac ggg ata  gag agc ctg gtg gac  aag atg agc cgc tgg        13626
Pro Asn Asn Gly Ile  Glu Ser Leu Val Asp  Lys Met Ser Arg Trp
                1550                1555                1560

aag acg tac gcg cag  gag cac agg gac gat  ccg tcg cag ggg gcc        13671
Lys Thr Tyr Ala Gln  Glu His Arg Asp Asp  Pro Ser Gln Gly Ala
                1565                1570                1575

acg agc cgg ggc agc  gcc gcc cgt aaa cgc  cgg tgg cac gac agg        13716
Thr Ser Arg Gly Ser  Ala Ala Arg Lys Arg  Arg Trp His Asp Arg
                1580                1585                1590

cag cgg gga ctg atg  tgg gac gat gag gat  tcc gcc gac gac agc        13761
Gln Arg Gly Leu Met  Trp Asp Asp Glu Asp  Ser Ala Asp Asp Ser
                1595                1600                1605

agc gtg ttg gac ttg  ggt ggg agt ggt ggt  aac ccg ttc gct cac        13806
Ser Val Leu Asp Leu  Gly Gly Ser Gly Gly  Asn Pro Phe Ala His
                1610                1615                1620

ctg cgc ccc cgc atc  ggg cgc atg atg taagaaaccg aaaataaatg          13853
Leu Arg Pro Arg Ile  Gly Arg Met Met
                1625

atactcacca aggccatggc gaccagcgtg cgttcgtttc ttctctgttg ttgtatctag   13913

t atg  atg agg cgt gcg tac  ccg gag ggt cct cct  ccc tcg tac gag     13959
  Met  Met Arg Arg Ala Tyr  Pro Glu Gly Pro Pro  Pro Ser Tyr Glu
  1630                1635                1640

agc  gtg atg cag cag gcg  atg gcg gcg gcg gcg  atg cag ccc ccg      14004
Ser  Val Met Gln Gln Ala  Met Ala Ala Ala Ala  Met Gln Pro Pro
1645                1650                1655

ctg  gag gct cct tac gtg  ccc ccg cgg tac ctg  gcg cct acg gag      14049
Leu  Glu Ala Pro Tyr Val  Pro Pro Arg Tyr Leu  Ala Pro Thr Glu
1660                1665                1670
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ggg  cgg aac agc att cgt  tac tcg gag ctg gca  ccc ttg tac gat       14094
Gly  Arg Asn Ser Ile Arg  Tyr Ser Glu Leu Ala  Pro Leu Tyr Asp
1675                1680                1685

acc  acc cgg ttg tac ctg  gtg gac aac aag tcg  gcg gac atc gcc       14139
Thr  Thr Arg Leu Tyr Leu  Val Asp Asn Lys Ser  Ala Asp Ile Ala
1690                1695                1700

tcg  ctg aac tac cag aac  gac cac agc aac ttc  ctg acc acc gtg       14184
Ser  Leu Asn Tyr Gln Asn  Asp His Ser Asn Phe  Leu Thr Thr Val
1705                1710                1715

gtg  cag aac aat gac ttc  acc ccc acg gag gcc  agc acc cag acc       14229
Val  Gln Asn Asn Asp Phe  Thr Pro Thr Glu Ala  Ser Thr Gln Thr
1720                1725                1730

atc  aac ttt gac gag cgc  tcg cgg tgg ggc ggc  cag ctg aaa acc       14274
Ile  Asn Phe Asp Glu Arg  Ser Arg Trp Gly Gly  Gln Leu Lys Thr
1735                1740                1745

atc  atg cac acc aac atg  ccc aac gtg aac gag  ttc atg tac agc       14319
Ile  Met His Thr Asn Met  Pro Asn Val Asn Glu  Phe Met Tyr Ser
1750                1755                1760

aac  aag ttc aag gcg cgg  gtc atg gtc tcc cgc  aag acc ccc aac       14364
Asn  Lys Phe Lys Ala Arg  Val Met Val Ser Arg  Lys Thr Pro Asn
1765                1770                1775

ggg  gtg gga gag gat tat  gat ggt agt cag gat  gag ctg aaa tac       14409
Gly  Val Gly Glu Asp Tyr  Asp Gly Ser Gln Asp  Glu Leu Lys Tyr
1780                1785                1790

gaa  tgg gtg gag ttt gag  ctg ccc gaa ggc aac  ttc tcg gtg acc       14454
Glu  Trp Val Glu Phe Glu  Leu Pro Glu Gly Asn  Phe Ser Val Thr
1795                1800                1805

atg  acc atc gac ctg atg  aac aac gcc atc atc  gac aat tac ttg       14499
Met  Thr Ile Asp Leu Met  Asn Asn Ala Ile Ile  Asp Asn Tyr Leu
1810                1815                1820

gcg  gtg ggg cgg cag aac  ggg gtc ctg gag agc  gat atc ggc gtg       14544
Ala  Val Gly Arg Gln Asn  Gly Val Leu Glu Ser  Asp Ile Gly Val
1825                1830                1835

aag  ttc gac act agg aac  ttc agg ctg ggg tgg  gac ccc gtg acc       14589
Lys  Phe Asp Thr Arg Asn  Phe Arg Leu Gly Trp  Asp Pro Val Thr
1840                1845                1850

gag  ctg gtc atg ccc ggg  gtg tac acc aac gag  gcc ttc cat ccc       14634
Glu  Leu Val Met Pro Gly  Val Tyr Thr Asn Glu  Ala Phe His Pro
1855                1860                1865

gat  att gtc ttg ctg ccc  ggc tgc ggg gtg gac  ttc acc gag agc       14679
Asp  Ile Val Leu Leu Pro  Gly Cys Gly Val Asp  Phe Thr Glu Ser
1870                1875                1880

cgc  ctc agc aac ctg ctg  ggc att cgc aag agg  cag cca ttc cag       14724
Arg  Leu Ser Asn Leu Leu  Gly Ile Arg Lys Arg  Gln Pro Phe Gln
1885                1890                1895
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gag  ggt ttc cag atc atg  tac gag gat ctg gag  ggg ggc aac atc       14769
Glu  Gly Phe Gln Ile Met  Tyr Glu Asp Leu Glu  Gly Gly Asn Ile
1900                 1905                 1910

ccc  gca ctc ctg gat gtc  gac gcc tat gag aaa  agc aag gag gaa       14814
Pro  Ala Leu Leu Asp Val  Asp Ala Tyr Glu Lys  Ser Lys Glu Glu
1915                 1920                 1925

gca  gca gct gag gca acc  gca gcc gta gcc acc  gcc tct acc gag       14859
Ala  Ala Ala Glu Ala Thr  Ala Ala Val Ala Thr  Ala Ser Thr Glu
1930                 1935                 1940

gtc  agg ggc gat aat ttt  gcc agc cct gca gca  gtg gca gcg gcc       14904
Val  Arg Gly Asp Asn Phe  Ala Ser Pro Ala Ala  Val Ala Ala Ala
1945                 1950                 1955

gag  gcg gct gaa acc gaa  agt aag ata gtc att  cag ccg gtg gag       14949
Glu  Ala Ala Glu Thr Glu  Ser Lys Ile Val Ile  Gln Pro Val Glu
1960                 1965                 1970

aag  gat agc aag aac agg  agc tac aac gta cta  ccg gac aag ata       14994
Lys  Asp Ser Lys Asn Arg  Ser Tyr Asn Val Leu  Pro Asp Lys Ile
1975                 1980                 1985

aac  acc gcc tac cgc agc  tgg tac ctg gcc tac  aac tat ggc gac       15039
Asn  Thr Ala Tyr Arg Ser  Trp Tyr Leu Ala Tyr  Asn Tyr Gly Asp
1990                 1995                 2000

ccc  gag aag ggc gtg cgc  tcc tgg acg ctg ctc  acc acc tcg gac       15084
Pro  Glu Lys Gly Val Arg  Ser Trp Thr Leu Leu  Thr Thr Ser Asp
2005                 2010                 2015

gtc  acc tgc ggc gtg gag  caa gtc tac tgg tcg  ctg ccc gac atg       15129
Val  Thr Cys Gly Val Glu  Gln Val Tyr Trp Ser  Leu Pro Asp Met
2020                 2025                 2030

atg  caa gac ccg gtc acc  ttc cgc tcc acg cgt  caa gtt agc aac       15174
Met  Gln Asp Pro Val Thr  Phe Arg Ser Thr Arg  Gln Val Ser Asn
2035                 2040                 2045

tac  ccg gtg gtg ggc gcc  gag ctc ctg ccc gtc  tac tcc aag agc       15219
Tyr  Pro Val Val Gly Ala  Glu Leu Leu Pro Val  Tyr Ser Lys Ser
2050                 2055                 2060

ttc  ttc aac gag cag gcc  gtc tac tcg cag cag  ctg cgc gcc ttc       15264
Phe  Phe Asn Glu Gln Ala  Val Tyr Ser Gln Gln  Leu Arg Ala Phe
2065                 2070                 2075

acc  tcg ctc acg cac gtc  ttc aac cgc ttt ccc  gag aac cag atc       15309
Thr  Ser Leu Thr His Val  Phe Asn Arg Phe Pro  Glu Asn Gln Ile
2080                 2085                 2090

ctc  gtc cgc ccg ccc gcg  ccc acc att acc acc  gtc agt gaa aac       15354
Leu  Val Arg Pro Pro Ala  Pro Thr Ile Thr Thr  Val Ser Glu Asn
2095                 2100                 2105

gtt  cct gct ctc aca gat  cac ggg acc ctg ccg  ctg cgc agc agt       15399
Val  Pro Ala Leu Thr Asp  His Gly Thr Leu Pro  Leu Arg Ser Ser
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2110                2115                2120

atc  cgg gga gtc cag cgc  gtg acc gtt act gac  gcc aga cgc cgc      15444
Ile  Arg Gly Val Gln Arg  Val Thr Val Thr Asp  Ala Arg Arg Arg
2125                2130                2135

acc  tgc ccc tac gtc tac  aag gcc ctg ggc ata  gtc gcg ccg cgc      15489
Thr  Cys Pro Tyr Val Tyr  Lys Ala Leu Gly Ile  Val Ala Pro Arg
2140                2145                2150

gtc  ctc tcg agc cgc acc  ttc taaaaa atg tcc att ctc  atc tcg ccc   15537
Val  Leu Ser Ser Arg Thr  Phe        Met Ser Ile Leu  Ile Ser Pro
2155                2160                     2165

agt aat  aac acc ggt tgg ggc  ctg cgc gcg ccc agc  aag atg tac      15582
Ser Asn  Asn Thr Gly Trp Gly  Leu Arg Ala Pro Ser  Lys Met Tyr
    2170                2175                2180

gga ggc  gct cgc caa cgc tcc  acg caa cac ccc gtg  cgc gtg cgc      15627
Gly Gly  Ala Arg Gln Arg Ser  Thr Gln His Pro Val  Arg Val Arg
    2185                2190                2195

ggg cac  ttc cgc gct ccc tgg  ggc gcc ctc aag ggc  cgc gtg cgc      15672
Gly His  Phe Arg Ala Pro Trp  Gly Ala Leu Lys Gly  Arg Val Arg
    2200                2205                2210

tcg cgc  acc acc gtc gac gac  gtg atc gac cag gtg  gtg gcc gac      15717
Ser Arg  Thr Thr Val Asp Asp  Val Ile Asp Gln Val  Val Ala Asp
    2215                2220                2225

gcg cgc  aac tac acg ccc gcc  gcc gcg ccc gcc tcc  acc gtg gac      15762
Ala Arg  Asn Tyr Thr Pro Ala  Ala Ala Pro Ala Ser  Thr Val Asp
    2230                2235                2240

gcc gtc  atc gac agc gtg gtg  gcc gac gcg cgc cgg  tac gcc cgc      15807
Ala Val  Ile Asp Ser Val Val  Ala Asp Ala Arg Arg  Tyr Ala Arg
    2245                2250                2255

gcc aag  agc cgg cgg cgg cgc  atc gcc cgg cgg cac  cgg agc acc      15852
Ala Lys  Ser Arg Arg Arg Arg  Ile Ala Arg Arg His  Arg Ser Thr
    2260                2265                2270

ccc gcc  atg cgc gcg gcg cga  gcc ttg ctg cgc agg  gcc agg cgc      15897
Pro Ala  Met Arg Ala Ala Arg  Ala Leu Leu Arg Arg  Ala Arg Arg
    2275                2280                2285

acg gga  cgc agg gcc atg ctc  agg gcg gcc aga cgc  gcg gct tca      15942
Thr Gly  Arg Arg Ala Met Leu  Arg Ala Ala Arg Arg  Ala Ala Ser
    2290                2295                2300

ggc gcc  agc gcc ggc agg acc  cgg aga cgc gcg gcc  acg gcg gcg      15987
Gly Ala  Ser Ala Gly Arg Thr  Arg Arg Arg Ala Ala  Thr Ala Ala
    2305                2310                2315

gca gcg  gcc atc gcc agc atg  tcc cgc ccg cgg cga  ggg aac gtg      16032
Ala Ala  Ala Ile Ala Ser Met  Ser Arg Pro Arg Arg  Gly Asn Val
    2320                2325                2330

tac tgg  gtg cgc gac gcc gcc  acc ggt gtg cgc gtg  ccc gtg cgc      16077
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Tyr Trp  Val Arg Asp Ala Ala  Thr Gly Val Arg Val  Pro Val Arg
    2335                2340                2345

acc cgc  ccc cct cgc act tgaagatgtt cacttcgcga tgttgatgtg          16125
Thr Arg  Pro Pro Arg Thr
    2350

tcccagcggc gagg atg  tcc aag cgc aaa ttc  aag gaa gag atg ctc      16172
                Met  Ser Lys Arg Lys Phe  Lys Glu Glu Met Leu
                2355                2360                2365

cag gtc atc gcg cct  gag atc tac ggc ccc  gcg gcg gcg gtg aag      16217
Gln Val Ile Ala Pro  Glu Ile Tyr Gly Pro  Ala Ala Ala Val Lys
                2370                2375                2380

gag gaa aga aag ccc  cgc aaa ctg aag cgg  gtc aaa aag gac aaa      16262
Glu Glu Arg Lys Pro  Arg Lys Leu Lys Arg  Val Lys Lys Asp Lys
                2385                2390                2395

aag gag gag gaa gat  gac gga ctg gtg gag  ttt gtg cgc gag ttc      16307
Lys Glu Glu Glu Asp  Asp Gly Leu Val Glu  Phe Val Arg Glu Phe
                2400                2405                2410

gcc ccc cgg cgg cgc  gtg cag tgg cgc ggg  cgg aag gtg cag ccg      16352
Ala Pro Arg Arg Arg  Val Gln Trp Arg Gly  Arg Lys Val Gln Pro
                2415                2420                2425

gtg ctg aga ccc ggc  acc acc gtg gtc ttc  acg ccc ggc gag cgc      16397
Val Leu Arg Pro Gly  Thr Thr Val Val Phe  Thr Pro Gly Glu Arg
                2430                2435                2440

tcc ggc acc gct tcc  aag cgc tcc tac gac  gag gtg tac ggg gat      16442
Ser Gly Thr Ala Ser  Lys Arg Ser Tyr Asp  Glu Val Tyr Gly Asp
                2445                2450                2455

gat gat att ctg gag  cag gcg gcc gag cgc  ctg ggc gag ttt gct      16487
Asp Asp Ile Leu Glu  Gln Ala Ala Glu Arg  Leu Gly Glu Phe Ala
                2460                2465                2470

tac ggc aag cgc agc  cgc tcc gcg ctg aag  gaa gag gcg gtg tcc      16532
Tyr Gly Lys Arg Ser  Arg Ser Ala Leu Lys  Glu Glu Ala Val Ser
                2475                2480                2485

atc ccg ctg gac cac  ggc aac ccc acg ccg  agc ctc aag ccc gtg      16577
Ile Pro Leu Asp His  Gly Asn Pro Thr Pro  Ser Leu Lys Pro Val
                2490                2495                2500

acc ctg cag cag gtg  ctg ccg agc gcg gcg  ccg cga agg ggg ttc      16622
Thr Leu Gln Gln Val  Leu Pro Ser Ala Ala  Pro Arg Arg Gly Phe
                2505                2510                2515

aag cgc gag ggc gag  gat ctg tat ccc acc  atg cag ctg atg gtg      16667
Lys Arg Glu Gly Glu  Asp Leu Tyr Pro Thr  Met Gln Leu Met Val
                2520                2525                2530

ccc aaa cgc cag aag  ctg gaa gac gtg ctg  gaa acc atg aag gtg      16712
Pro Lys Arg Gln Lys  Leu Glu Asp Val Leu  Glu Thr Met Lys Val
                2535                2540                2545
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gac ccg gac gtg cag  ccc gag gtc aag gtg  cgg ccc atc aag cag        16757
Asp Pro Asp Val Gln  Pro Glu Val Lys Val  Arg Pro Ile Lys Gln
                2550                2555                2560

gtg gcc ccg ggt ctg  ggc gtg cag acc gtg  gac atc aag atc ccc        16802
Val Ala Pro Gly Leu  Gly Val Gln Thr Val  Asp Ile Lys Ile Pro
                2565                2570                2575

acg gag ccc atg gaa  acg cag acc gag ccc  atg atc aag ccc agt        16847
Thr Glu Pro Met Glu  Thr Gln Thr Glu Pro  Met Ile Lys Pro Ser
                2580                2585                2590

acc agc acc atg gag  gtg cag acg gat ccc  tgg atg cca gcc gcc        16892
Thr Ser Thr Met Glu  Val Gln Thr Asp Pro  Trp Met Pro Ala Ala
                2595                2600                2605

ccc acc agc agc cga  aga ccc cgg cgc aag  tac ggc gcg gcc agc        16937
Pro Thr Ser Ser Arg  Arg Pro Arg Arg Lys  Tyr Gly Ala Ala Ser
                2610                2615                2620

ctg ctg atg ccc aac  tac gcg ctg cat cct  tcc atc atc ccc acg        16982
Leu Leu Met Pro Asn  Tyr Ala Leu His Pro  Ser Ile Ile Pro Thr
                2625                2630                2635

ccg ggc tac cgc ggc  acg cgc ttc tac cgc  ggt cat aca acc agc        17027
Pro Gly Tyr Arg Gly  Thr Arg Phe Tyr Arg  Gly His Thr Thr Ser
                2640                2645                2650

tcc cgc cgc cgc aag  acc acc acc cgc cgc  cgt cgt cgc agc cgc        17072
Ser Arg Arg Arg Lys  Thr Thr Thr Arg Arg  Arg Arg Arg Ser Arg
                2655                2660                2665

cgc agc agc acc gcg  act tcc gcc gcc gcc  ctg gtg cgg aga gtg        17117
Arg Ser Ser Thr Ala  Thr Ser Ala Ala Ala  Leu Val Arg Arg Val
                2670                2675                2680

tac cgc agc ggg cgc  gag cct ctg acc ctg  ccg cgc gcg cgc tac        17162
Tyr Arg Ser Gly Arg  Glu Pro Leu Thr Leu  Pro Arg Ala Arg Tyr
                2685                2690                2695

cac ccg agc atc gcc  att taactctgcc gtcgcctcct tgcagat atg gcc        17213
His Pro Ser Ile Ala  Ile                              Met Ala
                2700

ctc aca  tgc cgc ctc cgc gtc  ccc att acg ggc tac  cga gga aga        17258
Leu Thr  Cys Arg Leu Arg Val  Pro Ile Thr Gly Tyr  Arg Gly Arg
    2705                2710                2715

aag ccg  cgc cgt aga agg ctg  gcg ggg aac ggg atg  cgt cgc cac        17303
Lys Pro  Arg Arg Arg Arg Leu  Ala Gly Asn Gly Met  Arg Arg His
    2720                2725                2730

cac cac  cgg cgg cgg cgc gcc  atc agc aag cgg ttg  ggg gga ggc        17348
His His  Arg Arg Arg Arg Ala  Ile Ser Lys Arg Leu  Gly Gly Gly
    2735                2740                2745

ttc ctg  ccc gcg ctg atc ccc  atc atc gcc gcg gcg  atc ggg gcg        17393
Phe Leu  Pro Ala Leu Ile Pro  Ile Ile Ala Ala Ala  Ile Gly Ala
    2750                2755                2760
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atc ccc  ggc att gct tcc gtg  gcg gtg cag gcc tct  cag cgc cac       17438
Ile Pro  Gly Ile Ala Ser Val  Ala Val Gln Ala Ser  Gln Arg His
    2765                2770                2775

tgagacacac ttggaaacat cttgtaataa acca atg gac  tct gac gct cct       17490
                                       Met Asp  Ser Asp Ala Pro
                                            2780

ggt  cct gtg atg tgt ttt  cgt aga cag atg gaa  gac atc aat ttt       17535
Gly  Pro Val Met Cys Phe  Arg Arg Gln Met Glu  Asp Ile Asn Phe
2785                2790                2795

tcg  tcc ctg gct ccg cga  cac ggc acg cgg ccg  ttc atg ggc acc       17580
Ser  Ser Leu Ala Pro Arg  His Gly Thr Arg Pro  Phe Met Gly Thr
2800                2805                2810

tgg  agc gac atc ggc acc  agc caa ctg aac ggg  ggc gcc ttc aat       17625
Trp  Ser Asp Ile Gly Thr  Ser Gln Leu Asn Gly  Gly Ala Phe Asn
2815                2820                2825

tgg  agc agt ctc tgg agc  ggg ctt aag aat ttc  ggg tcc acg ctt       17670
Trp  Ser Ser Leu Trp Ser  Gly Leu Lys Asn Phe  Gly Ser Thr Leu
2830                2835                2840

aaa  acc tat ggc agc aag  gcg tgg aac agc acc  aca ggg cag gcg       17715
Lys  Thr Tyr Gly Ser Lys  Ala Trp Asn Ser Thr  Thr Gly Gln Ala
2845                2850                2855

ctg  agg gat aag ctg aaa  gag cag aac ttc cag  cag aag gtg gtc       17760
Leu  Arg Asp Lys Leu Lys  Glu Gln Asn Phe Gln  Gln Lys Val Val
2860                2865                2870

gat  ggg ctc gcc tcg ggc  atc aac ggg gtg gtg  gac ctg gcc aac       17805
Asp  Gly Leu Ala Ser Gly  Ile Asn Gly Val Val  Asp Leu Ala Asn
2875                2880                2885

cag  gcc gtg cag cgg cag  atc aac agc cgc ctg  gac ccg gtg ccg       17850
Gln  Ala Val Gln Arg Gln  Ile Asn Ser Arg Leu  Asp Pro Val Pro
2890                2895                2900

ccc  gcc ggc tcc gtg gag  atg ccg cag gtg gag  gag gag ctg cct       17895
Pro  Ala Gly Ser Val Glu  Met Pro Gln Val Glu  Glu Glu Leu Pro
2905                2910                2915

ccc  ctg gac aag cgg ggc  gag aag cga ccc cgc  ccc gac gcg gag       17940
Pro  Leu Asp Lys Arg Gly  Glu Lys Arg Pro Arg  Pro Asp Ala Glu
2920                2925                2930

gag  acg ctg ctg acg cac  acg gac gag ccg ccc  ccg tac gag gag       17985
Glu  Thr Leu Leu Thr His  Thr Asp Glu Pro Pro  Pro Tyr Glu Glu
2935                2940                2945

gcg  gtg aaa ctg ggt ctg  ccc acc acg cgg ccc  atc gcg ccc ctg       18030
Ala  Val Lys Leu Gly Leu  Pro Thr Thr Arg Pro  Ile Ala Pro Leu
2950                2955                2960

gcc  acc ggg gtg ctg aaa  ccc gaa agt aat aag  ccc gcg acc ctg       18075
Ala  Thr Gly Val Leu Lys  Pro Glu Ser Asn Lys  Pro Ala Thr Leu
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2965                2970                2975

gac  ttg cct cct ccc cag  cct tct cgc ccc tcc  aca gtg gct aag      18120
Asp  Leu Pro Pro Pro Gln  Pro Ser Arg Pro Ser  Thr Val Ala Lys
2980                2985                2990

ccc  ctg ccg ccg gtg gcc  gtg gcc cgc gcg cga  ccc ggg ggc acc      18165
Pro  Leu Pro Pro Val Ala  Val Ala Arg Ala Arg  Pro Gly Gly Thr
2995                3000                3005

gcc  cgc cct cat gcg aac  tgg cag agc act ctg  aac agc atc gtg      18210
Ala  Arg Pro His Ala Asn  Trp Gln Ser Thr Leu  Asn Ser Ile Val
3010                3015                3020

ggt  ctg gga gtg cag agt  gtg aag cgc cgc cgc  tgc tat taaacctacc   18259
Gly  Leu Gly Val Gln Ser  Val Lys Arg Arg Arg  Cys Tyr
3025                3030                3035

gtagcgctta acttgcttgt ctgtgtgtgt atgtattatg tcgccgccgc cgctgtccac   18319

cagaaggagg agtgaagagg cgcgtcgccg agttgcaag atg gcc acc  cca tcg     18373
                                          Met Ala Thr  Pro Ser
                                                  3040

atg ctg ccc  cag tgg gcg tac ata  cac atc gcc gga cag  gac gct      18418
Met Leu Pro  Gln Trp Ala Tyr Ile  His Ile Ala Gly Gln  Asp Ala
        3045                3050                3055

tcg gag tac  ctg agt ccg ggt ctg  gtg cag ttc gcc cgc  gcc aca      18463
Ser Glu Tyr  Leu Ser Pro Gly Leu  Val Gln Phe Ala Arg  Ala Thr
        3060                3065                3070

gac acc tac  ttc agt ctg ggg aac  aag ttt agg aac ccc  acg gtg      18508
Asp Thr Tyr  Phe Ser Leu Gly Asn  Lys Phe Arg Asn Pro  Thr Val
        3075                3080                3085

gcg ccc acg  cac gat gtg acc acc  gac cgc agc cag cgg  ctg acg      18553
Ala Pro Thr  His Asp Val Thr Thr  Asp Arg Ser Gln Arg  Leu Thr
        3090                3095                3100

ctg cgc ttc  gtg ccc gtg gac cgc  gag gac aac acc tac  tcg tac      18598
Leu Arg Phe  Val Pro Val Asp Arg  Glu Asp Asn Thr Tyr  Ser Tyr
        3105                3110                3115

aaa gtg cgc  tac acg ctg gcc gtg  ggc gac aac cgc gtg  ctg gac      18643
Lys Val Arg  Tyr Thr Leu Ala Val  Gly Asp Asn Arg Val  Leu Asp
        3120                3125                3130

atg gcc agc  acc tac ttt gac atc  cgc ggc gtg ctg gac  cgg ggc      18688
Met Ala Ser  Thr Tyr Phe Asp Ile  Arg Gly Val Leu Asp  Arg Gly
        3135                3140                3145

cct agc ttc  aaa ccc tac tcc ggc  acc gcc tac aac agc  ctg gct      18733
Pro Ser Phe  Lys Pro Tyr Ser Gly  Thr Ala Tyr Asn Ser  Leu Ala
        3150                3155                3160

ccc aag gga  gcg ccc aat tcc agc  cag tgg gag caa aaa  aag act      18778
Pro Lys Gly  Ala Pro Asn Ser Ser  Gln Trp Glu Gln Lys  Lys Thr
        3165                3170                3175
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ggc aat aat  gcc aat gga gat acg  gag aat gtc act tat  ggt gta       18823
Gly Asn Asn  Ala Asn Gly Asp Thr  Glu Asn Val Thr Tyr  Gly Val
        3180                 3185                 3190

gct gcc atg  gga gga att gac atc  gat aaa aat ggc ctt  caa att       18868
Ala Ala Met  Gly Gly Ile Asp Ile  Asp Lys Asn Gly Leu  Gln Ile
        3195                 3200                 3205

gga acc gat  gac acc aaa gat aac  gat aat gac att tat  gca gac       18913
Gly Thr Asp  Asp Thr Lys Asp Asn  Asp Asn Asp Ile Tyr  Ala Asp
        3210                 3215                 3220

aaa aca tat  cag cct gag ccg caa  ata gga gag gaa aac  tgg caa       18958
Lys Thr Tyr  Gln Pro Glu Pro Gln  Ile Gly Glu Glu Asn  Trp Gln
        3225                 3230                 3235

gaa aca tat  tcc tac tat gga ggt  aga gct ctt aaa aaa  gat acc       19003
Glu Thr Tyr  Ser Tyr Tyr Gly Gly  Arg Ala Leu Lys Lys  Asp Thr
        3240                 3245                 3250

aaa atg aag  cca tgc tat ggc tca  ttt gcc aga cct acc  aat gtg       19048
Lys Met Lys  Pro Cys Tyr Gly Ser  Phe Ala Arg Pro Thr  Asn Val
        3255                 3260                 3265

aaa gga gga  cag gca aaa ata aaa  aca gat gga gat gtt  aag tca       19093
Lys Gly Gly  Gln Ala Lys Ile Lys  Thr Asp Gly Asp Val  Lys Ser
        3270                 3275                 3280

ttt gac ata  gac cta gcc ttc ttt  gat att ccc aat tct  ggc gcg       19138
Phe Asp Ile  Asp Leu Ala Phe Phe  Asp Ile Pro Asn Ser  Gly Ala
        3285                 3290                 3295

gga aat ggc  aca aat gtt aac aat  tat cca gat atg gtt  atg tat       19183
Gly Asn Gly  Thr Asn Val Asn Asn  Tyr Pro Asp Met Val  Met Tyr
        3300                 3305                 3310

aca gaa aat  gta aat ctg gaa acc  cca gat act cat att  gtg tac       19228
Thr Glu Asn  Val Asn Leu Glu Thr  Pro Asp Thr His Ile  Val Tyr
        3315                 3320                 3325

aaa cca gga  act tca gat gac agc  tca aag gtc aac ttg  tgt cag       19273
Lys Pro Gly  Thr Ser Asp Asp Ser  Ser Lys Val Asn Leu  Cys Gln
        3330                 3335                 3340

caa tcc atg  cct aac aga ccc aat  tat att ggc ttc aga  gac aat       19318
Gln Ser Met  Pro Asn Arg Pro Asn  Tyr Ile Gly Phe Arg  Asp Asn
        3345                 3350                 3355

ttt att ggg  ctt atg tac tac aac  agc act ggc aat atg  ggt gtg       19363
Phe Ile Gly  Leu Met Tyr Tyr Asn  Ser Thr Gly Asn Met  Gly Val
        3360                 3365                 3370

ctg gct ggt  cag gcc tct caa ctg  aat gcc gtg gtg gac  ttg caa       19408
Leu Ala Gly  Gln Ala Ser Gln Leu  Asn Ala Val Val Asp  Leu Gln
        3375                 3380                 3385

gac aga aac  aca gag ctg tcc tac  cag ctc ttg ctt gac  tct ctg       19453
Asp Arg Asn  Thr Glu Leu Ser Tyr  Gln Leu Leu Leu Asp  Ser Leu
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        3390                3395                3400

ggt gac aga  acc agg tat ttc agt  atg tgg aat cag gcg  gtg gac       19498
Gly Asp Arg  Thr Arg Tyr Phe Ser  Met Trp Asn Gln Ala  Val Asp
        3405                3410                3415

agt tat gat  cct gat gtg cgc att  att gaa aac cat ggt  gtg gag       19543
Ser Tyr Asp  Pro Asp Val Arg Ile  Ile Glu Asn His Gly  Val Glu
        3420                3425                3430

gat gaa ttg  cca aac tat tgc ttc  ccc ttg gat gga gca  ggc acc       19588
Asp Glu Leu  Pro Asn Tyr Cys Phe  Pro Leu Asp Gly Ala  Gly Thr
        3435                3440                3445

aat tcg gtt  tac caa ggt gtt aaa  cca aaa act gac aat  ggc aac       19633
Asn Ser Val  Tyr Gln Gly Val Lys  Pro Lys Thr Asp Asn  Gly Asn
        3450                3455                3460

gat cag tgg  gaa aca gat tcc aca  gtt tca agt cac aat  cag ata       19678
Asp Gln Trp  Glu Thr Asp Ser Thr  Val Ser Ser His Asn  Gln Ile
        3465                3470                3475

tgc aaa ggc  aat atc tat gcc atg  gag atc aac ctc cag  gcc aac       19723
Cys Lys Gly  Asn Ile Tyr Ala Met  Glu Ile Asn Leu Gln  Ala Asn
        3480                3485                3490

ctg tgg aga  agt ttt ctc tac tcg  aac gtg gcc ctg tac  ctg ccc       19768
Leu Trp Arg  Ser Phe Leu Tyr Ser  Asn Val Ala Leu Tyr  Leu Pro
        3495                3500                3505

gat tct tac  aag tac acg ccg gcc  aac atc acc ctg ccc  acc aac       19813
Asp Ser Tyr  Lys Tyr Thr Pro Ala  Asn Ile Thr Leu Pro  Thr Asn
        3510                3515                3520

acc aac acc  tac gat tac atg aac  ggg aga gtg gtg cct  ccc tcg       19858
Thr Asn Thr  Tyr Asp Tyr Met Asn  Gly Arg Val Val Pro  Pro Ser
        3525                3530                3535

ctg gtg gac  gcc tac atc aac atc  ggg gcg cgc tgg tcg  ctg gac       19903
Leu Val Asp  Ala Tyr Ile Asn Ile  Gly Ala Arg Trp Ser  Leu Asp
        3540                3545                3550

ccc atg gac  aac gtg aat ccc ttc  aac cac cac cgc aac  gcg ggc       19948
Pro Met Asp  Asn Val Asn Pro Phe  Asn His His Arg Asn  Ala Gly
        3555                3560                3565

ctg cgc tac  cgc tcc atg ctc ctg  ggc aac ggg cgc tac  gtg ccc       19993
Leu Arg Tyr  Arg Ser Met Leu Leu  Gly Asn Gly Arg Tyr  Val Pro
        3570                3575                3580

ttc cac atc  cag gtg ccc cag aaa  ttt ttc gcc att aag  agc ctc       20038
Phe His Ile  Gln Val Pro Gln Lys  Phe Phe Ala Ile Lys  Ser Leu
        3585                3590                3595

ctg ctc ctg  ccc ggg tcc tac acc  tac gag tgg aac ttc  cgc aag       20083
Leu Leu Leu  Pro Gly Ser Tyr Thr  Tyr Glu Trp Asn Phe  Arg Lys
        3600                3605                3610

gac gtc aac  atg atc ctg cag agc  tcc ctc ggc aac gac  ctg cgc       20128
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Asp Val Asn  Met Ile Leu Gln Ser  Ser Leu Gly Asn Asp  Leu Arg
        3615                 3620                 3625

acg gac ggg  gcc tcc atc tcc ttc  acc agc atc aac ctc  tac gcc       20173
Thr Asp Gly  Ala Ser Ile Ser Phe  Thr Ser Ile Asn Leu  Tyr Ala
        3630                 3635                 3640

acc ttc ttc  ccc atg gcg cac aac  acg gct tcc acg ctc  gag gcc       20218
Thr Phe Phe  Pro Met Ala His Asn  Thr Ala Ser Thr Leu  Glu Ala
        3645                 3650                 3655

atg ctg cgc  aac gac acc aac gac  cag tcc ttc aac gac  tac ctc       20263
Met Leu Arg  Asn Asp Thr Asn Asp  Gln Ser Phe Asn Asp  Tyr Leu
        3660                 3665                 3670

tcg gcg gcc  aac atg ctc tac ccc  atc ccg gcc aac gcc  acc aac       20308
Ser Ala Ala  Asn Met Leu Tyr Pro  Ile Pro Ala Asn Ala  Thr Asn
        3675                 3680                 3685

gtg ccc atc  tcc atc ccc tcg cgc  aac tgg gcc gcc ttc  cgc ggc       20353
Val Pro Ile  Ser Ile Pro Ser Arg  Asn Trp Ala Ala Phe  Arg Gly
        3690                 3695                 3700

tgg tcc ttc  acg cgc ctc aag acc  aag gag acg ccc tcg  ctg ggc       20398
Trp Ser Phe  Thr Arg Leu Lys Thr  Lys Glu Thr Pro Ser  Leu Gly
        3705                 3710                 3715

tcc ggg ttc  gac ccc tac ttc gtc  tac tcg ggc tcc atc  ccc tac       20443
Ser Gly Phe  Asp Pro Tyr Phe Val  Tyr Ser Gly Ser Ile  Pro Tyr
        3720                 3725                 3730

ctc gac ggc  acc ttc tac ctc aac  cac acc ttc aag aag  gtc tcc       20488
Leu Asp Gly  Thr Phe Tyr Leu Asn  His Thr Phe Lys Lys  Val Ser
        3735                 3740                 3745

atc acc ttc  gac tcc tcc gtc agc  tgg ccc ggc aac gac  cgg ctc       20533
Ile Thr Phe  Asp Ser Ser Val Ser  Trp Pro Gly Asn Asp  Arg Leu
        3750                 3755                 3760

ctg acg ccc  aac gag ttc gaa atc  aag cgc acc gtc gac  ggc gag       20578
Leu Thr Pro  Asn Glu Phe Glu Ile  Lys Arg Thr Val Asp  Gly Glu
        3765                 3770                 3775

ggc tac aac  gtg gcc cag tgc aac  atg acc aag gac tgg  ttc ctg       20623
Gly Tyr Asn  Val Ala Gln Cys Asn  Met Thr Lys Asp Trp  Phe Leu
        3780                 3785                 3790

gtc cag atg  ctg gcc cac tac aac  atc ggc tac cag ggc  ttc tac       20668
Val Gln Met  Leu Ala His Tyr Asn  Ile Gly Tyr Gln Gly  Phe Tyr
        3795                 3800                 3805

gtg ccc gag  ggc tac aag gac cgc  atg tac tcc ttc ttc  cgc aac       20713
Val Pro Glu  Gly Tyr Lys Asp Arg  Met Tyr Ser Phe Phe  Arg Asn
        3810                 3815                 3820

ttc cag ccc  atg agc cgc cag gtg  gtg gac gag gtc aac  tac aag       20758
Phe Gln Pro  Met Ser Arg Gln Val  Val Asp Glu Val Asn  Tyr Lys
        3825                 3830                 3835
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gac tac cag  gcc gtc acc ctg gcc  tac cag cac aac aac  tcg ggc       20803
Asp Tyr Gln  Ala Val Thr Leu Ala  Tyr Gln His Asn Asn  Ser Gly
        3840                 3845                 3850

ttc gtc ggc  tac ctc gcg ccc acc  atg tgc cag ggc cag  ccc tac       20848
Phe Val Gly  Tyr Leu Ala Pro Thr  Met Cys Gln Gly Gln  Pro Tyr
        3855                 3860                 3865

ccc gcc aac  tac ccg tac ccg ctc  atc ggc aag agc gcc  gtc acc       20893
Pro Ala Asn  Tyr Pro Tyr Pro Leu  Ile Gly Lys Ser Ala  Val Thr
        3870                 3875                 3880

agc gtc acc  cag aaa aag ttc ctc  tgc gac agg gtc atg  tgg cgc       20938
Ser Val Thr  Gln Lys Lys Phe Leu  Cys Asp Arg Val Met  Trp Arg
        3885                 3890                 3895

atc ccc ttc  tcc agc aac ttc atg  tcc atg ggc gcg ctc  acc gac       20983
Ile Pro Phe  Ser Ser Asn Phe Met  Ser Met Gly Ala Leu  Thr Asp
        3900                 3905                 3910

ctc ggc cag  aac atg ctc tat gcc  aac tcc gcc cac gcg  cta gac       21028
Leu Gly Gln  Asn Met Leu Tyr Ala  Asn Ser Ala His Ala  Leu Asp
        3915                 3920                 3925

atg aat ttc  gaa gtc gac ccc atg  gat gag tcc acc ctt  ctc tat       21073
Met Asn Phe  Glu Val Asp Pro Met  Asp Glu Ser Thr Leu  Leu Tyr
        3930                 3935                 3940

gtt gtc ttc  gaa gtc ttc gac gtc  gtc cga gtg cac cag  ccc cac       21118
Val Val Phe  Glu Val Phe Asp Val  Val Arg Val His Gln  Pro His
        3945                 3950                 3955

cgc ggc gtc  atc gag gcc gtc tac  ctg cgc acc ccc ttc  tcg gcc       21163
Arg Gly Val  Ile Glu Ala Val Tyr  Leu Arg Thr Pro Phe  Ser Ala
        3960                 3965                 3970

ggt aac gcc  acc acc taagctcttg cttcttgcaa gct atg gct gag  ccc      21213
Gly Asn Ala  Thr Thr                          Met Ala Glu  Pro
        3975                                               3980

acg ggc tcc ggc  gag cag gag ctc agg  gcc atc atc cgc gac  ctg       21258
Thr Gly Ser Gly  Glu Gln Glu Leu Arg  Ala Ile Ile Arg Asp  Leu
            3985                 3990                 3995

ggc tgc ggg ccc  tac ttc ctg ggc acc  ttc gat aag cgc ttc  ccg       21303
Gly Cys Gly Pro  Tyr Phe Leu Gly Thr  Phe Asp Lys Arg Phe  Pro
            4000                 4005                 4010

gga ttc atg gcc  ccg cac aag ctg gcc  tgc gcc atc gtc aac  acg       21348
Gly Phe Met Ala  Pro His Lys Leu Ala  Cys Ala Ile Val Asn  Thr
            4015                 4020                 4025

gcc ggc cgc gag  acc ggg ggc gag cac  tgg ctg gcc ttc gcc  tgg       21393
Ala Gly Arg Glu  Thr Gly Gly Glu His  Trp Leu Ala Phe Ala  Trp
            4030                 4035                 4040

aac ccg cgc tcg  aac acc tgc tac ctc  ttc gac ccc ttc ggg  ttc       21438
Asn Pro Arg Ser  Asn Thr Cys Tyr Leu  Phe Asp Pro Phe Gly  Phe
            4045                 4050                 4055
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tcg gac gag cgc  ctc aag cag atc tac  cag ttc gag tac gag  ggc       21483
Ser Asp Glu Arg  Leu Lys Gln Ile Tyr  Gln Phe Glu Tyr Glu  Gly
            4060                4065                4070

ctg ctg cgc cgc  agc gcc ctg gcc acc  gag gac cgc tgc gtc  acc       21528
Leu Leu Arg Arg  Ser Ala Leu Ala Thr  Glu Asp Arg Cys Val  Thr
            4075                4080                4085

ctg gaa aag tcc  acc cag acc gtg cag  ggt ccg cgc tcg gcc  gcc       21573
Leu Glu Lys Ser  Thr Gln Thr Val Gln  Gly Pro Arg Ser Ala  Ala
            4090                4095                4100

tgc ggg ctc ttc  tgc tgc atg ttc ctg  cac gcc ttc gtg cac  tgg       21618
Cys Gly Leu Phe  Cys Cys Met Phe Leu  His Ala Phe Val His  Trp
            4105                4110                4115

ccc gac cgc ccc  atg gac aag aac ccc  acc atg aac tta ctg  acg       21663
Pro Asp Arg Pro  Met Asp Lys Asn Pro  Thr Met Asn Leu Leu  Thr
            4120                4125                4130

ggg gtg ccc aac  ggc atg ctc cag tcg  ccc cag gtg gaa ccc  acc       21708
Gly Val Pro Asn  Gly Met Leu Gln Ser  Pro Gln Val Glu Pro  Thr
            4135                4140                4145

ctg cgc cgc aac  cag gag gcg ctc tac  cgc ttc ctc aac gcc  cac       21753
Leu Arg Arg Asn  Gln Glu Ala Leu Tyr  Arg Phe Leu Asn Ala  His
            4150                4155                4160

tcc gcc tac ttt  cgc tcc cac cgc gcg  cgc atc gag aag gcc  acc       21798
Ser Ala Tyr Phe  Arg Ser His Arg Ala  Arg Ile Glu Lys Ala  Thr
            4165                4170                4175

gcc ttc gac cgc  atg aat caa gac atg  taaaccgtgt gtgtatgtga          21845
Ala Phe Asp Arg  Met Asn Gln Asp Met
            4180                4185

atgctttatt cataataaac agcacatgtt tatgccacct tctctgaggc tctgacttta   21905

tttagaaatc gaaggggttc tgccggctct cggcgtgccc cgcgggcagg gatacgttgc   21965

ggaactggta cttgggcagc cacttgaact cggggatcag cagcttcggc acggggaggt   22025

cggggaacga gtcgctccac agcttgcgcg tgagttgcag ggcgcccagc aggtcgggcg   22085

cggagatctt gaaatcacag ttgggacccg cgttctgcgc gcgagagttg cggtacacgg   22145

ggttgcagca ctggaacacc atcagggccg ggtgcttcac gctcgccagc accgtcgcgt   22205

cggtgatgcc ctccatgtcc agatcctcgg cgttggccat cccgaagggg gtcatcttgc   22265

aggtctgccg ccccatgctg ggcacgcagc cgggcttgtg gttgcaatcg cagtgcaggg   22325

ggatcagcat catctgggcc tgttcggagc tcatgcccgg gtacatggcc ttcatgaaag   22385

cctccagctg gcggaaggcc tgctgcgcct tgccgccctc ggtgaagaag accccgcagg   22445

acttgctaga gaactggttg gtggcgcagc ccgcgtcgtg cacgcagcag cgcgcgtcgt   22505
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tgttggccag ctgcaccacg ctgcgccccc agcggttctg ggtgatcttg gcccggtcgg    22565

ggttctcctt cagcgcgcgc tgcccgttct cgctcgccac atccatctcg atcgtgtgct    22625

ccttctggat catcacggtc ccgtgcaggc accgcagctt gccctcggcc tcggtgcagc    22685

cgtgcagcca cagcgcgcag ccggtgctct cccagttctt gtgggcgatc tgggagtgcg    22745

agtgcacgaa gccctgcagg aagcggccca tcatcgtggt cagggtcttg ttgctggtga    22805

aggtcagcgg gatgccgcgg tgctcctcgt tcacatacat gtggcagatg cggcggtaca    22865

cctcgccctg ctcgggcatc agctggaagg cggacttcag gtcgctctcc acgcggtacc    22925

ggtccatcag cagcgtcatg acttccatgc ccttctccca ggccgaaacg atcggcaggc    22985

tcaggggttt cttcaccgcc attgtcatct tagtcgccgc cgccgaggtc agggggtcgt    23045

tctcgtccag ggtctcaaac actcgcttgc cgtccttctc ggtgatgcgc acgggggga     23105

aggcgaagcc cacggccgcc agctcctcct cggcctgcct ttcgtcctcg ctgtcctggc    23165

tgatgtcttg caaaggcaca tgcttggtct tgcggggttt ctttttgggc ggcagaggcg    23225

gcggcgatgt gctgggcgag cgcgagttct cgctcaccac gactatttct tctccttggc    23285

cgtcgtccga gaccacgcgg cggtaggcat gcctcttctg gggcagaggc ggaggcgacg    23345

ggctctcgcg gttcggcggg cggctggcag agcccccttcc gcgttcgggg gtgcgctcct    23405

ggcggcgctg ctctgactga cttcctccgc ggccggccat tgtgttctcc tagggagcaa    23465

gc atg gag act cag cca  tcg tcg cca aca tcg  cca tct gcc ccc gcc      23512
   Met Glu Thr Gln Pro  Ser Ser Pro Thr Ser  Pro Ser Ala Pro Ala
                  4190                 4195                 4200

gcc acc gcc gac gag  aac cag cag cag cag  aat gaa agc tta acc        23557
Ala Thr Ala Asp Glu  Asn Gln Gln Gln Gln  Asn Glu Ser Leu Thr
                4205                 4210                 4215

gcc ccg ccg ccc agc  ccc acc tcc gac gcc  gcg gcc cca gac atg        23602
Ala Pro Pro Pro Ser  Pro Thr Ser Asp Ala  Ala Ala Pro Asp Met
                4220                 4225                 4230

caa gag atg gag gaa  tcc atc gag att gac  ctg ggc tac gtg acg        23647
Gln Glu Met Glu Glu  Ser Ile Glu Ile Asp  Leu Gly Tyr Val Thr
                4235                 4240                 4245

ccc gcg gag cac gag  gag gag ctg gca gcg  cgc ttt tca gcc ccg        23692
Pro Ala Glu His Glu  Glu Glu Leu Ala Ala  Arg Phe Ser Ala Pro
                4250                 4255                 4260

gaa gag aac cac caa  gag cag cca gag cag  gaa gca gag agc gag        23737
Glu Glu Asn His Gln  Glu Gln Pro Glu Gln  Glu Ala Glu Ser Glu
                4265                 4270                 4275

cag agc cag gct ggg  ctc gag cat ggc gac  tac ctg agc ggg gca        23782
Gln Ser Gln Ala Gly  Leu Glu His Gly Asp  Tyr Leu Ser Gly Ala
                4280                 4285                 4290
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gag gac gtg ctc atc  aag cat ctg gcc cgc  caa tgc atc atc gtc        23827
Glu Asp Val Leu Ile  Lys His Leu Ala Arg  Gln Cys Ile Ile Val
                4295                4300                4305

aag gat gcg ctg ctc  gac cgc gcc gag gtg  ccc ctc agc gtg gcg        23872
Lys Asp Ala Leu Leu  Asp Arg Ala Glu Val  Pro Leu Ser Val Ala
                4310                4315                4320

gag ctc agc cgc gcc  tac gag cgc aac ctc  ttc tcg ccg cgc gtg        23917
Glu Leu Ser Arg Ala  Tyr Glu Arg Asn Leu  Phe Ser Pro Arg Val
                4325                4330                4335

ccc ccc aag cgc cag  ccc aac ggc acc tgc  gag ccc aac ccg cgc        23962
Pro Pro Lys Arg Gln  Pro Asn Gly Thr Cys  Glu Pro Asn Pro Arg
                4340                4345                4350

ctc aac ttc tac ccg  gtc ttc gcg gtg ccc  gag gcc ctg gcc acc        24007
Leu Asn Phe Tyr Pro  Val Phe Ala Val Pro  Glu Ala Leu Ala Thr
                4355                4360                4365

tac cac ctc ttt ttc  aag aac caa agg atc  ccc gtc tcc tgc cgc        24052
Tyr His Leu Phe Phe  Lys Asn Gln Arg Ile  Pro Val Ser Cys Arg
                4370                4375                4380

gcc aac cgc acc cgc  gcc gac gcc ctg ctc  aac ctg ggc ccc ggc        24097
Ala Asn Arg Thr Arg  Ala Asp Ala Leu Leu  Asn Leu Gly Pro Gly
                4385                4390                4395

gcc cgc cta cct gat  atc gcc tcc ttg gaa  gag gtt ccc aag atc        24142
Ala Arg Leu Pro Asp  Ile Ala Ser Leu Glu  Glu Val Pro Lys Ile
                4400                4405                4410

ttc gag ggt ctg ggc  agc gac gag act cgg  gcc gcg aac gct ctg        24187
Phe Glu Gly Leu Gly  Ser Asp Glu Thr Arg  Ala Ala Asn Ala Leu
                4415                4420                4425

caa gga agc gga gag  gag cat gag cac cac  agc gcc ctg gtg gag        24232
Gln Gly Ser Gly Glu  Glu His Glu His His  Ser Ala Leu Val Glu
                4430                4435                4440

ttg gaa ggc gac aac  gcg cgc ctg gcg gtc  ctc aag cgc acg gtc        24277
Leu Glu Gly Asp Asn  Ala Arg Leu Ala Val  Leu Lys Arg Thr Val
                4445                4450                4455

gag ctg acc cac ttc  gcc tac ccg gcg ctc  aac ctg ccc ccc aag        24322
Glu Leu Thr His Phe  Ala Tyr Pro Ala Leu  Asn Leu Pro Pro Lys
                4460                4465                4470

gtc atg agc gcc gtc  atg gac cag gtg ctc  atc aag cgc gcc tcg        24367
Val Met Ser Ala Val  Met Asp Gln Val Leu  Ile Lys Arg Ala Ser
                4475                4480                4485

ccc ctc tcg gag gag  gag atg cag gac ccc  gag agc tcg gac gag        24412
Pro Leu Ser Glu Glu  Glu Met Gln Asp Pro  Glu Ser Ser Asp Glu
                4490                4495                4500

ggc aag ccc gtg gtc  agc gac gag cag ctg  gcg cgc tgg ctg gga        24457
Gly Lys Pro Val Val  Ser Asp Glu Gln Leu  Ala Arg Trp Leu Gly
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                4505                4510                4515

gcg agt agc acc ccc  cag agc ctg gaa gag  cgg cgc aag ctc atg       24502
Ala Ser Ser Thr Pro  Gln Ser Leu Glu Glu  Arg Arg Lys Leu Met
                4520                4525                4530

atg gcc gtg gtc ctg  gtg acc gtg gag ctg  gag tgt ctg cgc cgc       24547
Met Ala Val Val Leu  Val Thr Val Glu Leu  Glu Cys Leu Arg Arg
                4535                4540                4545

ttc ttc gcc gac gcg  gag acc ctg cgc aag  gtc gag gag aac ctg       24592
Phe Phe Ala Asp Ala  Glu Thr Leu Arg Lys  Val Glu Glu Asn Leu
                4550                4555                4560

cac tac ctc ttc agg  cac ggg ttc gtg cgc  cag gcc tgc aag atc       24637
His Tyr Leu Phe Arg  His Gly Phe Val Arg  Gln Ala Cys Lys Ile
                4565                4570                4575

tcc aac gtg gag ctg  acc aac ctg gtc tcc  tac atg ggc atc ctg       24682
Ser Asn Val Glu Leu  Thr Asn Leu Val Ser  Tyr Met Gly Ile Leu
                4580                4585                4590

cac gag aac cgc ctg  ggg cag aac gtg ctg  cac acc acc ctg cgc       24727
His Glu Asn Arg Leu  Gly Gln Asn Val Leu  His Thr Thr Leu Arg
                4595                4600                4605

ggg gag gcc cgc cgc  gac tac atc cgc gac  tgc gtc tac ctg tac       24772
Gly Glu Ala Arg Arg  Asp Tyr Ile Arg Asp  Cys Val Tyr Leu Tyr
                4610                4615                4620

ctc tgc cac acc tgg  cag acg ggc atg ggc  gtg tgg cag cag tgc       24817
Leu Cys His Thr Trp  Gln Thr Gly Met Gly  Val Trp Gln Gln Cys
                4625                4630                4635

ctg gag gag cag aac  ctg aaa gag ctc tgc  aag ctc ctg cag aag       24862
Leu Glu Glu Gln Asn  Leu Lys Glu Leu Cys  Lys Leu Leu Gln Lys
                4640                4645                4650

aac ctg aag gcc ctg  tgg acc ggg ttc gac  gag cgc acc acc gcc       24907
Asn Leu Lys Ala Leu  Trp Thr Gly Phe Asp  Glu Arg Thr Thr Ala
                4655                4660                4665

tcg gac ctg gcc gac  ctc atc ttc ccc gag  cgc ctg cgg ctg acg       24952
Ser Asp Leu Ala Asp  Leu Ile Phe Pro Glu  Arg Leu Arg Leu Thr
                4670                4675                4680

ctg cgc aac ggg ctg  ccc gac ttt atg agc  caa agc atg ttg caa       24997
Leu Arg Asn Gly Leu  Pro Asp Phe Met Ser  Gln Ser Met Leu Gln
                4685                4690                4695

aac ttt cgc tct ttc  atc ctc gaa cgc tcc  ggg atc ctg ccc gcc       25042
Asn Phe Arg Ser Phe  Ile Leu Glu Arg Ser  Gly Ile Leu Pro Ala
                4700                4705                4710

acc tgc tcc gcg ctg  ccc tcg gac ttc gtg  ccg ctg acc ttc cgc       25087
Thr Cys Ser Ala Leu  Pro Ser Asp Phe Val  Pro Leu Thr Phe Arg
                4715                4720                4725

gag tgc ccc ccg ccg  ctc tgg agc cac tgc  tac ctg ctg cgt ctg       25132
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Glu Cys Pro Pro Pro  Leu Trp Ser His Cys  Tyr Leu Leu Arg Leu
                4730                4735                4740

gcc aac tac ctg gcc  tac cac tcg gac gtg  atc gag gac gtc agc        25177
Ala Asn Tyr Leu Ala  Tyr His Ser Asp Val  Ile Glu Asp Val Ser
                4745                4750                4755

ggc gag ggt ctg ctc  gag tgc cac tgt cgc  tgc aac ctc tgc acg        25222
Gly Glu Gly Leu Leu  Glu Cys His Cys Arg  Cys Asn Leu Cys Thr
                4760                4765                4770

ccg cac cgc tcc ctg  gcc tgc aac ccc cag  ctg ctg agc gag acc        25267
Pro His Arg Ser Leu  Ala Cys Asn Pro Gln  Leu Leu Ser Glu Thr
                4775                4780                4785

cag atc atc ggc acc  ttc gag ttg caa ggc  ccc ggc gag gag ggc        25312
Gln Ile Ile Gly Thr  Phe Glu Leu Gln Gly  Pro Gly Glu Glu Gly
                4790                4795                4800

aag ggg ggt ctg aaa  ctc acc ccg ggg ctg  tgg acc tcg gcc tac        25357
Lys Gly Gly Leu Lys  Leu Thr Pro Gly Leu  Trp Thr Ser Ala Tyr
                4805                4810                4815

ttg cgc aag ttc gtg  ccc gag gac tac cat  ccc ttc gag atc agg        25402
Leu Arg Lys Phe Val  Pro Glu Asp Tyr His  Pro Phe Glu Ile Arg
                4820                4825                4830

ttc tac gag gac caa  tcc cag ccg ccc aag  gcc gag ctg tcg gcc        25447
Phe Tyr Glu Asp Gln  Ser Gln Pro Pro Lys  Ala Glu Leu Ser Ala
                4835                4840                4845

tgc gtc atc acc cag  ggg gcc atc ctg gcc  caa ttg caa gcc atc        25492
Cys Val Ile Thr Gln  Gly Ala Ile Leu Ala  Gln Leu Gln Ala Ile
                4850                4855                4860

cag aaa tcc cgc caa  gaa ttt ctg ctg aaa  aag ggc cac ggg gtc        25537
Gln Lys Ser Arg Gln  Glu Phe Leu Leu Lys  Lys Gly His Gly Val
                4865                4870                4875

tac ttg gac ccc cag  acc gga gag gag ctc  aac ccc agc ttc ccc        25582
Tyr Leu Asp Pro Gln  Thr Gly Glu Glu Leu  Asn Pro Ser Phe Pro
                4880                4885                4890

cag gat gcc ccg agg  aag cag caa gaa gct  gaa agt gga gct gcc        25627
Gln Asp Ala Pro Arg  Lys Gln Gln Glu Ala  Glu Ser Gly Ala Ala
                4895                4900                4905

gcc gga gga ttt gga  gga aga ctg gga gag  cag tca ggc aga gga        25672
Ala Gly Gly Phe Gly  Gly Arg Leu Gly Glu  Gln Ser Gly Arg Gly
                4910                4915                4920

gga gga gat gga aga  ctg gga cag cac tca  ggc aga gga gga cag        25717
Gly Gly Asp Gly Arg  Leu Gly Gln His Ser  Gly Arg Gly Gly Gln
                4925                4930                4935

cct gca aga cag tct  gga gga aga cga ggt  gga gga gga ggc aga        25762
Pro Ala Arg Gln Ser  Gly Gly Arg Arg Gly  Gly Gly Gly Gly Arg
                4940                4945                4950
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gga aga agc agc cgc  cgc cag acc gtc gtc  ctc ggc gga gga gga        25807
Gly Arg Ser Ser Arg  Arg Gln Thr Val Val  Leu Gly Gly Gly Gly
                4955                 4960                 4965

gaa agc aag cag cac  gga tac cat ctc cgc  tcc ggg tcg ggg tcg        25852
Glu Ser Lys Gln His  Gly Tyr His Leu Arg  Ser Gly Ser Gly Ser
                4970                 4975                 4980

cgg cgg ccg ggc cca  cag tagatgggac gagaccgggc gcttcccgaa            25900
Arg Arg Pro Gly Pro  Gln
                4985

ccccaccacc cagaccggta agaaggagcg gcagggatac aagtcctggc gggggcacaa    25960

aaacgccatc gtctcctgct tgcaagcctg cgggggcaac atctccttca cccggcgcta    26020

cctgctcttc caccgcgggg tgaacttccc ccgcaacatc ttgcattact accgtcacct    26080

ccacagcccc tactactgtt tccaagaaga ggcagaaacc cagcagcagc agcagaaaac    26140

cagcagcagc tagaaaatcc acggcggcag gtggactgag gatcgcggcg aacgagccgg    26200

cgcagacccg ggagctgagg aaccggatct ttcccaccct ctatgccatc ttccagcaga    26260

gtcgggggca ggagcaggaa ctgaaagtca agaaccgttc tctgcgctcg ctcacccgca    26320

gttgtctgta tcacaagagc gaagaccaac ttcagcgcac tctcgaggac gccgaggctc    26380

tcttcaacaa gtactgcgcg ctcactctta aagagtagcc cgcgcccgcc cagccgcaga    26440

aaaaggcggg aattacgtca cctgtgccct tcgcccgacc atc atg agc aaa gag      26495
                                                Met Ser Lys Glu
                                                             4990

att ccc acg cct tac  atg tgg agc tac cag  ccc cag atg ggc ctg        26540
Ile Pro Thr Pro Tyr  Met Trp Ser Tyr Gln  Pro Gln Met Gly Leu
                4995                 5000                 5005

gcc gcc ggc gcc gcc  cag gac tac tcc acc  cgc atg aat tgg ctc        26585
Ala Ala Gly Ala Ala  Gln Asp Tyr Ser Thr  Arg Met Asn Trp Leu
                5010                 5015                 5020

agc gcc ggg ccc gcg  atg atc tca cgg gtg  aat gac atc cgc gcc        26630
Ser Ala Gly Pro Ala  Met Ile Ser Arg Val  Asn Asp Ile Arg Ala
                5025                 5030                 5035

cac cga aac cag ata  ctc cta gaa cag tca  gcg ctc acc gcc acg        26675
His Arg Asn Gln Ile  Leu Leu Glu Gln Ser  Ala Leu Thr Ala Thr
                5040                 5045                 5050

ccc cgc aat cac ctc  aac ccg cgt aat tgg  ccc gcc gcc ctg gtg        26720
Pro Arg Asn His Leu  Asn Pro Arg Asn Trp  Pro Ala Ala Leu Val
                5055                 5060                 5065

tac cag gaa att ccc  cag ccc acg acc gta  cta ctt ccg cga gac        26765
Tyr Gln Glu Ile Pro  Gln Pro Thr Thr Val  Leu Leu Pro Arg Asp
                5070                 5075                 5080

gcc cag gcc gaa gtc  cag ctg act aac tca  ggt gtc cag ctg gcg        26810
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Ala Gln Ala Glu Val  Gln Leu Thr Asn Ser  Gly Val Gln Leu Ala
                5085                5090                5095

ggc ggc gcc acc ctg  tgt cgt cac cgc ccc  gct cag ggt ata aag        26855
Gly Gly Ala Thr Leu  Cys Arg His Arg Pro  Ala Gln Gly Ile Lys
                5100                5105                5110

cgg ctg gtg atc cgg  ggc aga ggc aca cag  ctc aac gac gag gtg        26900
Arg Leu Val Ile Arg  Gly Arg Gly Thr Gln  Leu Asn Asp Glu Val
                5115                5120                5125

gtg agc tct tcg ctg  ggt ctg cga cct gac  gga gtc ttc caa ctc        26945
Val Ser Ser Ser Leu  Gly Leu Arg Pro Asp  Gly Val Phe Gln Leu
                5130                5135                5140

gcc gga tcg ggg aga  tct tcc ttc acg cct  cgt cag gcc gtg ctg        26990
Ala Gly Ser Gly Arg  Ser Ser Phe Thr Pro  Arg Gln Ala Val Leu
                5145                5150                5155

act ttg gag agt tcg  tcc tcg cag ccc cgc  tcg ggc ggc atc ggc        27035
Thr Leu Glu Ser Ser  Ser Ser Gln Pro Arg  Ser Gly Gly Ile Gly
                5160                5165                5170

act ctc cag ttc gtg  gag gag ttc act ccc  tcg gtc tac ttc aac        27080
Thr Leu Gln Phe Val  Glu Glu Phe Thr Pro  Ser Val Tyr Phe Asn
                5175                5180                5185

ccc ttc tcc ggc tcc  ccc ggg cac tac ccg  gac gag ttc atc ccg        27125
Pro Phe Ser Gly Ser  Pro Gly His Tyr Pro  Asp Glu Phe Ile Pro
                5190                5195                5200

aac ttt gac gcc atc  agc gag tcg gtg gac  ggc tac gat tga atg        27170
Asn Phe Asp Ala Ile  Ser Glu Ser Val Asp  Gly Tyr Asp     Met
                5205                5210

tcc  cat ggt ggc gcg gct  gac ata gct cgg ctt  cga cac ctg gac       27215
Ser  His Gly Gly Ala Ala  Asp Ile Ala Arg Leu  Arg His Leu Asp
5215                5220                5225

cac  tgc cgc cgc ttt cgc  tgc ttc gct cgg gac  ctc gcc gag ttc       27260
His  Cys Arg Arg Phe Arg  Cys Phe Ala Arg Asp  Leu Ala Glu Phe
5230                5235                5240

acc  tac ttt gag ctg ccc  gag gag cat cct cag  ggc ccg gcc cac       27305
Thr  Tyr Phe Glu Leu Pro  Glu Glu His Pro Gln  Gly Pro Ala His
5245                5250                5255

gga  gtg cgg atc gtc gtc  gaa ggg ggc cta gac  tcc cac ctg ctt       27350
Gly  Val Arg Ile Val Val  Glu Gly Gly Leu Asp  Ser His Leu Leu
5260                5265                5270

cgg  atc ttc agc cag cgc  ccg atc ctg gtc gag  cgc caa cag ggc       27395
Arg  Ile Phe Ser Gln Arg  Pro Ile Leu Val Glu  Arg Gln Gln Gly
5275                5280                5285

aac  acc ctc ctg acc ctc  tac tgc atc tgc gac  cac ccc ggc ctg       27440
Asn  Thr Leu Leu Thr Leu  Tyr Cys Ile Cys Asp  His Pro Gly Leu
5290                5295                5300
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cat  gaa agt ctt tgt tgt  ctg ctg tgt act gag  tat aat aaa agc      27485
His  Glu Ser Leu Cys Cys  Leu Leu Cys Thr Glu  Tyr Asn Lys Ser
5305                5310                5315

tgagatcagc gactactccg gactcaactg tggtgtttct gcatccatca accagtctct   27545

aaccttcacc gggaacgaga ccgagctcca gctccagtgt aagccccaca agaagtacct   27605

cacctggctg taccagggct ccccgatcgc cgttgttaac cactgcgacg acgacggagt   27665

cctgctgaac ggccccgcca accttacttt ttccacccgc agaagcaagc tactgctctt   27725

ccgacccttc ctccccggca cctatcagtg cgtctcggga ccctgccatc acaccttcca   27785

cctgatcccg aataccacct cttccccagc gccgctcccc actaacaacc aaactaacca   27845

ccaccgctac cgacgcgacc tcgttgaatc taataccacc cacaccggag gtgagctcca   27905

aggtcgcaaa ccctctggga tttattacgg cccctgggag gtggtggggt taatagcttt   27965

aggcttagta gcgggtgggc ttttggctct ctgctaccta tacatccctt gctgttctta   28025

cttagtggtg ctgtgttgct ggtttaagaa atg  ggg cag atc acc cta  gtg      28076
                                  Met  Gly Gln Ile Thr Leu  Val
                                  5320                5325

agc tgc ggt gtg  ctg gtg gcg gtg gtg  ctt tcg att gtg gga  ctg      28121
Ser Cys Gly Val  Leu Val Ala Val Val  Leu Ser Ile Val Gly  Leu
            5330                5335                5340

ggc ggc gcg gct  gta gtg aag gag aag  gcc gat ccc tgc ttg  cat      28166
Gly Gly Ala Ala  Val Val Lys Glu Lys  Ala Asp Pro Cys Leu  His
            5345                5350                5355

ttc aat ccc gac  aaa tgc cag ctg agt  ttt cag ccc gat ggc  aat      28211
Phe Asn Pro Asp  Lys Cys Gln Leu Ser  Phe Gln Pro Asp Gly  Asn
            5360                5365                5370

cgg tgc gcg gtg  ctg atc aag tgc gga  tgg gaa tgc gag aac  gtg      28256
Arg Cys Ala Val  Leu Ile Lys Cys Gly  Trp Glu Cys Glu Asn  Val
            5375                5380                5385

aga atc gag tac  aat aac aag act cgg  aac aat act ctc gcg  tcc      28301
Arg Ile Glu Tyr  Asn Asn Lys Thr Arg  Asn Asn Thr Leu Ala  Ser
            5390                5395                5400

gtg tgg cag ccc  ggg gac ccc gag tgg  tac acc gtc tct gtc  ccc      28346
Val Trp Gln Pro  Gly Asp Pro Glu Trp  Tyr Thr Val Ser Val  Pro
            5405                5410                5415

ggt gct gac ggc  tcc ccg cgc acc gtg  aat aat act ttc att  ttt      28391
Gly Ala Asp Gly  Ser Pro Arg Thr Val  Asn Asn Thr Phe Ile  Phe
            5420                5425                5430

gcg cac atg tgc  gac acg gtc atg tgg  atg agc aag cag tac  gat      28436
Ala His Met Cys  Asp Thr Val Met Trp  Met Ser Lys Gln Tyr  Asp
            5435                5440                5445

atg tgg ccc ccc  acg aag gag aac atc  gtg gtc ttc tcc atc  gct      28481
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Met Trp Pro Pro  Thr Lys Glu Asn Ile  Val Val Phe Ser Ile  Ala
            5450                 5455                 5460

tac agc gtg tgc  acg gcg cta atc acc  gct atc gtg tgc ctg  agc       28526
Tyr Ser Val Cys  Thr Ala Leu Ile Thr  Ala Ile Val Cys Leu  Ser
            5465                 5470                 5475

att cac atg ctc  atc gct att cgc ccc  aga aat aat gcc gaa  aaa       28571
Ile His Met Leu  Ile Ala Ile Arg Pro  Arg Asn Asn Ala Glu  Lys
            5480                 5485                 5490

gaa aaa cag cca  taacacgttt tttcacacac ctttttcaga cc atg gcc tct     28624
Glu Lys Gln Pro                                    Met Ala Ser
            5495

gtt aaa  ttt ttg ctt tta ttt  gcc agt ctc att acc  gtc att cat       28669
Val Lys  Phe Leu Leu Leu Phe  Ala Ser Leu Ile Thr  Val Ile His
    5500                 5505                 5510

gga atg  agt aat gag aaa att  act att tac act ggc  act aat cac       28714
Gly Met  Ser Asn Glu Lys Ile  Thr Ile Tyr Thr Gly  Thr Asn His
    5515                 5520                 5525

aca ttg  aaa ggt cca gaa aaa  gcc aca gaa gtt tca  tgg tat tgt       28759
Thr Leu  Lys Gly Pro Glu Lys  Ala Thr Glu Val Ser  Trp Tyr Cys
    5530                 5535                 5540

tat ttt  aat gaa tca gat gta  tct act gaa ctc tgt  gga aac aag       28804
Tyr Phe  Asn Glu Ser Asp Val  Ser Thr Glu Leu Cys  Gly Asn Lys
    5545                 5550                 5555

aac aaa  aaa aat gag agc att  act ctc atc aag ttt  caa tgt gga       28849
Asn Lys  Lys Asn Glu Ser Ile  Thr Leu Ile Lys Phe  Gln Cys Gly
    5560                 5565                 5570

tct gac  tta acc cta att aac  atc act aga gac tat  gta ggt atg       28894
Ser Asp  Leu Thr Leu Ile Asn  Ile Thr Arg Asp Tyr  Val Gly Met
    5575                 5580                 5585

tat tat  gga act aca gca ggc  att tca gac atg gaa  ttt tat caa       28939
Tyr Tyr  Gly Thr Thr Ala Gly  Ile Ser Asp Met Glu  Phe Tyr Gln
    5590                 5595                 5600

gtt tct  gtg tct gaa ccc acc  acg cct aga atg acc  aca acc aca       28984
Val Ser  Val Ser Glu Pro Thr  Thr Pro Arg Met Thr  Thr Thr Thr
    5605                 5610                 5615

aaa act  aca cct gtt acc act  atg cag ctc act acc  aat ggc ttt       29029
Lys Thr  Thr Pro Val Thr Thr  Met Gln Leu Thr Thr  Asn Gly Phe
    5620                 5625                 5630

ctt gcc  atg ctt caa gtg gct  gaa aat agc acc agc  att caa ccc       29074
Leu Ala  Met Leu Gln Val Ala  Glu Asn Ser Thr Ser  Ile Gln Pro
    5635                 5640                 5645

acc cca  ccc agt gag gaa att  ccc aga tcc atg att  ggc att att       29119
Thr Pro  Pro Ser Glu Glu Ile  Pro Arg Ser Met Ile  Gly Ile Ile
    5650                 5655                 5660
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gtt gct  gta gtg gtg tgc atg  ttg atc atc gcc ttg  tgc atg gtg       29164
Val Ala  Val Val Val Cys Met  Leu Ile Ile Ala Leu  Cys Met Val
    5665                 5670                 5675

tac tat  gcc ttc tgc tac aga  aag cac aga ctg aac  gac aag ctg       29209
Tyr Tyr  Ala Phe Cys Tyr Arg  Lys His Arg Leu Asn  Asp Lys Leu
    5680                 5685                 5690

gaa cac  tta cta agt gtt gaa  ttt taatttttta gaacc atg aag atc       29257
Glu His  Leu Leu Ser Val Glu  Phe                  Met Lys Ile
    5695                 5700

cta  ggc ctt tta att ttt  tct atc att acc tct  gct cta tgc aat       29302
Leu  Gly Leu Leu Ile Phe  Ser Ile Ile Thr Ser  Ala Leu Cys Asn
5705                 5710                 5715

tct  gac aat gag gac gtt  act gtc gtt gtc gga  acc aat tat aca       29347
Ser  Asp Asn Glu Asp Val  Thr Val Val Val Gly  Thr Asn Tyr Thr
5720                 5725                 5730

ctg  aaa ggt cca gcg aag  ggt atg ctt tcg tgg  tat tgc tat ttt       29392
Leu  Lys Gly Pro Ala Lys  Gly Met Leu Ser Trp  Tyr Cys Tyr Phe
5735                 5740                 5745

gga  tct gac act aca gaa  act gaa tta tgc aat  ctt aag aat ggc       29437
Gly  Ser Asp Thr Thr Glu  Thr Glu Leu Cys Asn  Leu Lys Asn Gly
5750                 5755                 5760

aaa  att caa aat tct aaa  att aac aat tat ata  tgc aat ggt act       29482
Lys  Ile Gln Asn Ser Lys  Ile Asn Asn Tyr Ile  Cys Asn Gly Thr
5765                 5770                 5775

gat  ctg ata ctc ctc aat  atc acg aaa tca tat  gct ggc agt tac       29527
Asp  Leu Ile Leu Leu Asn  Ile Thr Lys Ser Tyr  Ala Gly Ser Tyr
5780                 5785                 5790

acc  tgc cct gga gat gat  gct gac agt atg att  ttt tac aaa gta       29572
Thr  Cys Pro Gly Asp Asp  Ala Asp Ser Met Ile  Phe Tyr Lys Val
5795                 5800                 5805

act  gtt gtt gat cct act  act cca cct ccg ccc  acc acc aca act       29617
Thr  Val Val Asp Pro Thr  Thr Pro Pro Pro Pro  Thr Thr Thr Thr
5810                 5815                 5820

act  cac acc aca cac ata  gaa caa acc aca gca  gag gca gca gga       29662
Thr  His Thr Thr His Ile  Glu Gln Thr Thr Ala  Glu Ala Ala Gly
5825                 5830                 5835

gag  tta gcc ttg cag gtt  cag gaa gat tcc ctt  atg gct aat acc       29707
Glu  Leu Ala Leu Gln Val  Gln Glu Asp Ser Leu  Met Ala Asn Thr
5840                 5845                 5850

cct  aca ccc gat cat cgg  tgt ccg ggg ctg ctc  gtc agc ggc att       29752
Pro  Thr Pro Asp His Arg  Cys Pro Gly Leu Leu  Val Ser Gly Ile
5855                 5860                 5865

gtc  ggt gtg ctt tcg gga  tta gca gtc ata atc  atc tgc atg ttc       29797
Val  Gly Val Leu Ser Gly  Leu Ala Val Ile Ile  Ile Cys Met Phe
5870                 5875                 5880
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att  ttt gct tgc tgc tat  aga agg ctt tac cga  caa aaa tca gac       29842
Ile  Phe Ala Cys Cys Tyr  Arg Arg Leu Tyr Arg  Gln Lys Ser Asp
5885                5890                5895

cca  ctg ctg aac ctc tat  gtt taatttttc cagagcc atg aag gca gtt     29892
Pro  Leu Leu Asn Leu Tyr  Val                   Met Lys Ala Val
5900                5905                                5910

agc gct cta gtt ttt  tgt tct ttg att ggc  att gtt ttt agt gct       29937
Ser Ala Leu Val Phe  Cys Ser Leu Ile Gly  Ile Val Phe Ser Ala
                5915                5920                5925

ggg ttt ttg aaa aat  ctt acc att tat gaa  ggt gag aat gcc act       29982
Gly Phe Leu Lys Asn  Leu Thr Ile Tyr Glu  Gly Glu Asn Ala Thr
                5930                5935                5940

cta gtg ggc atc agt  ggt caa aat gtc agc  tgg cta aaa tac cat       30027
Leu Val Gly Ile Ser  Gly Gln Asn Val Ser  Trp Leu Lys Tyr His
                5945                5950                5955

cta gat ggg tgg aaa  gac att tgc gat tgg  aat gtc act gtg tat       30072
Leu Asp Gly Trp Lys  Asp Ile Cys Asp Trp  Asn Val Thr Val Tyr
                5960                5965                5970

aca tgt aat gga gtt  aac ctc acc att act  aat gcc acc caa gat       30117
Thr Cys Asn Gly Val  Asn Leu Thr Ile Thr  Asn Ala Thr Gln Asp
                5975                5980                5985

cag aat ggt agg ttt  aag ggc cag agt ttc  act aga aat aat ggg       30162
Gln Asn Gly Arg Phe  Lys Gly Gln Ser Phe  Thr Arg Asn Asn Gly
                5990                5995                6000

tat gaa tcc cat aac  atg ttt atc tat gac  gtc act gtc atc aga       30207
Tyr Glu Ser His Asn  Met Phe Ile Tyr Asp  Val Thr Val Ile Arg
                6005                6010                6015

aac gag act gcc acc  aca cag atg ccc act  aca cac agt tct acc       30252
Asn Glu Thr Ala Thr  Thr Gln Met Pro Thr  Thr His Ser Ser Thr
                6020                6025                6030

act act agc atg caa  acc aca cag aca acc  act ttt tat aca tca       30297
Thr Thr Ser Met Gln  Thr Thr Gln Thr Thr  Thr Phe Tyr Thr Ser
                6035                6040                6045

act cag cat atc acc  act aca gca gca aag  cca agt agc gca gcg       30342
Thr Gln His Ile Thr  Thr Thr Ala Ala Lys  Pro Ser Ser Ala Ala
                6050                6055                6060

cct cag cca cag gct  ttg gct ttg aaa gct  gca caa cct agt aca       30387
Pro Gln Pro Gln Ala  Leu Ala Leu Lys Ala  Ala Gln Pro Ser Thr
                6065                6070                6075

act act agg acc aat  gag cag act act gat  ttt ttg tcc act gtc       30432
Thr Thr Arg Thr Asn  Glu Gln Thr Thr Asp  Phe Leu Ser Thr Val
                6080                6085                6090

gag agc cac acc aca  gct acc tcg agt gcc  ttc tct agc acc gcc       30477
Glu Ser His Thr Thr  Ala Thr Ser Ser Ala  Phe Ser Ser Thr Ala
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                6095                6100                6105

aat ctc tcc tcg ctt  tcc tct aca cca atc  agt ccc gct act act        30522
Asn Leu Ser Ser Leu  Ser Ser Thr Pro Ile  Ser Pro Ala Thr Thr
                6110                6115                6120

cct acc ccc gct ctt  ctc ccc act ccc ctg  aag caa act gag aac        30567
Pro Thr Pro Ala Leu  Leu Pro Thr Pro Leu  Lys Gln Thr Glu Asn
                6125                6130                6135

agc ggc atg caa tgg  cag atc acc ctg ctc  att gtg atc ggg ttg        30612
Ser Gly Met Gln Trp  Gln Ile Thr Leu Leu  Ile Val Ile Gly Leu
                6140                6145                6150

gtc atc ctg gcc gtg  ttg ctc tac tac atc  ttc tgc cgc cgc att        30657
Val Ile Leu Ala Val  Leu Leu Tyr Tyr Ile  Phe Cys Arg Arg Ile
                6155                6160                6165

ccc aac gcg cac cgc  aag ccg gtc tac aag  ccc atc gtt atc ggg        30702
Pro Asn Ala His Arg  Lys Pro Val Tyr Lys  Pro Ile Val Ile Gly
                6170                6175                6180

cag ccg gag ccg ctt  cag gtg gaa ggg ggt  cta agg aat ctt ctc        30747
Gln Pro Glu Pro Leu  Gln Val Glu Gly Gly  Leu Arg Asn Leu Leu
                6185                6190                6195

ttc tct ttt aca gta  tgg tgattgaact atg att cct aga  caa ttc ttg     30796
Phe Ser Phe Thr Val  Trp           Met Ile Pro Arg  Gln Phe Leu
                6200                          6205

atc act  att ctt atc tgc ctc  ctc caa gtc tgt gcc  acc ctc gct       30841
Ile Thr  Ile Leu Ile Cys Leu  Leu Gln Val Cys Ala  Thr Leu Ala
    6210                6215                6220

cta gtg  gcc aac gcc agt cca  gac tgt att ggg ccc  ttc gcc tcc       30886
Leu Val  Ala Asn Ala Ser Pro  Asp Cys Ile Gly Pro  Phe Ala Ser
    6225                6230                6235

tac gtg  ctc ttt gcc ttc atc  acc tgc atc tgc tgc  tgt agc ata       30931
Tyr Val  Leu Phe Ala Phe Ile  Thr Cys Ile Cys Cys  Cys Ser Ile
    6240                6245                6250

gtc tgc  ctg ctt atc acc ttc  ttc cag ttc att gac  tgg atc ttt       30976
Val Cys  Leu Leu Ile Thr Phe  Phe Gln Phe Ile Asp  Trp Ile Phe
    6255                6260                6265

gtg cgc  atc gcc tac ctg cgc  cac cac ccc cag tac  cgc gac cag       31021
Val Arg  Ile Ala Tyr Leu Arg  His His Pro Gln Tyr  Arg Asp Gln
    6270                6275                6280

caa gtg  gcg cga ctg ctc agg  ctc ctc tgataagc atg cgg gct  ctg     31068
Gln Val  Ala Arg Leu Leu Arg  Leu Leu          Met Arg Ala  Leu
    6285                6290                          6295

cta ctt ctc gcg  ctt ctg ctg tta gtg  ctc ccc cgt ccc gtc  gac      31113
Leu Leu Leu Ala  Leu Leu Leu Leu Val  Leu Pro Arg Pro Val  Asp
            6300                6305                6310

ccc cgg ccc ccc  act cag tcc ccc gag  gag gtc cgc aaa tgc  aaa      31158
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Pro Arg Pro Pro  Thr Gln Ser Pro Glu  Glu Val Arg Lys Cys  Lys
            6315                6320                6325

ttc caa gaa ccc  tgg aaa ttc ctc aaa  tgc tac cgc caa aaa  tca       31203
Phe Gln Glu Pro  Trp Lys Phe Leu Lys  Cys Tyr Arg Gln Lys  Ser
            6330                6335                6340

gac atg cat ccc  agc tgg atc atg atc  att ggg atc gtg aac  att       31248
Asp Met His Pro  Ser Trp Ile Met Ile  Ile Gly Ile Val Asn  Ile
            6345                6350                6355

ctg gcc tgc acc  ctc atc tcc ttt gtg  att tac ccc tgc ttt  gac       31293
Leu Ala Cys Thr  Leu Ile Ser Phe Val  Ile Tyr Pro Cys Phe  Asp
            6360                6365                6370

ttt ggt tgg aac  tcg cca gag gcg ctc  tat ctc ccg cct gaa  cct       31338
Phe Gly Trp Asn  Ser Pro Glu Ala Leu  Tyr Leu Pro Pro Glu  Pro
            6375                6380                6385

gac aca cca cca  cag caa cct cag gca  cat gca cta cca cca  cag       31383
Asp Thr Pro Pro  Gln Gln Pro Gln Ala  His Ala Leu Pro Pro  Gln
            6390                6395                6400

cct agg cca caa  tac atg ccc ata tta  gac tat gag gcc gag  cca       31428
Pro Arg Pro Gln  Tyr Met Pro Ile Leu  Asp Tyr Glu Ala Glu  Pro
            6405                6410                6415

cag cga ccc atg  ctc ccc gct att agt  tac ttc aat cta acc  ggc       31473
Gln Arg Pro Met  Leu Pro Ala Ile Ser  Tyr Phe Asn Leu Thr  Gly
            6420                6425                6430

gga gat gac tgacccactg gccaacaaca acgtcaacga ccttctcctg             31522
Gly Asp Asp

gacatggacg gccgcgcctc ggagcagcga ctcgcccaac tccgcatccg ccagcagcag   31582

gagagagccg tcaaggagct gcaggatgcg gtggccatcc accagtgcaa gaaaggcatc   31642

ttctgcctgg tgaagcaggc caagatcacc ttcgaggtga cttccaccga ccatcgcctc   31702

tcctacgagc tcctgcagca acgccagaag ttcacctgcc tggtcggagt caaccccatc   31762

gtcatcaccc agcagtctgg cgataccaag ggttgcatcc actgctcctg cgactccccc   31822

gagtgcgttc acaccatgat caagaccctc tgcggcctcc gcgacctcct ccccatgaac   31882

taatcaacta acccctaccc catttaccca gatacaataa agattaaaga gatgatgatt   31942

tgaattgatc aataaagaat cacttacttg aaatctgaaa ccaggtctct gtcc atg      31999
                                                          Met
                                                          6435

ttt tct gtc agc agc  act tca ctc ccc tct  tcc cag ctc tgg tac       32044
Phe Ser Val Ser Ser  Thr Ser Leu Pro Ser  Ser Gln Leu Trp Tyr
                6440                6445                6450

tgc aga ccc cgg cgg  gct gca aac ttc ctc  cac act ctg aag ggg       32089
Cys Arg Pro Arg Arg  Ala Ala Asn Phe Leu  His Thr Leu Lys Gly
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                6455                6460                6465

atg tca aat tcc tcc  tgt ccc tca atc ttc  att ttt atc ttc tat        32134
Met Ser Asn Ser Ser  Cys Pro Ser Ile Phe  Ile Phe Ile Phe Tyr
                6470                6475                6480

cag atg tcc aaa aag  cgc gcg cgg gtg gat  gat ggc ttc gac ccc        32179
Gln Met Ser Lys Lys  Arg Ala Arg Val Asp  Asp Gly Phe Asp Pro
                6485                6490                6495

gtg tac ccc tac gat  gca gac aac gca ccg  act gtg ccc ttc atc        32224
Val Tyr Pro Tyr Asp  Ala Asp Asn Ala Pro  Thr Val Pro Phe Ile
                6500                6505                6510

aac cct ccc ttc gtc  tct tca gat gga ttc  caa gaa aag ccc ctg        32269
Asn Pro Pro Phe Val  Ser Ser Asp Gly Phe  Gln Glu Lys Pro Leu
                6515                6520                6525

ggg gtg ttg tcc ctg  cgc ctg gcc gac ccc  gtc acc acc aag aac        32314
Gly Val Leu Ser Leu  Arg Leu Ala Asp Pro  Val Thr Thr Lys Asn
                6530                6535                6540

ggg gct gtc acc ctc  aag ctg ggg gag ggg  gtg gac ctc gac gag        32359
Gly Ala Val Thr Leu  Lys Leu Gly Glu Gly  Val Asp Leu Asp Glu
                6545                6550                6555

tcg gga aaa ctc atc  tcc aaa aat gcc acc  aag gcc act gcc cct        32404
Ser Gly Lys Leu Ile  Ser Lys Asn Ala Thr  Lys Ala Thr Ala Pro
                6560                6565                6570

ctc agt att tcc aac  aac acc att tcc ctt  aac ctg gat acc cct        32449
Leu Ser Ile Ser Asn  Asn Thr Ile Ser Leu  Asn Leu Asp Thr Pro
                6575                6580                6585

ttt tat acc aaa gat  gga aaa tta acc atg  cag gta act gca cca        32494
Phe Tyr Thr Lys Asp  Gly Lys Leu Thr Met  Gln Val Thr Ala Pro
                6590                6595                6600

tta aag tta gca aac  aca gcc ata cta aac  act cta gct atg gcc        32539
Leu Lys Leu Ala Asn  Thr Ala Ile Leu Asn  Thr Leu Ala Met Ala
                6605                6610                6615

tat gga aat ggt tta  ggt cta agc aac aat  gct ctc act gtt cag        32584
Tyr Gly Asn Gly Leu  Gly Leu Ser Asn Asn  Ala Leu Thr Val Gln
                6620                6625                6630

gta aca tct cca ctc  acc ttt gat aat agc  aaa gtc aag att aac        32629
Val Thr Ser Pro Leu  Thr Phe Asp Asn Ser  Lys Val Lys Ile Asn
                6635                6640                6645

cta ggt aat gga cca  cta atg gta tct gcc  aac aag ctt tca atc        32674
Leu Gly Asn Gly Pro  Leu Met Val Ser Ala  Asn Lys Leu Ser Ile
                6650                6655                6660

aac tgc tta cgg ggc  ctg tat gtt gcc cct  aat aat acc gga cta        32719
Asn Cys Leu Arg Gly  Leu Tyr Val Ala Pro  Asn Asn Thr Gly Leu
                6665                6670                6675

gaa acc aac ata agc  tgg gca aac gca atg  cgc ttt gag ggt aac        32764
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Glu Thr Asn Ile Ser  Trp Ala Asn Ala Met  Arg Phe Glu Gly Asn
                6680                6685                6690

gca atg gct gtt aat  ata gac aca aat aaa  ggc cta caa ttt ggc        32809
Ala Met Ala Val Asn  Ile Asp Thr Asn Lys  Gly Leu Gln Phe Gly
                6695                6700                6705

act act agt aca gaa  aca ggt gtc acc aat  gct tac ccc ata caa        32854
Thr Thr Ser Thr Glu  Thr Gly Val Thr Asn  Ala Tyr Pro Ile Gln
                6710                6715                6720

gtc aaa ctt ggc gca  ggc ctt gca ttt gat  agc aca ggg gct att        32899
Val Lys Leu Gly Ala  Gly Leu Ala Phe Asp  Ser Thr Gly Ala Ile
                6725                6730                6735

gtt gct tgg aac aaa  gaa aat gac agc ctc  act ttg tgg act aca        32944
Val Ala Trp Asn Lys  Glu Asn Asp Ser Leu  Thr Leu Trp Thr Thr
                6740                6745                6750

cca gac ccc tct cca  aat tgt aaa ata gct  tct gaa aaa gat gca        32989
Pro Asp Pro Ser Pro  Asn Cys Lys Ile Ala  Ser Glu Lys Asp Ala
                6755                6760                6765

aaa ctc aca ctt tgc  ttg aca aag tgt ggt  agt caa atc cta ggc        33034
Lys Leu Thr Leu Cys  Leu Thr Lys Cys Gly  Ser Gln Ile Leu Gly
                6770                6775                6780

act gtc tcc cta tta  gca gtc agt ggc agc  ttg gct cct atc aca        33079
Thr Val Ser Leu Leu  Ala Val Ser Gly Ser  Leu Ala Pro Ile Thr
                6785                6790                6795

ggg gct gtt agt act  gca ctt gta tca ctc  aaa ttc aat gcc aat        33124
Gly Ala Val Ser Thr  Ala Leu Val Ser Leu  Lys Phe Asn Ala Asn
                6800                6805                6810

gga gcc ctt ttg gac  aaa tca act ctg aac  aaa gaa tac tgg aac        33169
Gly Ala Leu Leu Asp  Lys Ser Thr Leu Asn  Lys Glu Tyr Trp Asn
                6815                6820                6825

tac aga caa gga gat  cta att cca ggt aca  cca tat aca cat gct        33214
Tyr Arg Gln Gly Asp  Leu Ile Pro Gly Thr  Pro Tyr Thr His Ala
                6830                6835                6840

gtg ggt ttc atg cct  aac aaa aaa gcc tac  cct aaa aac aca act        33259
Val Gly Phe Met Pro  Asn Lys Lys Ala Tyr  Pro Lys Asn Thr Thr
                6845                6850                6855

gca gct tcc aag agc  cac att gtg ggt gat  gtt tat tta gat gga        33304
Ala Ala Ser Lys Ser  His Ile Val Gly Asp  Val Tyr Leu Asp Gly
                6860                6865                6870

gat gca gat aag cct  tta tct ctt atc atc  act ttc aat gaa act        33349
Asp Ala Asp Lys Pro  Leu Ser Leu Ile Ile  Thr Phe Asn Glu Thr
                6875                6880                6885

gat gat gaa acc tgt  gat tac tgc atc aac  ttt caa tgg aaa tgg        33394
Asp Asp Glu Thr Cys  Asp Tyr Cys Ile Asn  Phe Gln Trp Lys Trp
                6890                6895                6900
```

```
agt gct gaa caa tat  aaa gaa aag aca ctc  gca acc agt tca ttc        33439
Ser Ala Glu Gln Tyr  Lys Glu Lys Thr Leu  Ala Thr Ser Ser Phe
                6905                 6910                 6915

acc ttc tca tac atc  gcc caa gaa taaacccgcc ctgcatgcca ccccttgtcc    33493
Thr Phe Ser Tyr Ile  Ala Gln Glu
                6920

cactgctcta caatggaaaa ctctgaagca gaaaaataaa gttcaagtgt tttattgatt    33553

caacagtttt tcacagaatt cgagtagtta ttttccctcc tccctcccaa ctcatggaat    33613

acaccaccct ctccccacgc acagccttaa acatctgaat gccattggta atggacatgg    33673

ttttggtttc cacattccac acagtttcag agcgagccag tctcgggtcg gtcaaggaga    33733

tgaaaccctc cgggcactcc tgcatctgca cctcaaagtt caacagctga gggctgtcct    33793

cggtggtcgg gatcacggtt atctggaaga agagcgatga gagtcataat ccgcgaatgg    33853

gatcgggcgg ttgtgttgca tcaggccccg cagcagtcgc tgtctgcgcc gctccgtcaa    33913

gctgctgctc aaggggaccg ggtccaggga ctccctacgc atgatgccga tggccctgag    33973

catcagtcgc ctggtgcggc gggcgcagca gcggatgcgg atctcgctca ggtcggagca    34033

gtacgtgcag cacagcacca ccaagttgtt caacagtcca tagttcaacg tgctccagcc    34093

aaaactcatc tgtggaacta tgctgcccac atgtccatcg taccagatcc tgatgtaaat    34153

caggtggcgc cccctccaga acacactgcc catgtacatg atctccttgg gcatatgcag    34213

gttcaccacc tcccggtacc acatcacccg ctggttgaac atgcagccct ggataattct    34273

gcggaaccag atggccagca ccgccccgcc cgccatgcag cgcagggacc ccgggtcctg    34333

acagtggcag tggaggaccc accgctcgcg gccgtggatc aactgggagc tgaacaggtc    34393

tatgttggca cagcacaggc acacgctcat gcatgtcttc agcactctca gttcctcggg    34453

ggtcaggacc atgtcccagg gcacggggaa ctcttgcagg acagtgaacc cggcagaaca    34513

gggcagccct cgcacacaac ttacattgtg catggacagg gtatcgcaat caggcagcac    34573

cgggtgatcc tccaccagag aagcgcgggt ctcggtctcc tcacagcgtg gtaaggggggc   34633

cggccgatac gggtgatggc gggacgcggc tgatcgtgtt cgcgaccgtg tcatgatgca    34693

gttgctttcg gacattttcg tacttgctgt agcagaacct ggtccgggcg ctgcacaccg    34753

atcgccggcg gcggtcccgg cgcttggaac gctcggtgtt gaagttgtaa aacagccact    34813

ctctcagacc gtgcagcaga tctagggcct caggagtgat gaagatccca tcatgcctga    34873

tggctctaat cacatcgacc accgtggaat gggccagacc cagccagatg atgcaatttt    34933

gttgggtttc ggtgacggcg ggggagggaa gaacaggaag aaccatgatt aacttttaat    34993

ccaaacggtc tcggagcact tcaaaatgaa gatcgcggag atggcacctc tcgcccccgc    35053
```

tgtgttggtg gaaaataaca gccaggtcaa aggtgatacg gttctcgaga tgttccacgg 35113

tggcttccag caaagcctcc acgcgcacat ccagaaacaa gacaatagcg aaagcgggag 35173

ggttctctaa ttcctcaatc atcatgttac actcctgcac catccccaga taattttcat 35233

ttttccagcc ttgaatgatt cgaactagtt cctgaggtaa atccaagcca gccatgataa 35293

agagctcgcg cagagcgccc tccaccggca ttcttaagca caccctcata attccaagat 35353

attctgctcc tggttcacct gcagcagatt gacaagcgga atatcaaaat ctctgccgcg 35413

atccctaagc tcctccctca gcaataactg taagtactct ttcatatcct ctccgaaatt 35473

tttagccata ggaccgccag gaatgagatt aggacaagcc acattacaga taaaccgaag 35533

tccccccccag tgagcattgc caaatgtaag attgaaataa gcatgctggc tagacccggt 35593

gatatcttcc agataactgg acagaaaatc gcccaggcaa tttttaagaa aatcaacaaa 35653

agaaaaatct tccaggtgca cgtttagggc ctcgggaaca acgatggagt aagtgcaagg 35713

ggtgcgttcc agcatggtta gttagctgat ctgtaaaaaa acaaaaaata aaacattaaa 35773

ccatgctagc ctggcgaaca ggtgggtaaa tcgttctctc cagcaccagg caggccacgg 35833

ggtctccggc gcgaccctcg taaaaattgt cgctatgatt gaaaaccatc acagagagac 35893

gttcccggtg gccggcgtga atgattcgac aagatgaata cacccccgga acattggcgt 35953

ccgcgagtga aaaaaagcgg ccgaggaagc aataaggcac tacaatgctc agtctcaagt 36013

ccagcaaagc gatgccatgc ggatgaagca caaaattctc aggtgcgtac aaaatgtaat 36073

tactcccctc ctgcacaggc agcaaagccc cagatccctc cagatacaca tacaaagcct 36133

cagcgtccat agcttaccga gcagcagcac acaacaggcg caagagtcag agaaaggctg 36193

agctctaacc tgtcccccgc tctctgctca atatatagcc cagatctaca ctgacgtaaa 36253

ggccaaagtc taaaaatacc cgccaaataa tcacacacgc ccagcacacg cccagaaacc 36313

ggtgacacac tcaaaaaaat acgcgcactt cctcaaacgc ccaaactgcc gtcatttccg 36373

ggttcccacg ctacgtcatc agaattcgac tttcaaatcc gtcgaccgtt aaacacgtca 36433

ctcgccccgc ccctaacggt cgcccttctc tccgccaatc accgccccgc atccccaaat 36493

tcaaacgcct catttgcata ttaacgcgca ccaaaagttt gaggtatatt attgatgatg 36553

<210> 2
<211> 504
<212> PRT
<213> Simian adenovirus 39

<400> 2

```
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 Ala 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 Thr 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 Ile Val Gly Arg Thr
    290                 295                 300

Lys Ser Val Leu Ser Val Lys Lys Cys Leu Phe Glu Arg Cys His Leu
305                 310                 315                 320

Gly Val Met Ser Glu Gly Glu Ala Arg Ile Arg His Cys Ala Ser Thr
                325                 330                 335

Glu Thr Gly Cys Phe Val Leu Cys Lys Gly Asn Ala Lys Ile 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 Ala Arg Lys Pro Trp Pro Glu Phe Glu His Asn Val Met Thr Arg
385                 390                 395                 400

Cys Asn Met His Leu Gly Ser Arg Arg Gly Met Phe Met Pro Tyr Gln
                405                 410                 415

Cys Asn Leu Asn Tyr 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 Asp Val 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 Phe Gln Pro Val Cys Val Asp Val Thr Glu
465                 470                 475                 480
```

```
Asp Leu Arg Pro Asp His Leu Val Leu Ser Cys Thr Gly Thr Glu Phe
                485                 490                 495

Gly Ser Ser Gly Glu Glu Ser Asp
            500
```

<210> 3
<211> 142
<212> PRT
<213> Simian adenovirus 39

<400> 3

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

Thr Gly Arg Leu Pro Ser Trp Ala Gly Val Arg Gln Asn Val Met Gly
            20                  25                  30

Ser Thr Val Asp Gly Arg Pro Val Gln Pro Ala Asn Ser Ser Thr Leu
        35                  40                  45

Thr Tyr Ala Thr Leu Ser Ser Ser Ser Val Asp Ala Ala Ala Ala Ala
    50                  55                  60

Ala Ala Ala Ser Ala Ala Ser Ala Val Arg Gly Met Ala Met Gly Ala
65                  70                  75                  80

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

Ala Ser Leu Asn Glu Glu Lys Leu Leu Leu Leu Met Ala Gln Leu Glu
            100                 105                 110

Ala Leu Thr Gln Arg Leu Gly Glu Leu Thr Gln Gln Val Ala Gln Leu
        115                 120                 125

Gln Glu Gln Thr Arg Ala Ala Val Ala Thr Val Lys Ser Lys
    130                 135                 140
```

<210> 4
<211> 393
<212> PRT
<213> Simian adenovirus 39

<400> 4

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

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

Asp Glu Glu Gly Glu Tyr Leu Glu Asp
385                 390


<210>  5
<211>  590
<212>  PRT
<213>  Simian adenovirus 39

<400>  5

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 Leu 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 Ala 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 Gly
                565                 570                 575

Asn Pro Phe Ala His Leu Arg Pro Arg Ile Gly Arg Met Met
            580                 585                 590
```

<210> 6
<211> 532
<212> PRT
<213> Simian adenovirus 39

<400> 6

```
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 Met Gln Pro Pro Leu Glu
            20                  25                  30

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

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

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

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

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

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

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

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

Asp Glu Leu Lys 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 Ala Ala Ala Glu
    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 Asn 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> 7
<211> 193
<212> PRT
<213> Simian adenovirus 39

<400> 7

```
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 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> 8
<211> 347
<212> PRT
<213> Simian adenovirus 39

<400> 8

```
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 Gln 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 Ser Ala Leu Lys Glu Glu
        115                 120                 125

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

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

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

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

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

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

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

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

Arg Pro Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn Tyr
            260                 265                 270
```

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

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

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

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

Pro Arg Ala Arg Tyr His Pro Ser Ile Ala Ile
            340                 345
```

<210> 9
<211> 77
<212> PRT
<213> Simian adenovirus 39

<400> 9

```
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> 10
<211> 259
<212> PRT
<213> Simian adenovirus 39

<400> 10

```
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 Asn 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> 11
<211> 940
<212> PRT
<213> Simian adenovirus 39

<400> 11

Met Ala Thr Pro Ser Met Leu Pro Gln Trp Ala Tyr Ile 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 Lys Lys Thr Gly Asn Asn Ala
130 135 140

Asn Gly Asp Thr Glu Asn Val Thr Tyr Gly Val Ala Ala Met Gly Gly
145 150 155 160

Ile Asp Ile Asp Lys Asn Gly Leu Gln Ile Gly Thr Asp Asp Thr Lys
165 170 175

Asp Asn Asp Asn Asp Ile Tyr Ala Asp Lys Thr Tyr Gln Pro Glu Pro
180 185 190

```
Gln Ile Gly Glu Glu Asn Trp Gln Glu Thr Tyr Ser Tyr Tyr Gly Gly
        195                 200                 205

Arg Ala Leu Lys Lys Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe
    210                 215                 220

Ala Arg Pro Thr Asn Val Lys Gly Gly Gln Ala Lys Ile Lys Thr Asp
225                 230                 235                 240

Gly Asp Val Lys Ser Phe Asp Ile Asp Leu Ala Phe Phe Asp Ile Pro
                245                 250                 255

Asn Ser Gly Ala Gly Asn Gly Thr Asn Val Asn Asn Tyr Pro Asp Met
            260                 265                 270

Val Met Tyr Thr Glu Asn Val Asn Leu Glu Thr Pro Asp Thr His Ile
        275                 280                 285

Val Tyr Lys Pro Gly Thr Ser Asp Asp Ser Ser Lys Val Asn Leu Cys
    290                 295                 300

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

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

Ala Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg
            340                 345                 350

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

Thr Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro
    370                 375                 380

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

Tyr Cys Phe Pro Leu Asp Gly Ala Gly Thr Asn Ser Val Tyr Gln Gly
                405                 410                 415

Val Lys Pro Lys Thr Asp Asn Gly Asn Asp Gln Trp Glu Thr Asp Ser
```

```
            420                 425                 430

Thr Val Ser Ser His Asn Gln Ile Cys Lys Gly Asn Ile Tyr Ala Met
        435                 440                 445

Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe Leu Tyr Ser Asn
    450                 455                 460

Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Pro Ala Asn Ile
465                 470                 475                 480

Thr Leu Pro Thr Asn Thr Asn Thr Tyr Asp Tyr Met Asn Gly Arg Val
                485                 490                 495

Val Pro Pro Ser Leu Val Asp Ala Tyr Ile Asn Ile Gly Ala Arg Trp
            500                 505                 510

Ser Leu Asp Pro Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn
        515                 520                 525

Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val
    530                 535                 540

Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Ser Leu
545                 550                 555                 560

Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp
                565                 570                 575

Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Thr Asp
            580                 585                 590

Gly Ala Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala Thr Phe Phe
        595                 600                 605

Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn
    610                 615                 620

Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met
625                 630                 635                 640

Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro
                645                 650                 655
```

```
Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr Arg Leu Lys
            660                 665                 670

Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro Tyr Phe Val
        675                 680                 685

Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His
    690                 695                 700

Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser Val Ser Trp Pro
705                 710                 715                 720

Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Thr
                725                 730                 735

Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp
            740                 745                 750

Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly Tyr Gln Gly
        755                 760                 765

Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg
    770                 775                 780

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

Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn Ser Gly Phe
                805                 810                 815

Val Gly Tyr Leu Ala Pro Thr Met Cys Gln Gly Gln Pro Tyr Pro Ala
            820                 825                 830

Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr Ser Val Thr
        835                 840                 845

Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile Pro Phe Ser
    850                 855                 860

Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Met
865                 870                 875                 880

Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe Glu Val Asp
                885                 890                 895
```

```
Pro Met Asp Glu Ser Thr Leu Leu Tyr Val Val Phe Glu Val Phe Asp
            900                 905                 910

Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Ala Val Tyr
        915                 920                 925

Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
    930                 935                 940
```

<210> 12
<211> 208
<212> PRT
<213> Simian adenovirus 39

<400> 12

```
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> 13
<211> 801
<212> PRT
<213> Simian adenovirus 39

<400> 13

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

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

Pro Pro Ser Pro Thr Ser Asp 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 Ser 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 Glu Glu Gly Lys Gly Gly Leu Lys Leu Thr Pro Gly
    610                 615                 620

Leu Trp Thr Ser Ala Tyr Leu Arg Lys Phe Val Pro Glu Asp Tyr His
```

625 630 635 640

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

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

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

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

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

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

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

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

Ser Arg Arg Gln Thr Val Val Leu Gly Gly Gly Gly Glu Ser Lys Gln
770 775 780

His Gly Tyr His Leu Arg Ser Gly Ser Gly Ser Arg Arg Pro Gly Pro
785 790 795 800

Gln

<210> 14
<211> 227
<212> PRT
<213> Simian adenovirus 39

<400> 14

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 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>  15
<211>  106
<212>  PRT
<213>  Simian adenovirus 39
```

<400> 15

```
Met Ser His Gly Gly Ala Ala Asp Ile 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> 16
<211> 176
<212> PRT
<213> Simian adenovirus 39

<400> 16

```
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 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

Val 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> 17
<211> 206
<212> PRT
<213> Simian adenovirus 39

<400> 17

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

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

His Thr Leu Lys Gly Pro Glu Lys Ala Thr Glu Val Ser Trp Tyr Cys
        35                  40                  45

Tyr Phe Asn Glu Ser Asp Val Ser Thr Glu Leu Cys Gly Asn Lys Asn
    50                  55                  60

Lys Lys Asn Glu Ser Ile Thr Leu Ile Lys Phe Gln Cys Gly Ser Asp
65                  70                  75                  80

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

Thr Thr Ala Gly Ile Ser Asp Met Glu Phe Tyr Gln Val Ser Val Ser
            100                 105                 110

Glu Pro Thr Thr Pro Arg Met Thr Thr Thr Thr Lys Thr Thr Pro Val
```

```
        115                 120                 125

Thr Thr Met Gln Leu Thr Thr Asn Gly Phe Leu Ala Met Leu Gln Val
    130                 135                 140

Ala Glu Asn Ser Thr Ser Ile Gln Pro Thr Pro Pro Ser Glu Glu Ile
145                 150                 155                 160

Pro Arg Ser Met Ile Gly Ile Ile Val Ala Val Val Val Cys Met Leu
                165                 170                 175

Ile Ile Ala Leu Cys Met Val Tyr Tyr Ala Phe Cys Tyr Arg Lys His
            180                 185                 190

Arg Leu Asn Asp Lys Leu Glu His Leu Leu Ser Val Glu Phe
        195                 200                 205


<210>  18
<211>  205
<212>  PRT
<213>  Simian adenovirus 39

<400>  18

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 Thr Asn Tyr
            20                  25                  30

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

Gly Ser Asp Thr Thr Glu Thr Glu Leu Cys Asn Leu Lys Asn Gly Lys
    50                  55                  60

Ile Gln Asn Ser Lys Ile Asn 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 Thr Cys Pro
                85                  90                  95

Gly Asp Asp Ala Asp Ser Met Ile Phe Tyr Lys Val Thr Val Val Asp
            100                 105                 110

Pro Thr Thr Pro Pro Pro Pro Thr Thr Thr Thr Thr His Thr Thr His
```

```
        115                 120                 125

Ile Glu Gln Thr Thr Ala Glu Ala Ala Gly Glu Leu Ala Leu Gln Val
    130                 135                 140

Gln Glu Asp Ser Leu Met Ala Asn Thr Pro Thr Pro Asp His Arg Cys
145                 150                 155                 160

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

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

Tyr Arg Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
        195                 200                 205
```

<210> 19
<211> 295
<212> PRT
<213> Simian adenovirus 39

<400> 19

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

Phe Ser Ala Gly Phe Leu Lys Asn Leu Thr Ile Tyr Glu Gly Glu 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 Asp Ile Cys Asp Trp Asn Val Thr Val Tyr
    50                  55                  60

Thr Cys Asn 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 Arg Asn Asn Gly Tyr Glu
                85                  90                  95

Ser His Asn Met Phe Ile Tyr Asp Val Thr Val Ile Arg Asn Glu Thr
            100                 105                 110

Ala Thr Thr Gln Met Pro Thr Thr His Ser Ser Thr Thr Thr Ser Met
```

```
        115                 120                 125

Gln Thr Thr Gln Thr Thr Thr Phe Tyr Thr Ser Thr Gln His Ile Thr
    130                 135                 140

Thr Thr Ala Ala Lys Pro Ser Ser Ala Ala Pro Gln Pro Gln Ala Leu
145                 150                 155                 160

Ala Leu Lys Ala Ala Gln Pro Ser Thr Thr Thr Arg Thr Asn Glu Gln
                165                 170                 175

Thr Thr Asp Phe Leu Ser Thr Val Glu Ser His Thr Thr Ala Thr Ser
            180                 185                 190

Ser Ala Phe Ser Ser Thr Ala Asn Leu Ser Ser Leu Ser Ser Thr Pro
        195                 200                 205

Ile Ser Pro Ala Thr Thr Pro Thr Pro Ala Leu Leu Pro Thr Pro Leu
    210                 215                 220

Lys Gln Thr Glu Asn Ser Gly Met Gln Trp Gln Ile Thr Leu Leu Ile
225                 230                 235                 240

Val Ile Gly Leu Val Ile Leu Ala Val Leu Leu Tyr Tyr Ile Phe Cys
                245                 250                 255

Arg Arg Ile Pro Asn Ala His Arg Lys Pro Val Tyr Lys Pro Ile Val
            260                 265                 270

Ile Gly Gln Pro Glu Pro Leu Gln Val Glu Gly Gly Leu Arg Asn Leu
        275                 280                 285

Leu Phe Ser Phe Thr Val Trp
    290                 295


<210>  20
<211>  91
<212>  PRT
<213>  Simian adenovirus 39

<400>  20

Met Ile Pro Arg Gln Phe Leu Ile Thr Ile Leu Ile Cys Leu Leu Gln
1               5                   10                  15

Val Cys Ala Thr Leu Ala Leu Val Ala Asn Ala Ser Pro Asp Cys Ile
```

```
            20                  25                  30

Gly Pro Phe Ala Ser Tyr Val Leu Phe Ala Phe Ile Thr Cys Ile Cys
        35                  40                  45

Cys Cys Ser Ile Val Cys Leu Leu Ile Thr Phe Phe Gln Phe Ile Asp
    50                  55                  60

Trp Ile Phe Val Arg Ile Ala Tyr Leu Arg His His Pro Gln Tyr Arg
65                  70                  75                  80

Asp Gln Gln Val Ala Arg Leu Leu Arg Leu Leu
                85                  90
```

<210> 21
<211> 142
<212> PRT
<213> Simian adenovirus 39

<400> 21

```
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 Gln Pro Arg Pro
            100                 105                 110

Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala Glu Pro Gln Arg Pro Met
        115                 120                 125

Leu Pro Ala Ile Ser Tyr Phe Asn Leu Thr Gly Gly Asp Asp
```

130 135 140

<210> 22
<211> 489
<212> PRT
<213> Simian adenovirus 39

<400> 22

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 Glu Ser Gly Lys Leu Ile Ser Lys
115 120 125

Asn Ala Thr Lys Ala Thr Ala Pro Leu Ser Ile Ser Asn Asn Thr Ile
130 135 140

Ser Leu Asn Leu Asp Thr Pro Phe Tyr Thr Lys Asp Gly Lys Leu Thr
145 150 155 160

Met Gln Val Thr Ala Pro Leu Lys Leu Ala Asn Thr Ala Ile Leu Asn
165 170 175

Thr Leu Ala Met Ala Tyr Gly Asn Gly Leu Gly Leu Ser Asn Asn Ala
180 185 190

Leu Thr Val Gln Val Thr Ser Pro Leu Thr Phe Asp Asn Ser Lys Val

```
        195                 200                 205

Lys Ile Asn Leu Gly Asn Gly Pro Leu Met Val Ser Ala Asn Lys Leu
    210                 215                 220

Ser Ile Asn Cys Leu Arg Gly Leu Tyr Val Ala Pro Asn Asn Thr Gly
225                 230                 235                 240

Leu Glu Thr Asn Ile Ser Trp Ala Asn Ala Met Arg Phe Glu Gly Asn
                245                 250                 255

Ala Met Ala Val Asn Ile Asp Thr Asn Lys Gly Leu Gln Phe Gly Thr
            260                 265                 270

Thr Ser Thr Glu Thr Gly Val Thr Asn Ala Tyr Pro Ile Gln Val Lys
        275                 280                 285

Leu Gly Ala Gly Leu Ala Phe Asp Ser Thr Gly Ala Ile Val Ala Trp
    290                 295                 300

Asn Lys Glu Asn Asp Ser Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser
305                 310                 315                 320

Pro Asn Cys Lys Ile Ala Ser Glu Lys Asp Ala Lys Leu Thr Leu Cys
                325                 330                 335

Leu Thr Lys Cys Gly Ser Gln Ile Leu Gly Thr Val Ser Leu Leu Ala
            340                 345                 350

Val Ser Gly Ser Leu Ala Pro Ile Thr Gly Ala Val Ser Thr Ala Leu
        355                 360                 365

Val Ser Leu Lys Phe Asn Ala Asn Gly Ala Leu Leu Asp Lys Ser Thr
    370                 375                 380

Leu Asn Lys Glu Tyr Trp Asn Tyr Arg Gln Gly Asp Leu Ile Pro Gly
385                 390                 395                 400

Thr Pro Tyr Thr His Ala Val Gly Phe Met Pro Asn Lys Lys Ala Tyr
                405                 410                 415

Pro Lys Asn Thr Thr Ala Ala Ser Lys Ser His Ile Val Gly Asp Val
            420                 425                 430
```

```
Tyr Leu Asp Gly Asp Ala Asp Lys Pro Leu Ser Leu Ile Ile Thr Phe
        435                 440                 445


Asn Glu Thr Asp Asp Glu Thr Cys Asp Tyr Cys Ile Asn Phe Gln Trp
    450                 455                 460


Lys Trp Ser Ala Glu Gln Tyr Lys Glu Lys Thr Leu Ala Thr Ser Ser
465                 470                 475                 480


Phe Thr Phe Ser Tyr Ile Ala Gln Glu
                485


<210>  23
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<212>  DNA
<213>  Simian adenovirus 39


<220>
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gcaggactc atg gag atc tgg acg gtc ttg gaa gac ttt cac cag act aga       51
          Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Gln Thr Arg
          1               5                   10

cag ctg cta gag aac tca tcg gag gaa gtc tcc tac ctg tgg aga ttc         99
Gln Leu Leu Glu Asn Ser Ser Glu Glu Val Ser Tyr Leu Trp Arg Phe
15                  20                  25                  30

tgc ttc ggt ggg cct cta gct aag cta gtc tat agg gcc aaa cag gat        147
Cys Phe Gly Gly Pro Leu Ala Lys Leu Val Tyr Arg Ala Lys Gln Asp
                35                  40                  45

tat aag gat caa ttt gag gat att ttg aga gag tgt cct ggt att ttt        195
Tyr Lys Asp Gln Phe Glu Asp Ile Leu Arg Glu Cys Pro Gly Ile Phe
            50                  55                  60

gac tct ctc aac ttg ggc cat cag tct cac ttt aac cag agt att ctg        243
Asp Ser Leu Asn Leu Gly His Gln Ser His Phe Asn Gln Ser Ile Leu
        65                  70                  75

aga gcc ctt gac ttt tct act cct ggc aga act acc gcc gcg gta gcc        291
Arg Ala Leu Asp Phe Ser Thr Pro Gly Arg Thr Thr Ala Ala Val Ala
    80                  85                  90

ttt ttt gcc ttt atc ctt gac aaa tgg agt caa gaa acc cat ttc agc        339
Phe Phe Ala Phe Ile Leu Asp Lys Trp Ser Gln Glu Thr His Phe Ser
95                  100                 105                 110

agg gat tac cgt ctg gac tgc tta gca gta gct ttg tgg aga aca tgg        387
Arg Asp Tyr Arg Leu Asp Cys Leu Ala Val Ala Leu Trp Arg Thr Trp
                115                 120                 125
```

```
agg tgc cag cgc ctg aat gca atc tcc ggc tac ttg cca gta cag ccg        435
Arg Cys Gln Arg Leu Asn Ala Ile Ser Gly Tyr Leu Pro Val Gln Pro
            130                 135                 140

gta gac acg ctg agg atc ctg agt ctc cag tca ccc cag gaa cac caa        483
Val Asp Thr Leu Arg Ile Leu Ser Leu Gln Ser Pro Gln Glu His Gln
        145                 150                 155

cgc cgc cag cag ccg cag cag gag cag cag caa gag gag gag gag gac        531
Arg Arg Gln Gln Pro Gln Gln Glu Gln Gln Gln Glu Glu Glu Glu Asp
    160                 165                 170

cga gaa gag aac ccg aga gcc ggt ctg gac cct ccg gtg gcg gag gag        579
Arg Glu Glu Asn Pro Arg Ala Gly Leu Asp Pro Pro Val Ala Glu Glu
175                 180                 185                 190

gag gag tagct                                                         590
Glu Glu
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<210> 24
<211> 192
<212> PRT
<213> Simian adenovirus 39

<400> 24

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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 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 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 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>  25
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<212>  DNA
<213>  Simian adenovirus 39


<220>
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<223>  label=E3\CR1\alpha

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<223>  label=E3\14.7K

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cccagg atg ccc cga gga agc agc aag aag ctg aaa gtg gag ctg ccg          48
       Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro
       1               5                   10

ccg gag gat ttg gag gaa gac tgg gag agc agt cag gca gag gag gag         96
Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu
15                  20                  25                  30

gag atg gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa        144
Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
                35                  40                  45

gac agt ctg gag gaa gac gag gtg gag gag gag gca gag gaa gaa gca        192
Asp Ser Leu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala
            50                  55                  60

gcc gcc gcc aga ccg tcg tcc tcg gcg gag gag gag aaa gca agc agc        240
Ala Ala Ala Arg Pro Ser Ser Ser Ala Glu Glu Glu Lys Ala Ser Ser
        65                  70                  75
```

```
acg gat acc atc tcc gct ccg ggt cgg ggt cgc ggc ggc cgg gcc cac        288
Thr Asp Thr Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His
    80                  85                  90

agt aga tgg gac gag acc ggg cgc ttc ccg aac ccc acc acc cag acc        336
Ser Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr
95                  100                 105                 110

ggt aag aag gag cgg cag gga tac aag tcc tgg cgg ggg cac aaa aac        384
Gly Lys Lys Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn
                115                 120                 125

gcc atc gtc tcc tgc ttg caa gcc tgc ggg ggc aac atc tcc ttc acc        432
Ala Ile Val Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr
            130                 135                 140

cgg cgc tac ctg ctc ttc cac cgc ggg gtg aac ttc ccc cgc aac atc        480
Arg Arg Tyr Leu Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile
        145                 150                 155

ttg cat tac tac cgt cac ctc cac agc ccc tac tac tgt ttc caa gaa        528
Leu His Tyr Tyr Arg His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu
    160                 165                 170

gag gca gaa acc cag cag cag cag cag aaa acc agc agc agc                570
Glu Ala Glu Thr Gln Gln Gln Gln Gln Lys Thr Ser Ser Ser
175                 180                 185

tagaaaatcc acggcggcag gtggactgag gatcgcggcg aacgagccgg cgcagacccg      630

ggagctgagg aaccggatct ttcccaccct ctatgccatc ttccagcaga gtcgggggca      690

ggagcaggaa ctgaaagtca agaaccgttc tctgcgctcg ctcacccgca gttgtctgta      750

tcacaagagc gaagaccaac ttcagcgcac tctcgaggac gccgaggctc tcttcaacaa      810

gtactgcgcg ctcactctta aagagtagcc cgcgcccgcc cagccgcaga aaaaggcggg      870

aattacgtca cctgtgccct tcgcccgacc atcatgagca aagagattcc cacgccttac      930

atgtggagct accagcccca gatgggcctg gccgccggcg ccgcccagga ctactccacc      990

cgcatgaatt ggctcagcgc cgggcccgcg atgatctcac gggtgaatga catccgcgcc     1050

caccgaaacc agatactcct agaacagtca gcgctcaccg ccacgccccg caatcacctc     1110

aacccgcgta attggcccgc cgccctggtg taccaggaaa ttccccagcc cacgaccgta     1170

ctacttccgc gagacgccca ggccgaagtc cagctgacta actcaggtgt ccagctggcg     1230

ggcggcgcca ccctgtgtcg tcaccgcccc gctcagggta taaagcggct ggtgatccgg     1290

ggcagaggca cacagctcaa cgacgaggtg gtgagctctt cgctgggtct gcgacctgac     1350

ggagtcttcc aactcgccgg atcggggaga tcttccttca cgcctcgtca ggccgtgctg     1410

actttggaga gttcgtcctc gcagccccgc tcgggcggca tcggcactct ccagttcgtg     1470
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gaggagttca ctccctcggt ctacttcaac cccttctccg gctcccccgg gcactacccg     1530

gacgagttca tcccgaactt tgacgccatc agcgagtcgg tggacggcta cgattgaatg     1590

tcccatggtg gcgcggctga catagctcgg cttcgacacc tggaccactg ccgccgcttt     1650

cgctgcttcg ctcgggacct cgccgagttc acctactttg agctgcccga ggagcatcct     1710

cagggcccgg cccacggagt gcggatcgtc gtcgaagggg gcctagactc ccacctgctt     1770

cggatcttca gccagcgccc gatcctggtc gagcgccaac agggcaacac cctcctgacc     1830

ctctactgca tctgcgacca ccccggcctg c atg aaa gtc ttt gtt gtc tgc        1882
                                    Met Lys Val Phe Val Val Cys
                                        190                 195

tgt gta ctg agt ata ata aaa gct gag atc agc gac tac tcc gga ctc       1930
Cys Val Leu Ser Ile Ile Lys Ala Glu Ile Ser Asp Tyr Ser Gly Leu
                200                 205                 210

aac tgt ggt gtt tct gca tcc atc aac cag tct cta acc ttc acc ggg       1978
Asn Cys Gly Val Ser Ala Ser Ile Asn Gln Ser Leu Thr Phe Thr Gly
            215                 220                 225

aac gag acc gag ctc cag ctc cag tgt aag ccc cac aag aag tac ctc       2026
Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys Pro His Lys Lys Tyr Leu
        230                 235                 240

acc tgg ctg tac cag ggc tcc ccg atc gcc gtt gtt aac cac tgc gac       2074
Thr Trp Leu Tyr Gln Gly Ser Pro Ile Ala Val Val Asn His Cys Asp
    245                 250                 255

gac gac gga gtc ctg ctg aac ggc ccc gcc aac ctt act ttt tcc acc       2122
Asp Asp Gly Val Leu Leu Asn Gly Pro Ala Asn Leu Thr Phe Ser Thr
260                 265                 270                 275

cgc aga agc aag cta ctg ctc ttc cga ccc ttc ctc ccc ggc acc tat       2170
Arg Arg Ser Lys Leu Leu Leu Phe Arg Pro Phe Leu Pro Gly Thr Tyr
                280                 285                 290

cag tgc gtc tcg gga ccc tgc cat cac acc ttc cac ctg atc ccg aat       2218
Gln Cys Val Ser Gly Pro Cys His His Thr Phe His Leu Ile Pro Asn
            295                 300                 305

acc acc tct tcc cca gcg ccg ctc ccc act aac aac caa act aac cac       2266
Thr Thr Ser Ser Pro Ala Pro Leu Pro Thr Asn Asn Gln Thr Asn His
        310                 315                 320

cac cgc tac cga cgc gac ctc gtt gaa tct aat acc acc cac acc gga       2314
His Arg Tyr Arg Arg Asp Leu Val Glu Ser Asn Thr Thr His Thr Gly
    325                 330                 335

ggt gag ctc caa ggt cgc aaa ccc tct ggg att tat tac ggc ccc tgg       2362
Gly Glu Leu Gln Gly Arg Lys Pro Ser Gly Ile Tyr Tyr Gly Pro Trp
340                 345                 350                 355

gag gtg gtg ggg tta ata gct tta ggc tta gta gcg ggt ggg ctt ttg       2410
Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Ala Gly Gly Leu Leu
                360                 365                 370
```

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gct ctc tgc tac cta tac atc cct tgc tgt tct tac tta gtg gtg ctg      2458
Ala Leu Cys Tyr Leu Tyr Ile Pro Cys Cys Ser Tyr Leu Val Val Leu
            375                 380                 385

tgt tgc tgg ttt aag aaa tgg ggc aga tca ccc tagtgagctg cggtgtgctg    2511
Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
        390                 395

gtggcggtgg tgctttcgat tgtgggactg ggcggcgcgg ctgtagtgaa ggagaaggcc    2571

gatccctgct tgcatttcaa tcccgacaaa tgccagctga gttttcagcc cgatggcaat    2631

cggtgcgcgg tgctgatcaa gtgcggatgg gaatgcgaga acgtgagaat cgagtacaat    2691

aacaagactc ggaacaatac tctcgcgtcc gtgtggcagc ccggggaccc cgagtggtac    2751

accgtctctg tccccggtgc tgacggctcc ccgcgcaccg tgaataatac tttcattttt    2811

gcgcacatgt gcgacacggt catgtggatg agcaagcagt acgatatgtg gccccccacg    2871

aaggagaaca tcgtggtctt ctccatcgct tacagcgtgt gcacggcgct aatcaccgct    2931

atcgtgtgcc tgagcattca catgctcatc gctattcgcc ccagaaataa tgccgaaaaa    2991

gaaaaacagc cataacacgt tttttcacac acctttttca gaccatggcc tctgttaaat    3051

ttttgctttt atttgccagt ctcattaccg tcattcatgg aatgagtaat gagaaaatta    3111

ctatttacac tggcactaat cacacattga aaggtccaga aaaagccaca gaagtttcat    3171

ggtattgtta ttttaatgaa tcagatgtat ctactgaact ctgtggaaac aagaacaaaa    3231

aaaatgagag cattactctc atcaagtttc aatgtggatc tgacttaacc ctaattaaca    3291

tcactagaga ctatgtaggt atgtattatg gaactacagc aggcatttca gacatggaat    3351

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cacctgttac cactatgcag ctcactacca atggctttct tgccatgctt caagtggctg    3471

aaaatagcac cagcattcaa cccaccccac ccagtgagga aattcccaga tccatgattg    3531

gcattattgt tgctgtagtg gtgtgcatgt tgatcatcgc cttgtgcatg gtgtactatg    3591

ccttctgcta cagaaagcac agactgaacg acaagctgga acacttacta agtgttgaat    3651

tttaattttt tagaaccatg aagatcctag gccttttaat tttttctatc attacctctg    3711

ctctatgcaa ttctgacaat gaggacgtta ctgtcgttgt cggaaccaat tatacactga    3771

aaggtccagc gaagggtatg ctttcgtggt attgctattt tggatctgac actacagaaa    3831

ctgaattatg caatcttaag aatggcaaaa ttcaaaattc taaaattaac aattatatat    3891

gcaatggtac tgatctgata ctcctcaata tcacgaaatc atatgctggc agttacacct    3951

gccctggaga tgatgctgac agtatgattt tttacaaagt aactgttgtt gatcctacta    4011
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ctccacctcc gcccaccacc acaactactc acaccacaca catagaacaa accacagcag 4071

aggcagcagg agagttagcc ttgcaggttc aggaagattc ccttatggct aataccccta 4131

cacccgatca tcggtgtccg gggctgctcg tcagcggcat tgtcggtgtg ctttcgggat 4191

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aaaaatcaga cccactgctg aacctctatg tttaattttt tccagagcca tgaaggcagt 4311

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tcttaccatt tatgaaggtg agaatgccac tctagtgggc atcagtggtc aaaatgtcag 4431

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cgtcactgtc atcagaaacg agactgccac cacacagatg cccactacac acagttctac 4671

cactactagc atgcaaacca cacagacaac cacttttat acatcaactc agcatatcac 4731

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tgtgatttac ccctgctttg actttggttg gaactcgcca gaggcgctct atctcccgcc 5751

tgaacctgac acaccaccac agcaacctca ggcacatgca ctaccaccac agcctaggcc 5811

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acaatacatg cccatattag actatgaggc cgagccacag cgacccatgc tccccgctat     5871

tagttacttc aatctaaccg gcggag atg act gac cca ctg gcc aac aac aac      5924
                            Met Thr Asp Pro Leu Ala Asn Asn Asn
                                400                 405

gtc aac gac ctt ctc ctg gac atg gac ggc cgc gcc tcg gag cag cga       5972
Val Asn Asp Leu Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln Arg
        410                 415                 420

ctc gcc caa ctc cgc atc cgc cag cag cag gag aga gcc gtc aag gag       6020
Leu Ala Gln Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys Glu
    425                 430                 435

ctg cag gat gcg gtg gcc atc cac cag tgc aag aaa ggc atc ttc tgc       6068
Leu Gln Asp Ala Val Ala Ile His Gln Cys Lys Lys Gly Ile Phe Cys
440                 445                 450                 455

ctg gtg aag cag gcc aag atc acc ttc gag gtg act tcc acc gac cat       6116
Leu Val Lys Gln Ala Lys Ile Thr Phe Glu Val Thr Ser Thr Asp His
                460                 465                 470

cgc ctc tcc tac gag ctc ctg cag caa cgc cag aag ttc acc tgc ctg       6164
Arg Leu Ser Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe Thr Cys Leu
            475                 480                 485

gtc gga gtc aac ccc atc gtc atc acc cag cag tct ggc gat acc aag       6212
Val Gly Val Asn Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr Lys
        490                 495                 500

ggt tgc atc cac tgc tcc tgc gac tcc ccc gag tgc gtt cac acc atg       6260
Gly Cys Ile His Cys Ser Cys Asp Ser Pro Glu Cys Val His Thr Met
    505                 510                 515

atc aag acc ctc tgc ggc ctc cgc gac ctc ctc ccc atg aac taatcaac      6310
Ile Lys Thr Leu Cys Gly Leu Arg Asp Leu Leu Pro Met Asn
520                 525                 530
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<210> 26
<211> 188
<212> PRT
<213> Simian adenovirus 39

<400> 26

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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 Glu Glu Met
            20                  25                  30

Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
        35                  40                  45
```

```
Leu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala Ala
    50                  55                  60

Ala Arg Pro Ser Ser Ser Ala Glu Glu Glu Lys Ala Ser Ser Thr Asp
65                  70                  75                  80

Thr Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser Arg
                85                  90                  95

Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys
            100                 105                 110

Lys Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile
        115                 120                 125

Val Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg
    130                 135                 140

Tyr Leu Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His
145                 150                 155                 160

Tyr Tyr Arg His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala
                165                 170                 175

Glu Thr Gln Gln Gln Gln Gln Lys Thr Ser Ser Ser
            180                 185


<210>  27
<211>  210
<212>  PRT
<213>  Simian adenovirus 39

<400>  27

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 Thr Tyr Gln Cys Val 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 His Arg Tyr Arg Arg Asp Leu Val Glu
    130                 135                 140

Ser Asn Thr Thr His Thr Gly Gly Glu Leu Gln Gly Arg Lys Pro Ser
145                 150                 155                 160

Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly
                165                 170                 175

Leu Val Ala Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Ile Pro Cys
            180                 185                 190

Cys Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg
        195                 200                 205

Ser Pro
    210
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<210> 28
<211> 135
<212> PRT
<213> Simian adenovirus 39

<400> 28

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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 Ala Val Ala Ile
        35                  40                  45
```

```
His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile
    50                  55                  60

Thr Phe Glu Val Thr Ser 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 Glu Cys Val His Thr Met Ile Lys Thr Leu Cys Gly Leu
        115                 120                 125

Arg Asp Leu Leu Pro Met Asn
    130                 135


<210>  29
<211>  870
<212>  DNA
<213>  Simian adenovirus 39


<220>
<221>  CDS
<222>  (6)..(573)
<223>  label=Ela

<220>
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<222>  (658)..(863)
<223>  label=Ela

<400>  29
gaaag atg agg cac ctg aga gac ctg ccc ggt aat gtt ttc ctg gct act       50
      Met Arg His Leu Arg Asp Leu Pro Gly Asn Val Phe Leu Ala Thr
      1               5                   10                  15

ggg aac gag att ctg gaa ctg gtg gtg gac gcc atg atg ggt gac gac         98
Gly Asn Glu Ile Leu Glu Leu Val Val Asp Ala Met Met Gly Asp Asp
                20                  25                  30

cct ccg gag ccc cct acc cca ttt gag gcg cct tcg ctg tac gat ttg        146
Pro Pro Glu Pro Pro Thr Pro Phe Glu Ala Pro Ser Leu Tyr Asp Leu
            35                  40                  45

tat gat ctg gag gtg gat gtg ccc gag aac gac ccc aac gag gag gcg        194
Tyr Asp Leu Glu Val Asp Val Pro Glu Asn Asp Pro Asn Glu Glu Ala
        50                  55                  60

gtg aat gat ttg ttt agc gat gcc gcg ctg ctg gct gcc gag cag gct        242
Val Asn Asp Leu Phe Ser Asp Ala Ala Leu Leu Ala Ala Glu Gln Ala
```

```
    65                  70                  75

aat atg gac tct ggc tca gac agc gat tcc tct ctc cat acc ccg aga        290
Asn Met Asp Ser Gly Ser Asp Ser Asp Ser Ser Leu His Thr Pro Arg
80                  85                  90                  95

ccc ggc aga ggt gag aaa aag atc ccc gag ctt aaa ggg gaa gag ctc        338
Pro Gly Arg Gly Glu Lys Lys Ile Pro Glu Leu Lys Gly Glu Glu Leu
                100                 105                 110

gac ctg cga tgt tat gag gaa tgc ttg cct ccg agc gat gat gag gag        386
Asp Leu Arg Cys Tyr Glu Glu Cys Leu Pro Pro Ser Asp Asp Glu Glu
            115                 120                 125

gac gag gag acg att cga gct gcg gcg aac cag gga gtg aaa gct gcg        434
Asp Glu Glu Thr Ile Arg Ala Ala Ala Asn Gln Gly Val Lys Ala Ala
        130                 135                 140

ggc gag agc ttt agc ctg gac tgt cct act ctg ccc gga cac ggc tgt        482
Gly Glu Ser Phe Ser Leu Asp Cys Pro Thr Leu Pro Gly His Gly Cys
    145                 150                 155

aag tct tgt gaa ttt cat cgc atg aat act gga gat aag aat gtg atg        530
Lys Ser Cys Glu Phe His Arg Met Asn Thr Gly Asp Lys Asn Val Met
160                 165                 170                 175

tgt gcc ctg tgc tat atg aga gct tac aac cat tgt gtt tac a             573
Cys Ala Leu Cys Tyr Met Arg Ala Tyr Asn His Cys Val Tyr
                180                 185

gtaagtgtga ttaactttag ctgggggggc agagggtgac tgggtgctga ctggtttatt      633

tatgtatatg ttttttatgt gtag gt  ccc gtc tct gac gca gat gag acc         683
                           Ser Pro Val Ser Asp Ala Asp Glu Thr
                                                   195

ccc act tca gag tgc att tca tca ccc cca gaa att ggc gag gaa ccg        731
Pro Thr Ser Glu Cys Ile Ser Ser Pro Pro Glu Ile Gly Glu Glu Pro
    200                 205                 210

ccc gaa gat att att cat aga cca gtt gca gtg aga gtc acc ggg cgg        779
Pro Glu Asp Ile Ile His Arg Pro Val Ala Val Arg Val Thr Gly Arg
215                 220                 225                 230

aga gca gct gtg gag agt ttg gat gac ttg cta cag ggt ggg gat gaa        827
Arg Ala Ala Val Glu Ser Leu Asp Asp Leu Leu Gln Gly Gly Asp Glu
                235                 240                 245

cct ttg gac ttg tgt acc cgg aaa cgc ccc agg cac taagtgc                870
Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro Arg His
            250                 255
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<210> 30
<211> 258
<212> PRT
<213> Simian adenovirus 39

<400> 30

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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 Pro 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

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

Ser Asp Ala Asp Glu Thr Pro Thr Ser Glu Cys Ile Ser Ser Pro Pro
        195                 200                 205

Glu Ile Gly Glu Glu Pro Pro Glu Asp Ile Ile His Arg Pro Val Ala
    210                 215                 220

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

```
Leu Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro
                245                 250                 255

Arg His
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<210> 31
<211> 840
<212> DNA
<213> Simian adenovirus 39

<220>
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<222> (7)..(337)
<223> label=33K

<220>
<221> CDS
<222> (507)..(835)
<223> label=33K

<400> 31

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cccagg atg ccc cga gga agc agc aag aag ctg aaa gtg gag ctg ccg          48
       Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro
       1               5                   10

ccg gag gat ttg gag gaa gac tgg gag agc agt cag gca gag gag gag         96
Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu
15                  20                  25                  30

gag atg gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa        144
Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
                35                  40                  45

gac agt ctg gag gaa gac gag gtg gag gag gag gca gag gaa gaa gca        192
Asp Ser Leu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala
            50                  55                  60

gcc gcc gcc aga ccg tcg tcc tcg gcg gag gag gag aaa gca agc agc        240
Ala Ala Ala Arg Pro Ser Ser Ser Ala Glu Glu Glu Lys Ala Ser Ser
        65                  70                  75

acg gat acc atc tcc gct ccg ggt cgg ggt cgc ggc ggc cgg gcc cac        288
Thr Asp Thr Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His
    80                  85                  90

agt aga tgg gac gag acc ggg cgc ttc ccg aac ccc acc acc cag acc g      337
Ser Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr
95                  100                 105                 110

gtaagaagga gcggcaggga tacaagtcct ggcgggggca caaaaacgcc atcgtctcct      397

gcttgcaagc ctgcgggggc aacatctcct tcacccggcg ctacctgctc ttccaccgcg      457
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gggtgaactt cccccgcaac atcttgcatt actaccgtca cctccacag cc  cct act      514
                                                        Ala Pro Thr


act gtt tcc aag aag agg cag aaa ccc agc agc agc agc aga aaa cca        562
Thr Val Ser Lys Lys Arg Gln Lys Pro Ser Ser Ser Ser Arg Lys Pro
    115                 120                 125

gca gca gct aga aaa tcc acg gcg gca ggt gga ctg agg atc gcg gcg        610
Ala Ala Ala Arg Lys Ser Thr Ala Ala Gly Gly Leu Arg Ile Ala Ala
130                 135                 140                 145

aac gag ccg gcg cag acc cgg gag ctg agg aac cgg atc ttt ccc acc        658
Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg Asn Arg Ile Phe Pro Thr
                150                 155                 160

ctc tat gcc atc ttc cag cag agt cgg ggg cag gag cag gaa ctg aaa        706
Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly Gln Glu Gln Glu Leu Lys
            165                 170                 175

gtc aag aac cgt tct ctg cgc tcg ctc acc cgc agt tgt ctg tat cac        754
Val Lys Asn Arg Ser Leu Arg Ser Leu Thr Arg Ser Cys Leu Tyr His
        180                 185                 190

aag agc gaa gac caa ctt cag cgc act ctc gag gac gcc gag gct ctc        802
Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu Glu Asp Ala Glu Ala Leu
    195                 200                 205

ttc aac aag tac tgc gcg ctc act ctt aaa gag tagcc                    840
Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys Glu
210                 215                 220


<210>  32
<211>  220
<212>  PRT
<213>  Simian adenovirus 39

<400>  32

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 Glu Glu Met
            20                  25                  30


Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
        35                  40                  45


Leu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala Ala
    50                  55                  60


Ala Arg Pro Ser Ser Ser Ala Glu Glu Glu Lys Ala Ser Ser Thr Asp
65                  70                  75                  80
```

```
Thr Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser Arg
                85                  90                  95

Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Ala Pro
            100                 105                 110

Thr Thr Val Ser Lys Lys Arg Gln Lys Pro Ser Ser Ser Ser Arg Lys
        115                 120                 125

Pro Ala Ala Ala Arg Lys Ser Thr Ala Ala Gly Gly Leu Arg Ile Ala
    130                 135                 140

Ala Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg Asn Arg Ile Phe Pro
145                 150                 155                 160

Thr Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly Gln Glu Gln Glu Leu
                165                 170                 175

Lys Val Lys Asn Arg Ser Leu Arg Ser Leu Thr Arg Ser Cys Leu Tyr
            180                 185                 190

His Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu Glu Asp Ala Glu Ala
        195                 200                 205

Leu Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys Glu
    210                 215                 220


<210>  33
<211>  36634
<212>  DNA
<213>  Simian adenovirus 37


<220>
<221>  repeat_region
<222>  (1)..(127)
<223>  label=ITR

<220>
<221>  CDS
<222>  (1907)..(3415)
<223>  label=Elb\55K

<220>
<221>  CDS
<222>  (3453)..(3923)
<223>  label=pIX

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<222> (3989)..(5610)
<223> complement (3989..5319, 5598..5610) label=IVa2

<220>
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<222> (5092)..(13844)
<223> complement (5092..8664, 13836..13844) label=pol

<220>
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<222> (8467)..(13844)
<223> complement (8467..10400, 13836..13844) label=pTP

<220>
<221> CDS
<222> (10827)..(12002)
<223> label=55K

<220>
<221> CDS
<222> (12029)..(13807)
<223> label=pIIIa

<220>
<221> CDS
<222> (13889)..(15514)
<223> label=penton

<220>
<221> CDS
<222> (15521)..(16099)
<223> label=pVII

<220>
<221> CDS
<222> (16144)..(17181)
<223> label=V

<220>
<221> CDS
<222> (17209)..(17439)
<223> label=pX

<220>
<221> CDS
<222> (17512)..(18234)
<223> label=pVI

<220>
<221> CDS
<222> (18328)..(21153)
<223> label=hexon

<220>
<221> CDS
<222> (21172)..(21798)
<223> label=protease

<220>
<221> misc_feature
<222> (21883)..(23418)
<223> complement label=DBP

<220>
<221> CDS
<222> (23441)..(25840)
<223> label=100K

<220>
<221> CDS
<222> (26463)..(27143)
<223> label=pVIII

<220>
<221> CDS
<222> (27147)..(27464)
<223> label=E3\12.5K

<220>
<221> CDS
<222> (28029)..(28556)
<223> label=E3\gp\19K

<220>
<221> CDS
<222> (28593)..(29276)
<223> label=E3\CR1\beta

<220>
<221> CDS
<222> (29292)..(29900)
<223> label=E3\CR1\gamma

<220>
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<222> (29918)..(30781)
<223> label=E3\CR1\delta

<220>
<221> CDS
<222> (30792)..(31064)
<223> label=E3\RID\alpha

<220>
<221> CDS
<222> (31073)..(31504)
<223> label=E3\RID\beta

<220>
<221> CDS
<222> (32201)..(33535)
<223> label=fiber

<220>
<221> misc_feature
<222> (33640)..(34784)
<223> complement (33640..33888, 34602..34784) label=E4\orf6/7

<220>
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<222> (33888)..(34784)
<223> complement label=E4\orf6

<220>
<221> misc_feature
<222> (34763)..(35055)
<223> complement label=E4\orf4

<220>
<221> misc_feature
<222> (35067)..(35417)
<223> complement label=E4\orf3

<220>
<221> misc_feature
<222> (35417)..(35803)
<223> complement label=E4\orf2

<220>
<221> misc_feature
<222> (35856)..(36227)
<223> complement label=E4\orf1

<220>
<221> repeat_region
<222> (36508)..(36634)
<223> complement label=ITR

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catcatcaaa taatatacct caaacttttt gtgcgcgtta atatgcaaat gaggcgtttg 60

aatttgggga gggaggaagg tgattggctg cgacgaaggc gaccgttagg ggcggggcgg 120

gtgacgtttt gatgacgtgg ccatgaggcg gagccggttt gcaagttctc gtgggaaaag 180

tgacgtcaaa cgaggtgtgg tttgaacacg gaaatactca attttcccgc gctctctgac 240

aggaaatgag gtgtttctgg gcggatgcaa gtgaaaacgg gccattttcg cgcgaaaact 300

gaatgaggaa gtgaaaatct gagtaattcc gcgtttatgg cagggaggag tatttgccga 360

gggccgagta gactttgacc gattacgtgg gggtttcgat taccgtattt ttcacctaaa 420

tttccgcgta cggtgtcaaa gtccggtgtt tttacgtagg tgtcagctga tcgccagggt 480

atttaaacct gcgctctcta gtcaagaggc cactcttgag tgccagcgag tagagttttc 540

tcctccgcgc cgcgagtcag atctacactt tgaaagatga ggcacctgag agacctgccc 600

ggtaatgttt tcctggctac tgggaacgag attctggaac tggtggtgga cgccatgatg 660

ggtgacgacc ctcccgagcc ccctacccca tttgaggcgc cttcgctgta cgatttgtat 720

gatctggagg tggatgtgtc cgagaacgac cccaacgagg aggcggtgaa tgatttgttt 780

agcgatgccg cgctgctggc tgccgagcag gctaatacgg actctggctc agacagcgat 840

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tcctctctcc ataccccgag acccggcaga ggtgagaaaa agatccccga gcttaaaggg      900

gaagagctcg acctgcgctg ctatgaggaa tgcttgcctc cgagcgatga tgaggaggac      960

gaggaggcga ttcgagctgc agcgagcgag ggagtgaaag ttgcgggcga gagctttagc     1020

ctggactgtc ctactctgcc cggacacggc tgtaagtctt gtgaatttca tcgcatgaat     1080

actggagata agaatgtgat gtgtgccctg tgctatatga gagcttacaa ccattgtgtt     1140

tacagtaagt gtgattaact ttagttggga aaggcagagg gtgactgggt gctgactggt     1200

ttatttatgt atatgttttt tatgtgtagg tcccgtctct gacgcagatg agacccccac     1260

ttcagagtgc atttcatcac ccccagaaat tggcgaggaa ccgcccgaag atattattca     1320

tagaccagtt gcagtgagag tcaccgggcg gagagcagct gtggagagtt tggatgactt     1380

gctacagggt ggggatgaac ctttggactt gtgtacccgg aaacgcccca ggcactaagt     1440

gccacacatg tgtgtttact taaggtgatg tcagtattta tagggtgtgg agtgcaataa     1500

aaatatgtgt tgactttaag tgcgtgtttt atgactcagg ggtggggact gtgggtatat     1560

aagcaggtgc agacctgtgt ggtcagttca gagcaggact tatggagatc tggacagtct     1620

tggaagactt tcaccagact agacagctgc tagagaactc atcggaggga gtctcttacc     1680

tgtggagatt ctgcttcgct gggcctctag ctaagctagt ctatagggcc aagcaggatt     1740

atagggaaca atttgaggat attttgagag agtgtcctgg tatttttgac tctctcaact     1800

tgggccatca gtctcacttt aaccagagta ttctgagagc ccttgacttt tctactcctg     1860

gcagaactac cgccgcggta gccttttttg cctttatcct tgacaa atg gag tca        1915
                                                  Met Glu Ser
                                                  1

aga aac cca ttt cag cag gga tta ccg tct gga ctg ctt agc agt agc        1963
Arg Asn Pro Phe Gln Gln Gly Leu Pro Ser Gly Leu Leu Ser Ser Ser
    5                  10                  15

ttt gtg gag aac atg gag gtg cca gcg cct gaa tgc aat ctc cgg cta        2011
Phe Val Glu Asn Met Glu Val Pro Ala Pro Glu Cys Asn Leu Arg Leu
20                  25                  30                  35

ctt gcc agt aca gcc ggt aga cac gct gag gat cct gag tct cca gtc        2059
Leu Ala Ser Thr Ala Gly Arg His Ala Glu Asp Pro Glu Ser Pro Val
                40                  45                  50

acc cca gga aca cca acg ccg cca gca gcc gca gca gga gca gca gca        2107
Thr Pro Gly Thr Pro Thr Pro Pro Ala Ala Ala Ala Gly Ala Ala Ala
            55                  60                  65

aga gga gga gga ccg aga aga gaa ccc gag agc cgg tct gga ccc tcc        2155
Arg Gly Gly Gly Pro Arg Arg Glu Pro Glu Ser Arg Ser Gly Pro Ser
        70                  75                  80
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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

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
100                 105                 110                 115

agg cat gag gag act agc 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 gta gat gag gtc tcg gtg atg cat gag aaa tat tcc cta gaa caa       2395
Gly Val 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

agg aat tat gcc aag ctg gct ctg agg cca gac aag aag tac aag att       2491
Arg Asn Tyr Ala Lys Leu Ala Leu Arg Pro Asp Lys Lys Tyr Lys Ile
180                 185                 190                 195

acc aaa ctg att aat atc aga aat tcc tgc tac att tca 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 gct 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 gtc 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 ttc 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

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
260                 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
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gag ggc gaa gcc aaa gtc 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

ttt gtg tgt atc aag ggc aat gcc caa gtc aag cat aac atg atc tgt       2971
Phe Val Cys Ile Lys Gly Asn Ala Gln Val Lys His Asn Met Ile Cys
340                 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

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
420                 425                 430                 435

gcg ggg gtg ttt gac atg aat gtg gag ctg tgg aaa att ctg aga tat       3259
Ala 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

gaa gaa tct gac tagagtgagt agtgtttggg ggcgggtggg agcctgc atg agg      3458
Glu Glu Ser Asp                                         Met Arg
500                                                         505

ggc aga atg act aaa atc tgt gtt ttt ctg tgc agc agc atg agc gga       3506
Gly Arg Met Thr Lys Ile Cys Val Phe Leu Cys Ser Ser Met Ser Gly
                510                 515                 520

agc gcc tcc ttt gag gga ggg gta ttc agc cct tat ctg acg ggg cgt       3554
Ser Ala Ser Phe Glu Gly Gly Val Phe Ser Pro Tyr Leu Thr Gly Arg
            525                 530                 535

ctc ccc tcc tgg gcg gga gtg cgt cag aat gtg atg gga tct acg gtg       3602
Leu Pro Ser Trp Ala Gly Val Arg Gln Asn Val Met Gly Ser Thr Val
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        540                 545                 550

gac ggc cgg ccc gtg cag ccc gcg aac tct tca acc ctg acc tac gcg       3650
Asp Gly Arg Pro Val Gln Pro Ala Asn Ser Ser Thr Leu Thr Tyr Ala
    555                 560                 565

acc ctg agc tcc tcg tcc gtg gac gca gct gcc gcc gca gct gct gct       3698
Thr Leu Ser Ser Ser Ser Val Asp Ala Ala Ala Ala Ala Ala Ala Ala
570                 575                 580                 585

tcc gcc gcc agc gcc gtg cgc gga atg gcc ctg ggc gcc ggc tac tac       3746
Ser Ala Ala Ser Ala Val Arg Gly Met Ala Leu Gly Ala Gly Tyr Tyr
                590                 595                 600

agc tct ctg gtg gcc aac tcg agt tcc acc aat aat ccc gcc agc ctg       3794
Ser Ser Leu Val Ala Asn Ser Ser Ser Thr Asn Asn Pro Ala Ser Leu
            605                 610                 615

aac gag gag aag ctg ctg ctg ctg atg gcc cag ctc gag gcc ctg acc       3842
Asn Glu Glu Lys Leu Leu Leu Leu Met Ala Gln Leu Glu Ala Leu Thr
        620                 625                 630

cag cgc ctg ggc gag ctg acc cag cag gtg gct cag ctg cag gcg gag       3890
Gln Arg Leu Gly Glu Leu Thr Gln Gln Val Ala Gln Leu Gln Ala Glu
    635                 640                 645

acg cgg gcc gcg gtt gcc acg gtg aaa acc aaa taaaaaatga atcaataaat     3943
Thr Arg Ala Ala Val Ala Thr Val Lys Thr Lys
650                 655                 660

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gcggtaggcc ctggaccacc ggtctcgatc attgagcacc cggtggatct tttccaggac     4063

ccggtagagg tgggcttgga tgttgaggta catgggcatg agcccgtccc gggggtggag     4123

gtagctccat tgcagggcct cgtgctcggg ggtggtgttg taaatcaccc agtcatagca     4183

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gagatgcatc ttggcctgga tcttgagatt ggcgatgttc ccgcccagat cccgccgggg     4363

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cagttacgga gcgagcccct cttttgtttt ttgtttttgc cag atg cat ccc gta      10838
                                                Met His Pro Val

ctg cgg cag atg cgc ccc cac cac cct cca ccg caa caa cag ccc cct      10886
Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln Gln Gln Pro Pro
665                 670                 675                 680

cca cag ccg gcg ctt ctg ccc ccg ccc cag cag caa ctt cca gcc acg      10934
Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln Leu Pro Ala Thr
                685                 690                 695

acc gcc gcg gcc gcc gtg agc ggg gct gga cag agt tat gac cac cag      10982
Thr Ala Ala Ala Ala Val Ser Gly Ala Gly Gln Ser Tyr Asp His Gln
            700                 705                 710

ctg gcc ttg gaa gag ggc gag ggg ctg gcg cgc ctg ggg gcg tcg tcg      11030
Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser
        715                 720                 725

ccg gag cgg cac ccg cgc gtg cag atg aaa agg gac gct cgc gag gcc      11078
Pro Glu Arg His Pro Arg Val Gln Met Lys Arg Asp Ala Arg Glu Ala
    730                 735                 740

tac gtg ccc aag cag aac ctg ttc aga gac agg agc ggc gag gag ccc      11126
Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro
745                 750                 755                 760

gag gag atg cgc gcg gcc cgg ttc cac gcg ggg cgg gag ctg cgg cgc      11174
Glu Glu Met Arg Ala Ala Arg Phe His Ala Gly Arg Glu Leu Arg Arg
                765                 770                 775

ggc ctg gac cga aag agg gtg ctg agg gac gag gat ttc gag gcg gac      11222
Gly Leu Asp Arg Lys Arg Val Leu Arg Asp Glu Asp Phe Glu Ala Asp
            780                 785                 790

gag ctg acg ggg atc agc ccc gcg cgc gcg cac gtg gcc gcg gcc aac      11270
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Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala His Val Ala Ala Ala Asn
        795                 800                 805

ctg gtc acg gcg tac gag cag acc gtg aag gag gag agc aac ttc caa      11318
Leu Val Thr Ala Tyr Glu Gln Thr Val Lys Glu Glu Ser Asn Phe Gln
    810                 815                 820

aaa tcc ttc aac aac cac gtg cgc acg ctg atc gcg cgc gag gag gtg      11366
Lys Ser Phe Asn Asn His Val Arg Thr Leu Ile Ala Arg Glu Glu Val
825                 830                 835                 840

acc ctg ggc ctg atg cac ctg tgg gac ctg ctg gag gcc atc gtg cag      11414
Thr Leu Gly Leu Met His Leu Trp Asp Leu Leu Glu Ala Ile Val Gln
                845                 850                 855

aac ccc acg agc aag ccg ctg acg gcg cag ctg ttc ctg gtg gtg cag      11462
Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu Phe Leu Val Val Gln
            860                 865                 870

cac agt cgg gac aac gag acg ttc agg gag gcg ctg ctg aat atc acc      11510
His Ser Arg Asp Asn Glu Thr Phe Arg Glu Ala Leu Leu Asn Ile Thr
        875                 880                 885

gag ccc gag ggc cgc tgg ctc ctg gac ctg gtg aac att ctg cag agc      11558
Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu Val Asn Ile Leu Gln Ser
    890                 895                 900

atc gtg gtg cag gag cgc ggg ctg ccg ctg tcc gag aag ctg gcg gcc      11606
Ile Val Val Gln Glu Arg Gly Leu Pro Leu Ser Glu Lys Leu Ala Ala
905                 910                 915                 920

atc aac ttc tcg gtg ctg agt ttg ggc aag tac tac gct agg aag atc      11654
Ile Asn Phe Ser Val Leu Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile
                925                 930                 935

tac aag acc ccg tac gtg ccc ata gac aag gag gtg aag atc gac ggg      11702
Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu Val Lys Ile Asp Gly
            940                 945                 950

ttt tac atg cgc atg acc ctg aaa gtg ctg acc ctg agc gac gat ctg      11750
Phe Tyr Met Arg Met Thr Leu Lys Val Leu Thr Leu Ser Asp Asp Leu
        955                 960                 965

ggg gtg tac cgc aac gac agg atg cac cgt gcg gtg agc gcc agc cgc      11798
Gly Val Tyr Arg Asn Asp Arg Met His Arg Ala Val Ser Ala Ser Arg
    970                 975                 980

cgg cgc gag ctg agc gac cag gag ctg atg cac agc ctg cag cgg gcc      11846
Arg Arg Glu Leu Ser Asp Gln Glu Leu Met His Ser Leu Gln Arg Ala
985                 990                 995                 1000

ctg acc ggg gcc ggg  acc gag ggg gag agc  tac ttt gac atg ggc       11891
Leu Thr Gly Ala Gly  Thr Glu Gly Glu Ser  Tyr Phe Asp Met Gly
                1005                1010                1015

gcg gac ctg cgc tgg  cag ccc agc cgc cgg  gcc ttg gaa gct gcc       11936
Ala Asp Leu Arg Trp  Gln Pro Ser Arg Arg  Ala Leu Glu Ala Ala
                1020                1025                1030
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ggc ggt tcc ccc tac  gta gaa gag gtg gac  gat gag gtg gac gag        11981
Gly Gly Ser Pro Tyr  Val Glu Glu Val Asp  Asp Glu Val Asp Glu
                1035                1040                1045

gag ggc gag tac ctg  gaa gac tgatggcgcg accgtatttt tgctag atg caa    12034
Glu Gly Glu Tyr Leu  Glu Asp                                Met Gln
                1050

caa  cag cca cct cct gat  ccc gcg atg cgg gcg  gcg ctg cag agc       12079
Gln  Gln Pro Pro Pro Asp  Pro Ala Met Arg Ala  Ala Leu Gln Ser
1055                1060                1065

cag  ccg tcc ggc att aac  tcc tcg gac gat tgg  acc cag gcc atg       12124
Gln  Pro Ser Gly Ile Asn  Ser Ser Asp Asp Trp  Thr Gln Ala Met
1070                1075                1080

caa  cgc atc atg gcg ctg  acg acc cgc aac ccc  gaa gcc ttt aga       12169
Gln  Arg Ile Met Ala Leu  Thr Thr Arg Asn Pro  Glu Ala Phe Arg
1085                1090                1095

cag  cag ccc cag gcc aac  cgg ctc tcg gcc atc  ctg gag gcc gtg       12214
Gln  Gln Pro Gln Ala Asn  Arg Leu Ser Ala Ile  Leu Glu Ala Val
1100                1105                1110

gtg  ccc tcg cgc tcc aac  ccc acg cac gag aag  gtc ctg gcc atc       12259
Val  Pro Ser Arg Ser Asn  Pro Thr His Glu Lys  Val Leu Ala Ile
1115                1120                1125

gtg  aac gcg ctg gtg gag  aac aag gcc atc cgc  ggc gac gag gcc       12304
Val  Asn Ala Leu Val Glu  Asn Lys Ala Ile Arg  Gly Asp Glu Ala
1130                1135                1140

ggc  ctg gtg tac aac gcg  ctg ctg gag cgc gtg  gcc cgc tac aac       12349
Gly  Leu Val Tyr Asn Ala  Leu Leu Glu Arg Val  Ala Arg Tyr Asn
1145                1150                1155

agc  acc aac gtg cag acc  aac ctg gac cgc atg  gtg acc gac gtg       12394
Ser  Thr Asn Val Gln Thr  Asn Leu Asp Arg Met  Val Thr Asp Val
1160                1165                1170

cgc  gag gcc gtg gcc cag  cgc gag cgg ttc cac  cgc gag tcc aac       12439
Arg  Glu Ala Val Ala Gln  Arg Glu Arg Phe His  Arg Glu Ser Asn
1175                1180                1185

ctg  gga tcc atg gtg gcg  ctg aac gcc ttc ctc  agc acc cag ccc       12484
Leu  Gly Ser Met Val Ala  Leu Asn Ala Phe Leu  Ser Thr Gln Pro
1190                1195                1200

gcc  aac gtg ccc cgg ggc  cag gag gac tac acc  aac ttc atc agc       12529
Ala  Asn Val Pro Arg Gly  Gln Glu Asp Tyr Thr  Asn Phe Ile Ser
1205                1210                1215

gcc  ctg cgc ctg atg gtg  acc gag gtg ccc cag  agc gag gtg tac       12574
Ala  Leu Arg Leu Met Val  Thr Glu Val Pro Gln  Ser Glu Val Tyr
1220                1225                1230

cag  tcc ggg ccg gac tac  ttc ttc cag acc agt  cgc cag ggc ttg       12619
Gln  Ser Gly Pro Asp Tyr  Phe Phe Gln Thr Ser  Arg Gln Gly Leu
1235                1240                1245
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cag  acc gtg aac ctg agc  cag gct ttc aag aac  ttg cag gga ttg       12664
Gln  Thr Val Asn Leu Ser  Gln Ala Phe Lys Asn  Leu Gln Gly Leu
1250                1255                1260

tgg  ggc gtg cag gcc ccg  gtc ggg gac cgc gcg  acg gtg tcg agc       12709
Trp  Gly Val Gln Ala Pro  Val Gly Asp Arg Ala  Thr Val Ser Ser
1265                1270                1275

ctg  ctg acg ccg aac tcg  cgc ctg ctg ctg ctg  ctg gtg gcc ccc       12754
Leu  Leu Thr Pro Asn Ser  Arg Leu Leu Leu Leu  Leu Val Ala Pro
1280                1285                1290

ttc  acg gac agc ggc agc  atc aac cgc aac tcg  tac ctg ggc tac       12799
Phe  Thr Asp Ser Gly Ser  Ile Asn Arg Asn Ser  Tyr Leu Gly Tyr
1295                1300                1305

ctg  att aac ctg tac cgc  gag gcc atc ggc cag  gcg cac gtg gac       12844
Leu  Ile Asn Leu Tyr Arg  Glu Ala Ile Gly Gln  Ala His Val Asp
1310                1315                1320

gag  cag acc tac cag gag  atc acc cac gtg agc  cgc gcc ctg ggc       12889
Glu  Gln Thr Tyr Gln Glu  Ile Thr His Val Ser  Arg Ala Leu Gly
1325                1330                1335

cag  gac gac ccg ggc aac  ctg gaa gcc acc ctg  aac ttt ttg ctg       12934
Gln  Asp Asp Pro Gly Asn  Leu Glu Ala Thr Leu  Asn Phe Leu Leu
1340                1345                1350

acc  aac cgg tcg cag aag  atc ccg ccc cag tac  gcg ctc agc acc       12979
Thr  Asn Arg Ser Gln Lys  Ile Pro Pro Gln Tyr  Ala Leu Ser Thr
1355                1360                1365

gag  gag gag cgc atc ctg  cgt tac gtg cag cag  agc gtg ggc ctg       13024
Glu  Glu Glu Arg Ile Leu  Arg Tyr Val Gln Gln  Ser Val Gly Leu
1370                1375                1380

ttc  ctg atg cag gag ggg  gcc acc ccc agc gcc  gcg ctc gac atg       13069
Phe  Leu Met Gln Glu Gly  Ala Thr Pro Ser Ala  Ala Leu Asp Met
1385                1390                1395

acc  gcg cgc aac atg gag  ccc agc atg tac gcc  agc aac cgc ccg       13114
Thr  Ala Arg Asn Met Glu  Pro Ser Met Tyr Ala  Ser Asn Arg Pro
1400                1405                1410

ttc  atc aat aaa ctg atg  gac tac ttg cat cgg  gcg gcc gcc atg       13159
Phe  Ile Asn Lys Leu Met  Asp Tyr Leu His Arg  Ala Ala Ala Met
1415                1420                1425

aac  tct gac tat ttc acc  aac gcc atc ctg aat  ccc cac tgg ctc       13204
Asn  Ser Asp Tyr Phe Thr  Asn Ala Ile Leu Asn  Pro His Trp Leu
1430                1435                1440

ccg  ccg cct ggg ttc tac  acg ggc gag tac gac  atg ccc gac ccc       13249
Pro  Pro Pro Gly Phe Tyr  Thr Gly Glu Tyr Asp  Met Pro Asp Pro
1445                1450                1455

aat  gac ggg ttc ctg tgg  gac gat gtg gac agc  agc gtg ttc tcc       13294
Asn  Asp Gly Phe Leu Trp  Asp Asp Val Asp Ser  Ser Val Phe Ser
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1460                1465                1470

ccc  cga ccg ggt gct aac  gag cgc ccc ttg tgg  aag aag gaa ggc       13339
Pro  Arg Pro Gly Ala Asn  Glu Arg Pro Leu Trp  Lys Lys Glu Gly
1475                1480                1485

agc  gac cga cgc ccg tcc  tcg gcg ctg tcc ggc  cgc gag ggt gct       13384
Ser  Asp Arg Arg Pro Ser  Ser Ala Leu Ser Gly  Arg Glu Gly Ala
1490                1495                1500

gcc  gcg gcg gtg ccc gag  gcc gcc agt cct ttt  cct agc ttg ccc       13429
Ala  Ala Ala Val Pro Glu  Ala Ala Ser Pro Phe  Pro Ser Leu Pro
1505                1510                1515

ttc  tcg ctg aac agt atc  cgc agc agc gag ctg  ggg agg atc acg       13474
Phe  Ser Leu Asn Ser Ile  Arg Ser Ser Glu Leu  Gly Arg Ile Thr
1520                1525                1530

cgc  ccg cgc ttg ctg ggc  gag gag gag tac ttg  aat gac tcg ctg       13519
Arg  Pro Arg Leu Leu Gly  Glu Glu Glu Tyr Leu  Asn Asp Ser Leu
1535                1540                1545

ttg  aga ccc gag cgg gag  aag aac ttc ccc aat  aac ggg ata gag       13564
Leu  Arg Pro Glu Arg Glu  Lys Asn Phe Pro Asn  Asn Gly Ile Glu
1550                1555                1560

agc  ctg gtg gac aag atg  agc cgc tgg aag acg  tat gcg cag gag       13609
Ser  Leu Val Asp Lys Met  Ser Arg Trp Lys Thr  Tyr Ala Gln Glu
1565                1570                1575

cac  agg gac gat ccc cgg  gcg tcg cag ggg gcc  acg agc cgg ggc       13654
His  Arg Asp Asp Pro Arg  Ala Ser Gln Gly Ala  Thr Ser Arg Gly
1580                1585                1590

agc  gcc gcc cgt aaa cgc  cgg tgg cac gac agg  cag cgg gga ctg       13699
Ser  Ala Ala Arg Lys Arg  Arg Trp His Asp Arg  Gln Arg Gly Leu
1595                1600                1605

atg  tgg gac gat gag gat  tcc gcc gac gac agc  agc gtg ttg gac       13744
Met  Trp Asp Asp Glu Asp  Ser Ala Asp Asp Ser  Ser Val Leu Asp
1610                1615                1620

ttg  ggt ggg agt ggt ggt  ggt aac ccg ttc gct  cac ctg cgc ccc       13789
Leu  Gly Gly Ser Gly Gly  Gly Asn Pro Phe Ala  His Leu Arg Pro
1625                1630                1635

cgc  atc ggg cgc atg atg  taagaaaccg aaaataaatg atactcacca         13837
Arg  Ile Gly Arg Met Met
1640                1645

aggccatggc gaccagcgtg cgttcgtttc ttctctgttg ttgtatctag t atg atg    13894
                                                        Met Met


agg cgt gcg  tac ccg gag ggt cct  cct ccc tcg tac gag  agc gtg       13939
Arg Arg Ala  Tyr Pro Glu Gly Pro  Pro Pro Ser Tyr Glu  Ser Val
        1650                1655                1660

atg cag cag  gcg atg gcg gcg gcg  gcg gcg atg cag ccc  ccg ctg       13984
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Met Gln Gln  Ala Met Ala Ala Ala  Ala Ala Met Gln Pro  Pro Leu
        1665                 1670                 1675

gag gct cct  tac gtg ccc ccg cgg  tac ctg gcg cct acg  gag ggg       14029
Glu Ala Pro  Tyr Val Pro Pro Arg  Tyr Leu Ala Pro Thr  Glu Gly
        1680                 1685                 1690

cgg aac agc  att cgt tac tcg gag  ctg gca ccc ttg tac  gat acc       14074
Arg Asn Ser  Ile Arg Tyr Ser Glu  Leu Ala Pro Leu Tyr  Asp Thr
        1695                 1700                 1705

acc cgg ttg  tac ctg gtg gac aac  aag tcg gcg gac atc  gcc tcg       14119
Thr Arg Leu  Tyr Leu Val Asp Asn  Lys Ser Ala Asp Ile  Ala Ser
        1710                 1715                 1720

ctg aac tac  cag aac gac cac agc  aac ttc ctg acc acc  gtg gtg       14164
Leu Asn Tyr  Gln Asn Asp His Ser  Asn Phe Leu Thr Thr  Val Val
        1725                 1730                 1735

cag aac aat  gac ttc acc ccc acg  gag gcc agc acc cag  acc atc       14209
Gln Asn Asn  Asp Phe Thr Pro Thr  Glu Ala Ser Thr Gln  Thr Ile
        1740                 1745                 1750

aac ttt gac  gag cgc tcg cgg tgg  ggc ggc cag ctg aaa  acc atc       14254
Asn Phe Asp  Glu Arg Ser Arg Trp  Gly Gly Gln Leu Lys  Thr Ile
        1755                 1760                 1765

atg cac acc  aac atg ccc aac gtg  aac gag ttc atg tac  agc aac       14299
Met His Thr  Asn Met Pro Asn Val  Asn Glu Phe Met Tyr  Ser Asn
        1770                 1775                 1780

aag ttc aag  gcg cgg gtc atg gtc  tcc cgc aag acc ccc  aac ggg       14344
Lys Phe Lys  Ala Arg Val Met Val  Ser Arg Lys Thr Pro  Asn Gly
        1785                 1790                 1795

gtc aag gta  gat gat acg tat gat  ggt agt cag gat gag  cta aaa       14389
Val Lys Val  Asp Asp Thr Tyr Asp  Gly Ser Gln Asp Glu  Leu Lys
        1800                 1805                 1810

tac gag tgg  gtg gag ttt gag ctg  ccc gaa ggc aac ttc  tcg gtg       14434
Tyr Glu Trp  Val Glu Phe Glu Leu  Pro Glu Gly Asn Phe  Ser Val
        1815                 1820                 1825

acc atg acc  atc gac ctg atg aac  aac gcc atc atc gac  aat tac       14479
Thr Met Thr  Ile Asp Leu Met Asn  Asn Ala Ile Ile Asp  Asn Tyr
        1830                 1835                 1840

ttg gcg gtg  ggg cgg cag aac ggg  gtg ttg gag agc gac  atc ggc       14524
Leu Ala Val  Gly Arg Gln Asn Gly  Val Leu Glu Ser Asp  Ile Gly
        1845                 1850                 1855

gtg aag ttc  gac act agg aac ttc  agg ctg ggc tgg gac  ccc gtg       14569
Val Lys Phe  Asp Thr Arg Asn Phe  Arg Leu Gly Trp Asp  Pro Val
        1860                 1865                 1870

acc gag ctg  gtc atg ccc ggg gtg  tac acc aac gag gcc  ttc cat       14614
Thr Glu Leu  Val Met Pro Gly Val  Tyr Thr Asn Glu Ala  Phe His
        1875                 1880                 1885
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ccc gat att  gtc ttg ctg ccc ggc  tgc ggg gtg gac ttc  acc gag       14659
Pro Asp Ile  Val Leu Leu Pro Gly  Cys Gly Val Asp Phe  Thr Glu
        1890                 1895                 1900

agc cgc ctc  agc aac ctg ctg ggc  att cgc aaa agg cag  ccc ttc       14704
Ser Arg Leu  Ser Asn Leu Leu Gly  Ile Arg Lys Arg Gln  Pro Phe
        1905                 1910                 1915

cag gag ggc  ttc cag atc atg tac  gag gat ctg gag ggg  ggc aac       14749
Gln Glu Gly  Phe Gln Ile Met Tyr  Glu Asp Leu Glu Gly  Gly Asn
        1920                 1925                 1930

atc ccc gcc  ctc ctg gat gtc gag  gcc tat gag gac agt  aag aaa       14794
Ile Pro Ala  Leu Leu Asp Val Glu  Ala Tyr Glu Asp Ser  Lys Lys
        1935                 1940                 1945

aaa gca gaa  gcc gag gcg act gca  gcc gtg gct acc gcc  gcg acc       14839
Lys Ala Glu  Ala Glu Ala Thr Ala  Ala Val Ala Thr Ala  Ala Thr
        1950                 1955                 1960

aat gca gat  gcc aat gtg act aga  ggc gat aca ttc gcc  act cag       14884
Asn Ala Asp  Ala Asn Val Thr Arg  Gly Asp Thr Phe Ala  Thr Gln
        1965                 1970                 1975

gcg gag gaa  gca gcc gcc cta gcg  gtc gcc gat gat agt  gaa agt       14929
Ala Glu Glu  Ala Ala Ala Leu Ala  Val Ala Asp Asp Ser  Glu Ser
        1980                 1985                 1990

aag ata gtc  att cag ccg gtg aag  aag gat agc aag aac  agg agc       14974
Lys Ile Val  Ile Gln Pro Val Lys  Lys Asp Ser Lys Asn  Arg Ser
        1995                 2000                 2005

tac aac gtg  ctg ccg gac gag gta  aac acc gcc tac cgc  agc tgg       15019
Tyr Asn Val  Leu Pro Asp Glu Val  Asn Thr Ala Tyr Arg  Ser Trp
        2010                 2015                 2020

tac ctg gcc  tac aac tat ggc gac  ccc gag aag ggc gtg  cgc tcc       15064
Tyr Leu Ala  Tyr Asn Tyr Gly Asp  Pro Glu Lys Gly Val  Arg Ser
        2025                 2030                 2035

tgg acg ctg  ctc acc acc tcg gac  gtc acc tgc ggc gtg  gag caa       15109
Trp Thr Leu  Leu Thr Thr Ser Asp  Val Thr Cys Gly Val  Glu Gln
        2040                 2045                 2050

gtc tac tgg  tcg ctg ccc gac atg  atg caa gac ccg gtc  acc ttc       15154
Val Tyr Trp  Ser Leu Pro Asp Met  Met Gln Asp Pro Val  Thr Phe
        2055                 2060                 2065

cgc tcc acg  cgt caa gtt agc aac  tac ccg gtg gtg ggc  gcc gag       15199
Arg Ser Thr  Arg Gln Val Ser Asn  Tyr Pro Val Val Gly  Ala Glu
        2070                 2075                 2080

ctc ctg ccc  gtc tac tcc aag agc  ttc ttc aac gag cag  gcc gtc       15244
Leu Leu Pro  Val Tyr Ser Lys Ser  Phe Phe Asn Glu Gln  Ala Val
        2085                 2090                 2095

tac tcg cag  cag ctg cgc gcc ttc  acc tcg ctc acg cac  gtc ttc       15289
Tyr Ser Gln  Gln Leu Arg Ala Phe  Thr Ser Leu Thr His  Val Phe
        2100                 2105                 2110
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aac cgc ttc  ccc gag aac cag atc  ctc gtc cgc ccg ccc  gcg ccc       15334
Asn Arg Phe  Pro Glu Asn Gln Ile  Leu Val Arg Pro Pro  Ala Pro
        2115                 2120                 2125

acc att acc  acc gtc agt gaa aac  gtt cct gct ctc aca  gat cac       15379
Thr Ile Thr  Thr Val Ser Glu Asn  Val Pro Ala Leu Thr  Asp His
        2130                 2135                 2140

ggg acc ctg  ccg ctg cgc agc agt  atc cgg gga gtc cag  cgc gtg       15424
Gly Thr Leu  Pro Leu Arg Ser Ser  Ile Arg Gly Val Gln  Arg Val
        2145                 2150                 2155

acc gtt act  gac gcc aga cgc cgc  acc tgc ccc tac gtc  tac aag       15469
Thr Val Thr  Asp Ala Arg Arg Arg  Thr Cys Pro Tyr Val  Tyr Lys
        2160                 2165                 2170

gcc ctg ggc  ata gtc gcg ccg cgc  gtc ctc tcg agc cgc  acc ttc       15514
Ala Leu Gly  Ile Val Ala Pro Arg  Val Leu Ser Ser Arg  Thr Phe
        2175                 2180                 2185

taaaaa atg tcc att  ctc atc tcg ccc agt  aat aac acc ggt tgg  ggc    15562
       Met Ser Ile  Leu Ile Ser Pro Ser  Asn Asn Thr Gly Trp  Gly
              2190                 2195                 2200

ctg cgc gcg ccc  agc aag atg tac gga  ggc gct cgc caa cgc  tcc       15607
Leu Arg Ala Pro  Ser Lys Met Tyr Gly  Gly Ala Arg Gln Arg  Ser
            2205                 2210                 2215

acg caa cac ccc  gtg cgc gtg cgc ggg  cac ttc cgc gct ccc  tgg       15652
Thr Gln His Pro  Val Arg Val Arg Gly  His Phe Arg Ala Pro  Trp
            2220                 2225                 2230

ggc gcc ctc aag  ggc cgc gtg cgg tcg  cgc acc acc gtc gac  gac       15697
Gly Ala Leu Lys  Gly Arg Val Arg Ser  Arg Thr Thr Val Asp  Asp
            2235                 2240                 2245

gtg atc gac cag  gtg gtg gcc gac gcg  cgc aac tac acc ccc  gcc       15742
Val Ile Asp Gln  Val Val Ala Asp Ala  Arg Asn Tyr Thr Pro  Ala
            2250                 2255                 2260

gcc gcg ccc gtc  tcc acc gtg gac gcc  gtc atc gac agc gtg  gtg       15787
Ala Ala Pro Val  Ser Thr Val Asp Ala  Val Ile Asp Ser Val  Val
            2265                 2270                 2275

gcc gac gcg cgc  cgg tac gcc cgc gcc  aag agc cgg cgg cgg  cgc       15832
Ala Asp Ala Arg  Arg Tyr Ala Arg Ala  Lys Ser Arg Arg Arg  Arg
            2280                 2285                 2290

atc gcc cgg cgg  cac cgg agc acc ccc  gcc atg cgc gcg gcg  cga       15877
Ile Ala Arg Arg  His Arg Ser Thr Pro  Ala Met Arg Ala Ala  Arg
            2295                 2300                 2305

gcc ttg ctg cgc  agg gcc agg cgc acg  gga cgc agg gcc atg  ctc       15922
Ala Leu Leu Arg  Arg Ala Arg Arg Thr  Gly Arg Arg Ala Met  Leu
            2310                 2315                 2320

agg gcg gcc aga  cgc gcg gct tca ggc  gcc agc gcc ggc agg  acc       15967
Arg Ala Ala Arg  Arg Ala Ala Ser Gly  Ala Ser Ala Gly Arg  Thr
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            2325                2330                2335

cgg aga cgc gcg  gcc acg gcg gcg gca  gcg gcc atc gcc agc  atg       16012
Arg Arg Arg Ala  Ala Thr Ala Ala Ala  Ala Ala Ile Ala Ser  Met
            2340                2345                2350

tcc cgc ccg cgg  cga ggg aac gtg tac  tgg gtg cgc gac gcc  gcc       16057
Ser Arg Pro Arg  Arg Gly Asn Val Tyr  Trp Val Arg Asp Ala  Ala
            2355                2360                2365

acc ggt gtg cgc  gtg ccc gtg cgc acc  cgc ccc cct cgc act           16099
Thr Gly Val Arg  Val Pro Val Arg Thr  Arg Pro Pro Arg Thr
            2370                2375                2380

tgaagatgtt cacttcgcga tgttgatgtg tcccagcggc gagg atg tcc aag cgc    16155
                                                 Met Ser Lys Arg


aaa  ttc aag gaa gag atg  ctc cag gtc atc gcg  cct gag atc tac      16200
Lys  Phe Lys Glu Glu Met  Leu Gln Val Ile Ala  Pro Glu Ile Tyr
2385                2390                2395

ggc  ccc gcg gcg gtg gtg  aag gag gaa aga aag  ccc cgc aaa atc      16245
Gly  Pro Ala Ala Val Val  Lys Glu Glu Arg Lys  Pro Arg Lys Ile
2400                2405                2410

aag  cgg gtc aaa aag gac  aaa aag gaa gaa gat  gtg gac gat atg      16290
Lys  Arg Val Lys Lys Asp  Lys Lys Glu Glu Asp  Val Asp Asp Met
2415                2420                2425

gtg  gag ttt gtg cgc gag  ttc gcc ccc cgg cgg  cgc gtg cag tgg      16335
Val  Glu Phe Val Arg Glu  Phe Ala Pro Arg Arg  Arg Val Gln Trp
2430                2435                2440

cgc  ggg cgg aag gtg cgc  ccg gtg ctg aga ccc  ggc acc acc gtg      16380
Arg  Gly Arg Lys Val Arg  Pro Val Leu Arg Pro  Gly Thr Thr Val
2445                2450                2455

gtc  ttc acg ccc ggc gag  cgc tcc ggc acc gct  tcc aag cgc tcc      16425
Val  Phe Thr Pro Gly Glu  Arg Ser Gly Thr Ala  Ser Lys Arg Ser
2460                2465                2470

tac  gac gag gtg tac ggg  gat gat gat att ctg  gag cag gcg gcc      16470
Tyr  Asp Glu Val Tyr Gly  Asp Asp Asp Ile Leu  Glu Gln Ala Ala
2475                2480                2485

gag  cgc ctg ggc gag ttt  gct tac ggc aag cgc  agc cgc ccc gcg      16515
Glu  Arg Leu Gly Glu Phe  Ala Tyr Gly Lys Arg  Ser Arg Pro Ala
2490                2495                2500

ccc  ttg aaa gag gag gcg  gtg tcc atc ccg ctg  gac cac ggc aac      16560
Pro  Leu Lys Glu Glu Ala  Val Ser Ile Pro Leu  Asp His Gly Asn
2505                2510                2515

ccc  acg ccg agc ctg aag  ccg gtg acc ctg cag  cag gtg ctg ccg      16605
Pro  Thr Pro Ser Leu Lys  Pro Val Thr Leu Gln  Gln Val Leu Pro
2520                2525                2530

agc  gcg gcg ccg cgc cgg  ggc ttc aag cgc gag  ggc ggc gag gat      16650
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Ser  Ala Ala Pro Arg Arg  Gly Phe Lys Arg Glu  Gly Gly Glu Asp
2535                 2540                 2545

ctg  tac ccg acc atg cag  ctg atg gtg ccc aag  cgc cag aag ctg      16695
Leu  Tyr Pro Thr Met Gln  Leu Met Val Pro Lys  Arg Gln Lys Leu
2550                 2555                 2560

gag  gac gtg ctg gag cac  atg aag gtg gac ccc  gag gtg cag ccc      16740
Glu  Asp Val Leu Glu His  Met Lys Val Asp Pro  Glu Val Gln Pro
2565                 2570                 2575

gag  gtc aag gtg cgg ccc  atc aag cag gtg gcc  ccg ggc ctg ggc      16785
Glu  Val Lys Val Arg Pro  Ile Lys Gln Val Ala  Pro Gly Leu Gly
2580                 2585                 2590

gtg  cag acc gtg gac atc  aag atc ccc acg gag  ccc atg gaa acg      16830
Val  Gln Thr Val Asp Ile  Lys Ile Pro Thr Glu  Pro Met Glu Thr
2595                 2600                 2605

cag  acc gag ccc gtg aag  ccc agc acc agc acc  atg gag gtg cag      16875
Gln  Thr Glu Pro Val Lys  Pro Ser Thr Ser Thr  Met Glu Val Gln
2610                 2615                 2620

acg  gat ccc tgg atg ccg  gcg ccg gct tcc acc  acc act cgc cga      16920
Thr  Asp Pro Trp Met Pro  Ala Pro Ala Ser Thr  Thr Thr Arg Arg
2625                 2630                 2635

aga  cgc aag tac ggc gcg  gcc agc ctg ctg atg  ccc aac tac gcg      16965
Arg  Arg Lys Tyr Gly Ala  Ala Ser Leu Leu Met  Pro Asn Tyr Ala
2640                 2645                 2650

ctg  cat cct tcc atc atc  ccc acg ccg ggc tac  cgc ggc acg cgc      17010
Leu  His Pro Ser Ile Ile  Pro Thr Pro Gly Tyr  Arg Gly Thr Arg
2655                 2660                 2665

ttc  tac cgc ggc tac agc  agc cgc cgc aag acc  acc acc cgc cgc      17055
Phe  Tyr Arg Gly Tyr Ser  Ser Arg Arg Lys Thr  Thr Thr Arg Arg
2670                 2675                 2680

cgc  cgt cgc cgc acc cgc  cgc agc acc acc gcg  act tcc gcc gcc      17100
Arg  Arg Arg Arg Thr Arg  Arg Ser Thr Thr Ala  Thr Ser Ala Ala
2685                 2690                 2695

gcc  ttg gtg cgg aga gtg  tac cgc agc ggg cgt  gag cct ctg acc      17145
Ala  Leu Val Arg Arg Val  Tyr Arg Ser Gly Arg  Glu Pro Leu Thr
2700                 2705                 2710

ctg  ccg cgc gcg cgc tac  cac ccg agc atc gcc  att taactctgcc      17191
Leu  Pro Arg Ala Arg Tyr  His Pro Ser Ile Ala  Ile
2715                 2720                 2725

gtcgcctcct tgcagat atg gcc ctc aca  tgc cgc ctc cgc gtc  ccc att  17241
                  Met Ala Leu Thr  Cys Arg Leu Arg Val  Pro Ile
                                2730                 2735

acg ggc tac  cga gga aga aag ccg  cgc cgt aga agg ctg  acg ggg      17286
Thr Gly Tyr  Arg Gly Arg Lys Pro  Arg Arg Arg Arg Leu  Thr Gly
        2740                 2745                 2750
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aac ggg ctg  cgt cgc cat cac cac  cgg cgg cgg cgc gcc  atc agc       17331
Asn Gly Leu  Arg Arg His His His  Arg Arg Arg Arg Ala  Ile Ser
        2755                 2760                 2765

aag cgg ttg  ggg gga ggc ttc ctg  ccc gcg ctg atc ccc  atc atc       17376
Lys Arg Leu  Gly Gly Gly Phe Leu  Pro Ala Leu Ile Pro  Ile Ile
        2770                 2775                 2780

gcc gcg gcg  atc ggg gcg atc ccc  ggc ata gct tcc gtg  gcg gtg       17421
Ala Ala Ala  Ile Gly Ala Ile Pro  Gly Ile Ala Ser Val  Ala Val
        2785                 2790                 2795

cag gcc tct  cag cgc cac tgagacacag cttggaaaat ttgtaataaa           17469
Gln Ala Ser  Gln Arg His
        2800

aaaatggact gacgctcctg gtcctgtgat gtgtgttttt ag atg gaa  gac atc      17523
                                                Met Glu  Asp Ile
                                                    2805

aat ttt tcg  tcc ctg gca ccg cga  cac ggc acg cgg ccg  ttt atg       17568
Asn Phe Ser  Ser Leu Ala Pro Arg  His Gly Thr Arg Pro  Phe Met
        2810                 2815                 2820

ggc acc tgg  agc gac atc ggc aac  agc caa ctg aac ggg  ggc gcc       17613
Gly Thr Trp  Ser Asp Ile Gly Asn  Ser Gln Leu Asn Gly  Gly Ala
        2825                 2830                 2835

ttc aat tgg  agc agt ctc tgg agc  ggg ctt aag aat ttc  ggg tcc       17658
Phe Asn Trp  Ser Ser Leu Trp Ser  Gly Leu Lys Asn Phe  Gly Ser
        2840                 2845                 2850

acg ctc aaa  acc tat ggc aac aag  gcg tgg aac agc agc  aca ggg       17703
Thr Leu Lys  Thr Tyr Gly Asn Lys  Ala Trp Asn Ser Ser  Thr Gly
        2855                 2860                 2865

cag gcg ctg  agg gaa aag ctg aaa  gag cag aac ttc cag  cag aag       17748
Gln Ala Leu  Arg Glu Lys Leu Lys  Glu Gln Asn Phe Gln  Gln Lys
        2870                 2875                 2880

gtg gtc gat  ggc ctg gcc tcg ggc  atc aac ggg gtg gtg  gac ctg       17793
Val Val Asp  Gly Leu Ala Ser Gly  Ile Asn Gly Val Val  Asp Leu
        2885                 2890                 2895

gcc aac cag  gcc gtg cag aaa cag  atc aac agc cgc ctg  gac gcg       17838
Ala Asn Gln  Ala Val Gln Lys Gln  Ile Asn Ser Arg Leu  Asp Ala
        2900                 2905                 2910

gtc ccg ccc  gcg ggg tcc gtg gag  atg ccc cag gtg gag  gag gag       17883
Val Pro Pro  Ala Gly Ser Val Glu  Met Pro Gln Val Glu  Glu Glu
        2915                 2920                 2925

ctg cct ccc  ctg gac aag cgc ggc  gac aag cga ccg cgt  ccc gac       17928
Leu Pro Pro  Leu Asp Lys Arg Gly  Asp Lys Arg Pro Arg  Pro Asp
        2930                 2935                 2940

gcg gag gag  acg ctg ctg acg cac  acg gac gag ccg ccc  ccg tac       17973
Ala Glu Glu  Thr Leu Leu Thr His  Thr Asp Glu Pro Pro  Pro Tyr
        2945                 2950                 2955
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gag gag gcg  gtg aaa ctg ggt ctg  ccc acc acg cgg ccc  gtg gcg       18018
Glu Glu Ala  Val Lys Leu Gly Leu  Pro Thr Thr Arg Pro  Val Ala
        2960                 2965                 2970

cct ctg gcc  acc ggg gtg ctg aaa  ccc agc agc agc agc  agc cag       18063
Pro Leu Ala  Thr Gly Val Leu Lys  Pro Ser Ser Ser Ser  Ser Gln
        2975                 2980                 2985

ccc gcg acc  ctg gac ttg cct cca  cct cgc ccc tcc aca  gtg gct       18108
Pro Ala Thr  Leu Asp Leu Pro Pro  Pro Arg Pro Ser Thr  Val Ala
        2990                 2995                 3000

aag ccc ctg  ccg ccg gtg gcc gtc  gcg tcg cgc gcc ctc  cga ggc       18153
Lys Pro Leu  Pro Pro Val Ala Val  Ala Ser Arg Ala Leu  Arg Gly
        3005                 3010                 3015

cgc ccc cag  gcg aac tgg cag agc  act ctg aac agc atc  gtg ggt       18198
Arg Pro Gln  Ala Asn Trp Gln Ser  Thr Leu Asn Ser Ile  Val Gly
        3020                 3025                 3030

ctg gga gtg  cag agt gtg aag cgc  cgc cgc tgc tat taaaagacac        18244
Leu Gly Val  Gln Ser Val Lys Arg  Arg Arg Cys Tyr
        3035                 3040

tgtagcgctt aacttgcttg tctgtgtgta tgtatgtccg ccgaccagaa ggaggaggaa   18304

gaggcgcgtc gccgagttgc aag atg  gcc acc cca tcg atg  ctg ccc cag      18354
                          Met  Ala Thr Pro Ser Met  Leu Pro Gln
                          3045                 3050

tgg gcg  tac atg cac atc gcc  gga cag gac gct tcg  gag tac ctg       18399
Trp Ala  Tyr Met His Ile Ala  Gly Gln Asp Ala Ser  Glu Tyr Leu
    3055                 3060                 3065

agt ccg  ggt ctg gtg cag ttc  gcc cgc gcc aca gac  acc tac ttc       18444
Ser Pro  Gly Leu Val Gln Phe  Ala Arg Ala Thr Asp  Thr Tyr Phe
    3070                 3075                 3080

agt ctg  ggg aac aag ttt agg  aac ccc acg gtg gcg  ccc acg cac       18489
Ser Leu  Gly Asn Lys Phe Arg  Asn Pro Thr Val Ala  Pro Thr His
    3085                 3090                 3095

gat gtg  acc acc gac cgc agc  cag cgg ctg acg ctg  cgc ttc gtg       18534
Asp Val  Thr Thr Asp Arg Ser  Gln Arg Leu Thr Leu  Arg Phe Val
    3100                 3105                 3110

ccc gtg  gac cgc gag gac aac  acc tac tcg tac aaa  gtg cgc tac       18579
Pro Val  Asp Arg Glu Asp Asn  Thr Tyr Ser Tyr Lys  Val Arg Tyr
    3115                 3120                 3125

acg ctg  gcc gtg ggc gac aac  cgc gtg ctg gac atg  gcc agc acc       18624
Thr Leu  Ala Val Gly Asp Asn  Arg Val Leu Asp Met  Ala Ser Thr
    3130                 3135                 3140

tac ttt  gac atc cgc ggc gtg  ctg gat cgg ggc ccc  agc ttc aaa       18669
Tyr Phe  Asp Ile Arg Gly Val  Leu Asp Arg Gly Pro  Ser Phe Lys
    3145                 3150                 3155
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ccc tac  tcc ggc acc gcc tac  aac agc ctg gct ccc  aag gga gct       18714
Pro Tyr  Ser Gly Thr Ala Tyr  Asn Ser Leu Ala Pro  Lys Gly Ala
    3160                 3165                 3170

ccc aat  tcc agc cag tgg gag  caa gca aaa aca ggc  aat ggg gga       18759
Pro Asn  Ser Ser Gln Trp Glu  Gln Ala Lys Thr Gly  Asn Gly Gly
    3175                 3180                 3185

act atg  gaa aca cac aca tat  ggt gtg gcc cca atg  ggc gga gag       18804
Thr Met  Glu Thr His Thr Tyr  Gly Val Ala Pro Met  Gly Gly Glu
    3190                 3195                 3200

aat att  aca aaa gat ggt ctt  caa att gga act gac  gtt aca gcg       18849
Asn Ile  Thr Lys Asp Gly Leu  Gln Ile Gly Thr Asp  Val Thr Ala
    3205                 3210                 3215

aat cag  aat aaa cca att tat  gcc gac aaa aca ttt  caa cca gaa       18894
Asn Gln  Asn Lys Pro Ile Tyr  Ala Asp Lys Thr Phe  Gln Pro Glu
    3220                 3225                 3230

ccg caa  gta gga gaa gaa aat  tgg caa gaa act gaa  aac ttt tat       18939
Pro Gln  Val Gly Glu Glu Asn  Trp Gln Glu Thr Glu  Asn Phe Tyr
    3235                 3240                 3245

ggc ggt  aga gct ctt aaa aaa  gac aca aac atg aaa  cct tgc tat       18984
Gly Gly  Arg Ala Leu Lys Lys  Asp Thr Asn Met Lys  Pro Cys Tyr
    3250                 3255                 3260

ggc tcc  tat gct aga ccc acc  aat gaa aaa gga ggt  caa gct aaa       19029
Gly Ser  Tyr Ala Arg Pro Thr  Asn Glu Lys Gly Gly  Gln Ala Lys
    3265                 3270                 3275

ctt aaa  gtt gga gat gat gga  gtt cca acc aaa gaa  ttc gac ata       19074
Leu Lys  Val Gly Asp Asp Gly  Val Pro Thr Lys Glu  Phe Asp Ile
    3280                 3285                 3290

gac ctg  gct ttc ttt gat act  ccc ggt ggc acc gtg  aac ggt caa       19119
Asp Leu  Ala Phe Phe Asp Thr  Pro Gly Gly Thr Val  Asn Gly Gln
    3295                 3300                 3305

gac gag  tat aaa gca gac att  gtc atg tat acc gaa  aac acg tat       19164
Asp Glu  Tyr Lys Ala Asp Ile  Val Met Tyr Thr Glu  Asn Thr Tyr
    3310                 3315                 3320

ctg gaa  act cca gac acg cat  gtg gta tac aaa cca  ggc aag gat       19209
Leu Glu  Thr Pro Asp Thr His  Val Val Tyr Lys Pro  Gly Lys Asp
    3325                 3330                 3335

gat gca  agt tct gaa att aac  ctg gtt cag cag tct  atg ccc aac       19254
Asp Ala  Ser Ser Glu Ile Asn  Leu Val Gln Gln Ser  Met Pro Asn
    3340                 3345                 3350

aga ccc  aac tac att ggg ttc  agg gac aac ttt atc  ggt ctt atg       19299
Arg Pro  Asn Tyr Ile Gly Phe  Arg Asp Asn Phe Ile  Gly Leu Met
    3355                 3360                 3365

tac tac  aac agt act ggc aat  atg ggt gtg ctt gct  ggt cag gcc       19344
Tyr Tyr  Asn Ser Thr Gly Asn  Met Gly Val Leu Ala  Gly Gln Ala
    3370                 3375                 3380
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tcc cag  ctg aat gct gtg gtt  gac ttg caa gac aga  aac aca gag       19389
Ser Gln  Leu Asn Ala Val Val  Asp Leu Gln Asp Arg  Asn Thr Glu
    3385                 3390                 3395

ctg tcc  tac cag ctc ttg ctt  gac tct ttg ggt gac  aga acc agg       19434
Leu Ser  Tyr Gln Leu Leu Leu  Asp Ser Leu Gly Asp  Arg Thr Arg
    3400                 3405                 3410

tat ttc  agt atg tgg aat cag  gcg gtg gac agt tat  gat cct gat       19479
Tyr Phe  Ser Met Trp Asn Gln  Ala Val Asp Ser Tyr  Asp Pro Asp
    3415                 3420                 3425

gtg cgc  att att gaa aac cat  ggt gtg gaa gat gaa  ctt ccc aac       19524
Val Arg  Ile Ile Glu Asn His  Gly Val Glu Asp Glu  Leu Pro Asn
    3430                 3435                 3440

tat tgc  ttc ccc ctg gat ggg  tct ggc act aac gcc  gct tac caa       19569
Tyr Cys  Phe Pro Leu Asp Gly  Ser Gly Thr Asn Ala  Ala Tyr Gln
    3445                 3450                 3455

ggt gtg  aaa gta aaa aat ggt  caa gat ggt gat gtt  gag agc gaa       19614
Gly Val  Lys Val Lys Asn Gly  Gln Asp Gly Asp Val  Glu Ser Glu
    3460                 3465                 3470

tgg gaa  aaa gat gat act gtc  gca gct caa aat caa  tta tgt aaa       19659
Trp Glu  Lys Asp Asp Thr Val  Ala Ala Gln Asn Gln  Leu Cys Lys
    3475                 3480                 3485

ggt aac  att ttt gcc atg gag  atc aat ctc cag gct  aac ctg tgg       19704
Gly Asn  Ile Phe Ala Met Glu  Ile Asn Leu Gln Ala  Asn Leu Trp
    3490                 3495                 3500

aga agt  ttc ctc tac tcg aac  gtg gcc ctg tac ctg  ccc gac tcc       19749
Arg Ser  Phe Leu Tyr Ser Asn  Val Ala Leu Tyr Leu  Pro Asp Ser
    3505                 3510                 3515

tac aag  tac acg ccg acc aac  gtc acg ctg ccg acc  aac acc aac       19794
Tyr Lys  Tyr Thr Pro Thr Asn  Val Thr Leu Pro Thr  Asn Thr Asn
    3520                 3525                 3530

acc tac  gat tac atg aac ggg  aga gtg aca cct ccc  tcg ctg gta       19839
Thr Tyr  Asp Tyr Met Asn Gly  Arg Val Thr Pro Pro  Ser Leu Val
    3535                 3540                 3545

gac gcc  tac atc aac atc ggg  gcg cgc tgg tcg ctg  gac ccc atg       19884
Asp Ala  Tyr Ile Asn Ile Gly  Ala Arg Trp Ser Leu  Asp Pro Met
    3550                 3555                 3560

gac aac  gtc aat ccc ttc aac  cac cat cgc aac gcg  ggg ctg cgc       19929
Asp Asn  Val Asn Pro Phe Asn  His His Arg Asn Ala  Gly Leu Arg
    3565                 3570                 3575

tac cgc  tcc atg ctc ctg ggc  aac ggg cgc tac gtg  ccc ttc cac       19974
Tyr Arg  Ser Met Leu Leu Gly  Asn Gly Arg Tyr Val  Pro Phe His
    3580                 3585                 3590

atc cag  gtg ccc cag aaa ttt  ttc gcc att aag agc  ctc ctg ctc       20019
Ile Gln  Val Pro Gln Lys Phe  Phe Ala Ile Lys Ser  Leu Leu Leu
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    3595                3600                3605

ctg ccc  ggg tcc tac acc tac  gag tgg aac ttc cgc  aag gac gtc       20064
Leu Pro  Gly Ser Tyr Thr Tyr  Glu Trp Asn Phe Arg  Lys Asp Val
    3610                3615                3620

aac atg  atc ctg cag agc tcc  ctc ggc aac gac ctg  cgc acg gac       20109
Asn Met  Ile Leu Gln Ser Ser  Leu Gly Asn Asp Leu  Arg Thr Asp
    3625                3630                3635

ggg gcc  tcc atc tcc ttc acc  agc atc aac ctc tac  gca acc ttc       20154
Gly Ala  Ser Ile Ser Phe Thr  Ser Ile Asn Leu Tyr  Ala Thr Phe
    3640                3645                3650

ttc ccc  atg gcg cac aac acg  gct tcc acg ctc gag  gcc atg ctg       20199
Phe Pro  Met Ala His Asn Thr  Ala Ser Thr Leu Glu  Ala Met Leu
    3655                3660                3665

cgc aac  gac acc aac gac cag  tcc ttc aac gac tac  ctc tcg gcg       20244
Arg Asn  Asp Thr Asn Asp Gln  Ser Phe Asn Asp Tyr  Leu Ser Ala
    3670                3675                3680

gcc aac  atg ctc tac ccc atc  ccg gcc aac gcc acc  aac gtg ccc       20289
Ala Asn  Met Leu Tyr Pro Ile  Pro Ala Asn Ala Thr  Asn Val Pro
    3685                3690                3695

atc tcc  atc ccc tcg cgc aac  tgg gcc gcc ttc cgc  ggc tgg tcc       20334
Ile Ser  Ile Pro Ser Arg Asn  Trp Ala Ala Phe Arg  Gly Trp Ser
    3700                3705                3710

ttc acg  cgc ctc aag acc aag  gag acg ccc tcg ctg  ggc tcc ggg       20379
Phe Thr  Arg Leu Lys Thr Lys  Glu Thr Pro Ser Leu  Gly Ser Gly
    3715                3720                3725

ttc gac  ccc tac ttc gtc tac  tcg ggc tcc atc ccc  tac ctc gac       20424
Phe Asp  Pro Tyr Phe Val Tyr  Ser Gly Ser Ile Pro  Tyr Leu Asp
    3730                3735                3740

ggc acc  ttc tac ctc aac cac  acc ttc aag aag gtc  tcc atc acc       20469
Gly Thr  Phe Tyr Leu Asn His  Thr Phe Lys Lys Val  Ser Ile Thr
    3745                3750                3755

ttc gac  tcc tcc gtc agc tgg  ccc ggc aac gac cgg  ctc ctg acg       20514
Phe Asp  Ser Ser Val Ser Trp  Pro Gly Asn Asp Arg  Leu Leu Thr
    3760                3765                3770

ccc aac  gag ttc gaa atc aag  cgc acc gtc gac ggc  gag ggc tac       20559
Pro Asn  Glu Phe Glu Ile Lys  Arg Thr Val Asp Gly  Glu Gly Tyr
    3775                3780                3785

aac gtg  gcc cag tgc aac atg  acc aag gac tgg ttc  ctg gtc cag       20604
Asn Val  Ala Gln Cys Asn Met  Thr Lys Asp Trp Phe  Leu Val Gln
    3790                3795                3800

atg ctg  gcc cac tac aac atc  ggc tac cag ggc ttc  tac gtg ccc       20649
Met Leu  Ala His Tyr Asn Ile  Gly Tyr Gln Gly Phe  Tyr Val Pro
    3805                3810                3815

gag ggc  tac aag gac cgc atg  tac tcc ttc ttc cgc  aac ttc cag       20694
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Glu Gly  Tyr Lys Asp Arg Met  Tyr Ser Phe Phe Arg  Asn Phe Gln
    3820                 3825                 3830

ccc atg  agc cgc cag gtg gtg  gac gag gtc aac tac  aag gac tac      20739
Pro Met  Ser Arg Gln Val Val  Asp Glu Val Asn Tyr  Lys Asp Tyr
    3835                 3840                 3845

cag gcc  gtc acc ctg gcc tac  cag cac aac aac tcg  ggc ttc gtc      20784
Gln Ala  Val Thr Leu Ala Tyr  Gln His Asn Asn Ser  Gly Phe Val
    3850                 3855                 3860

ggc tac  ctc gcg ccc acc atg  cgc cag ggc cag ccc  tac ccc gcc      20829
Gly Tyr  Leu Ala Pro Thr Met  Arg Gln Gly Gln Pro  Tyr Pro Ala
    3865                 3870                 3875

aac tac  ccc tac ccg ctc atc  ggc aag agc gcc gtc  acc agc gtc      20874
Asn Tyr  Pro Tyr Pro Leu Ile  Gly Lys Ser Ala Val  Thr Ser Val
    3880                 3885                 3890

acc cag  aaa aag ttc ctc tgc  gac agg gtc atg tgg  cgc atc ccc      20919
Thr Gln  Lys Lys Phe Leu Cys  Asp Arg Val Met Trp  Arg Ile Pro
    3895                 3900                 3905

ttc tcc  agc aac ttc atg tcc  atg ggc gcg ctc acc  gac ctc ggc      20964
Phe Ser  Ser Asn Phe Met Ser  Met Gly Ala Leu Thr  Asp Leu Gly
    3910                 3915                 3920

cag aac  atg ctc tat gcc aac  tcc gcc cac gcg cta  gac atg aat      21009
Gln Asn  Met Leu Tyr Ala Asn  Ser Ala His Ala Leu  Asp Met Asn
    3925                 3930                 3935

ttc gaa  gtc gac ccc atg gat  gag tcc acc ctt ctc  tat gtt gtc      21054
Phe Glu  Val Asp Pro Met Asp  Glu Ser Thr Leu Leu  Tyr Val Val
    3940                 3945                 3950

ttc gaa  gtc ttc gac gtc gtc  cga gtg cac cag ccc  cac cgc ggc      21099
Phe Glu  Val Phe Asp Val Val  Arg Val His Gln Pro  His Arg Gly
    3955                 3960                 3965

gtc atc  gag gcc gtc tac ctg  cgc acc ccc ttc tcg  gcc ggt aac      21144
Val Ile  Glu Ala Val Tyr Leu  Arg Thr Pro Phe Ser  Ala Gly Asn
    3970                 3975                 3980

gcc acc  acc taagctcttg cttcttgc atg atg gct gag  ccc acg ggc tcc  21195
Ala Thr  Thr                    Met Met Ala Glu  Pro Thr Gly Ser
    3985                                     3990

ggc  gag cag gag ctc agg  gcc atc atc cgc gac  ctg ggc tgc ggg      21240
Gly  Glu Gln Glu Leu Arg  Ala Ile Ile Arg Asp  Leu Gly Cys Gly
3995                 4000                 4005

ccc  tac ttc ctg ggc acc  ttc gat aag cgc ttc  ccg gga ttc atg      21285
Pro  Tyr Phe Leu Gly Thr  Phe Asp Lys Arg Phe  Pro Gly Phe Met
4010                 4015                 4020

gcc  ccg cac aag ctg gcc  tgc gcc atc gtc aac  acg gcc ggc cgc      21330
Ala  Pro His Lys Leu Ala  Cys Ala Ile Val Asn  Thr Ala Gly Arg
4025                 4030                 4035
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gag  acc ggg ggc gag cac  tgg ctg gcc ttc gcc  tgg aac ccg cgc       21375
Glu  Thr Gly Gly Glu His  Trp Leu Ala Phe Ala  Trp Asn Pro Arg
4040                 4045                 4050

tcg  aac acc tgc tac ctc  ttc gac ccc ttc ggg  ttc tcg gac gag       21420
Ser  Asn Thr Cys Tyr Leu  Phe Asp Pro Phe Gly  Phe Ser Asp Glu
4055                 4060                 4065

cgc  ctc aag cag atc tac  cag ttc gag tac gag  ggc ctg ctg cgc       21465
Arg  Leu Lys Gln Ile Tyr  Gln Phe Glu Tyr Glu  Gly Leu Leu Arg
4070                 4075                 4080

cgt  agc gcc ctg gcc acc  gag gac cgc tgc gtc  acc ctg gaa aag       21510
Arg  Ser Ala Leu Ala Thr  Glu Asp Arg Cys Val  Thr Leu Glu Lys
4085                 4090                 4095

tcc  acc cag acc gtg cag  ggt ccg cgc tcg gcc  gcc tgc ggg ctc       21555
Ser  Thr Gln Thr Val Gln  Gly Pro Arg Ser Ala  Ala Cys Gly Leu
4100                 4105                 4110

ttc  tgc tgc atg ttc ctg  cac gcc ttc gtg cac  tgg ccc gac cgc       21600
Phe  Cys Cys Met Phe Leu  His Ala Phe Val His  Trp Pro Asp Arg
4115                 4120                 4125

ccc  atg gac aag aac ccc  acc atg aac tta ctg  acg ggg gtg ccc       21645
Pro  Met Asp Lys Asn Pro  Thr Met Asn Leu Leu  Thr Gly Val Pro
4130                 4135                 4140

aac  ggc atg ctc cag tcg  ccc cag gtg gaa ccc  acc ctg cgc cgc       21690
Asn  Gly Met Leu Gln Ser  Pro Gln Val Glu Pro  Thr Leu Arg Arg
4145                 4150                 4155

aac  cag gag gcg ctc tac  cgc ttc ctc aac gcc  cac tcc gcc tac       21735
Asn  Gln Glu Ala Leu Tyr  Arg Phe Leu Asn Ala  His Ser Ala Tyr
4160                 4165                 4170

ttt  cgc tcc cac cgc gcg  cgc atc gag aag gcc  acc gcc ttc gac       21780
Phe  Arg Ser His Arg Ala  Arg Ile Glu Lys Ala  Thr Ala Phe Asp
4175                 4180                 4185

cgc  atg aat caa gac atg  taaaccgtgt gtgtatgtga atgctttatt          21828
Arg  Met Asn Gln Asp Met
4190                 4195

cataataaac agcacatgtt tatgccacct tctctgaggc tctgacttta tttagaaatc   21888

gaaggggttc tgccggctct cggcgtgccc cgcgggcagg gatacgttgc ggaactggta   21948

cttgggcagc cacttgaact cggggatcag cagcttcggc acggggaggt cggggaacga   22008

gtcgctccac agcttgcgcg tgagttgcag ggcgcccagc aggtcgggcg cggagatctt   22068

gaaatcacag ttgggacccg cgttctgcgc gcgagagttg cggtacacgg ggttgcagca   22128

ctggaacacc atcagggccg ggtgcttcac gctcgccagc accgtcgcgt cggtgatgcc   22188

ctccacgtcc agatcctcgg cgttggccat cccgaagggg gtcatcttgc aggtctgccg   22248

ccccatgctg ggcacgcagc cgggcttgtg gttgcaatcg cagtgcaggg ggatcagcat   22308
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catctgggcc tgttcggagc tcatgcccgg gtacatggcc ttcatgaaag cctccagctg    22368

gcggaaggcc tgctgcgcct tgccgccctc ggtgaagaag accccgcagg acttgctaga    22428

gaactggttg gtagcgcagc ccgcgtcgtg cacgcagcag cgcgcgtcgt tgttggccag    22488

ctgcaccacg ctgcgccccc agcggttctg ggtgatcttg gcccggtcgg ggttctcctt    22548

cagcgcgcgc tgcccgttct cgctcgccac atccatctcg atcgtgtgct ccttctggat    22608

catcacggtc ccgtgcaggc accgcagctt gccctcggcc tcggtgcagc cgtgcagcca    22668

cagcgcgcag ccggtgctct cccagttctt gtgggcgatc tgggagtgcg agtgcacgaa    22728

gccctgcagg aagcggccca tcatcgtggt cagggtcttg ttgctggtga aggtcagcgg    22788

gatgccgcgg tgctcctcgt tcacatacat gtggcagatg cggcggtaca cctcgccctg    22848

ctcgggcatc agctggaagg cggacttcag gtcgctctcc acgcggtacc ggtccatcag    22908

cagcgtcatg acttccatgc ccttctccca ggccgaaacg atcggcaggc tcaggggttt    22968

cttcaccgcc attgtcatct tagtcgccgc cgccgaggtc agggggtcgt tctcgtccag    23028

ggtctcaaac actcgcttgc cgtccttctc ggtgatgcgc acgggggggа aggcgaagcc    23088

cacggccgcc agctcctcct cggcctgcct ttcgtcctcg ctgtcctggc tgatgtcttg    23148

caaaggcaca tgcttggtct tgcggggttt ctttttgggc ggcagaggcg gcggcgatgt    23208

gctgggcgag cgcgagttct cgctcaccac gactatttct tctccttggc cgtcgtccga    23268

gaccacgcgg cggtaggcat gcctcttctg gggcagaggc ggaggcgacg ggctctcgcg    23328

gttcggcggg cggctggcag agcccccttcc gcgttcgggg gtgcgctcct ggcggcgctg    23388

ctctgactga cttcctccgc ggccggccat tgtgttctcc tagggagcaa gc atg gag    23446
                                                          Met Glu

act cag cca  tcg tcg cca aca tcg  cca tct gcc ccc gcc  gcc acc       23491
Thr Gln Pro  Ser Ser Pro Thr Ser  Pro Ser Ala Pro Ala  Ala Thr
        4200                4205                4210

gcc gac gag  aac cag cag cag cag  aat gaa agc tta acc  gcc ccg       23536
Ala Asp Glu  Asn Gln Gln Gln Gln  Asn Glu Ser Leu Thr  Ala Pro
        4215                4220                4225

ccg ccc agc  ccc acc tcc gac gcc  gcg gcc cca gac atg  caa gag       23581
Pro Pro Ser  Pro Thr Ser Asp Ala  Ala Ala Pro Asp Met  Gln Glu
        4230                4235                4240

atg gag gaa  tcc atc gag att gac  ctg ggc tac gtg acg  ccc gcg       23626
Met Glu Glu  Ser Ile Glu Ile Asp  Leu Gly Tyr Val Thr  Pro Ala
        4245                4250                4255

gag cac gag  gag gag ctg gca gcg  cgc ttt tca gcc ccg  gaa gaa       23671
Glu His Glu  Glu Glu Leu Ala Ala  Arg Phe Ser Ala Pro  Glu Glu
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        4260                4265                4270

aac cac caa  gag cag cca gag cag  gaa gca gag agc gag  cag aac       23716
Asn His Gln  Glu Gln Pro Glu Gln  Glu Ala Glu Ser Glu  Gln Asn
        4275                4280                4285

cag gct ggg  ctc gag cat ggc gac  tac ctg agc ggg gca  gag gac       23761
Gln Ala Gly  Leu Glu His Gly Asp  Tyr Leu Ser Gly Ala  Glu Asp
        4290                4295                4300

gtg ctc atc  aag cat ctg gcc cgc  caa tgc atc atc gtc  aag gac       23806
Val Leu Ile  Lys His Leu Ala Arg  Gln Cys Ile Ile Val  Lys Asp
        4305                4310                4315

gcg ctg ctc  gac cgc gcc gag gtg  ccc ctc agc gtg gcg  gag ctc       23851
Ala Leu Leu  Asp Arg Ala Glu Val  Pro Leu Ser Val Ala  Glu Leu
        4320                4325                4330

agc cgc gcc  tac gag cgc aac ctc  ttc tcg cca cgc gtg  ccc ccc       23896
Ser Arg Ala  Tyr Glu Arg Asn Leu  Phe Ser Pro Arg Val  Pro Pro
        4335                4340                4345

aag cgc cag  ccc aac ggc acc tgt  gag ccc aac ccg cgc  ctc aac       23941
Lys Arg Gln  Pro Asn Gly Thr Cys  Glu Pro Asn Pro Arg  Leu Asn
        4350                4355                4360

ttc tac ccg  gtc ttc gcg gtg ccc  gag gcc ctg gcc acc  tac cac       23986
Phe Tyr Pro  Val Phe Ala Val Pro  Glu Ala Leu Ala Thr  Tyr His
        4365                4370                4375

ctc ttt ttc  aag aac caa agg atc  ccc gtc tcc tgc cgc  gcc aac       24031
Leu Phe Phe  Lys Asn Gln Arg Ile  Pro Val Ser Cys Arg  Ala Asn
        4380                4385                4390

cgc acc cgc  gcc gac gcc ctg ctc  aac ctg ggc ccc ggc  gcc cgc       24076
Arg Thr Arg  Ala Asp Ala Leu Leu  Asn Leu Gly Pro Gly  Ala Arg
        4395                4400                4405

cta cct gat  atc acc tcc ttg gaa  gag gtt ccc aag atc  ttt gag       24121
Leu Pro Asp  Ile Thr Ser Leu Glu  Glu Val Pro Lys Ile  Phe Glu
        4410                4415                4420

ggt ctg ggc  agc gac gag act cgg  gcc gcg aac gct ctg  caa gga       24166
Gly Leu Gly  Ser Asp Glu Thr Arg  Ala Ala Asn Ala Leu  Gln Gly
        4425                4430                4435

agc gga gag  gag cat gag cac cac  agc gcc ctg gtg gag  ttg gaa       24211
Ser Gly Glu  Glu His Glu His His  Ser Ala Leu Val Glu  Leu Glu
        4440                4445                4450

ggc gac aac  gcg cgc ctg gcg gtc  ctc aag cgc acg gtc  gag ctg       24256
Gly Asp Asn  Ala Arg Leu Ala Val  Leu Lys Arg Thr Val  Glu Leu
        4455                4460                4465

acc cac ttc  gcc tac ccg gcg ctc  aac ctg ccc ccc aag  gtc atg       24301
Thr His Phe  Ala Tyr Pro Ala Leu  Asn Leu Pro Pro Lys  Val Met
        4470                4475                4480

agc gcc gtc  atg gac cag gtg ctc  atc aag cgc gcc tcg  ccc ctc       24346
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Ser Ala Val  Met Asp Gln Val Leu  Ile Lys Arg Ala Ser  Pro Leu
        4485                 4490                 4495

tcg gag gag  gag atg cag gac ccc  gag agc tcg gac gag  ggc aag       24391
Ser Glu Glu  Glu Met Gln Asp Pro  Glu Ser Ser Asp Glu  Gly Lys
        4500                 4505                 4510

ccc gtg gtc  agc gac gag cag ctg  gcg cgc tgg ctg gga  gcg agt       24436
Pro Val Val  Ser Asp Glu Gln Leu  Ala Arg Trp Leu Gly  Ala Ser
        4515                 4520                 4525

agc acc ccc  cag agc ctg gaa gag  cgg cgc aag ctc atg  atg gcc       24481
Ser Thr Pro  Gln Ser Leu Glu Glu  Arg Arg Lys Leu Met  Met Ala
        4530                 4535                 4540

gtg gtc ctg  gtg acc gtg gag ctg  gag tgt ctg cgc cgc  ttc ttt       24526
Val Val Leu  Val Thr Val Glu Leu  Glu Cys Leu Arg Arg  Phe Phe
        4545                 4550                 4555

gcc gac gcg  gag acc ctg cgc aag  gtc gag gag aac ctg  cac tac       24571
Ala Asp Ala  Glu Thr Leu Arg Lys  Val Glu Glu Asn Leu  His Tyr
        4560                 4565                 4570

ctc ttc agg  cac ggg ttc gtg cgc  cag gcc tgc aag atc  tcc aac       24616
Leu Phe Arg  His Gly Phe Val Arg  Gln Ala Cys Lys Ile  Ser Asn
        4575                 4580                 4585

gtg gag ctg  acc aac ctg gtc tcc  tac atg ggc atc ctg  cac gag       24661
Val Glu Leu  Thr Asn Leu Val Ser  Tyr Met Gly Ile Leu  His Glu
        4590                 4595                 4600

aac cgc ctg  ggg cag aac gtg ctg  cac acc acc ctg cgc  ggg gag       24706
Asn Arg Leu  Gly Gln Asn Val Leu  His Thr Thr Leu Arg  Gly Glu
        4605                 4610                 4615

gcc cgc cgc  gac tac atc cgc gac  tgc gtc tac ctg tac  ctc tgc       24751
Ala Arg Arg  Asp Tyr Ile Arg Asp  Cys Val Tyr Leu Tyr  Leu Cys
        4620                 4625                 4630

cac acc tgg  cag acg ggc atg ggc  gtg tgg cag cag tgc  ctg gag       24796
His Thr Trp  Gln Thr Gly Met Gly  Val Trp Gln Gln Cys  Leu Glu
        4635                 4640                 4645

gag cag aac  ctg aaa gag ctc tgc  aag ctc ctg cag aag  aac ctg       24841
Glu Gln Asn  Leu Lys Glu Leu Cys  Lys Leu Leu Gln Lys  Asn Leu
        4650                 4655                 4660

aag gcc ctg  tgg acc ggg ttc gac  gag cgc acc acc gcc  tcg gac       24886
Lys Ala Leu  Trp Thr Gly Phe Asp  Glu Arg Thr Thr Ala  Ser Asp
        4665                 4670                 4675

ctg gcc gac  ctc atc ttc ccc gag  cgc ctg cgg ctg acg  ctg cgc       24931
Leu Ala Asp  Leu Ile Phe Pro Glu  Arg Leu Arg Leu Thr  Leu Arg
        4680                 4685                 4690

aac ggg ctg  ccc gac ttt atg agc  caa agc atg ttg caa  aac ttt       24976
Asn Gly Leu  Pro Asp Phe Met Ser  Gln Ser Met Leu Gln  Asn Phe
        4695                 4700                 4705
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cgc tct ttc  atc ctc gaa cgc tcc  ggg atc ctg ccc gcc  acc tgc       25021
Arg Ser Phe  Ile Leu Glu Arg Ser  Gly Ile Leu Pro Ala  Thr Cys
        4710                 4715                 4720

tcc gcg ctg  ccc tcg gac ttc gtg  ccg ctg acc ttc cgc  gag tgc       25066
Ser Ala Leu  Pro Ser Asp Phe Val  Pro Leu Thr Phe Arg  Glu Cys
        4725                 4730                 4735

ccc ccg ccg  ctc tgg agc cac tgc  tac ttg ctg cgc ctg  gcc aac       25111
Pro Pro Pro  Leu Trp Ser His Cys  Tyr Leu Leu Arg Leu  Ala Asn
        4740                 4745                 4750

tac ctg gcc  tac cac tcg gac gtg  atc gag gac gtc agc  ggc gag       25156
Tyr Leu Ala  Tyr His Ser Asp Val  Ile Glu Asp Val Ser  Gly Glu
        4755                 4760                 4765

ggt ctg ctc  gag tgc cac tgt cgc  tgc aac ctc tgc acg  ccg cac       25201
Gly Leu Leu  Glu Cys His Cys Arg  Cys Asn Leu Cys Thr  Pro His
        4770                 4775                 4780

cgc tcc ctg  gcc tgc aac ccc cag  ctg ctg agc gag acc  cag atc       25246
Arg Ser Leu  Ala Cys Asn Pro Gln  Leu Leu Ser Glu Thr  Gln Ile
        4785                 4790                 4795

atc ggc acc  ttc gag ttg caa ggc  ccc ggc gag gag ggc  aag ggg       25291
Ile Gly Thr  Phe Glu Leu Gln Gly  Pro Gly Glu Glu Gly  Lys Gly
        4800                 4805                 4810

ggt ctg aaa  ctc acc ccg ggg ctg  tgg acc tcg gcc tac  ttg cgc       25336
Gly Leu Lys  Leu Thr Pro Gly Leu  Trp Thr Ser Ala Tyr  Leu Arg
        4815                 4820                 4825

aag ttc gtg  ccc gag gac tac cat  ccc ttc gag atc agg  ttc tac       25381
Lys Phe Val  Pro Glu Asp Tyr His  Pro Phe Glu Ile Arg  Phe Tyr
        4830                 4835                 4840

gag gac caa  tcc cag ccg ccc aag  gcc gag ctg tcg gcc  tgc gtc       25426
Glu Asp Gln  Ser Gln Pro Pro Lys  Ala Glu Leu Ser Ala  Cys Val
        4845                 4850                 4855

atc acc cag  ggg gcc atc ctg gcc  caa ttg caa gcc atc  cag aaa       25471
Ile Thr Gln  Gly Ala Ile Leu Ala  Gln Leu Gln Ala Ile  Gln Lys
        4860                 4865                 4870

tcc cgc caa  gaa ttt ctg ctg aaa  aag ggc cac ggg gtc  tac ttg       25516
Ser Arg Gln  Glu Phe Leu Leu Lys  Lys Gly His Gly Val  Tyr Leu
        4875                 4880                 4885

gac ccc cag  acc gga gag gag ctc  aac ccc agc ttc ccc  cag gat       25561
Asp Pro Gln  Thr Gly Glu Glu Leu  Asn Pro Ser Phe Pro  Gln Asp
        4890                 4895                 4900

gcc ccg agg  aag cag caa gaa gct  gaa agt gga gct gcc  gcc gcc       25606
Ala Pro Arg  Lys Gln Gln Glu Ala  Glu Ser Gly Ala Ala  Ala Ala
        4905                 4910                 4915

gcc gga gga  ttt gga gga aga ctg  gga gag cag tca ggc  aga gga       25651
Ala Gly Gly  Phe Gly Gly Arg Leu  Gly Glu Gln Ser Gly  Arg Gly
        4920                 4925                 4930
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gat gga aga  ctg gga cag cac tca  ggc aga gga gga cag  cct gca       25696
Asp Gly Arg  Leu Gly Gln His Ser  Gly Arg Gly Gly Gln  Pro Ala
        4935                4940                4945

aga cag tct  gga gga gga aga cga  ggt gga gga gga ggc  aga gga       25741
Arg Gln Ser  Gly Gly Gly Arg Arg  Gly Gly Gly Gly Gly  Arg Gly
        4950                4955                4960

aga agc agc  cgc cgc cag acc gtc  gtc ctc ggc gga gaa  agc aag       25786
Arg Ser Ser  Arg Arg Gln Thr Val  Val Leu Gly Gly Glu  Ser Lys
        4965                4970                4975

cag cac gga  tac cat ctc cgc tcc  ggg tcg ggg tcg cgg  cgg ccg       25831
Gln His Gly  Tyr His Leu Arg Ser  Gly Ser Gly Ser Arg  Arg Pro
        4980                4985                4990

ggc cca cag  taggtgggac gagaccgggc gcttcccgaa ccccaccacc            25880
Gly Pro Gln
        4995

cagaccggta agaaggagcg gcagggatac aagtcctggc gggggcacaa aaacgccatc   25940

gtctcctgct tgcaagcctg cgggggcaac atctccttca cccggcgcta cctgctcttc   26000

caccgcgggg tgaacttccc ccgcaacatc ttgcattact accgtcacct ccacagcccc   26060

tactactgtt tccaagaaga ggcagaaacc cagcagcagc agaaaaccag cggcagcagc   26120

agctagaaaa tccacagcgg cggcaggtgg actgaggatc gcggcgaacg agccggcgca   26180

gacccgggag ctgaggaacc ggatctttcc caccctctat gccatcttcc agcagagtcg   26240

ggggcaggag caggaactga aagtcaagaa ccgttctctg cgctcgctca cccgcagttg   26300

tctgtatcac aagagcgaag accaacttca gcgcactctc gaggacgccg aggctctctt   26360

caacaagtac tgcgcgctca ctcttaaaga gtagcccgcg cccgcccaca cacggaaaaa   26420

ggcgggaatt acgtcaccac ctgcgccctt cgcccgacca tc atg agc aaa gag      26474
                                              Met Ser Lys Glu


att  ccc acg cct tac atg  tgg agc tac cag ccc  cag atg ggc ctg      26519
Ile  Pro Thr Pro Tyr Met  Trp Ser Tyr Gln Pro  Gln Met Gly Leu
5000                5005                5010

gcc  gcc ggc gcc gcc cag  gac tac tcc acc cgc  atg aac tgg ctc      26564
Ala  Ala Gly Ala Ala Gln  Asp Tyr Ser Thr Arg  Met Asn Trp Leu
5015                5020                5025

agt  gcc ggg ccc gcg atg  atc tca cgg gtg aat  gac atc cgc gcc      26609
Ser  Ala Gly Pro Ala Met  Ile Ser Arg Val Asn  Asp Ile Arg Ala
5030                5035                5040

cgc  cga aac cag ata ctc  cta gaa cag tca gcg  atc acc gcc acg      26654
Arg  Arg Asn Gln Ile Leu  Leu Glu Gln Ser Ala  Ile Thr Ala Thr
5045                5050                5055
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ccc  cgc cat cac ctt aat  ccg cgt aat tgg ccc  gcc gcc ctg gtg       26699
Pro  Arg His His Leu Asn  Pro Arg Asn Trp Pro  Ala Ala Leu Val
5060                 5065                 5070

tac  cag gaa att ccc cag  ccc acg acc gta cta  ctt ccg cga gac       26744
Tyr  Gln Glu Ile Pro Gln  Pro Thr Thr Val Leu  Leu Pro Arg Asp
5075                 5080                 5085

gcc  cag gcc gaa gtc cag  ctg act aac tca ggt  gtc cag ctg gcc       26789
Ala  Gln Ala Glu Val Gln  Leu Thr Asn Ser Gly  Val Gln Leu Ala
5090                 5095                 5100

ggc  ggc gcc gcc ctg tgt  cgt cac cgc ccc gct  cag ggt ata aag       26834
Gly  Gly Ala Ala Leu Cys  Arg His Arg Pro Ala  Gln Gly Ile Lys
5105                 5110                 5115

cgg  ctg gtg atc cga ggc  aga ggc aca cag ctc  aac gac gag gtg       26879
Arg  Leu Val Ile Arg Gly  Arg Gly Thr Gln Leu  Asn Asp Glu Val
5120                 5125                 5130

gtg  agc tct tcg ctg ggt  ctg cga cct gac gga  gtc ttc caa ctc       26924
Val  Ser Ser Ser Leu Gly  Leu Arg Pro Asp Gly  Val Phe Gln Leu
5135                 5140                 5145

gcc  gga tcg ggg aga tct  tcc ttc acg cct cgt  cag gcc gtc ctg       26969
Ala  Gly Ser Gly Arg Ser  Ser Phe Thr Pro Arg  Gln Ala Val Leu
5150                 5155                 5160

act  ttg gag agt tcg tcc  tcg cag ccc cgc tcg  ggc ggc atc ggc       27014
Thr  Leu Glu Ser Ser Ser  Ser Gln Pro Arg Ser  Gly Gly Ile Gly
5165                 5170                 5175

act  ctc cag ttc gtg gag  gag ttc act ccc tcg  gtc tac ttc aac       27059
Thr  Leu Gln Phe Val Glu  Glu Phe Thr Pro Ser  Val Tyr Phe Asn
5180                 5185                 5190

ccc  ttc tcc ggc tcc ccc  ggc cac tac ccg gac  gag ttc atc ccg       27104
Pro  Phe Ser Gly Ser Pro  Gly His Tyr Pro Asp  Glu Phe Ile Pro
5195                 5200                 5205

aac  ttc gac gcc atc agc  gag tcg gtg gac ggc  tac gat tga atg       27149
Asn  Phe Asp Ala Ile Ser  Glu Ser Val Asp Gly  Tyr Asp     Met
5210                 5215                 5220

tcc cat  ggt ggc gca gct gac  cta gct cgg ctt cga  cac ctg gac       27194
Ser His  Gly Gly Ala Ala Asp  Leu Ala Arg Leu Arg  His Leu Asp
    5225                 5230                 5235

cac tgc  cgc cgc ttc cgc tgc  ttc gct cgg gat ctc  gcc gag ttt       27239
His Cys  Arg Arg Phe Arg Cys  Phe Ala Arg Asp Leu  Ala Glu Phe
    5240                 5245                 5250

gcc tac  ttt gag ctg ccc gag  gag cac cct cag ggc  cca gcc cac       27284
Ala Tyr  Phe Glu Leu Pro Glu  Glu His Pro Gln Gly  Pro Ala His
    5255                 5260                 5265

gga gtg  cgg atc atc gtc gaa  ggg ggc ctc gac tcc  cac ctg ctt       27329
Gly Val  Arg Ile Ile Val Glu  Gly Gly Leu Asp Ser  His Leu Leu
    5270                 5275                 5280
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cgg atc  ttc agc cag cga ccg  atc ctg gtc gag cgc  gaa caa gga       27374
Arg Ile  Phe Ser Gln Arg Pro  Ile Leu Val Glu Arg  Glu Gln Gly
    5285                 5290                 5295

cag acc  cgt ctg acc ctg tac  tgc atc tgc aac cac  ccc ggc ctg       27419
Gln Thr  Arg Leu Thr Leu Tyr  Cys Ile Cys Asn His  Pro Gly Leu
    5300                 5305                 5310

cat gaa  agt ctt tgt tgt ctg  ctg tgt act gag tat  aat aaa agc       27464
His Glu  Ser Leu Cys Cys Leu  Leu Cys Thr Glu Tyr  Asn Lys Ser
    5315                 5320                 5325

tgagatcagc gactactccg gactcgattg tggtgttcct gctatcaacc ggtccctgtt    27524

cttcaccggg aacgaaaccg agctccagct ccagtgtaag ccccacaaga agtacctcac    27584

ctggctgttc cagggctccc ccatcgccgt tgtcaaccac tgcgacaacg acggagtcct    27644

gctgagcggc cctgccaacc ttacttttc cacccgcaga agcaagctcc agctcttcca    27704

acccttcctc cccgggacct atcagtgcgt ctcgggaccc tgccatcaca ccttccacct    27764

gatcccgaat accacagcgc cgctccccgc tactaacaac caaactaacc tccaccaacg    27824

ccaccgtcgc gacctttcct ctgaatctaa taccactacc ggaggtgagc tccgaggtcg    27884

accaacctct gggatttact acggcccctg ggaggtggtg gggttaatag cgctaggcct    27944

agttgtgggt gggcttttgg ctctctgcta cctatacctc ccttgctgtt cgtacttagt    28004

ggtgctgtgt tgctggttta agaa atg ggg  cag atc acc cta gtg  agc tgc     28055
                          Met Gly  Gln Ile Thr Leu Val  Ser Cys
                              5330                 5335

ggt gtg ctg  gtg gcg gtg ctt tcg  att gtg gga ctg ggc  ggc gcg       28100
Gly Val Leu  Val Ala Val Leu Ser  Ile Val Gly Leu Gly  Gly Ala
        5340                 5345                 5350

gct gta gtg  aag gag gag aag gcc  gat ccc tgc ttg cat  ttc aat       28145
Ala Val Val  Lys Glu Glu Lys Ala  Asp Pro Cys Leu His  Phe Asn
        5355                 5360                 5365

ccc gac aaa  tgc cag ctg agt ttt  cag ccc gat ggc aat  cgg tgc       28190
Pro Asp Lys  Cys Gln Leu Ser Phe  Gln Pro Asp Gly Asn  Arg Cys
        5370                 5375                 5380

gcg gtg ctg  atc aag tgc gga tgg  gaa tgc gag aac gtg  aga atc       28235
Ala Val Leu  Ile Lys Cys Gly Trp  Glu Cys Glu Asn Val  Arg Ile
        5385                 5390                 5395

gag tac aat  aac aag act cgg aac  aat act ctc gcg tcc  gtg tgg       28280
Glu Tyr Asn  Asn Lys Thr Arg Asn  Asn Thr Leu Ala Ser  Val Trp
        5400                 5405                 5410

cag ccc ggg  gac ccc gag tgg tac  acc gtc tct gtc ccc  ggt gct       28325
Gln Pro Gly  Asp Pro Glu Trp Tyr  Thr Val Ser Val Pro  Gly Ala
        5415                 5420                 5425
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gac ggc tcc  ccg cgc acc gtg aat  aat act ttc att ttt  gcg cac       28370
Asp Gly Ser  Pro Arg Thr Val Asn  Asn Thr Phe Ile Phe  Ala His
        5430                 5435                 5440

atg tgc aac  acg gtc atg tgg atg  agc aag cag tac gat  atg tgg       28415
Met Cys Asn  Thr Val Met Trp Met  Ser Lys Gln Tyr Asp  Met Trp
        5445                 5450                 5455

ccc ccc acg  aag gag aac atc gtg  gtc ttc tcc atc gct  tac agc       28460
Pro Pro Thr  Lys Glu Asn Ile Val  Val Phe Ser Ile Ala  Tyr Ser
        5460                 5465                 5470

ctg tgc acg  gcg cta atc acc gct  atc gtg tgc ctg agc  att cac       28505
Leu Cys Thr  Ala Leu Ile Thr Ala  Ile Val Cys Leu Ser  Ile His
        5475                 5480                 5485

atg ctc atc  gct att cgc ccc aga  aat aat gcc gag aaa  gag aaa       28550
Met Leu Ile  Ala Ile Arg Pro Arg  Asn Asn Ala Glu Lys  Glu Lys
        5490                 5495                 5500

cag cca taacacgttt tttcacacac cttgttttta cagaca atg  cgt ctg tta     28604
Gln Pro                                          Met  Arg Leu Leu
                                                 5505

aat ttt  tta aac att gtg ctc  agt att gct tat gcc  tct ggt tat       28649
Asn Phe  Leu Asn Ile Val Leu  Ser Ile Ala Tyr Ala  Ser Gly Tyr
    5510                 5515                 5520

gca aac  ata cag aaa acc ctt  tat gta gga tct gat  ggt aca cta       28694
Ala Asn  Ile Gln Lys Thr Leu  Tyr Val Gly Ser Asp  Gly Thr Leu
    5525                 5530                 5535

gag ggt  acc caa tca caa gcc  aag gtt gca tgg tat  ttt tat aga       28739
Glu Gly  Thr Gln Ser Gln Ala  Lys Val Ala Trp Tyr  Phe Tyr Arg
    5540                 5545                 5550

acc aac  act gat cca gtt aaa  ctt tgt aag ggt gaa  ttg ccg cgt       28784
Thr Asn  Thr Asp Pro Val Lys  Leu Cys Lys Gly Glu  Leu Pro Arg
    5555                 5560                 5565

aca cat  aaa act cca ctt aca  ttt agt tgc agc aat  aat aat ctt       28829
Thr His  Lys Thr Pro Leu Thr  Phe Ser Cys Ser Asn  Asn Asn Leu
    5570                 5575                 5580

aca ctt  ttt tca att aca aaa  caa tat act ggt act  tat tac agt       28874
Thr Leu  Phe Ser Ile Thr Lys  Gln Tyr Thr Gly Thr  Tyr Tyr Ser
    5585                 5590                 5595

aca aac  ttt cat aca gga caa  gat aaa tat tat act  gtt aag gta       28919
Thr Asn  Phe His Thr Gly Gln  Asp Lys Tyr Tyr Thr  Val Lys Val
    5600                 5605                 5610

gaa aat  cct acc act cct aga  act acc acc acc acc  acc act act       28964
Glu Asn  Pro Thr Thr Pro Arg  Thr Thr Thr Thr Thr  Thr Thr Thr
    5615                 5620                 5625

gca aag  ccc act gtg aaa act  aca act agg acc acc  aca act aca       29009
Ala Lys  Pro Thr Val Lys Thr  Thr Thr Arg Thr Thr  Thr Thr Thr
    5630                 5635                 5640
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gaa acc  acc acc agc aca aca  ctt gct gca act aca  cac aca cac       29054
Glu Thr  Thr Thr Ser Thr Thr  Leu Ala Ala Thr Thr  His Thr His
    5645                 5650                 5655

act aag  cta acc tta cag acc  act aat gat ttg atc  gcc ctg ctg       29099
Thr Lys  Leu Thr Leu Gln Thr  Thr Asn Asp Leu Ile  Ala Leu Leu
    5660                 5665                 5670

caa aag  ggg gat aac agc acc  act tcc aat gag gag  ata ccc aaa       29144
Gln Lys  Gly Asp Asn Ser Thr  Thr Ser Asn Glu Glu  Ile Pro Lys
    5675                 5680                 5685

tcc atg  att ggc att att gtt  gct gta gtg gtg tgc  atg ttg atc       29189
Ser Met  Ile Gly Ile Ile Val  Ala Val Val Val Cys  Met Leu Ile
    5690                 5695                 5700

atc gcc  ttg tgc atg gtg tac  tat gcc ttc tgc tac  aga aag cac       29234
Ile Ala  Leu Cys Met Val Tyr  Tyr Ala Phe Cys Tyr  Arg Lys His
    5705                 5710                 5715

aga ctg  aac gac aag ctg gaa  cac tta cta agt gtt  gaa ttt           29276
Arg Leu  Asn Asp Lys Leu Glu  His Leu Leu Ser Val  Glu Phe
    5720                 5725                 5730

taatttttta gaacc atg aag atc  cta ggc ctt ttt agt  ttt tct atc      29324
                Met Lys Ile  Leu Gly Leu Phe Ser  Phe Ser Ile
                         5735                 5740

att acc  tct gct ctt tgt gaa  tca gtg gat aga gat  gtt act att       29369
Ile Thr  Ser Ala Leu Cys Glu  Ser Val Asp Arg Asp  Val Thr Ile
    5745                 5750                 5755

acc act  ggt tct aat tat aca  ctg aaa ggg cca ccc  tca ggt atg       29414
Thr Thr  Gly Ser Asn Tyr Thr  Leu Lys Gly Pro Pro  Ser Gly Met
    5760                 5765                 5770

ctt tcg  tgg tat tgc tat ttt  gga act gac act gat  caa act gaa       29459
Leu Ser  Trp Tyr Cys Tyr Phe  Gly Thr Asp Thr Asp  Gln Thr Glu
    5775                 5780                 5785

tta tgc  aat ttt caa aaa ggc  aaa acc tca aac tct  aaa atc tct       29504
Leu Cys  Asn Phe Gln Lys Gly  Lys Thr Ser Asn Ser  Lys Ile Ser
    5790                 5795                 5800

aat tat  caa tgc aat ggc act  gat ctg ata cta ctc  aat gtc acg       29549
Asn Tyr  Gln Cys Asn Gly Thr  Asp Leu Ile Leu Leu  Asn Val Thr
    5805                 5810                 5815

aaa gca  tat ggt ggc agt tat  tat tgc cct gga caa  aac act gaa       29594
Lys Ala  Tyr Gly Gly Ser Tyr  Tyr Cys Pro Gly Gln  Asn Thr Glu
    5820                 5825                 5830

gaa atg  att ttt tac aaa gtg  gaa gtg gtt gat ccc  act aca cca       29639
Glu Met  Ile Phe Tyr Lys Val  Glu Val Val Asp Pro  Thr Thr Pro
    5835                 5840                 5845

ccc acc  acc aca act att cat  acc aca cac aca gaa  caa aca cca       29684
Pro Thr  Thr Thr Thr Ile His  Thr Thr His Thr Glu  Gln Thr Pro
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    5850                5855                5860

gag gca  aca gaa gca gag ttg  gcc ttc cag gtt cac  gga gat tcc       29729
Glu Ala  Thr Glu Ala Glu Leu  Ala Phe Gln Val His  Gly Asp Ser
    5865                5870                5875

ttt gct  gtc aat acc cct aca  ccc gat cag cgg tgt  ccg ggg ccg       29774
Phe Ala  Val Asn Thr Pro Thr  Pro Asp Gln Arg Cys  Pro Gly Pro
    5880                5885                5890

cta gtc  agc ggc att gtc ggt  gtg ctt tcg gga tta  gca gtc ata       29819
Leu Val  Ser Gly Ile Val Gly  Val Leu Ser Gly Leu  Ala Val Ile
    5895                5900                5905

atc atc  tgc atg ttc att ttt  gct tgc tgc tat aga  agg ctt tac       29864
Ile Ile  Cys Met Phe Ile Phe  Ala Cys Cys Tyr Arg  Arg Leu Tyr
    5910                5915                5920

cga caa  aaa tca gac cca ctg  ctg aac ctc tat gtt  taatttttc        29910
Arg Gln  Lys Ser Asp Pro Leu  Leu Asn Leu Tyr Val
    5925                5930                5935

cagagcc atg aag gca gtt agc  gct cta gtt ttt tgt  tct ttg att ggc   29959
        Met Lys Ala Val Ser  Ala Leu Val Phe Cys  Ser Leu Ile Gly
                        5940                5945

att  gtt ttt aat agt aaa  att acc aaa gtt agc  ttt att aaa cat      30004
Ile  Val Phe Asn Ser Lys  Ile Thr Lys Val Ser  Phe Ile Lys His
5950                5955                5960

gtt  aat gta act gaa gga  gat aac atc aca cta  gca ggt gta gaa      30049
Val  Asn Val Thr Glu Gly  Asp Asn Ile Thr Leu  Ala Gly Val Glu
5965                5970                5975

ggt  gct caa aac acc acc  tgg aca aaa tac cat  cta gga tgg aga      30094
Gly  Ala Gln Asn Thr Thr  Trp Thr Lys Tyr His  Leu Gly Trp Arg
5980                5985                5990

gat  att tgc acc tgg aat  gta act tat tat tgc  ata gga att aat      30139
Asp  Ile Cys Thr Trp Asn  Val Thr Tyr Tyr Cys  Ile Gly Ile Asn
5995                6000                6005

ctt  acc att gtt aac gct  aac caa tct cag aat  ggg tta att aaa      30184
Leu  Thr Ile Val Asn Ala  Asn Gln Ser Gln Asn  Gly Leu Ile Lys
6010                6015                6020

gga  cag agt gtt agt gtg  acc agt gat ggg tac  tat acc cag cat      30229
Gly  Gln Ser Val Ser Val  Thr Ser Asp Gly Tyr  Tyr Thr Gln His
6025                6030                6035

agt  ttt aac tac aac att  act gtc ata cca ctg  cct acg cct agc      30274
Ser  Phe Asn Tyr Asn Ile  Thr Val Ile Pro Leu  Pro Thr Pro Ser
6040                6045                6050

cca  cct agc act acc aca  cag aca acc aca tac  agt aca tca aat      30319
Pro  Pro Ser Thr Thr Thr  Gln Thr Thr Thr Tyr  Ser Thr Ser Asn
6055                6060                6065

cag  cct acc acc act aca  gca gca gag gtt gcc  agc tcg tct ggg      30364
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Gln  Pro Thr Thr Thr Thr  Ala Ala Glu Val Ala  Ser Ser Ser Gly
6070                 6075                 6080

gtc  cga gtg gca ttt ttg  atg ttg gcc cca tct  agc agt ccc act       30409
Val  Arg Val Ala Phe Leu  Met Leu Ala Pro Ser  Ser Ser Pro Thr
6085                 6090                 6095

gct  agt acc aat gag cag  act act gaa ttt ttg  tcc act gtc gag       30454
Ala  Ser Thr Asn Glu Gln  Thr Thr Glu Phe Leu  Ser Thr Val Glu
6100                 6105                 6110

agc  cac acc aca gct acc  tcc agt gcc ttc tct  agc acc gcc aat       30499
Ser  His Thr Thr Ala Thr  Ser Ser Ala Phe Ser  Ser Thr Ala Asn
6115                 6120                 6125

ctc  tcc tcg ctt tcc tct  aca cca atc agc ccc  gct act act cct       30544
Leu  Ser Ser Leu Ser Ser  Thr Pro Ile Ser Pro  Ala Thr Thr Pro
6130                 6135                 6140

agc  ccc gct cct ctt ccc  act ccc ctg aag caa  aca gac ggc ggc       30589
Ser  Pro Ala Pro Leu Pro  Thr Pro Leu Lys Gln  Thr Asp Gly Gly
6145                 6150                 6155

atg  caa tgg cag atc acc  ctg ctc att gtg atc  ggg ttg gtc atc       30634
Met  Gln Trp Gln Ile Thr  Leu Leu Ile Val Ile  Gly Leu Val Ile
6160                 6165                 6170

ctg  gcc gtg ttg ctc tac  tac atc ttc tgc cgc  cgc att ccc aac       30679
Leu  Ala Val Leu Leu Tyr  Tyr Ile Phe Cys Arg  Arg Ile Pro Asn
6175                 6180                 6185

gcg  cac cgc aag ccg gcc  tac aag ccc atc gtt  atc ggg cag ccg       30724
Ala  His Arg Lys Pro Ala  Tyr Lys Pro Ile Val  Ile Gly Gln Pro
6190                 6195                 6200

gag  ccg ctt cag gtg gaa  ggg ggt cta agg aat  ctt ctc ttc tct       30769
Glu  Pro Leu Gln Val Glu  Gly Gly Leu Arg Asn  Leu Leu Phe Ser
6205                 6210                 6215

ttt  aca gta tgg tgattgaact atg att  cct aga caa ttc ttg  atc act    30818
Phe  Thr Val Trp           Met Ile  Pro Arg Gln Phe Leu  Ile Thr
6220                           6225                 6230

att ctt atc  tgc ctc ctc caa gtc  tgt gcc acc ctc gct  ctg gtg       30863
Ile Leu Ile  Cys Leu Leu Gln Val  Cys Ala Thr Leu Ala  Leu Val
        6235                 6240                 6245

gcc aac gcc  agt cca gac tgt att  ggg ccc ttc gcc tcc  tac gtg       30908
Ala Asn Ala  Ser Pro Asp Cys Ile  Gly Pro Phe Ala Ser  Tyr Val
        6250                 6255                 6260

ctc ttt gcc  ttc atc acc tgc atc  tgc tgc tgt agc ata  gtc tgc       30953
Leu Phe Ala  Phe Ile Thr Cys Ile  Cys Cys Cys Ser Ile  Val Cys
        6265                 6270                 6275

ctg ctt atc  acc ttc ttc cag ttc  att gac tgg atc ttt  gtg cgc       30998
Leu Leu Ile  Thr Phe Phe Gln Phe  Ile Asp Trp Ile Phe  Val Arg
        6280                 6285                 6290
```

```
atc gcc tac  ctg cgc cac cac ccc  cag tac cgc gac cag  cga gtg       31043
Ile Ala Tyr  Leu Arg His His Pro  Gln Tyr Arg Asp Gln  Arg Val
        6295                 6300                 6305

gcg cag ctg  ctc agg ctc ctc tgataagc atg  cgg gct ctg cta ctt       31090
Ala Gln Leu  Leu Arg Leu Leu          Met  Arg Ala Leu Leu Leu
        6310                          6315                 6320

ctc gcg ctt ctg ctg  tta gtg ctc ccc cgt  ccc gtt gac ccc cgg       31135
Leu Ala Leu Leu Leu  Leu Val Leu Pro Arg  Pro Val Asp Pro Arg
                6325                 6330                 6335

ccc ccc act cag tcc  ccc gag gag gtc cgc  aaa tgc aaa ttc caa       31180
Pro Pro Thr Gln Ser  Pro Glu Glu Val Arg  Lys Cys Lys Phe Gln
                6340                 6345                 6350

gaa ccc tgg aaa ttc  ctc aaa tgc tac cgc  caa aaa tca gac atg       31225
Glu Pro Trp Lys Phe  Leu Lys Cys Tyr Arg  Gln Lys Ser Asp Met
                6355                 6360                 6365

cat ccc agc tgg atc  atg atc att ggg atc  gtg aac att ctg gcc       31270
His Pro Ser Trp Ile  Met Ile Ile Gly Ile  Val Asn Ile Leu Ala
                6370                 6375                 6380

tgc acc ctc atc tcc  ttt gtg att tac ccc  tgc ttt gac ttt ggt       31315
Cys Thr Leu Ile Ser  Phe Val Ile Tyr Pro  Cys Phe Asp Phe Gly
                6385                 6390                 6395

tgg aac tcg cca gag  gcg ctc tat ctc ccg  cct gaa cct gac aca       31360
Trp Asn Ser Pro Glu  Ala Leu Tyr Leu Pro  Pro Glu Pro Asp Thr
                6400                 6405                 6410

cca cca cag caa cct  cag gca cac gca cta  cca cca cca cca cag       31405
Pro Pro Gln Gln Pro  Gln Ala His Ala Leu  Pro Pro Pro Pro Gln
                6415                 6420                 6425

cct agg cca caa tac  atg ccc ata tta gac  tat gag gcc gag cca       31450
Pro Arg Pro Gln Tyr  Met Pro Ile Leu Asp  Tyr Glu Ala Glu Pro
                6430                 6435                 6440

cag cga ccc atg ctc  ccc gct att agt tac  ttc aat cta acc ggc       31495
Gln Arg Pro Met Leu  Pro Ala Ile Ser Tyr  Phe Asn Leu Thr Gly
                6445                 6450                 6455

gga gat gac tgacccactg gccaacaaca acgtcaacga ccttctcctg             31544
Gly Asp Asp

gacatggacg gccgcgcctc ggagcagcga ctcgcccaac ttcgcattcg ccagcagcag   31604

gagagagccg tcaaggagct gcaggacggc atagccatcc accagtgcaa gaaaggcatc   31664

ttctgcctgg tgaaacaggc caagatctcc tacgaggtca cccagaccga ccatcgcctc   31724

tcctacgagc tcctgcagca gcgccagaag ttcacctgcc tggtcggagt caaccccatc   31784

gtcatcaccc agcagtcggg cgataccaag gggtgcatcc actgctcctg cgactccccc   31844

gactgcgtcc acactctgat caagaccctc tgcggcctcc gcgacctcct ccccatgaac   31904
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taatcacccc cttatccagt gaaataaaga tcatattgat gattaaataa aaaaaataat    31964

catttgattt gaaataaaga tacaatcata ttgatgattt gagtttaata aaaataaaga    32024

atcacttact tgaaatctga taccaggtct ctgtccatgt tttctgccaa caccacttca    32084

ctccccctctt cccagctctg gtactgcagg ccccggcggg ctgcaaactt cctccacacc    32144

ctgaagggga tgtcaaattc ctcctgtccc tcaatcttca ttttatcttc tatcag atg    32203
                                                              Met

tcc  aaa aag cgc gtc cgg  gtg gat gat gac ttc  gac ccc gtc tac       32248
Ser  Lys Lys Arg Val Arg  Val Asp Asp Asp Phe  Asp Pro Val Tyr
6460                 6465                 6470

ccc  tac gat gca gac aac  gca ccg acc gtg ccc  ttc atc aac ccc       32293
Pro  Tyr Asp Ala Asp Asn  Ala Pro Thr Val Pro  Phe Ile Asn Pro
6475                 6480                 6485

ccc  ttc gtc tct tca gat  gga ttc caa gag aag  ccc ctg ggg gtg       32338
Pro  Phe Val Ser Ser Asp  Gly Phe Gln Glu Lys  Pro Leu Gly Val
6490                 6495                 6500

ctg  tcc ctg cgt ctg gcc  gat ccc gtc acc acc  aag aac ggg gaa       32383
Leu  Ser Leu Arg Leu Ala  Asp Pro Val Thr Thr  Lys Asn Gly Glu
6505                 6510                 6515

atc  acc ctc aag ctg gga  gat ggg gtg gac ctc  gac gac tcg gga       32428
Ile  Thr Leu Lys Leu Gly  Asp Gly Val Asp Leu  Asp Asp Ser Gly
6520                 6525                 6530

aaa  ctc atc tcc aac acg  gcc acc aag gcc gcc  gcc cct ctc agt       32473
Lys  Leu Ile Ser Asn Thr  Ala Thr Lys Ala Ala  Ala Pro Leu Ser
6535                 6540                 6545

ttt  tcc aac aac acc att  tcc ctt aac atg gat  acc cct ctt tac       32518
Phe  Ser Asn Asn Thr Ile  Ser Leu Asn Met Asp  Thr Pro Leu Tyr
6550                 6555                 6560

aac  aac aat gga aag cta  ggt atg aag gta acc  gca cca tta aag       32563
Asn  Asn Asn Gly Lys Leu  Gly Met Lys Val Thr  Ala Pro Leu Lys
6565                 6570                 6575

ata  tta gac aca gat cta  cta aaa aca ctt gtt  gtt gct tat ggg       32608
Ile  Leu Asp Thr Asp Leu  Leu Lys Thr Leu Val  Val Ala Tyr Gly
6580                 6585                 6590

cag  gga tta gga aca aac  acc aat ggt gct ctt  gtt gcc caa cta       32653
Gln  Gly Leu Gly Thr Asn  Thr Asn Gly Ala Leu  Val Ala Gln Leu
6595                 6600                 6605

gca  tac cca ctt gtt ttt  aat acc gct agc aaa  att gcc ctt aat       32698
Ala  Tyr Pro Leu Val Phe  Asn Thr Ala Ser Lys  Ile Ala Leu Asn
6610                 6615                 6620

tta  ggc aat gga cca tta  aaa gtg gat gca aat  aga ctg aac att       32743
Leu  Gly Asn Gly Pro Leu  Lys Val Asp Ala Asn  Arg Leu Asn Ile
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6625                6630                6635

aat  tgc aaa aga ggt atc  tat gtc act acc aca  aaa gat gca ctg       32788
Asn  Cys Lys Arg Gly Ile  Tyr Val Thr Thr Thr  Lys Asp Ala Leu
6640                6645                6650

gag  att aat atc agt tgg  gca aat gct atg aca  ttt ata gga aat       32833
Glu  Ile Asn Ile Ser Trp  Ala Asn Ala Met Thr  Phe Ile Gly Asn
6655                6660                6665

gcc  att ggt gtc aat att  gac aca aaa aaa ggc  cta cag ttc ggc       32878
Ala  Ile Gly Val Asn Ile  Asp Thr Lys Lys Gly  Leu Gln Phe Gly
6670                6675                6680

act  tca agc act gaa aca  gat gtt aaa aat gct  ttt cca ctc caa       32923
Thr  Ser Ser Thr Glu Thr  Asp Val Lys Asn Ala  Phe Pro Leu Gln
6685                6690                6695

gta  aaa ctt gga gct ggt  ctt aca ttt gac agc  aca ggt gcc att       32968
Val  Lys Leu Gly Ala Gly  Leu Thr Phe Asp Ser  Thr Gly Ala Ile
6700                6705                6710

gtt  gct tgg aac aaa gaa  gat gac aaa ctt aca  ctg tgg acc aca       33013
Val  Ala Trp Asn Lys Glu  Asp Asp Lys Leu Thr  Leu Trp Thr Thr
6715                6720                6725

gcc  gat cca tct cca aac  tgt cac ata tat tct  gca aag gat gct       33058
Ala  Asp Pro Ser Pro Asn  Cys His Ile Tyr Ser  Ala Lys Asp Ala
6730                6735                6740

aag  ctt aca ctc tgc ttg  aca aag tgt ggt agt  cag ata ctg ggc       33103
Lys  Leu Thr Leu Cys Leu  Thr Lys Cys Gly Ser  Gln Ile Leu Gly
6745                6750                6755

act  gtt tct ctc ata gct  gtt gat act ggt agc  tta aat cca ata       33148
Thr  Val Ser Leu Ile Ala  Val Asp Thr Gly Ser  Leu Asn Pro Ile
6760                6765                6770

aca  gga aaa gta acc act  gct ctt gtt tca ctt  aaa ttc gat gcc       33193
Thr  Gly Lys Val Thr Thr  Ala Leu Val Ser Leu  Lys Phe Asp Ala
6775                6780                6785

aat  gga gtt ttg caa gcc  agt tca aca cta gat  aaa gaa tat tgg       33238
Asn  Gly Val Leu Gln Ala  Ser Ser Thr Leu Asp  Lys Glu Tyr Trp
6790                6795                6800

aat  ttc aga aaa gga gat  gtg aca cct gct gac  ccc tac act aat       33283
Asn  Phe Arg Lys Gly Asp  Val Thr Pro Ala Asp  Pro Tyr Thr Asn
6805                6810                6815

gct  ata ggc ttt atg ccc  aac ctt aat gca tac  cca aaa aac aca       33328
Ala  Ile Gly Phe Met Pro  Asn Leu Asn Ala Tyr  Pro Lys Asn Thr
6820                6825                6830

aac  gca gct gca aaa agt  cac att gtt gga aaa  gta tac cta cat       33373
Asn  Ala Ala Ala Lys Ser  His Ile Val Gly Lys  Val Tyr Leu His
6835                6840                6845

ggg  gat gta agc aag cca  cta gac ttg ata att  aca ttt aat gaa       33418
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Gly  Asp Val Ser Lys Pro  Leu Asp Leu Ile Ile  Thr Phe Asn Glu
6850                 6855                 6860

acc  agt gat gaa tcc tgt  act tat tgc att aac  ttt cag tgg cag       33463
Thr  Ser Asp Glu Ser Cys  Thr Tyr Cys Ile Asn  Phe Gln Trp Gln
6865                 6870                 6875

tgg  gga act gac caa tat  aaa gat gaa aca ctt  gca gtc agt tca       33508
Trp  Gly Thr Asp Gln Tyr  Lys Asp Glu Thr Leu  Ala Val Ser Ser
6880                 6885                 6890

ttc  acc ttc tca tac att  gct aaa gaa taacatccac cctgcatgcc         33555
Phe  Thr Phe Ser Tyr Ile  Ala Lys Glu
6895                 6900

aacccatttc cctctatcta tacatggaaa actctgaagc agaaaaaata aagttcaagt    33615

gttttattga ttcaacagtt tttacagaat tcgagtagtt attttccctc caccctccca    33675

actcatggaa tacaccatcc tctccccacg cacagcctta aacatctgaa tgccattggt    33735

aatggacatg gttttggcct ccacattcca cacagtttca gagcgagcca gtctcgggtc    33795

ggtcagggag atgaaaccct ccgggcactc ctgcatctgc acctcacagt tcaacagctg    33855

agggctgtcc tcggtggtcg ggatcacggt tatctggaag aagagcgatg agaatcataa    33915

tccgcgaacg ggatcgggcg gttgtggcgc atcaggcccc gcagcagtcg ctgtctgcgc    33975

cgctccgtca agctgctgct caaggggtcc gggtccaggg actccctgcg catgatgccg    34035

atggccctga gcatcagtcg cctggtgcgg cgggcgcagc agcggatgcg gatctcactc    34095

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acgctccagc caaaactcat ctgtggaact atgctgccca cgtgtccatc gtaccagatc    34215

ctgatgtaaa tcaggtggcg ccccctccag aacacactgc ccatgtacat gatctccttg    34275

ggcatatgca ggttcaccac ctcccggtac cacatcaccc gctggttgaa catgcagccc    34335

tggataattc tgcggaacca gatggccagc accgccccgc ccgccatgca gcgcagggac    34395

cccgggtcct gacagtggca gtggaggacc caccgctcgc ggccgtggat caactgggag    34455

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cgtgtcatga tggagcttct tcctgacatc ttcgtatttc atgtagcaga acctggtccg    34815

ggcactgcac accgctcgcc ggcgacggtc tcggcgcttc gagcgctcgg tgttgaagtt    34875
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gtaaaacagc cactccctca gagcgtgcag tatctcttga gcctcttggg tgatgaaaat 34935

cccatccgcc ctgatggctc tgatcacatc gaccacggtg gaatgggcca gacccagcca 34995

gatgatgcaa ttttgttggg tttcggtgac ggcgggggag ggaagaacag gaagaaccat 35055

gattaacttt attccaaacg gtctcggagc acttcaaaat gcaggtcgcg gagatggcac 35115

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gcgaaagcgg gagcgttctc taattcctca atcatcatat tacactcctg caccatcccc 35295

agataatttt catttttcca gccttgaatg atttgaacta gttcctgagg taaatccaag 35355

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cttctccgaa atttttagcc atagggccgc caggaatgag agcagggcaa gccacattac 35595

agataaagcg aagtcctccc cagtgagcat tgccaaatgt aagattgaaa taagcatgct 35655

ggctagaccc ggtgatatct tccagataac tggacagaaa atcaggcaag caatttttaa 35715

gaaaatcaac aaaagaaaag tcgtccaggt gcaagtttag agcctcagga acaacgatgg 35775

aataagtgca aggagtgcgt tccagcatgg ttagtgtttt tttggtgatc tgtagaacaa 35835

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actacaatgc tcaaccttaa ttccagcaga gcgaccccat gcggatgaag cacaaaattg 36135

gtaggtgcgt aaaaaatgta attactcccc tcctgcacag gcagcaaagc ccccgctccc 36195

tccagaaaca catacaaagc ctcagcgtcc atagcttacc gagcacggca ggcgcaagat 36255

tcagagaaaa ggctgagctc taacctgact gcccgctcct gagctcaata tatagcccta 36315

acctacactg acgtaaaggc caaagtctaa aaatacccgc caaaatgaca cacacgccca 36375

gcacacgccc agaaaccggt gacacactca aaaaaatacg tgcgcttcct caaacgccca 36435

aaccggcgtc atttccgggt tcccacgcta cgtcaccgct cagcgacttt caaatttcgt 36495

cgaccgttaa acacgtcact cgccccgccc ctaacggtcg ccctcctctc ggccaatcac 36555

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ggtatattat ttgatgatg 36634

<210> 34
<211> 503
<212> PRT
<213> Simian adenovirus 37

<400> 34

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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
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<210> 35
<211> 157
<212> PRT
<213> Simian adenovirus 37

<400> 35

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

Ser Gly Ser Ala Ser Phe Glu Gly Gly Val Phe Ser Pro Tyr Leu Thr
            20                  25                  30

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

Thr Val Asp Gly Arg Pro Val Gln Pro Ala Asn Ser Ser Thr Leu Thr
    50                  55                  60

Tyr Ala Thr Leu Ser Ser Ser Ser Val Asp Ala Ala Ala Ala Ala Ala
65                  70                  75                  80

Ala Ala Ser Ala Ala Ser Ala Val Arg Gly Met Ala Leu Gly Ala Gly
                85                  90                  95

Tyr Tyr Ser Ser Leu Val Ala Asn Ser Ser Ser Thr Asn Asn Pro Ala
            100                 105                 110

Ser Leu Asn Glu Glu Lys Leu Leu Leu Leu Met Ala Gln Leu Glu Ala
        115                 120                 125

Leu Thr Gln Arg Leu Gly Glu Leu Thr Gln Gln Val Ala Gln Leu Gln
```

```
    130                 135                 140

Ala Glu Thr Arg Ala Ala Val Ala Thr Val Lys Thr Lys
145                 150                 155


<210>  36
<211>  392
<212>  PRT
<213>  Simian adenovirus 37

<400>  36

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

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

Tyr Asp His Gln 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 Ala 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 Ser Pro Tyr Val Glu Glu Val Asp Asp Glu Val Asp
    370                 375                 380

Glu Glu Gly Glu Tyr Leu Glu Asp
385                 390


<210>  37
<211>  593
<212>  PRT
<213>  Simian adenovirus 37
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<400> 37

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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 Ala Leu Ser Thr 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 Arg Ala Ser Gln Gly Ala Thr Ser Arg Gly Ser Ala
    530                 535                 540

Ala Arg Lys Arg Arg Trp His Asp Arg Gln Arg Gly Leu Met Trp Asp
545                 550                 555                 560

Asp Glu Asp Ser Ala Asp Asp Ser Ser Val Leu Asp Leu Gly Gly Ser
                565                 570                 575

Gly Gly Gly Asn Pro Phe Ala His Leu Arg Pro Arg Ile Gly Arg Met
            580                 585                 590

Met
```

<210> 38
<211> 542
<212> PRT
<213> Simian adenovirus 37

<400> 38

```
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 Lys Val Asp Asp Thr Tyr Asp
145                 150                 155                 160

Gly Ser Gln Asp Glu Leu Lys Tyr Glu Trp Val Glu Phe Glu Leu Pro
                165                 170                 175

Glu Gly Asn Phe Ser Val Thr Met Thr Ile Asp Leu Met Asn Asn Ala
            180                 185                 190

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

Ser Asp Ile Gly Val Lys Phe Asp Thr Arg Asn Phe Arg Leu Gly Trp
    210                 215                 220

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

Phe His Pro Asp Ile Val Leu Leu Pro Gly Cys Gly Val Asp Phe Thr
                245                 250                 255

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

Gln Glu Gly Phe Gln Ile Met Tyr Glu Asp Leu Glu Gly Gly Asn Ile
        275                 280                 285

Pro Ala Leu Leu Asp Val Glu Ala Tyr Glu Asp Ser Lys Lys Lys Ala
    290                 295                 300
```

```
Glu Ala Glu Ala Thr Ala Ala Val Ala Thr Ala Ala Thr Asn Ala Asp
305                 310                 315                 320

Ala Asn Val Thr Arg Gly Asp Thr Phe Ala Thr Gln Ala Glu Glu Ala
                325                 330                 335

Ala Ala Leu Ala Val Ala Asp Asp Ser Glu Ser Lys Ile Val Ile Gln
            340                 345                 350

Pro Val Lys Lys Asp Ser Lys Asn Arg Ser Tyr Asn Val Leu Pro Asp
        355                 360                 365

Glu Val 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 Ile Val Ala Pro Arg Val Leu Ser Ser Arg Thr Phe
```

530 535 540

<210> 39
<211> 193
<212> PRT
<213> Simian adenovirus 37

<400> 39

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> 40
<211> 346
<212> PRT
<213> Simian adenovirus 37

<400> 40

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 Val Val Lys Glu Glu Arg Lys Pro Arg
20 25 30

Lys Ile 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 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>  41
<211>  77
<212>  PRT
<213>  Simian adenovirus 37

<400>  41

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>  42
<211>  241
<212>  PRT
<213>  Simian adenovirus 37

<400>  42

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 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 Leu 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> 43
<211> 942
<212> PRT
<213> Simian adenovirus 37

<400> 43

```
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 Ala Lys Thr Gly Asn Gly Gly
```

```
    130                 135                 140

Thr Met Glu Thr His Thr Tyr Gly Val Ala Pro Met Gly Gly Glu Asn
145                 150                 155                 160

Ile Thr Lys Asp Gly Leu Gln Ile Gly Thr Asp Val Thr Ala Asn Gln
                165                 170                 175

Asn Lys Pro Ile Tyr Ala Asp Lys Thr Phe Gln Pro Glu Pro Gln Val
            180                 185                 190

Gly Glu Glu Asn Trp Gln Glu Thr Glu Asn Phe Tyr Gly Gly Arg Ala
        195                 200                 205

Leu Lys Lys Asp Thr Asn Met Lys Pro Cys Tyr Gly Ser Tyr Ala Arg
    210                 215                 220

Pro Thr Asn Glu Lys Gly Gly Gln Ala Lys Leu Lys Val Gly Asp Asp
225                 230                 235                 240

Gly Val Pro Thr Lys Glu Phe Asp Ile Asp Leu Ala Phe Phe Asp Thr
                245                 250                 255

Pro Gly Gly Thr Val Asn Gly Gln Asp Glu Tyr Lys Ala Asp Ile Val
            260                 265                 270

Met Tyr Thr Glu Asn Thr Tyr Leu Glu Thr Pro Asp Thr His Val Val
        275                 280                 285

Tyr Lys Pro Gly Lys Asp Asp Ala Ser Ser Glu Ile Asn Leu Val Gln
    290                 295                 300

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

Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala
                325                 330                 335

Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn
            340                 345                 350

Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Leu Gly Asp Arg Thr
        355                 360                 365
```

```
Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp
    370                 375                 380

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

Cys Phe Pro Leu Asp Gly Ser Gly Thr Asn Ala Ala Tyr Gln Gly Val
                405                 410                 415

Lys Val Lys Asn Gly Gln Asp Gly Asp Val Glu Ser Glu Trp Glu Lys
            420                 425                 430

Asp Asp Thr Val Ala Ala Gln Asn Gln Leu Cys Lys Gly Asn Ile Phe
        435                 440                 445

Ala Met Glu Ile Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe Leu Tyr
    450                 455                 460

Ser Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Pro Thr
465                 470                 475                 480

Asn Val Thr Leu Pro Thr Asn Thr Asn Thr Tyr Asp Tyr Met Asn Gly
                485                 490                 495

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

Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn Pro Phe Asn His His
        515                 520                 525

Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg
    530                 535                 540

Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys
545                 550                 555                 560

Ser Leu Leu Leu Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg
                565                 570                 575

Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg
            580                 585                 590

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

```
Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu
    610                 615                 620

Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala
625                 630                 635                 640

Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser
                645                 650                 655

Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr Arg
            660                 665                 670

Leu Lys Thr Lys Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro Tyr
        675                 680                 685

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

Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp Ser Ser Val Ser
705                 710                 715                 720

Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys
                725                 730                 735

Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr
            740                 745                 750

Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly Tyr
        755                 760                 765

Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe
    770                 775                 780

Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val Asp Glu Val Asn
785                 790                 795                 800

Tyr Lys Asp Tyr Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn Ser
                805                 810                 815

Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln Pro Tyr
            820                 825                 830

Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr Ser
        835                 840                 845
```

```
Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile Pro
    850                 855                 860

Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln
865                 870                 875                 880

Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe Glu
                885                 890                 895

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

Phe Asp Val Val Arg Val His Gln Pro His Arg Gly Val Ile Glu Ala
        915                 920                 925

Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
    930                 935                 940
```

<210> 44
<211> 209
<212> PRT
<213> Simian adenovirus 37

<400> 44

```
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> 45
<211> 800
<212> PRT
<213> Simian adenovirus 37

<400> 45

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

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

Pro Pro Ser Pro Thr Ser Asp 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 Asn 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 Thr 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 Glu Glu Gly Lys Gly Gly Leu Lys Leu Thr Pro Gly
    610                 615                 620

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

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

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

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

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

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

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

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

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

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

Gly Tyr His Leu Arg Ser Gly Ser Gly Ser Arg Arg Pro Gly Pro Gln
785                 790                 795                 800
```

<210> 46
<211> 227
<212> PRT
<213> Simian adenovirus 37

<400> 46

```
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 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>  47
<211>  106
<212>  PRT
<213>  Simian adenovirus 37

<400>  47

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>  48
<211>  176
<212>  PRT
<213>  Simian adenovirus 37

<400>  48

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> 49
<211> 228
<212> PRT
<213> Simian adenovirus 37

<400> 49

```
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> 50
<211> 203
<212> PRT
<213> Simian adenovirus 37

<400> 50

```
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> 51
<211> 288
<212> PRT
<213> Simian adenovirus 37

<400> 51

```
Met Lys Ala Val Ser Ala Leu Val Phe Cys Ser Leu Ile Gly 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>  52
<211>  91
<212>  PRT
<213>  Simian adenovirus 37

<400>  52

Met Ile Pro Arg Gln Phe Leu Ile Thr Ile Leu Ile Cys Leu Leu Gln
1               5                   10                  15


Val Cys Ala Thr Leu Ala Leu Val Ala Asn Ala Ser Pro Asp Cys Ile
            20                  25                  30


Gly Pro Phe Ala Ser Tyr Val Leu Phe Ala Phe Ile Thr Cys Ile Cys
        35                  40                  45


Cys Cys Ser Ile Val Cys Leu Leu Ile Thr Phe Phe Gln Phe Ile Asp
    50                  55                  60


Trp Ile Phe Val Arg Ile Ala Tyr Leu Arg His His Pro Gln Tyr Arg
65                  70                  75                  80


Asp Gln Arg Val Ala Gln Leu Leu Arg Leu Leu
                85                  90


<210>  53
<211>  144
<212>  PRT
<213>  Simian adenovirus 37

<400>  53

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> 54
<211> 445
<212> PRT
<213> Simian adenovirus 37

<400> 54

```
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 Lys Val
305                 310                 315                 320

Thr Thr Ala Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Val Leu Gln
                325                 330                 335

Ala Ser Ser Thr Leu Asp Lys Glu Tyr Trp Asn Phe Arg Lys Gly Asp
            340                 345                 350

Val Thr Pro Ala Asp Pro Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn
        355                 360                 365
```

```
Leu Asn Ala Tyr Pro Lys Asn Thr Asn Ala Ala Ala Lys Ser His Ile
    370                 375                 380

Val Gly Lys Val Tyr Leu His Gly Asp Val Ser 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 Thr Asp Gln Tyr Lys Asp Glu Thr Leu
            420                 425                 430

Ala Val Ser Ser Phe Thr Phe Ser Tyr Ile Ala Lys Glu
        435                 440                 445


<210>  55
<211>  580
<212>  DNA
<213>  Simian adenovirus 37


<220>
<221>  CDS
<222>  (2)..(574)
<223>  label=Elb\19K

<400>  55
t atg gag atc tgg aca gtc ttg gaa gac ttt cac cag act aga cag ctg       49
  Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Gln Thr Arg Gln Leu
  1               5                  10                  15

cta gag aac tca tcg gag gga gtc tct tac ctg tgg aga ttc tgc ttc         97
Leu Glu Asn Ser Ser Glu Gly Val Ser Tyr Leu Trp Arg Phe Cys Phe
            20                  25                  30

gct ggg cct cta gct aag cta gtc tat agg gcc aag cag gat tat agg        145
Ala Gly Pro Leu Ala Lys Leu Val Tyr Arg Ala Lys Gln Asp Tyr Arg
        35                  40                  45

gaa caa ttt gag gat att ttg aga gag tgt cct ggt att ttt gac tct        193
Glu Gln Phe Glu Asp Ile Leu Arg Glu Cys Pro Gly Ile Phe Asp Ser
    50                  55                  60

ctc aac ttg ggc cat cag tct cac ttt aac cag agt att ctg aga gcc        241
Leu Asn Leu Gly His Gln Ser His Phe Asn Gln Ser Ile Leu Arg Ala
65                  70                  75                  80

ctt gac ttt tct act cct ggc aga act acc gcc gcg gta gcc ttt ttt        289
Leu Asp Phe Ser Thr Pro Gly Arg Thr Thr Ala Ala Val Ala Phe Phe
                85                  90                  95

gcc ttt atc ctt gac aaa tgg agt caa gaa acc cat ttc agc agg gat        337
Ala Phe Ile Leu Asp Lys Trp Ser Gln Glu Thr His Phe Ser Arg Asp
```

```
            100                 105                 110

tac cgt ctg gac tgc tta gca gta gct ttg tgg aga aca tgg agg tgc        385
Tyr Arg Leu Asp Cys Leu Ala Val Ala Leu Trp Arg Thr Trp Arg Cys
        115                 120                 125

cag cgc ctg aat gca atc tcc ggc tac ttg cca gta cag ccg gta gac        433
Gln Arg Leu Asn Ala Ile Ser Gly Tyr Leu Pro Val Gln Pro Val Asp
    130                 135                 140

acg ctg agg atc ctg agt ctc cag tca ccc cag gaa cac caa cgc cgc        481
Thr Leu Arg Ile Leu Ser Leu Gln Ser Pro Gln Glu His Gln Arg Arg
145                 150                 155                 160

cag cag ccg cag cag gag cag cag caa gag gag gag gac cga gaa gag        529
Gln Gln Pro Gln Gln Glu Gln Gln Gln Glu Glu Glu Asp Arg Glu Glu
                165                 170                 175

aac ccg aga gcc ggt ctg gac cct ccg gtg gcg gag gag gag gag            574
Asn Pro Arg Ala Gly Leu Asp Pro Pro Val Ala Glu Glu Glu Glu
            180                 185                 190

tagctg                                                                 580


<210>  56
<211>  191
<212>  PRT
<213>  Simian adenovirus 37

<400>  56

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>  57
<211>  6360
<212>  DNA
<213>  Simian adenovirus 37


<220>
<221>  CDS
<222>  (10)..(573)
<223>  label=22K

<220>
<221>  CDS
<222>  (1871)..(2494)
<223>  label=E3\CR1\alpha

<220>
<221>  CDS
<222>  (5950)..(6354)
<223>  label=E3\14.7K

<400>  57
tcccccagg atg ccc cga gga agc agc aag aag ctg aaa gtg gag ctg ccg       51
          Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro
          1               5                   10

ccg ccg ccg gag gat ttg gag gaa gac tgg gag agc agt cag gca gag         99
Pro Pro Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu
15                  20                  25                  30

gag atg gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa        147
Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
                35                  40                  45

gac agt ctg gag gag gaa gac gag gtg gag gag gag gca gag gaa gaa        195
Asp Ser Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu
            50                  55                  60
```

```
gca gcc gcc gcc aga ccg tcg tcc tcg gcg gag aaa gca agc agc acg        243
Ala Ala Ala Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr
        65                  70                  75

gat acc atc tcc gct ccg ggt cgg ggt cgc ggc ggc cgg gcc cac agt        291
Asp Thr Ile Ser Ala Pro Gly Arg 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        339
Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly
95                  100                 105                 110

aag aag gag cgg cag gga tac aag tcc tgg cgg ggg cac aaa aac gcc        387
Lys Lys Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala
                115                 120                 125

atc gtc tcc tgc ttg caa gcc tgc ggg ggc aac atc tcc ttc acc cgg        435
Ile Val Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg
            130                 135                 140

cgc tac ctg ctc ttc cac cgc ggg gtg aac ttc ccc cgc aac atc ttg        483
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        531
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 agc agc                573
Ala Glu Thr Gln Gln Gln Gln Lys Thr Ser Gly Ser Ser Ser
175                 180                 185

tagaaaatcc acagcggcgg caggtggact gaggatcgcg gcgaacgagc cggcgcagac      633

ccgggagctg aggaaccgga tctttcccac cctctatgcc atcttccagc agagtcgggg      693

gcaggagcag gaactgaaag tcaagaaccg ttctctgcgc tcgctcaccc gcagttgtct      753

gtatcacaag agcgaagacc aacttcagcg cactctcgag gacgccgagg ctctcttcaa      813

caagtactgc gcgctcactc ttaaagagta gcccgcgccc gcccacacac ggaaaaaggc      873

gggaattacg tcaccacctg cgcccttcgc ccgaccatca tgagcaaaga gattcccacg      933

ccttacatgt ggagctacca gccccagatg ggcctggccg ccggcgccgc ccaggactac      993

tccacccgca tgaactggct cagtgccggg cccgcgatga tctcacgggt gaatgacatc     1053

cgcgcccgcc gaaaccagat actcctagaa cagtcagcga tcaccgccac gccccgccat     1113

caccttaatc cgcgtaattg gcccgccgcc ctggtgtacc aggaaattcc ccagcccacg     1173

accgtactac ttccgcgaga cgcccaggcc gaagtccagc tgactaactc aggtgtccag     1233

ctggccggcg gcgccgccct gtgtcgtcac cgccccgctc agggtataaa gcggctggtg     1293

atccgaggca gaggcacaca gctcaacgac gaggtggtga gctcttcgct gggtctgcga     1353

cctgacggag tcttccaact cgccggatcg gggagatctt ccttcacgcc tcgtcaggcc     1413
```

```
gtcctgactt tggagagttc gtcctcgcag ccccgctcgg gcggcatcgg cactctccag     1473

ttcgtggagg agttcactcc ctcggtctac ttcaacccct tctccggctc ccccggccac     1533

tacccggacg agttcatccc gaacttcgac gccatcagcg agtcggtgga cggctacgat     1593

tgaatgtccc atggtggcgc agctgaccta gctcggcttc gacacctgga ccactgccgc     1653

cgcttccgct gcttcgctcg ggatctcgcc gagtttgcct actttgagct gcccgaggag     1713

caccctcagg gcccagccca cggagtgcgg atcatcgtcg aaggggggcct cgactcccac     1773

ctgcttcgga tcttcagcca gcgaccgatc ctggtcgagc gcgaacaagg acagacccgt     1833

ctgaccctgt actgcatctg caaccacccc ggcctgc atg aaa gtc ttt gtt gtc      1888
                                        Met Lys Val Phe Val Val
                                            190

tgc tgt gta ctg agt ata ata aaa gct gag atc agc gac tac tcc gga      1936
Cys Cys Val Leu Ser Ile Ile Lys Ala Glu Ile Ser Asp Tyr Ser Gly
195                 200                 205                 210

ctc gat tgt ggt gtt cct gct atc aac cgg tcc ctg ttc ttc acc ggg      1984
Leu Asp Cys Gly Val Pro Ala Ile Asn Arg Ser Leu Phe Phe Thr Gly
                215                 220                 225

aac gaa acc gag ctc cag ctc cag tgt aag ccc cac aag aag tac ctc      2032
Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys Pro His Lys Lys Tyr Leu
            230                 235                 240

acc tgg ctg ttc cag ggc tcc ccc atc gcc gtt gtc aac cac tgc gac      2080
Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala Val Val Asn His Cys Asp
        245                 250                 255

aac gac gga gtc ctg ctg agc ggc cct gcc aac ctt act ttt tcc acc      2128
Asn Asp Gly Val Leu Leu Ser Gly Pro Ala Asn Leu Thr Phe Ser Thr
    260                 265                 270

cgc aga agc aag ctc cag ctc ttc caa ccc ttc ctc ccc ggg acc tat      2176
Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro Phe Leu Pro Gly Thr Tyr
275                 280                 285                 290

cag tgc gtc tcg gga ccc tgc cat cac acc ttc cac ctg atc ccg aat      2224
Gln Cys Val Ser Gly Pro Cys His His Thr Phe His Leu Ile Pro Asn
                295                 300                 305

acc aca gcg ccg ctc ccc gct act aac aac caa act aac ctc cac caa      2272
Thr Thr Ala Pro Leu Pro Ala Thr Asn Asn Gln Thr Asn Leu His Gln
            310                 315                 320

cgc cac cgt cgc gac ctt tcc tct gaa tct aat acc act acc gga ggt      2320
Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn Thr Thr Thr Gly Gly
        325                 330                 335

gag ctc cga ggt cga cca acc tct ggg att tac tac ggc ccc tgg gag      2368
Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr Tyr Gly Pro Trp Glu
    340                 345                 350
```

```
gtg gtg ggg tta ata gcg cta ggc cta gtt gtg ggt ggg ctt ttg gct      2416
Val Val Gly Leu Ile Ala Leu Gly Leu Val Val Gly Gly Leu Leu Ala
355                 360                 365                 370

ctc tgc tac cta tac ctc cct tgc tgt tcg tac tta gtg gtg ctg tgt      2464
Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr Leu Val Val Leu Cys
                375                 380                 385

tgc tgg ttt aag aaa tgg ggc aga tca ccc tagtgagctg cggtgtgctg        2514
Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
            390                 395

gtggcggtgc tttcgattgt gggactgggc ggcgcggctg tagtgaagga ggagaaggcc    2574

gatccctgct tgcatttcaa tcccgacaaa tgccagctga gttttcagcc cgatggcaat    2634

cggtgcgcgg tgctgatcaa gtgcggatgg gaatgcgaga acgtgagaat cgagtacaat    2694

aacaagactc ggaacaatac tctcgcgtcc gtgtggcagc ccggggaccc cgagtggtac    2754

accgtctctg tccccggtgc tgacggctcc ccgcgcaccg tgaataatac tttcatttttt    2814

gcgcacatgt gcaacacggt catgtggatg agcaagcagt acgatatgtg gccccccacg    2874

aaggagaaca tcgtggtctt ctccatcgct tacagcctgt gcacggcgct aatcaccgct    2934

atcgtgtgcc tgagcattca catgctcatc gctattcgcc ccagaaataa tgccgagaaa    2994

gagaaacagc cataacacgt tttttcacac accttgtttt tacagacaat gcgtctgtta    3054

aatttttaa acattgtgct cagtattgct tatgcctctg gttatgcaaa catacagaaa     3114

acccttttatg taggatctga tggtacacta gagggtaccc aatcacaagc caaggttgca    3174

tggtattttt atagaaccaa cactgatcca gttaaacttt gtaagggtga attgccgcgt    3234

acacataaaa ctccacttac atttagttgc agcaataata atcttacact tttttcaatt    3294

acaaaacaat atactggtac ttattacagt acaaactttc atacaggaca agataaatat    3354

tatactgtta aggtagaaaa tcctaccact cctagaacta ccaccaccac caccactact    3414

gcaaagccca ctgtgaaaac tacaactagg accaccacaa ctacagaaac caccaccagc    3474

acaacacttg ctgcaactac acacacacac actaagctaa ccttacagac cactaatgat    3534

ttgatcgccc tgctgcaaaa gggggataac agcaccactt ccaatgagga gatacccaaa    3594

tccatgattg gcattattgt tgctgtagtg gtgtgcatgt tgatcatcgc cttgtgcatg    3654

gtgtactatg ccttctgcta cagaaagcac agactgaacg acaagctgga acacttacta    3714

agtgttgaat tttaattttt tagaaccatg aagatcctag gccttttag ttttctatc      3774

attacctctg ctctttgtga atcagtggat agagatgtta ctattaccac tggttctaat    3834

tatacactga aagggccacc ctcaggtatg ctttcgtggt attgctattt tggaactgac    3894

actgatcaaa ctgaattatg caattttcaa aaaggcaaaa cctcaaactc taaaatctct    3954
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aattatcaat gcaatggcac tgatctgata ctactcaatg tcacgaaagc atatggtggc 4014

agttattatt gccctggaca aaacactgaa gaaatgattt tttacaaagt ggaagtggtt 4074

gatcccacta caccacccac caccacaact attcatacca cacacacaga acaaacacca 4134

gaggcaacag aagcagagtt ggccttccag gttcacggag attcctttgc tgtcaatacc 4194

cctacacccg atcagcggtg tccggggccg ctagtcagcg gcattgtcgg tgtgctttcg 4254

ggattagcag tcataatcat ctgcatgttc atttttgctt gctgctatag aaggctttac 4314

cgacaaaaat cagacccact gctgaacctc tatgtttaat tttttccaga gccatgaagg 4374

cagttagcgc tctagttttt tgttctttga ttggcattgt ttttaatagt aaaattacca 4434

aagttagctt tattaaacat gttaatgtaa ctgaaggaga taacatcaca ctagcaggtg 4494

tagaaggtgc tcaaaacacc acctggacaa aataccatct aggatggaga gatatttgca 4554

cctggaatgt aacttattat tgcataggaa ttaatcttac cattgttaac gctaaccaat 4614

ctcagaatgg gttaattaaa ggacagagtg ttagtgtgac cagtgatggg tactataccc 4674

agcatagttt taactacaac attactgtca taccactgcc tacgcctagc ccacctagca 4734

ctaccacaca gacaaccaca tacagtacat caaatcagcc taccaccact acagcagcag 4794

aggttgccag ctcgtctggg gtccgagtgg catttttgat gttggcccca tctagcagtc 4854

ccactgctag taccaatgag cagactactg aatttttgtc cactgtcgag agccacacca 4914

cagctacctc cagtgccttc tctagcaccg ccaatctctc ctcgctttcc tctacaccaa 4974

tcagccccgc tactactcct agccccgctc ctcttcccac tcccctgaag caaacagacg 5034

gcggcatgca atggcagatc accctgctca ttgtgatcgg gttggtcatc ctggccgtgt 5094

tgctctacta catcttctgc cgccgcattc ccaacgcgca ccgcaagccg gcctacaagc 5154

ccatcgttat cgggcagccg gagccgcttc aggtggaagg gggtctaagg aatcttctct 5214

tctcttttac agtatggtga ttgaactatg attcctagac aattcttgat cactattctt 5274

atctgcctcc tccaagtctg tgccaccctc gctctggtgg ccaacgccag tccagactgt 5334

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atagtctgcc tgcttatcac cttcttccag ttcattgact ggatctttgt gcgcatcgcc 5454

tacctgcgcc accacccccа gtaccgcgac cagcgagtgg cgcagctgct caggctcctc 5514

tgataagcat gcgggctctg ctacttctcg cgcttctgct gttagtgctc ccccgtcccg 5574

ttgacccccg gccccccact cagtcccccg aggaggtccg caaatgcaaa ttccaagaac 5634

cctggaaatt cctcaaatgc taccgccaaa aatcagacat gcatcccagc tggatcatga 5694

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tcattgggat cgtgaacatt ctggcctgca ccctcatctc ctttgtgatt tacccctgct     5754

ttgactttgg ttggaactcg ccagaggcgc tctatctccc gcctgaacct gacacaccac     5814

cacagcaacc tcaggcacac gcactaccac caccaccaca gcctaggcca caatacatgc     5874

ccatattaga ctatgaggcc gagccacagc gacccatgct ccccgctatt agttacttca     5934

atctaaccgg cggag atg act gac cca ctg gcc aac aac aac gtc aac gac      5985
                Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp
                          400                 405

ctt ctc ctg gac atg gac ggc cgc gcc tcg gag cag cga ctc gcc caa       6033
Leu Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln
    410                 415                 420

ctt cgc att cgc cag cag cag gag aga gcc gtc aag gag ctg cag gac       6081
Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp
425                 430                 435                 440

ggc ata gcc atc cac cag tgc aag aaa ggc atc ttc tgc ctg gtg aaa       6129
Gly Ile Ala Ile His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys
                445                 450                 455

cag gcc aag atc tcc tac gag gtc acc cag acc gac cat cgc ctc tcc       6177
Gln Ala Lys Ile Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser
            460                 465                 470

tac gag ctc ctg cag cag cgc cag aag ttc acc tgc ctg gtc gga gtc       6225
Tyr Glu Leu Leu Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val
        475                 480                 485

aac ccc atc gtc atc acc cag cag tcg ggc gat acc aag ggg tgc atc       6273
Asn Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile
    490                 495                 500

cac tgc tcc tgc gac tcc ccc gac tgc gtc cac act ctg atc aag acc       6321
His Cys Ser Cys Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr
505                 510                 515                 520

ctc tgc ggc ctc cgc gac ctc ctc ccc atg aac taatca                   6360
Leu Cys Gly Leu Arg Asp Leu Leu Pro Met Asn
                525                 530


<210>  58
<211>  188
<212>  PRT
<213>  Simian adenovirus 37

<400>  58

Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Pro Pro
1               5                   10                  15


Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Met
            20                  25                  30
```

```
Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
        35                  40                  45

Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala
    50                  55                  60

Ala Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr Asp Thr
65                  70                  75                  80

Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala 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 Cys Phe Gln Glu Glu Ala Glu
                165                 170                 175

Thr Gln Gln Gln Gln Lys Thr Ser Gly Ser Ser Ser
            180                 185


<210>  59
<211>  208
<212>  PRT
<213>  Simian adenovirus 37

<400>  59

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
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<210> 60
<211> 135
<212> PRT
<213> Simian adenovirus 37

<400> 60

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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>  61
<211>  870
<212>  DNA
<213>  Simian adenovirus 37


<220>
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<222>  (7)..(574)
<223>  label=Ela

<220>
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<222>  (660)..(865)
<223>  label=Ela

<400>  61
tgaaag atg agg cac ctg aga gac ctg ccc ggt aat gtt ttc ctg gct          48
       Met Arg His Leu Arg Asp Leu Pro Gly Asn Val Phe Leu Ala
       1               5                   10

act ggg aac gag att ctg gaa ctg gtg gtg gac gcc atg atg ggt gac         96
Thr Gly Asn Glu Ile Leu Glu Leu Val Val Asp Ala Met Met Gly Asp
15                  20                  25                  30

gac cct ccc gag ccc cct acc cca ttt gag gcg cct tcg ctg tac gat        144
Asp Pro Pro Glu Pro Pro Thr Pro Phe Glu Ala Pro Ser Leu Tyr Asp
                35                  40                  45

ttg tat gat ctg gag gtg gat gtg tcc gag aac gac ccc aac gag gag        192
Leu Tyr Asp Leu Glu Val Asp Val Ser Glu Asn Asp Pro Asn Glu Glu
            50                  55                  60

gcg gtg aat gat ttg ttt agc gat gcc gcg ctg ctg gct gcc gag cag        240
```

```
Ala Val Asn Asp Leu Phe Ser Asp Ala Ala Leu Leu Ala Ala Glu Gln
        65                  70                  75

gct aat acg gac tct ggc tca gac agc gat tcc tct ctc cat acc ccg        288
Ala Asn Thr Asp Ser Gly Ser Asp Ser Asp Ser Ser Leu His Thr Pro
    80                  85                  90

aga ccc ggc aga ggt gag aaa aag atc ccc gag ctt aaa ggg gaa gag        336
Arg Pro Gly Arg Gly Glu Lys Lys Ile Pro Glu Leu Lys Gly Glu Glu
95                  100                 105                 110

ctc gac ctg cgc tgc tat gag gaa tgc ttg cct ccg agc gat gat gag        384
Leu Asp Leu Arg Cys Tyr Glu Glu Cys Leu Pro Pro Ser Asp Asp Glu
                115                 120                 125

gag gac gag gag gcg att cga gct gca gcg agc gag gga gtg aaa gtt        432
Glu Asp Glu Glu Ala Ile Arg Ala Ala Ala Ser Glu Gly Val Lys Val
            130                 135                 140

gcg ggc gag agc ttt agc ctg gac tgt cct act ctg ccc gga cac ggc        480
Ala Gly Glu Ser Phe Ser Leu Asp Cys Pro Thr Leu Pro Gly His Gly
        145                 150                 155

tgt aag tct tgt gaa ttt cat cgc atg aat act gga gat aag aat gtg        528
Cys Lys Ser Cys Glu Phe His Arg Met Asn Thr Gly Asp Lys Asn Val
    160                 165                 170

atg tgt gcc ctg tgc tat atg aga gct tac aac cat tgt gtt tac a         574
Met Cys Ala Leu Cys Tyr Met Arg Ala Tyr Asn His Cys Val Tyr
175                 180                 185

gtaagtgtga ttaactttag ttgggaaagg cagagggtga ctgggtgctg actggtttat      634

ttatgtatat gtttttttatg tgtag gt  ccc gtc tct gac gca gat gag acc        685
                                Ser Pro Val Ser Asp Ala Asp Glu Thr
                                                    195

ccc act tca gag tgc att tca tca ccc cca gaa att ggc gag gaa ccg        733
Pro Thr Ser Glu Cys Ile Ser Ser Pro Pro Glu Ile Gly Glu Glu Pro
    200                 205                 210

ccc gaa gat att att cat aga cca gtt gca gtg aga gtc acc ggg cgg        781
Pro Glu Asp Ile Ile His Arg Pro Val Ala Val Arg Val Thr Gly Arg
215                 220                 225                 230

aga gca gct gtg gag agt ttg gat gac ttg cta cag ggt ggg gat gaa        829
Arg Ala Ala Val Glu Ser Leu Asp Asp Leu Leu Gln Gly Gly Asp Glu
                235                 240                 245

cct ttg gac ttg tgt acc cgg aaa cgc ccc agg cac taagt                 870
Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro Arg His
            250                 255
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<210> 62
<211> 258
<212> PRT
<213> Simian adenovirus 37

<400> 62

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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 Pro Val
            180                 185                 190

Ser Asp Ala Asp Glu Thr Pro Thr Ser Glu Cys Ile Ser Ser Pro Pro
        195                 200                 205

Glu Ile Gly Glu Glu Pro Pro Glu Asp Ile Ile His Arg Pro Val Ala
    210                 215                 220

Val Arg Val Thr Gly Arg Arg Ala Ala Val Glu Ser Leu Asp Asp Leu
```

```
225                 230                 235                 240

Leu Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro
                245                 250                 255

Arg His



<210>  63
<211>  850
<212>  DNA
<213>  Simian adenovirus 37


<220>
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<222>  (10)..(337)
<223>  label=33K

<220>
<221>  CDS
<222>  (507)..(841)
<223>  label=33K

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tcccccagg atg ccc cga gga agc agc aag aag ctg aaa gtg gag ctg ccg       51
          Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro
          1               5                   10

ccg ccg ccg gag gat ttg gag gaa gac tgg gag agc agt cag gca gag         99
Pro Pro Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu
15                  20                  25                  30

gag atg gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa        147
Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
                35                  40                  45

gac agt ctg gag gag gaa gac gag gtg gag gag gag gca gag gaa gaa        195
Asp Ser Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu
            50                  55                  60

gca gcc gcc gcc aga ccg tcg tcc tcg gcg gag aaa gca agc agc acg        243
Ala Ala Ala Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr
        65                  70                  75

gat acc atc tcc gct ccg ggt cgg ggt cgc ggc ggc cgg gcc cac agt        291
Asp Thr Ile Ser Ala Pro Gly Arg 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 g          337
Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr
95                  100                 105

gtaagaagga gcggcaggga tacaagtcct ggcgggggca caaaaacgcc atcgtctcct      397

gcttgcaagc ctgcgggggc aacatctcct tcacccggcg ctacctgctc ttccaccgcg      457
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gggtgaactt cccccgcaac atcttgcatt actaccgtca cctccacag cc  cct act      514
                                                        Ala Pro Thr

act gtt tcc aag aag agg cag aaa ccc agc agc agc aga aaa cca gcg        562
Thr Val Ser Lys Lys Arg Gln Lys Pro Ser Ser Ser Arg Lys Pro Ala
        115                 120                 125

gca gca gca gct aga aaa tcc aca gcg gcg gca ggt gga ctg agg atc        610
Ala Ala Ala Ala Arg Lys Ser Thr Ala Ala Ala Gly Gly Leu Arg Ile
    130                 135                 140

gcg gcg aac gag ccg gcg cag acc cgg gag ctg agg aac cgg atc ttt        658
Ala Ala Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg Asn Arg Ile Phe
145                 150                 155                 160

ccc acc ctc tat gcc atc ttc cag cag agt cgg ggg cag gag cag gaa        706
Pro Thr Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly Gln Glu Gln Glu
                165                 170                 175

ctg aaa gtc aag aac cgt tct ctg cgc tcg ctc acc cgc agt tgt ctg        754
Leu Lys Val Lys Asn Arg Ser Leu Arg Ser Leu Thr Arg Ser Cys Leu
            180                 185                 190

tat cac aag agc gaa gac caa ctt cag cgc act ctc gag gac gcc gag        802
Tyr His Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu Glu Asp Ala Glu
        195                 200                 205

gct ctc ttc aac aag tac tgc gcg ctc act ctt aaa gag tagcccgcg          850
Ala Leu Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys Glu
    210                 215                 220
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<210> 64
<211> 221
<212> PRT
<213> Simian adenovirus 37

<400> 64

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Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Pro Pro
1               5                   10                  15

Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Met
            20                  25                  30

Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
        35                  40                  45

Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala
    50                  55                  60

Ala Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr Asp Thr
65                  70                  75                  80
```

```
Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser Arg Trp
                85                  90                  95

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

Thr Val Ser Lys Lys Arg Gln Lys Pro Ser Ser Ser Arg Lys Pro Ala
        115                 120                 125

Ala Ala Ala Ala Arg Lys Ser Thr Ala Ala Ala Gly Gly Leu Arg Ile
    130                 135                 140

Ala Ala Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg Asn Arg Ile Phe
145                 150                 155                 160

Pro Thr Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly Gln Glu Gln Glu
                165                 170                 175

Leu Lys Val Lys Asn Arg Ser Leu Arg Ser Leu Thr Arg Ser Cys Leu
            180                 185                 190

Tyr His Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu Glu Asp Ala Glu
        195                 200                 205

Ala Leu Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys Glu
    210                 215                 220


<210>  65
<211>  36494
<212>  DNA
<213>  Simian adenovirus 38


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<222>  (1)..(130)
<223>  label=ITR

<220>
<221>  CDS
<222>  (1906)..(3417)
<223>  label=Elb\55K

<220>
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<222>  (3505)..(3930)
<223>  label=pIX
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<222> (3996)..(5617)
<223> complement (3996..5326, 5605..5617) label=IVa2

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<222> (5099)..(13873)
<223> complement (5099..8671, 13865..13873) label=pol

<220>
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<222> (8473)..(13873)
<223> complement (8473..10410, 13865..13873) label=pTP

<220>
<221> misc_feature
<222> (10444)..(10608)
<223> label=VA\I

<220>
<221> misc_feature
<222> (10673)..(10843)
<223> label=VA\II

<220>
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<222> (10871)..(12046)
<223> label=52\55K

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<222> (12073)..(13830)
<223> label=pIIIa

<220>
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<222> (13913)..(15529)
<223> label=penton

<220>
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<222> (15536)..(16117)
<223> label=pVII

<220>
<221> CDS
<222> (16165)..(17211)
<223> label=V

<220>
<221> CDS
<222> (17239)..(17469)
<223> label=pX

<220>
<221> CDS
<222> (17542)..(18261)
<223> label=pVI

<220>
<221> CDS
<222> (18357)..(21146)
<223> label=hexon

<220>
<221> CDS
<222> (21171)..(21791)
<223> label=protease

<220>
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<222> (21869)..(23404)
<223> complement label=DBP

<220>
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<222> (23430)..(25814)
<223> label=100K

<220>
<221> CDS
<222> (26452)..(27132)
<223> label=pVIII

<220>
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<222> (27136)..(27453)
<223> label=E3\12.5K

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<223> label=E3\CR1\beta

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<222> (29214)..(29822)
<223> label=E3\CR1\gamma

<220>
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<222> (29840)..(30703)
<223> label=E3\CR1\delta

<220>
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<222> (30714)..(30986)
<223> label=E3\RID\alpha

<220>
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<222> (31419)..(31823)
<223> label=E3\14.7K

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<223> label=fiber

<220>
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<222> (33485)..(33676)
<223> complement label=E4\orf7

<220>
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<222> (33485)..(34635)
<223> complement (33485..33733, 34465..34635) label=E4\orf6/7

<220>
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<222> (33733)..(34635)
<223> complement label=E4\orf6

<220>
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<222> (34544)..(34906)
<223> complement label=E4\orf4

<220>
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<222> (34919)..(35269)
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<222> (35269)..(35655)
<223> complement label=E4\orf2

<220>
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<222> (35699)..(36070)
<223> complement label=E4\orf1

<220>
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<222> (36365)..(36494)
<223> complement label=ITR

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aatttgggga tgcggggcgg tgattggctg cgggagcggc gaccgttagg ggcggggcgg 120

gtgacgtttt gatgacgtgt ttgtgaggcg gagccggttt gcaagttctc gtgggaaaag 180

tgacgtcaaa cgaggtgtgg tttgaacacg gaaatactca attttcccgc gctctctgac 240

aggaaatgag gtgtttctgg gcggatgcaa gtgaaaacgg gccattttcg cgcgaaaact 300

gaatgaggaa gtgaaaatct gagtaatttc gcgtttatgg cagggaggag tatttgccga 360

gggccgagta gactttgacc gattacgtgg gggtttcgat taccgtattt ttcacctaaa 420

tttccgcgta cggtgtcaaa gtccggtgtt tttacgtagg tgtcagctga tcgccagggt 480

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atttaaacct gcgctctcta gtcaagaggc cactcttgag tgccagcgag tagagttttc      540

tcctccgcgc cgcgagtcag atctacactt tgaaagatga ggcacctgag agacctgccc      600

ggtaatgttt tcctggctac tgggaacgag attctggaac tggtggtgga cgccatgatg      660

ggtgacgacc ctccggagcc ccctacccca tttgaggcgc cttcgctgta cgatttgtat      720

gatctggagg tggatgtgcc cgagaacgac cccaacgagg aggcggtgaa tgatttgttt      780

agcgatgccg cgctgctggc tgccgagcag gctaatacgg actctggctc agacagcgat      840

tcctctctcc ataccccgag acccggcaga ggtgagaaaa agatccccga gcttaaaggg      900

gaagagctcg acctgcgctg ctatgaggaa tgcttgcctc cgagcgatga tgaggaggac      960

gaggaggcga ttcgagctgc agcgaaccag ggagtgaaag cggcgggcga gggctttagc     1020

ctggactgtc ctactctgcc cggacacggc tgtaagtctt gtgaatttca tcgcatgaat     1080

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ttcagagtgc atttcatcac ccccagaaat tggcgaggaa ccgcccgaag atattattca     1320

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gccacacatg tgtgtttact taaggtgatg tcagtattta tagggtgtgg agtgcaataa     1500

aatccgtgtt gactttaagt gcgtgtttta tgactcaggg gtggggactg tgggtatata     1560

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cagaactacc gccgcggtag ccttttttgc ctttatcctt gacaa atg gag tca aga     1917
                                                 Met Glu Ser Arg
                                                 1

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
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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 gga ccg aga aga gaa ccc gag agc cgg tct gga ccc tcc       2157
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       2205
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       2253
Val Leu Thr Arg Ser Ser Ser Gly Arg Glu Arg Gly Ile Lys Arg Glu
                105                 110                 115

agg cat gag gag act agc cac aga act gaa ctg act gtc agt ctg atg       2301
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 gtg cag tcg cag       2349
Ser Arg Arg Arg Pro Glu Ser Val Trp Trp His Glu Val Gln Ser Gln
        135                 140                 145

ggg ata gat gag gtc tca gtg atg cat gag aaa tat tcc cta gaa caa       2397
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       2445
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 ctg gct ctg aag cca gac aag aag tac aag att       2493
Arg Asn Tyr Ala Lys Leu Ala Leu Lys Pro Asp Lys Lys Tyr Lys Ile
                185                 190                 195

acc aaa ctg att aat atc aga aat tcc tgc tac att tca ggg aat ggg       2541
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 gcg gcc ttc aga tgt tgt       2589
Ala Glu Val Glu Ile Ser Thr Gln Glu Arg Ala Ala Phe Arg Cys Cys
        215                 220                 225

atg atg aat atg tac ccg ggg gtg gtg ggc atg gag gga gtc acc ttt       2637
Met Met Asn Met Tyr Pro Gly Val Val Gly Met Glu Gly Val Thr Phe
    230                 235                 240

atg aac acg agg ttc agg ggt gat ggg tat aat ggg gtg gtc ttt atg       2685
Met Asn Thr Arg Phe Arg Gly Asp Gly Tyr Asn Gly Val Val Phe Met
245                 250                 255                 260

gcc aac acc aag ttg aca gtg cac gga tgc tcc ttc ttt ggc ttc aat       2733
Ala Asn Thr Lys Leu Thr Val His Gly Cys Ser Phe Phe Gly Phe Asn
                265                 270                 275
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aac atg tgc atc gag gcc tgg ggc agt gtt tca gtg agg gga tgc agc       2781
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 gtg gtt       2829
Phe Ser Ala Asn Trp Met Gly Val Val Gly Arg Thr Lys Ser Val Val
        295                 300                 305

tca gtg aag aaa tgc ctg ttc gag agg tgc cac ctg ggg gtg atg agc       2877
Ser Val Lys Lys Cys Leu Phe Glu Arg Cys His Leu Gly Val Met Ser
    310                 315                 320

gag ggc gaa gcc aaa gtc aaa cac tgc gcc tct act gag acg ggc tgc       2925
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       2973
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       3021
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       3069
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       3117
Thr Trp Pro Glu Phe Glu His Asn Val Met Thr Arg Cys Asn Val His
    390                 395                 400

ctg ggg tcc cgc cga ggc atg ttc atg ccc tac cag tgc aac atg caa       3165
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       3213
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       3261
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       3309
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       3357
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       3405
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 ggaggtggag ggcttgtatg           3457
Glu Glu Ser Asp
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aggggcagaa tgactaaaat ctgtgttttt ctgtgtgttg cagcagc atg agc gga       3513
                                                    Met Ser Gly
                                                    505

agc gcc tcc ttt gag gga ggg gta ttc agc ccg tat ctg acg ggg cgt       3561
Ser Ala Ser Phe Glu Gly Gly Val Phe Ser Pro Tyr Leu Thr Gly Arg
        510                 515                 520

ctc ccc tcc tgg gct gga gtg cgt cag aat gtg atg gga tcc acg gtg       3609
Leu Pro Ser Trp Ala Gly Val Arg Gln Asn Val Met Gly Ser Thr Val
    525                 530                 535

gac ggc cgg ccc gtg cag ccc gcg aac tct tca acc ctg acc tac gcg       3657
Asp Gly Arg Pro Val Gln Pro Ala Asn Ser Ser Thr Leu Thr Tyr Ala
540                 545                 550                 555

acc ctg agc tcc tcg tcc gtg gac gca gct gcc gcc gca gct gct gct       3705
Thr Leu Ser Ser Ser Ser Val Asp Ala Ala Ala Ala Ala Ala Ala Ala
                560                 565                 570

tcc gcc gcc agc gcc gtg cgc gga atg gcc ctg ggc gcc ggc tac tac       3753
Ser Ala Ala Ser Ala Val Arg Gly Met Ala Leu Gly Ala Gly Tyr Tyr
            575                 580                 585

agc tct ctg gtg gcc aac tcg agt tcc acc aat aat ccc gcc agc ctg       3801
Ser Ser Leu Val Ala Asn Ser Ser Ser Thr Asn Asn Pro Ala Ser Leu
        590                 595                 600

aac gag gag aag ctg ctg ctg ctg atg gcc cag ctc gag gcc ctg acc       3849
Asn Glu Glu Lys Leu Leu Leu Leu Met Ala Gln Leu Glu Ala Leu Thr
    605                 610                 615

cag cgc ctg ggc gag ctg acc cag cag gtg gct cag ctg cag gcg gag       3897
Gln Arg Leu Gly Glu Leu Thr Gln Gln Val Ala Gln Leu Gln Ala Glu
620                 625                 630                 635

acg cgg gcc gcg gtt gcc acg gtg aaa acc aaa taaaaaatga atcaataaat     3950
Thr Arg Ala Ala Val Ala Thr Val Lys Thr Lys
                640                 645

aaacggagac ggttgttgat tttaacacag agtcttgaat ctttatttga tttttcgcgc     4010

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ccggtagagg tgggcttgga tgttgaggta catgggcatg agcccgtccc gggggtggag     4130

gtagctccat tgcagggcct cgtgctcggg ggtggtgttg taaatcaccc agtcatagca     4190

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Pro Pro Pro Gln Pro Pro Leu Pro Gln Gln Gln Gln Pro Ala Leu
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Leu Pro Pro Pro Gln Gln Gln Gln Gln Pro Ala Thr Thr Ala Ala Ala
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Ala Val Ser Gly Ala Gly Val Gln Tyr Asp Leu Ala Leu Glu Glu Gly
690                 695                 700                 705

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Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg
                710                 715                 720

gtg cag atg aaa agg gac gct cgc gag gcc tac gtg ccc aag cag aac      11143
Val Gln Met Lys Arg Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn
            725                 730                 735
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ctg ttc aga gac agg agc ggc gag gag ccc gag gag atg cgc gcc tcc      11191
Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ser
        740                 745                 750

cgc ttc cac gcg ggg cgg gag ctg cgg cgc ggc ctg gac cga aag cgg      11239
Arg Phe His Ala Gly Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg
    755                 760                 765

gtg ctg agg gac gag gat ttc gag gcg gac gag ctg acg ggg atc agc      11287
Val Leu Arg Asp Glu Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser
770                 775                 780                 785

ccc gcg cgc gcg cac gtg gcc gcg gcc aac ctg gtc acg gcg tac gag      11335
Pro Ala Arg Ala His Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu
                790                 795                 800

cag acc gtg aag gag gag agc aac ttt caa aaa tcc ttc aac aac cac      11383
Gln Thr Val Lys Glu Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His
            805                 810                 815

gtg cgc acc ttg atc gcg cgc gag gag gtg acc ctg ggc ctg atg cat      11431
Val Arg Thr Leu Ile Ala Arg Glu Glu Val Thr Leu Gly Leu Met His
        820                 825                 830

ctg tgg gac ctg ctg gag gcc atc gtg cag aac ccc acg agc aag ccg      11479
Leu Trp Asp Leu Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro
    835                 840                 845

ctg acg gcg cag ctg ttt ctg gtg gtg cag cac agt cgg gac aac gag      11527
Leu Thr Ala Gln Leu Phe Leu Val Val Gln His Ser Arg Asp Asn Glu
850                 855                 860                 865

acg ttc agg gag gcg ctg ctg aat atc acc gag ccc gag ggc cgc tgg      11575
Thr Phe Arg Glu Ala Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp
                870                 875                 880

ctc ctg gac ctg gtg aac att ctg cag agc atc gtg gtg cag gag cgc      11623
Leu Leu Asp Leu Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg
            885                 890                 895

ggg ctg ccg ctg tcc gag aag ctg gcg gcc atc aac ttc tcg gtg ctg      11671
Gly Leu Pro Leu Ser Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu
        900                 905                 910

agc ctg ggc aag tac tac gct agg aag atc tac aag acc ccg tac gtg      11719
Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val
    915                 920                 925

ccc ata gac aag gag gtg aag atc gat ggg ttt tac atg cgc atg acc      11767
Pro Ile Asp Lys Glu Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr
930                 935                 940                 945

ctg aaa gtg ctg acc ctg agc gac gat ctg ggg gtg tac cgc aac gac      11815
Leu Lys Val Leu Thr Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp
                950                 955                 960

agg atg cac cgc gcg gtg agc gcc agc cgc cgg cgc gag ctg agc gac      11863
Arg Met His Arg Ala Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp
            965                 970                 975
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cag gag ctg atg cac agc ctg cag cgg gcc ctg acc ggg gcc ggg acc      11911
Gln Glu Leu Met His Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr
        980                 985                 990

gag ggg gag agc tac ttt gac  atg ggc gcg gac ctg  cgc tgg cag ccc    11959
Glu Gly Glu Ser Tyr Phe Asp  Met Gly Ala Asp Leu  Arg Trp Gln Pro
    995                 1000                1005

agc  cgc cgg gcc ttg gaa  gct gcc ggc ggc gtg  ccc tac gtg gag       12004
Ser  Arg Arg Ala Leu Glu  Ala Ala Gly Gly Val  Pro Tyr Val Glu
1010                1015                1020

gag  gtg gac gat gag gag  gag gag ggc gag tac  ctg gaa gac           12046
Glu  Val Asp Asp Glu Glu  Glu Glu Gly Glu Tyr  Leu Glu Asp
1025                1030                1035

tgatggcgcg accgtatttt tgctag atg cag  caa cag cca ccg cct  cct       12096
                             Met Gln  Gln Gln Pro Pro Pro  Pro
                                 1040                1045

gat ccc gcg atg  cgg gcg gcg ctg cag  agc cag ccg tcc ggc  att       12141
Asp Pro Ala Met  Arg Ala Ala Leu Gln  Ser Gln Pro Ser Gly  Ile
            1050                1055                1060

aac tcc tcg gac  gat tgg acc cag gcc  atg caa cgc atc atg  gcg       12186
Asn Ser Ser Asp  Asp Trp Thr Gln Ala  Met Gln Arg Ile Met  Ala
            1065                1070                1075

ctg acg acc cgc  aat ccc gaa gcc ttt  aga cag cag cct cag  gcc       12231
Leu Thr Thr Arg  Asn Pro Glu Ala Phe  Arg Gln Gln Pro Gln  Ala
            1080                1085                1090

aac cgg ctc tcg  gcc atc ctg gag gcc  gtg gtg ccc tcg cgc  tcg       12276
Asn Arg Leu Ser  Ala Ile Leu Glu Ala  Val Val Pro Ser Arg  Ser
            1095                1100                1105

aac ccc acg cac  gag aag gtg ctg gcc  atc gtg aac gcg ctg  gtg       12321
Asn Pro Thr His  Glu Lys Val Leu Ala  Ile Val Asn Ala Leu  Val
            1110                1115                1120

gag aac aag gcc  atc cgc ggc gac gag  gcc ggg ctg gtg tac  aac       12366
Glu Asn Lys Ala  Ile Arg Gly Asp Glu  Ala Gly Leu Val Tyr  Asn
            1125                1130                1135

gcg ctg ctg gag  cgc gtg gcc cgc tac  aac agc acc aac gtg  cag       12411
Ala Leu Leu Glu  Arg Val Ala Arg Tyr  Asn Ser Thr Asn Val  Gln
            1140                1145                1150

acg aac ctg gac  cgc atg gtg acc gac  gtg cgc gag gcg gtg  tcg       12456
Thr Asn Leu Asp  Arg Met Val Thr Asp  Val Arg Glu Ala Val  Ser
            1155                1160                1165

cag cgc gag cgg  ttc cac cgc gag tcg  aac ctg ggc tcc atg  gtg       12501
Gln Arg Glu Arg  Phe His Arg Glu Ser  Asn Leu Gly Ser Met  Val
            1170                1175                1180

gcg ctg aac gcc  ttc ctg agc acg cag  ccc gcc aac gtg ccc  cgg       12546
Ala Leu Asn Ala  Phe Leu Ser Thr Gln  Pro Ala Asn Val Pro  Arg
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            1185                1190                1195

ggc cag gag gac  tac acc aac ttc atc  agc gcg ctg cgg ctg  atg       12591
Gly Gln Glu Asp  Tyr Thr Asn Phe Ile  Ser Ala Leu Arg Leu  Met
            1200                1205                1210

gtg gcc gag gtg  ccc cag agc gag gtg  tac cag tcg ggg ccg  gac       12636
Val Ala Glu Val  Pro Gln Ser Glu Val  Tyr Gln Ser Gly Pro  Asp
            1215                1220                1225

tac ttc ttc cag  acc agt cgc cag ggc  ttg cag acc gtg aac  ctg       12681
Tyr Phe Phe Gln  Thr Ser Arg Gln Gly  Leu Gln Thr Val Asn  Leu
            1230                1235                1240

agc cag gct ttc  aag aac ttg cag gga  ctg tgg ggc gtg cag  gcc       12726
Ser Gln Ala Phe  Lys Asn Leu Gln Gly  Leu Trp Gly Val Gln  Ala
            1245                1250                1255

ccg gtc ggg gac  cgc gcg acg gtg tcg  agc ctg ctg acg ccg  aac       12771
Pro Val Gly Asp  Arg Ala Thr Val Ser  Ser Leu Leu Thr Pro  Asn
            1260                1265                1270

tcg cgc ctg ctg  ctg ctg ctg gtg gcg  ccc ttc acg gac agc  ggc       12816
Ser Arg Leu Leu  Leu Leu Leu Val Ala  Pro Phe Thr Asp Ser  Gly
            1275                1280                1285

agc gtg agc cgc  gac tcg tac ctg ggc  tac ctg ctt aac ctg  tac       12861
Ser Val Ser Arg  Asp Ser Tyr Leu Gly  Tyr Leu Leu Asn Leu  Tyr
            1290                1295                1300

cgc gag gcc atc  ggg cag gcg cac gtg  gac gag cag acc tac  cag       12906
Arg Glu Ala Ile  Gly Gln Ala His Val  Asp Glu Gln Thr Tyr  Gln
            1305                1310                1315

gag atc acc cac  gtg agc cgc gcg ctg  ggc cag gag gac ccg  ggc       12951
Glu Ile Thr His  Val Ser Arg Ala Leu  Gly Gln Glu Asp Pro  Gly
            1320                1325                1330

aac ctg gag gcc  acc ctg aac ttc ctg  ctg acc aac cgg tcg  cag       12996
Asn Leu Glu Ala  Thr Leu Asn Phe Leu  Leu Thr Asn Arg Ser  Gln
            1335                1340                1345

aag atc ccg ccc  cag tac gcg ctg agc  acc gag gag gag cgc  atc       13041
Lys Ile Pro Pro  Gln Tyr Ala Leu Ser  Thr Glu Glu Glu Arg  Ile
            1350                1355                1360

ctg cgc tac gtg  cag cag agc gtg ggg  ctg ttc ctg atg cag  gag       13086
Leu Arg Tyr Val  Gln Gln Ser Val Gly  Leu Phe Leu Met Gln  Glu
            1365                1370                1375

ggg gcc acg ccc  agc gcc gcg ctc gac  atg acc gcg cgc aac  atg       13131
Gly Ala Thr Pro  Ser Ala Ala Leu Asp  Met Thr Ala Arg Asn  Met
            1380                1385                1390

gag ccc agc atg  tac gcc cgc aac cgc  ccg ttc atc aat aag  ctg       13176
Glu Pro Ser Met  Tyr Ala Arg Asn Arg  Pro Phe Ile Asn Lys  Leu
            1395                1400                1405

atg gac tac ttg  cat cgg gcg gcc gcc  atg aac tcg gac tac  ttt       13221
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Met Asp Tyr Leu  His Arg Ala Ala Ala  Met Asn Ser Asp Tyr  Phe
            1410                 1415                 1420

acc aac gcc atc  ttg aac ccg cac tgg  ctc ccg ccg ccc ggg  ttc       13266
Thr Asn Ala Ile  Leu Asn Pro His Trp  Leu Pro Pro Pro Gly  Phe
            1425                 1430                 1435

tac acg ggc gag  tac gac atg ccc gac  ccc aac gac ggg ttc  ctg       13311
Tyr Thr Gly Glu  Tyr Asp Met Pro Asp  Pro Asn Asp Gly Phe  Leu
            1440                 1445                 1450

tgg gac gac gtg  gac agc agc gtg ttc  tcg ccg cgc ccc acc  acc       13356
Trp Asp Asp Val  Asp Ser Ser Val Phe  Ser Pro Arg Pro Thr  Thr
            1455                 1460                 1465

acc gtg tgg aag  aaa gag ggc ggg gac  cgg cgg ccg tcc tcg  gcg       13401
Thr Val Trp Lys  Lys Glu Gly Gly Asp  Arg Arg Pro Ser Ser  Ala
            1470                 1475                 1480

ctg tcc ggt cgc  gcg ggt gct gcc gcg  gcg gtg ccc gag gcc  gcc       13446
Leu Ser Gly Arg  Ala Gly Ala Ala Ala  Ala Val Pro Glu Ala  Ala
            1485                 1490                 1495

agc ccc ttc ccg  agc ctg ccc ttt tcg  ctg aac agc gtg cgc  agc       13491
Ser Pro Phe Pro  Ser Leu Pro Phe Ser  Leu Asn Ser Val Arg  Ser
            1500                 1505                 1510

agc gag ctg ggt  cgg ctg acg cgg ccg  cgc ctg ctg ggc gag  gag       13536
Ser Glu Leu Gly  Arg Leu Thr Arg Pro  Arg Leu Leu Gly Glu  Glu
            1515                 1520                 1525

gag tac ctg aac  gac tcc ttg ttg agg  ccc gag cgc gag aaa  aac       13581
Glu Tyr Leu Asn  Asp Ser Leu Leu Arg  Pro Glu Arg Glu Lys  Asn
            1530                 1535                 1540

ttc ccc aat aac  ggg ata gag agc ctg  gtg gac aag atg agc  cgc       13626
Phe Pro Asn Asn  Gly Ile Glu Ser Leu  Val Asp Lys Met Ser  Arg
            1545                 1550                 1555

tgg aag acg tac  gcg cac gag cac agg  gac gag ccc cga gct  agc       13671
Trp Lys Thr Tyr  Ala His Glu His Arg  Asp Glu Pro Arg Ala  Ser
            1560                 1565                 1570

agc agc acc ggc  gcc cgt aga cgc cag  cgg cac gac agg cag  cgg       13716
Ser Ser Thr Gly  Ala Arg Arg Arg Gln  Arg His Asp Arg Gln  Arg
            1575                 1580                 1585

gga ctg gtg tgg  gac gat gag gat tcc  gcc gac gac agc agc  gtg       13761
Gly Leu Val Trp  Asp Asp Glu Asp Ser  Ala Asp Asp Ser Ser  Val
            1590                 1595                 1600

ttg gac ttg ggt  ggg agt ggt ggt ggt  aac ccg ttc gct cac  ctg       13806
Leu Asp Leu Gly  Gly Ser Gly Gly Gly  Asn Pro Phe Ala His  Leu
            1605                 1610                 1615

cgc ccc cgt atc  ggg cgc ctg atg taagaatctg aaaaaataaa aaaacggtac    13860
Arg Pro Arg Ile  Gly Arg Leu Met
            1620
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tcaccaaggc catggcgacc agcgtgcgtt cttctctgtt gtttgtagta gt atg        13915
                                                          Met
                                                          1625

atg agg cgc gtg tac  ccg gag ggt cct cct  ccc tcg tac gag agc        13960
Met Arg Arg Val Tyr  Pro Glu Gly Pro Pro  Pro Ser Tyr Glu Ser
                1630                1635                1640

gtg atg cag cag gcg  gtg gcg gcg gcg atg  cag ccc ccg ctg gag        14005
Val Met Gln Gln Ala  Val Ala Ala Ala Met  Gln Pro Pro Leu Glu
                1645                1650                1655

gcg cct tac gtg ccc  ccg cgg tac ctg gcg  cct acg gag ggg cgg        14050
Ala Pro Tyr Val Pro  Pro Arg Tyr Leu Ala  Pro Thr Glu Gly Arg
                1660                1665                1670

aac agc att cgt tac  tcg gag ctg gca ccc  ttg tac gat acc acc        14095
Asn Ser Ile Arg Tyr  Ser Glu Leu Ala Pro  Leu Tyr Asp Thr Thr
                1675                1680                1685

cgg ttg tac ctg gtg  gac aac aag tcg gcg  gac atc gcc tcg ctg        14140
Arg Leu Tyr Leu Val  Asp Asn Lys Ser Ala  Asp Ile Ala Ser Leu
                1690                1695                1700

aac tac cag aac gac  cac agc aac ttc ctg  acc acc gtg gtg cag        14185
Asn Tyr Gln Asn Asp  His Ser Asn Phe Leu  Thr Thr Val Val Gln
                1705                1710                1715

aac aac gat ttc acc  ccc acg gag gcc agc  acc cag acc atc aac        14230
Asn Asn Asp Phe Thr  Pro Thr Glu Ala Ser  Thr Gln Thr Ile Asn
                1720                1725                1730

ttt gac gag cgc tcg  cgg tgg ggc ggc cag  ctg aaa acc atc atg        14275
Phe Asp Glu Arg Ser  Arg Trp Gly Gly Gln  Leu Lys Thr Ile Met
                1735                1740                1745

cac acc aac atg ccc  aac gtg aac gag ttc  atg tac agc aac aag        14320
His Thr Asn Met Pro  Asn Val Asn Glu Phe  Met Tyr Ser Asn Lys
                1750                1755                1760

ttc aag gcg cgg gtg  atg gtc tcg cgc aag  acc ccc aac ggg gtc        14365
Phe Lys Ala Arg Val  Met Val Ser Arg Lys  Thr Pro Asn Gly Val
                1765                1770                1775

aca gta aca gat ggt  agt cag gac gag ctg  acc tac gag tgg gtg        14410
Thr Val Thr Asp Gly  Ser Gln Asp Glu Leu  Thr Tyr Glu Trp Val
                1780                1785                1790

gag ttt gag ctg ccc  gag ggc aac ttc tcg  gtg acc atg acc atc        14455
Glu Phe Glu Leu Pro  Glu Gly Asn Phe Ser  Val Thr Met Thr Ile
                1795                1800                1805

gat ctg atg aac aac  gcc atc atc gac aac  tac ttg gcg gtg gga        14500
Asp Leu Met Asn Asn  Ala Ile Ile Asp Asn  Tyr Leu Ala Val Gly
                1810                1815                1820

cgg cag aac ggg gtg  ctg gag agc gac atc  ggc gtg aag ttc gac        14545
Arg Gln Asn Gly Val  Leu Glu Ser Asp Ile  Gly Val Lys Phe Asp
                1825                1830                1835
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acg cgc aac ttc cgg  ctg ggc tgg gac ccc  gtg acc gag ctg gtg        14590
Thr Arg Asn Phe Arg  Leu Gly Trp Asp Pro  Val Thr Glu Leu Val
                1840                1845                1850

atg ccg ggc gtg tac  acc aac gag gcc ttc  cac ccc gac atc gtc        14635
Met Pro Gly Val Tyr  Thr Asn Glu Ala Phe  His Pro Asp Ile Val
                1855                1860                1865

ctg ctg ccc ggc tgc  ggc gtg gac ttc acc  gag agc cgc ctc agc        14680
Leu Leu Pro Gly Cys  Gly Val Asp Phe Thr  Glu Ser Arg Leu Ser
                1870                1875                1880

aac ctg ctg ggc atc  cgc aag cgg cag ccc  ttc cag gag ggc ttc        14725
Asn Leu Leu Gly Ile  Arg Lys Arg Gln Pro  Phe Gln Glu Gly Phe
                1885                1890                1895

cag atc ctg tac gag  gac ctg gag ggg ggc  aac atc ccc gcg ctg        14770
Gln Ile Leu Tyr Glu  Asp Leu Glu Gly Gly  Asn Ile Pro Ala Leu
                1900                1905                1910

ctg gac gtc gaa gcc  tac gag aaa agc aag  gag gag gcc gcc gca        14815
Leu Asp Val Glu Ala  Tyr Glu Lys Ser Lys  Glu Glu Ala Ala Ala
                1915                1920                1925

gcg gcg acc gcg gcc  gtg gct act gct gcg  acc acc gat gca gat        14860
Ala Ala Thr Ala Ala  Val Ala Thr Ala Ala  Thr Thr Asp Ala Asp
                1930                1935                1940

gca gct act act acc  agg ggc gat aca ttc  gcc acc cag gcg gag        14905
Ala Ala Thr Thr Thr  Arg Gly Asp Thr Phe  Ala Thr Gln Ala Glu
                1945                1950                1955

gaa gca gcc gcc cta  gcg gcg acc gat gat  agt gaa agt aag ata        14950
Glu Ala Ala Ala Leu  Ala Ala Thr Asp Asp  Ser Glu Ser Lys Ile
                1960                1965                1970

gtc atc aag ccg gtg  gag aag gac agc aag  gac agg agc tac aac        14995
Val Ile Lys Pro Val  Glu Lys Asp Ser Lys  Asp Arg Ser Tyr Asn
                1975                1980                1985

gtt cta tcg gat gga  aag aac acc gcc tac  cgc agc tgg tac ctg        15040
Val Leu Ser Asp Gly  Lys Asn Thr Ala Tyr  Arg Ser Trp Tyr Leu
                1990                1995                2000

gcc tac aac tac ggc  gac cct gag aag ggc  gtg cgc tcc tgg acg        15085
Ala Tyr Asn Tyr Gly  Asp Pro Glu Lys Gly  Val Arg Ser Trp Thr
                2005                2010                2015

ctg ctc acc acc tcg  gac gtc acc tgc ggc  gtg gag caa gtc tac        15130
Leu Leu Thr Thr Ser  Asp Val Thr Cys Gly  Val Glu Gln Val Tyr
                2020                2025                2030

tgg tcg ctg ccc gac  atg atg caa gac ccg  gtc acc ttc cgc tcc        15175
Trp Ser Leu Pro Asp  Met Met Gln Asp Pro  Val Thr Phe Arg Ser
                2035                2040                2045

acg cgt caa gtt agc  aac tac ccg gtg gtg  ggc gcc gag ctc ctg        15220
Thr Arg Gln Val Ser  Asn Tyr Pro Val Val  Gly Ala Glu Leu Leu
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                2050                2055                2060

ccc gtc tac tcc aag  agc ttc ttc aac gag  cag gcc gtc tac tcg       15265
Pro Val Tyr Ser Lys  Ser Phe Phe Asn Glu  Gln Ala Val Tyr Ser
                2065                2070                2075

cag cag ctg cgc gcc  ttc acc tcg ctc acg  cac gtc ttc aac cgc       15310
Gln Gln Leu Arg Ala  Phe Thr Ser Leu Thr  His Val Phe Asn Arg
                2080                2085                2090

ttc ccc gag aac cag  atc ctc gtc cgc ccg  ccc gcg ccc acc att       15355
Phe Pro Glu Asn Gln  Ile Leu Val Arg Pro  Pro Ala Pro Thr Ile
                2095                2100                2105

acc acc gtc agt gaa  aac gtt cct gct ctc  aca gat cac ggg acc       15400
Thr Thr Val Ser Glu  Asn Val Pro Ala Leu  Thr Asp His Gly Thr
                2110                2115                2120

ctg ccg ctg cgc agc  agt atc cgg gga gtc  cag cgc gtg acc gtc       15445
Leu Pro Leu Arg Ser  Ser Ile Arg Gly Val  Gln Arg Val Thr Val
                2125                2130                2135

act gac gcc aga cgc  cgc acc tgc ccc tac  gtc tac aag gcc ctg       15490
Thr Asp Ala Arg Arg  Arg Thr Cys Pro Tyr  Val Tyr Lys Ala Leu
                2140                2145                2150

ggc gta gtc gcg ccg  cgc gtc ctc tcg agc  cgc acc ttc taaaaa atg    15538
Gly Val Val Ala Pro  Arg Val Leu Ser Ser  Arg Thr Phe        Met
                2155                2160

tcc  att ctc atc tcg ccc  agt aat aac acc ggt  tgg ggc ctg cgc      15583
Ser  Ile Leu Ile Ser Pro  Ser Asn Asn Thr Gly  Trp Gly Leu Arg
2165                2170                2175

gcg  ccc agc aag atg tac  gga ggc gct cgc caa  cgc tcc acg caa      15628
Ala  Pro Ser Lys Met Tyr  Gly Gly Ala Arg Gln  Arg Ser Thr Gln
2180                2185                2190

cac  ccc gtg cgc gtg cgc  ggg cac ttc cgc gct  ccc tgg ggc gcc      15673
His  Pro Val Arg Val Arg  Gly His Phe Arg Ala  Pro Trp Gly Ala
2195                2200                2205

ctc  aag ggc cgc gtg cgc  tcg cgc acc acc gtc  gac gac gtg atc      15718
Leu  Lys Gly Arg Val Arg  Ser Arg Thr Thr Val  Asp Asp Val Ile
2210                2215                2220

gac  cag gtg gtg gcc gac  gcg cgc aac tac acg  ccc gcc gcc gcg      15763
Asp  Gln Val Val Ala Asp  Ala Arg Asn Tyr Thr  Pro Ala Ala Ala
2225                2230                2235

ccc  gcc tcc acc gtg gac  gcc gtc atc gac agc  gtg gtg gcc gac      15808
Pro  Ala Ser Thr Val Asp  Ala Val Ile Asp Ser  Val Val Ala Asp
2240                2245                2250

gcg  cgc cgg tac gcc cgc  gcc aag agc cgg cgg  cgg cgc atc gcc      15853
Ala  Arg Arg Tyr Ala Arg  Ala Lys Ser Arg Arg  Arg Arg Ile Ala
2255                2260                2265

cgg  cgg cac cgg agc acc  ccc gcc atg cgc gcg  gcg cga gcc ttg      15898
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Arg  Arg His Arg Ser Thr  Pro Ala Met Arg Ala  Ala Arg Ala Leu
2270                2275                2280

ctg  cgc agg gcc agg cgc  acg gga cgc agg gcc  atg ctc agg gcg       15943
Leu  Arg Arg Ala Arg Arg  Thr Gly Arg Arg Ala  Met Leu Arg Ala
2285                2290                2295

gcc  aga cgc gcg gcc tcc  ggc agc agc agc gcc  ggc agg acc cgc       15988
Ala  Arg Arg Ala Ala Ser  Gly Ser Ser Ser Ala  Gly Arg Thr Arg
2300                2305                2310

aga  cgc gcg gcc acg gcg  gcg gcg gcg gcc atc  gcc agc atg tcc       16033
Arg  Arg Ala Ala Thr Ala  Ala Ala Ala Ala Ile  Ala Ser Met Ser
2315                2320                2325

cgc  ccg cgg cgc ggc aac  gtg tac tgg gtg cgc  gac gcc gcc acc       16078
Arg  Pro Arg Arg Gly Asn  Val Tyr Trp Val Arg  Asp Ala Ala Thr
2330                2335                2340

ggt  gtg cgc gtg ccc gtg  cgc acc cgc ccc cct  cgc act tgaagatgct    16127
Gly  Val Arg Val Pro Val  Arg Thr Arg Pro Pro  Arg Thr
2345                2350                2355

gacttcgcga tgttgatgtg tcccagcggc gaggagg atg tcc aag  cgc aaa tac    16182
                                          Met Ser Lys  Arg Lys Tyr
                                                 2360

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
    2365                2370                2375

gcg gcg  gcg gtg aag gag gaa  aga aag ccc cgc aag  ctg aag cgg       16272
Ala Ala  Ala Val Lys Glu Glu  Arg Lys Pro Arg Lys  Leu Lys Arg
    2380                2385                2390

gtc aaa  aag gac aaa aag gag  gag gaa gat gtg aac  gga ctg gtg       16317
Val Lys  Lys Asp Lys Lys Glu  Glu Glu Asp Val Asn  Gly Leu Val
    2395                2400                2405

gag ttt  gtg cgc gag ttc gcc  ccc cgg cgg cgc gtg  cag tgg cgc       16362
Glu Phe  Val Arg Glu Phe Ala  Pro Arg Arg Arg Val  Gln Trp Arg
    2410                2415                2420

ggg cgg  aaa gtg aaa ccg gtg  ctg cgg ccc ggc acc  acg gtg gtc       16407
Gly Arg  Lys Val Lys Pro Val  Leu Arg Pro Gly Thr  Thr Val Val
    2425                2430                2435

ttc acg  ccc ggc gag cgt tcc  ggc tcc gcc tcc aag  cgc tcc tac       16452
Phe Thr  Pro Gly Glu Arg Ser  Gly Ser Ala Ser Lys  Arg Ser Tyr
    2440                2445                2450

gac gag  gtg tac ggg gac gag  gac atc ctc gag cag  gcg gtc gag       16497
Asp Glu  Val Tyr Gly Asp Glu  Asp Ile Leu Glu Gln  Ala Val Glu
    2455                2460                2465

cgt ctg  ggc gag ttt gcg tac  ggc aag cgc agc cgc  ccc gcg ccc       16542
Arg Leu  Gly Glu Phe Ala Tyr  Gly Lys Arg Ser Arg  Pro Ala Pro
    2470                2475                2480
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ttg aaa  gag gag gcg gtg tcc  atc ccg ctg gac cac  ggc aac ccc       16587
Leu Lys  Glu Glu Ala Val Ser  Ile Pro Leu Asp His  Gly Asn Pro
    2485                 2490                 2495

acg ccg  agc ctg aag ccg gtg  acc ctg cag cag gtg  ctg cct ggt       16632
Thr Pro  Ser Leu Lys Pro Val  Thr Leu Gln Gln Val  Leu Pro Gly
    2500                 2505                 2510

gcg gcg  ccg cgc cgg ggc ttc  aaa cgc gag ggc ggc  gag gat ctg       16677
Ala Ala  Pro Arg Arg Gly Phe  Lys Arg Glu Gly Gly  Glu Asp Leu
    2515                 2520                 2525

tac ccg  acc atg cag ctg atg  gtg ccc aag cgc cag  aag ctg gag       16722
Tyr Pro  Thr Met Gln Leu Met  Val Pro Lys Arg Gln  Lys Leu Glu
    2530                 2535                 2540

gac gtg  ctg gag cac atg aag  gtg gac ccc gag gtg  cag ccc gag       16767
Asp Val  Leu Glu His Met Lys  Val Asp Pro Glu Val  Gln Pro Glu
    2545                 2550                 2555

gtc aag  gtg cgg ccc atc aag  cag gtg gct ccg ggc  ctg ggc gtg       16812
Val Lys  Val Arg Pro Ile Lys  Gln Val Ala Pro Gly  Leu Gly Val
    2560                 2565                 2570

cag acc  gtg gac atc aag atc  ccc acg gag ccc atg  gaa acg cag       16857
Gln Thr  Val Asp Ile Lys Ile  Pro Thr Glu Pro Met  Glu Thr Gln
    2575                 2580                 2585

acc gag  ccc gtg aag ccc agc  acc agc acc atg gag  gtg cag acg       16902
Thr Glu  Pro Val Lys Pro Ser  Thr Ser Thr Met Glu  Val Gln Thr
    2590                 2595                 2600

gat ccc  tgg atg ccg gcg ccg  gct tcc acc acc acc  acc cgc cga       16947
Asp Pro  Trp Met Pro Ala Pro  Ala Ser Thr Thr Thr  Thr Arg Arg
    2605                 2610                 2615

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
    2620                 2625                 2630

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
    2635                 2640                 2645

ttc tac  cgc ggc tac acc agc  agc cgc cgc cgc aag  acc acc acc       17082
Phe Tyr  Arg Gly Tyr Thr Ser  Ser Arg Arg Arg Lys  Thr Thr Thr
    2650                 2655                 2660

cgc cgc  cgt cgt cgc agc cgc  cgc agc agc acc gcg  act tcc gcc       17127
Arg Arg  Arg Arg Arg Ser Arg  Arg Ser Ser Thr Ala  Thr Ser Ala
    2665                 2670                 2675

gcc gcc  ctg gtg cgg aga gtg  tac cgc agc ggg cgc  gag cct ctg       17172
Ala Ala  Leu Val Arg Arg Val  Tyr Arg Ser Gly Arg  Glu Pro Leu
    2680                 2685                 2690

acc ctg  ccg cgc gcg cgc tac  cac ccg agc atc gcc  att taactctgcc    17221
Thr Leu  Pro Arg Ala Arg Tyr  His Pro Ser Ile Ala  Ile
    2695                 2700                 2705
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gtcgcctcct tgcagat atg gcc ctc aca  tgc cgc ctc cgc gtc  ccc att     17271
                   Met Ala Leu Thr  Cys Arg Leu Arg Val  Pro Ile
                                2710                2715

acg ggc tac  cga gga aga aag ccg  cgc cgt aga agg ctg  acg ggg       17316
Thr Gly Tyr  Arg Gly Arg Lys Pro  Arg Arg Arg Arg Leu  Thr Gly
        2720                2725                2730

aac ggg ctg  cgt cgc cat cac cac  cgg cgg cgg cgc gcc  atc agc       17361
Asn Gly Leu  Arg Arg His His His  Arg Arg Arg Arg Ala  Ile Ser
        2735                2740                2745

aag cgg ttg  ggg gga ggc ttc ctg  ccc gcg ctg atc ccc  atc atc       17406
Lys Arg Leu  Gly Gly Gly Phe Leu  Pro Ala Leu Ile Pro  Ile Ile
        2750                2755                2760

gcc gcg gcg  atc ggg gcg atc ccc  ggc ata gct tcc gtg  gcg gtg       17451
Ala Ala Ala  Ile Gly Ala Ile Pro  Gly Ile Ala Ser Val  Ala Val
        2765                2770                2775

cag gcc tct  cag cgc cac tgagacacag cttggaaaat ttgtaataaa           17499
Gln Ala Ser  Gln Arg His
        2780

aaaatggact gacgctcctg gtcctgtgat gtgtgttttt ag atg gaa  gac atc     17553
                                              Met Glu  Asp Ile
                                                  2785

aat ttt tcg  tcc ctg gca ccg cga  cac ggc acg cgg ccg  ttt atg       17598
Asn Phe Ser  Ser Leu Ala Pro Arg  His Gly Thr Arg Pro  Phe Met
        2790                2795                2800

ggc acc tgg  agc gac atc ggc aac  agc caa ctg aac ggg  ggc gcc       17643
Gly Thr Trp  Ser Asp Ile Gly Asn  Ser Gln Leu Asn Gly  Gly Ala
        2805                2810                2815

ttc aat tgg  agc agt ctc tgg agc  ggg ctt aag aat ttc  ggg tcc       17688
Phe Asn Trp  Ser Ser Leu Trp Ser  Gly Leu Lys Asn Phe  Gly Ser
        2820                2825                2830

acg ctc aaa  acc tat ggc aac aag  gcg tgg aac agc agc  aca ggg       17733
Thr Leu Lys  Thr Tyr Gly Asn Lys  Ala Trp Asn Ser Ser  Thr Gly
        2835                2840                2845

cag gcg ctg  agg gaa aag ctg aaa  gag cag aac ttc cag  cag aag       17778
Gln Ala Leu  Arg Glu Lys Leu Lys  Glu Gln Asn Phe Gln  Gln Lys
        2850                2855                2860

gtg gtc gat  ggc ctg gcc tcg ggc  atc aac ggg gtg gtg  gac ctg       17823
Val Val Asp  Gly Leu Ala Ser Gly  Ile Asn Gly Val Val  Asp Leu
        2865                2870                2875

gcc aac cag  gcc gtg cag aaa cag  atc aac agc cgc ctg  gac gcg       17868
Ala Asn Gln  Ala Val Gln Lys Gln  Ile Asn Ser Arg Leu  Asp Ala
        2880                2885                2890

gtc ccg ccc  gcg ggg tcc gtg gag  atg ccc cag gtg gag  gag gag       17913
Val Pro Pro  Ala Gly Ser Val Glu  Met Pro Gln Val Glu  Glu Glu
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        2895                2900                2905

ctg cct ccc  ctg gac aag cgc ggc  gac aag cga ccg cgt  ccc gac       17958
Leu Pro Pro  Leu Asp Lys Arg Gly  Asp Lys Arg Pro Arg  Pro Asp
        2910                2915                2920

gcg gag gag  acg ctg ctg acg cac  acg gac gag ccg ccc  ccg tac       18003
Ala Glu Glu  Thr Leu Leu Thr His  Thr Asp Glu Pro Pro  Pro Tyr
        2925                2930                2935

gag gag gcg  gtg aaa ctg ggt ctg  ccc acc acg cgg ccc  gtg gcg       18048
Glu Glu Ala  Val Lys Leu Gly Leu  Pro Thr Thr Arg Pro  Val Ala
        2940                2945                2950

cct ctg gcc  acc ggg gtg ctg aaa  ccc agc agc agc agc  cag ccc       18093
Pro Leu Ala  Thr Gly Val Leu Lys  Pro Ser Ser Ser Ser  Gln Pro
        2955                2960                2965

gcg acc ctg  gac ttg cct ccg cct  cgc ccc tcc aca gtg  gct aag       18138
Ala Thr Leu  Asp Leu Pro Pro Pro  Arg Pro Ser Thr Val  Ala Lys
        2970                2975                2980

ccc ctg ccg  ccg gtg gcc gtc gcg  tcg cgc gcc ccc cga  ggc cgc       18183
Pro Leu Pro  Pro Val Ala Val Ala  Ser Arg Ala Pro Arg  Gly Arg
        2985                2990                2995

ccc cag gcg  aac tgg cag agc act  ctg aac agc atc gtg  ggt ctg       18228
Pro Gln Ala  Asn Trp Gln Ser Thr  Leu Asn Ser Ile Val  Gly Leu
        3000                3005                3010

gga gtg cag  agt gtg aag cgc cgc  cgc tgc tat taaaagacac             18271
Gly Val Gln  Ser Val Lys Arg Arg  Arg Cys Tyr
        3015                3020

tgtagcgctt aacttgcttg tctgtgtgta tatgtatgtc cgccgaccag aaggaggagg    18331

aagaggcgcg tcgccgagtt gcaag atg gcc  acc cca tcg atg ctg  ccc cag    18383
                            Met Ala  Thr Pro Ser Met Leu  Pro Gln
                                3025                3030

tgg gcg tac  atg cac atc gcc gga  cag gac gct tcg gag  tac ctg       18428
Trp Ala Tyr  Met His Ile Ala Gly  Gln Asp Ala Ser Glu  Tyr Leu
        3035                3040                3045

agt ccg ggt  ctg gtg cag ttc gcc  cgc gcc aca gac acc  tac ttc       18473
Ser Pro Gly  Leu Val Gln Phe Ala  Arg Ala Thr Asp Thr  Tyr Phe
        3050                3055                3060

agt ctg ggg  aac aag ttt agg aac  ccc acg gtg gcg ccc  acg cac       18518
Ser Leu Gly  Asn Lys Phe Arg Asn  Pro Thr Val Ala Pro  Thr His
        3065                3070                3075

gat gtg acc  acc gac cgc agc cag  cgg ctg acg ctg cgc  ttc gtg       18563
Asp Val Thr  Thr Asp Arg Ser Gln  Arg Leu Thr Leu Arg  Phe Val
        3080                3085                3090

ccc gtg gac  cgc gag gac aac acc  tac tcg tac aaa gtg  cgc tac       18608
Pro Val Asp  Arg Glu Asp Asn Thr  Tyr Ser Tyr Lys Val  Arg Tyr
        3095                3100                3105
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acg ctg gcc  gtg ggc gac aac cgc  gtg ctg gac atg gcc  agc acc       18653
Thr Leu Ala  Val Gly Asp Asn Arg  Val Leu Asp Met Ala  Ser Thr
        3110                 3115                 3120

tac ttt gac  atc cgc ggc gtg ctg  gat cgg ggc ccc agc  ttc aaa       18698
Tyr Phe Asp  Ile Arg Gly Val Leu  Asp Arg Gly Pro Ser  Phe Lys
        3125                 3130                 3135

ccc tac tcc  ggc acc gcc tac aac  agc ctg gct ccc aag  gga gcg       18743
Pro Tyr Ser  Gly Thr Ala Tyr Asn  Ser Leu Ala Pro Lys  Gly Ala
        3140                 3145                 3150

ccc aac act  tgc cag tgg aca tat  act gat aac caa act  gag aaa       18788
Pro Asn Thr  Cys Gln Trp Thr Tyr  Thr Asp Asn Gln Thr  Glu Lys
        3155                 3160                 3165

aca gcc aca  tat gga aat gca ccc  gta gag ggc att aac  att aca       18833
Thr Ala Thr  Tyr Gly Asn Ala Pro  Val Glu Gly Ile Asn  Ile Thr
        3170                 3175                 3180

aaa gat ggc  att caa ctt gga act  gac agc gat ggt cag  gca atc       18878
Lys Asp Gly  Ile Gln Leu Gly Thr  Asp Ser Asp Gly Gln  Ala Ile
        3185                 3190                 3195

tat gca gac  gaa act tat cag ccc  gaa cct cag gtg gga  gat cct       18923
Tyr Ala Asp  Glu Thr Tyr Gln Pro  Glu Pro Gln Val Gly  Asp Pro
        3200                 3205                 3210

gaa tgg cat  gat acc aca ggt aca  gaa gaa aaa tat gga  ggc aga       18968
Glu Trp His  Asp Thr Thr Gly Thr  Glu Glu Lys Tyr Gly  Gly Arg
        3215                 3220                 3225

gcg ctt aaa  cct gcc acc gac atg  aaa cct tgc tat ggc  tct ttt       19013
Ala Leu Lys  Pro Ala Thr Asp Met  Lys Pro Cys Tyr Gly  Ser Phe
        3230                 3235                 3240

gcc aag cca  act aat gtt aag gga  ggt cag gcc aaa agc  aga aca       19058
Ala Lys Pro  Thr Asn Val Lys Gly  Gly Gln Ala Lys Ser  Arg Thr
        3245                 3250                 3255

aaa act gat  gga aca act gag cct  gat att gac atg gcc  ttt ttt       19103
Lys Thr Asp  Gly Thr Thr Glu Pro  Asp Ile Asp Met Ala  Phe Phe
        3260                 3265                 3270

gat ggt aga  aat gca aca aca gct  ggt ttg act cca gaa  att gtt       19148
Asp Gly Arg  Asn Ala Thr Thr Ala  Gly Leu Thr Pro Glu  Ile Val
        3275                 3280                 3285

ttg tat act  gaa aat gtg gat ctg  gaa act cca gat acc  cat att       19193
Leu Tyr Thr  Glu Asn Val Asp Leu  Glu Thr Pro Asp Thr  His Ile
        3290                 3295                 3300

gta tac aag  gca ggc aca gat gac  agc agc tct tca att  aat ttg       19238
Val Tyr Lys  Ala Gly Thr Asp Asp  Ser Ser Ser Ser Ile  Asn Leu
        3305                 3310                 3315

ggt cag cag  tcc atg ccc aac aga  ccc aac tac att ggg  ttt aga       19283
Gly Gln Gln  Ser Met Pro Asn Arg  Pro Asn Tyr Ile Gly  Phe Arg
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        3320                3325                3330

gac aac ttc  att ggg ctc atg tac  tac aac agc act ggc  aat atg       19328
Asp Asn Phe  Ile Gly Leu Met Tyr  Tyr Asn Ser Thr Gly  Asn Met
        3335                3340                3345

ggc gta ctg  gct ggt cag gcc tcc  cag ctg aat gct gtg  gtg gac       19373
Gly Val Leu  Ala Gly Gln Ala Ser  Gln Leu Asn Ala Val  Val Asp
        3350                3355                3360

ttg cag gac  aga aac acc gaa ctg  tcc tac cag ctc ttg  ctt gac       19418
Leu Gln Asp  Arg Asn Thr Glu Leu  Ser Tyr Gln Leu Leu  Leu Asp
        3365                3370                3375

tct ctg ggt  gac aga acc agg tat  ttc agt atg tgg aat  cag gcg       19463
Ser Leu Gly  Asp Arg Thr Arg Tyr  Phe Ser Met Trp Asn  Gln Ala
        3380                3385                3390

gtg gac agt  tat gac ccc gat gtg  cgc att att gaa aat  cac ggt       19508
Val Asp Ser  Tyr Asp Pro Asp Val  Arg Ile Ile Glu Asn  His Gly
        3395                3400                3405

gtg gag gat  gaa cta ccc aac tat  tgc ttc ccc ctg aat  gct gtg       19553
Val Glu Asp  Glu Leu Pro Asn Tyr  Cys Phe Pro Leu Asn  Ala Val
        3410                3415                3420

ggt aga aca  gat agt tat cag gga  att aag ccc aat gga  ggc gat       19598
Gly Arg Thr  Asp Ser Tyr Gln Gly  Ile Lys Pro Asn Gly  Gly Asp
        3425                3430                3435

cca gct aca  tgg gcc aaa gat gaa  agc gtc aat gat tct  aat gaa       19643
Pro Ala Thr  Trp Ala Lys Asp Glu  Ser Val Asn Asp Ser  Asn Glu
        3440                3445                3450

ttg ggc aag  ggc aat cct ttc gcc  atg gag atc aac atc  cag gcc       19688
Leu Gly Lys  Gly Asn Pro Phe Ala  Met Glu Ile Asn Ile  Gln Ala
        3455                3460                3465

aac ctg tgg  cgg aac ttc ctc tac  gcg aac gtg gcc ctg  tac ctg       19733
Asn Leu Trp  Arg Asn Phe Leu Tyr  Ala Asn Val Ala Leu  Tyr Leu
        3470                3475                3480

ccc gac tcc  tac aag tac acg ccg  gcc aac atc acg ctg  ccc acc       19778
Pro Asp Ser  Tyr Lys Tyr Thr Pro  Ala Asn Ile Thr Leu  Pro Thr
        3485                3490                3495

aac acc aac  acc tac gat tac atg  aac ggc cgc gtg gtg  gcg ccc       19823
Asn Thr Asn  Thr Tyr Asp Tyr Met  Asn Gly Arg Val Val  Ala Pro
        3500                3505                3510

tcg ctg gtg  gac gcc tac atc aac  atc ggg gcg cgc tgg  tcg ctg       19868
Ser Leu Val  Asp Ala Tyr Ile Asn  Ile Gly Ala Arg Trp  Ser Leu
        3515                3520                3525

gac ccc atg  gac aac gtc aac ccc  ttc aac cac cac cgc  aac gcg       19913
Asp Pro Met  Asp Asn Val Asn Pro  Phe Asn His His Arg  Asn Ala
        3530                3535                3540

ggc ctg cgc  tac cgc tcc atg ctc  ctg ggc aac ggg cgc  tac gtg       19958
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Gly Leu Arg  Tyr Arg Ser Met Leu  Leu Gly Asn Gly Arg  Tyr Val
        3545                 3550                 3555

ccc ttc cac  atc cag gtg ccc caa  aag ttc ttc gcc atc  aag agc       20003
Pro Phe His  Ile Gln Val Pro Gln  Lys Phe Phe Ala Ile  Lys Ser
        3560                 3565                 3570

ctc ctg ctc  ctg ccc ggg tcc tac  acc tac gag tgg aac  ttc cgc       20048
Leu Leu Leu  Leu Pro Gly Ser Tyr  Thr Tyr Glu Trp Asn  Phe Arg
        3575                 3580                 3585

aag gac gtc  aac atg atc ctg cag  agc tcc ctc ggc aac  gac ctg       20093
Lys Asp Val  Asn Met Ile Leu Gln  Ser Ser Leu Gly Asn  Asp Leu
        3590                 3595                 3600

cgc acg gac  ggg gcc tcc atc gcc  ttc acc agc atc aac  ctc tac       20138
Arg Thr Asp  Gly Ala Ser Ile Ala  Phe Thr Ser Ile Asn  Leu Tyr
        3605                 3610                 3615

gcc acc ttc  ttc ccc atg gcg cac  aac acc gcc tcc acg  ctc gag       20183
Ala Thr Phe  Phe Pro Met Ala His  Asn Thr Ala Ser Thr  Leu Glu
        3620                 3625                 3630

gcc atg ctg  cgc aac gac acc aac  gac cag tcc ttc aac  gac tac       20228
Ala Met Leu  Arg Asn Asp Thr Asn  Asp Gln Ser Phe Asn  Asp Tyr
        3635                 3640                 3645

ctc tcg gcg  gcc aac atg ctc tac  ccc atc ccg gcc aac  gcc acc       20273
Leu Ser Ala  Ala Asn Met Leu Tyr  Pro Ile Pro Ala Asn  Ala Thr
        3650                 3655                 3660

aac gtg ccc  atc tcc atc ccc tcg  cgc aac tgg gcc gcc  ttc cgc       20318
Asn Val Pro  Ile Ser Ile Pro Ser  Arg Asn Trp Ala Ala  Phe Arg
        3665                 3670                 3675

ggc tgg tcc  ttc acg cgc ctc aag  acc cgc gag acg ccc  tcg ctc       20363
Gly Trp Ser  Phe Thr Arg Leu Lys  Thr Arg Glu Thr Pro  Ser Leu
        3680                 3685                 3690

ggc tcc ggg  ttc gac ccc tac ttc  gtc tac tcg ggc tcc  atc ccc       20408
Gly Ser Gly  Phe Asp Pro Tyr Phe  Val Tyr Ser Gly Ser  Ile Pro
        3695                 3700                 3705

tac ctc gac  ggc acc ttc tac ctc  aac cac acc ttc aag  aag gtc       20453
Tyr Leu Asp  Gly Thr Phe Tyr Leu  Asn His Thr Phe Lys  Lys Val
        3710                 3715                 3720

tcc atc acc  ttc gac tcc tcc gtc  agc tgg ccc ggc aac  gac cgc       20498
Ser Ile Thr  Phe Asp Ser Ser Val  Ser Trp Pro Gly Asn  Asp Arg
        3725                 3730                 3735

ctc ctg acg  ccc aac gag ttc gaa  atc aag cgc acc gtc  gac gga       20543
Leu Leu Thr  Pro Asn Glu Phe Glu  Ile Lys Arg Thr Val  Asp Gly
        3740                 3745                 3750

gag ggg tac  aac gtg gcc cag tgc  aac atg acc aag gac  tgg ttc       20588
Glu Gly Tyr  Asn Val Ala Gln Cys  Asn Met Thr Lys Asp  Trp Phe
        3755                 3760                 3765
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ctg gtc cag  atg ctg gcc cac tac  aac atc ggc tac cag  ggc ttc       20633
Leu Val Gln  Met Leu Ala His Tyr  Asn Ile Gly Tyr Gln  Gly Phe
        3770                 3775                 3780

tac gtg ccc  gag ggc tac aag gac  cgc atg tac tcc ttc  ttc cgc       20678
Tyr Val Pro  Glu Gly Tyr Lys Asp  Arg Met Tyr Ser Phe  Phe Arg
        3785                 3790                 3795

aac ttc cag  ccc atg agc cgc cag  gtc gtg gac gag gtc  aac tac       20723
Asn Phe Gln  Pro Met Ser Arg Gln  Val Val Asp Glu Val  Asn Tyr
        3800                 3805                 3810

aag gac tac  cag gcc gtc acc ctg  acc tac cag cat aac  aac tcg       20768
Lys Asp Tyr  Gln Ala Val Thr Leu  Thr Tyr Gln His Asn  Asn Ser
        3815                 3820                 3825

ggc ttc gtc  ggc tac ctc gcg ccc  acc atg cgc cag ggt  cag ccc       20813
Gly Phe Val  Gly Tyr Leu Ala Pro  Thr Met Arg Gln Gly  Gln Pro
        3830                 3835                 3840

tac ccc gcc  aac tac ccc tac ccg  ctc atc ggc aag agc  gcc gtc       20858
Tyr Pro Ala  Asn Tyr Pro Tyr Pro  Leu Ile Gly Lys Ser  Ala Val
        3845                 3850                 3855

gcc agc gtc  acc cag aaa aag ttc  ctc tgc gac cgg gtc  atg tgg       20903
Ala Ser Val  Thr Gln Lys Lys Phe  Leu Cys Asp Arg Val  Met Trp
        3860                 3865                 3870

cgc atc ccc  ttc tcc agc aac ttc  atg tcc atg ggc gcg  ctc acc       20948
Arg Ile Pro  Phe Ser Ser Asn Phe  Met Ser Met Gly Ala  Leu Thr
        3875                 3880                 3885

gac ctc ggc  cag aac atg ctc tac  gcc aac tcc gcc cac  gcg cta       20993
Asp Leu Gly  Gln Asn Met Leu Tyr  Ala Asn Ser Ala His  Ala Leu
        3890                 3895                 3900

gac atg aat  ttc gaa gtc gac ccc  atg gat gag tcc acc  ctt ctc       21038
Asp Met Asn  Phe Glu Val Asp Pro  Met Asp Glu Ser Thr  Leu Leu
        3905                 3910                 3915

tat gtt gtc  ttc gaa gtc ttc gac  gtc gtc cga gtg cac  cag ccc       21083
Tyr Val Val  Phe Glu Val Phe Asp  Val Val Arg Val His  Gln Pro
        3920                 3925                 3930

cac cgc ggc  gtc atc gag gcc gtc  tac ctg cgc acg ccc  ttc tcg       21128
His Arg Gly  Val Ile Glu Ala Val  Tyr Leu Arg Thr Pro  Phe Ser
        3935                 3940                 3945

gcc ggc aac  gcc acc acc taagccgctc ttgcttcttg caag atg acg  gcc     21179
Ala Gly Asn  Ala Thr Thr                              Met Thr  Ala
        3950                                                 3955

tgt ggc tcc ggc  gag cag gag ctc agg  gcc atc ctc cgc gac  ctg       21224
Cys Gly Ser Gly  Glu Gln Glu Leu Arg  Ala Ile Leu Arg Asp  Leu
            3960                 3965                 3970

ggc tgc ggg ccc  tgc ttc ctg ggc acc  ttc gac aag cgc ttc  ccg       21269
Gly Cys Gly Pro  Cys Phe Leu Gly Thr  Phe Asp Lys Arg Phe  Pro
            3975                 3980                 3985
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gga ttc atg gcc  ccg cac aag ctg gcc  tgc gcc atc gtc aac  acg       21314
Gly Phe Met Ala  Pro His Lys Leu Ala  Cys Ala Ile Val Asn  Thr
            3990                 3995                 4000

gcc ggc cgc gag  acc ggg ggc gag cac  tgg ctg gcc ttc gcc  tgg       21359
Ala Gly Arg Glu  Thr Gly Gly Glu His  Trp Leu Ala Phe Ala  Trp
            4005                 4010                 4015

aac ccg cgc tcc  cac acc tgc tac ctc  ttc gac ccc ttc ggg  ttc       21404
Asn Pro Arg Ser  His Thr Cys Tyr Leu  Phe Asp Pro Phe Gly  Phe
            4020                 4025                 4030

tcg gac gag cgc  ctc aag cag atc tac  cag ttc gag tac gag  ggc       21449
Ser Asp Glu Arg  Leu Lys Gln Ile Tyr  Gln Phe Glu Tyr Glu  Gly
            4035                 4040                 4045

ctg ctg cgc cgc  agc gcc ctg gcc acc  gag gac cgc tgc gtc  acc       21494
Leu Leu Arg Arg  Ser Ala Leu Ala Thr  Glu Asp Arg Cys Val  Thr
            4050                 4055                 4060

ctg gaa aag tcc  acc cag acc gtg cag  ggt ccg cgc tcg gcc  gcc       21539
Leu Glu Lys Ser  Thr Gln Thr Val Gln  Gly Pro Arg Ser Ala  Ala
            4065                 4070                 4075

tgc ggg ctc ttc  tgc tgc atg ttc ctg  cac gcc ttc gtg cac  tgg       21584
Cys Gly Leu Phe  Cys Cys Met Phe Leu  His Ala Phe Val His  Trp
            4080                 4085                 4090

ccc gac cgc ccc  atg gac aag aac ccc  acc atg aac ttg ctg  acg       21629
Pro Asp Arg Pro  Met Asp Lys Asn Pro  Thr Met Asn Leu Leu  Thr
            4095                 4100                 4105

ggg gtg ccc aac  ggc atg ctc cag tcg  ccc cag gtg gaa ccc  acc       21674
Gly Val Pro Asn  Gly Met Leu Gln Ser  Pro Gln Val Glu Pro  Thr
            4110                 4115                 4120

ctg cgc cgc aac  cag gag gcg ctc tac  cgc ttc ctc aat gcc  cac       21719
Leu Arg Arg Asn  Gln Glu Ala Leu Tyr  Arg Phe Leu Asn Ala  His
            4125                 4130                 4135

tcc gcc tac ttt  cgc tcc cac cgc gcg  cgc atc gag aag gcc  acc       21764
Ser Ala Tyr Phe  Arg Ser His Arg Ala  Arg Ile Glu Lys Ala  Thr
            4140                 4145                 4150

gcc ttc gac cgc  atg aat caa gac atg  taaaccgtgt gtatgtgaat         21811
Ala Phe Asp Arg  Met Asn Gln Asp Met
            4155                 4160

gctttattca taataaacag cacatgttta tgccacctga ggctctgact ttatttagaa  21871

atcgaagggg ttctgccggc tctcggcatg gcccgcgggc agggatacgt tgcggaactg  21931

gtacttgggc agccacttga actcggggat cagcagcttc ggcacgggga ggtcggggaa  21991

cgagtcgctc cacagcttgc gcgtgagttg cagggcgccc agcaggtcgg gcgcggagat  22051

cttgaaatcg cagttgggac ccgcgttctg cgcgcgagag ttgcggtaca cggggttgca  22111
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gcactggaac accattaggg ccgggtgctt cacgctcgcc agcaccgtcg cgtcggtgat    22171

gccctccacg tccagatcct cggcgttggc catcccgaag ggggtcatct tgcaggtctg    22231

ccgccccatg ctgggcacgc agccgggctt gtggttgcaa tcgcagtgca ggggaatcag    22291

catcatctgg gcctgctcgg agctcatgcc cgggtacatg gccttcatga aagcctccag    22351

ctggcggaag gcctgctgcg ccttgccgcc ctcggtgaag aagaccccgc aggacttgct    22411

agagaactgg ttggtggcgc agcccgcgtc gtgcacgcag cagcgcgcgt cgttgttggc    22471

cagctgcacc acgctgcgcc cccagcggtt ctgggtgatc ttggcccggt cggggttctc    22531

cttcagcgcg cgctgcccgt tctcgctcgc cacatccatc tcgatcgtgt gctccttctg    22591

gatcatcacg gtcccgtgca ggcaccgcag cttgccctcg gcctcggtgc atccgtgcag    22651

ccacagcgcg cagccggtgc tctcccagtt cttgtgggcg atctgggagt gcgagtgcac    22711

gaagccctgc aggaagcggc ccatcatcgt ggtcagggtc ttgttgctgg tgaaggtcag    22771

cgggatgccg cggtgctcct cgttcacata caggtggcag atgcggcggt acacctcgcc    22831

ctgctcgggc atcagctgga aggcggactt caggtcgctc tccacgcggt accgctccat    22891

cagcagcgtc atcacttcca tgcccttctc ccaggccgaa acgatcggca ggctcagggg    22951

gttcttcacc gttgtcatct tagtcgccgc cgccgaggtc agggggtcgt tctcgtccag    23011

ggtctcaaac actcgcttgc cgtccttctc ggtgatgcgc acgggggggа aggcgaagcc    23071

cacggccgcc agctcctcct cggcctgcct ttcgtcctcg ctgtcctggc tgatgtcttg    23131

caaaggcaca tgcttggtct tgcggggttt ctttttgggc ggcagaggcg gcggcggaga    23191

cgtgctgggc gagcgcgagt tctcgctcac cacgactatt tcttctcctt ggccgtcgtc    23251

cgagaccacg cggcggtagg catgcctctt ctggggcaga ggcggaggcg acgggctctc    23311

gcggttcggc gggcggctgg cagagcccct tccgcgttcg ggggtgcgct cctggcggcg    23371

ctgctctgac tgacttcctc cgcggccggc cattatgttc tcctagggag caacaagc      23429

atg gag act cag cca  tcg tcg cca aca tcg  cca tct gcc ccc gcc         23474
Met Glu Thr Gln Pro  Ser Ser Pro Thr Ser  Pro Ser Ala Pro Ala
                4165                4170                4175

gac gag aac cag cag  cag aat gaa agc tta  acc gcc ccg ccg ccc         23519
Asp Glu Asn Gln Gln  Gln Asn Glu Ser Leu  Thr Ala Pro Pro Pro
                4180                4185                4190

agc ccc acc tcc gac  gcg gcc cca gac atg  caa gag atg gag gaa         23564
Ser Pro Thr Ser Asp  Ala Ala Pro Asp Met  Gln Glu Met Glu Glu
                4195                4200                4205

tcc atc gag att gac  ctg ggc tac gtg acg  ccc gcg gag cac gag         23609
Ser Ile Glu Ile Asp  Leu Gly Tyr Val Thr  Pro Ala Glu His Glu
                4210                4215                4220
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gag gag ctg gca gcg  cgc ttt tca gcc ccg  gaa gag aac cac caa        23654
Glu Glu Leu Ala Ala  Arg Phe Ser Ala Pro  Glu Glu Asn His Gln
                4225                4230                4235

gag cag cca gag cag  gaa gca gag agc gag  cag cag cag gct ggg        23699
Glu Gln Pro Glu Gln  Glu Ala Glu Ser Glu  Gln Gln Gln Ala Gly
                4240                4245                4250

ctc gag cat ggc gac  tac ctg agc ggg gca  gag gac gtg ctc atc        23744
Leu Glu His Gly Asp  Tyr Leu Ser Gly Ala  Glu Asp Val Leu Ile
                4255                4260                4265

aag cat ctg gcc cgc  caa tgc atc atc gtc  aag gac gcg ctg ctc        23789
Lys His Leu Ala Arg  Gln Cys Ile Ile Val  Lys Asp Ala Leu Leu
                4270                4275                4280

gac cgc gcc gag gtg  ccc ctc agc gtg gcg  gag ctc agc cgc gcc        23834
Asp Arg Ala Glu Val  Pro Leu Ser Val Ala  Glu Leu Ser Arg Ala
                4285                4290                4295

tac gag cgc aac ctc  ttc tcg ccg cgc gtg  ccc ccc aag cgc cag        23879
Tyr Glu Arg Asn Leu  Phe Ser Pro Arg Val  Pro Pro Lys Arg Gln
                4300                4305                4310

ccc aac ggc acc tgc  gag ccc aac ccg cgc  ctt aac ttc tac ccg        23924
Pro Asn Gly Thr Cys  Glu Pro Asn Pro Arg  Leu Asn Phe Tyr Pro
                4315                4320                4325

gtc ttc gcg gtg ccc  gag gcc ctg gcc acc  tac cac atc ttt ttc        23969
Val Phe Ala Val Pro  Glu Ala Leu Ala Thr  Tyr His Ile Phe Phe
                4330                4335                4340

aag aac caa aag atc  ccc gtc tcc tgc cgc  gcc aac cgc acc cgc        24014
Lys Asn Gln Lys Ile  Pro Val Ser Cys Arg  Ala Asn Arg Thr Arg
                4345                4350                4355

gcc gac gcc ctt ttc  aac ctg ggc ccc ggc  gcc cgc cta cct gat        24059
Ala Asp Ala Leu Phe  Asn Leu Gly Pro Gly  Ala Arg Leu Pro Asp
                4360                4365                4370

atc gcc tcc ttg gaa  gag gtt ccc aag atc  ttc gag ggt ctg ggc        24104
Ile Ala Ser Leu Glu  Glu Val Pro Lys Ile  Phe Glu Gly Leu Gly
                4375                4380                4385

agc gac gag act cgg  gcc gcg aac gct ctg  caa gga aat gaa gag        24149
Ser Asp Glu Thr Arg  Ala Ala Asn Ala Leu  Gln Gly Asn Glu Glu
                4390                4395                4400

cat gag cac cac agc  gcc ctg gtc gag ttg  gaa ggc gac aac gcg        24194
His Glu His His Ser  Ala Leu Val Glu Leu  Glu Gly Asp Asn Ala
                4405                4410                4415

cgc ctg gcg gtc ctc  aag cgc acg gtc gag  ctg acc cac ttc gcc        24239
Arg Leu Ala Val Leu  Lys Arg Thr Val Glu  Leu Thr His Phe Ala
                4420                4425                4430

tac ccg gcg ctc aac  ctg ccc ccc aag gtc  atg aac gcc gtc atg        24284
Tyr Pro Ala Leu Asn  Leu Pro Pro Lys Val  Met Asn Ala Val Met
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                4435                4440                4445

gac cag gtg ctc atc  aag cgc gcc tcg ccc  ctc tcg gag gag gag       24329
Asp Gln Val Leu Ile  Lys Arg Ala Ser Pro  Leu Ser Glu Glu Glu
                4450                4455                4460

atg cag gac ccc gag  agc tcg gac gag ggc  aag ccc gtg gtc agc       24374
Met Gln Asp Pro Glu  Ser Ser Asp Glu Gly  Lys Pro Val Val Ser
                4465                4470                4475

gac gag cag ctg gcg  cgc tgg ctg gga gcg  agt agc acc ccc cag       24419
Asp Glu Gln Leu Ala  Arg Trp Leu Gly Ala  Ser Ser Thr Pro Gln
                4480                4485                4490

agc ctg gaa gag cgg  cgc aag ctc atg atg  gcc gtg gtc ctg gtg       24464
Ser Leu Glu Glu Arg  Arg Lys Leu Met Met  Ala Val Val Leu Val
                4495                4500                4505

acc gtg gag ctg gag  tgt ctg cgc cgc ttc  ttt gcc gac gcg gag       24509
Thr Val Glu Leu Glu  Cys Leu Arg Arg Phe  Phe Ala Asp Ala Glu
                4510                4515                4520

acc ctg cgc aag gtc  gag gag aac ctg cac  tac ctc ttc agg cac       24554
Thr Leu Arg Lys Val  Glu Glu Asn Leu His  Tyr Leu Phe Arg His
                4525                4530                4535

ggg ttc gtg cgc cag  gcc tgc aag atc tcc  aac gtg gag ctg acc       24599
Gly Phe Val Arg Gln  Ala Cys Lys Ile Ser  Asn Val Glu Leu Thr
                4540                4545                4550

aac ctg gtc tcc tac  atg ggc atc ctg cac  gag aac cgc ctg ggg       24644
Asn Leu Val Ser Tyr  Met Gly Ile Leu His  Glu Asn Arg Leu Gly
                4555                4560                4565

caa aac gtg ctg cac  acc acc ctg cgc ggg  gag gcc cgc cgc gac       24689
Gln Asn Val Leu His  Thr Thr Leu Arg Gly  Glu Ala Arg Arg Asp
                4570                4575                4580

tac atc cgc gac tgc  gtc tac ctg tac ctc  tgc cac acc tgg cag       24734
Tyr Ile Arg Asp Cys  Val Tyr Leu Tyr Leu  Cys His Thr Trp Gln
                4585                4590                4595

acg ggc atg ggc gtg  tgg cag cag tgc ctg  gag gag cag aac ctg       24779
Thr Gly Met Gly Val  Trp Gln Gln Cys Leu  Glu Glu Gln Asn Leu
                4600                4605                4610

aaa gag ctc tgc aag  ctc ctg cag aag aac  ctg aag gcc ctg tgg       24824
Lys Glu Leu Cys Lys  Leu Leu Gln Lys Asn  Leu Lys Ala Leu Trp
                4615                4620                4625

acc ggg ttc gac gag  cgc acc acc gcc gcg  gac ctg gcc gac ctc       24869
Thr Gly Phe Asp Glu  Arg Thr Thr Ala Ala  Asp Leu Ala Asp Leu
                4630                4635                4640

atc ttc ccc gag cgc  ctg cgg cta acg ctg  cgc aac ggg ctg ccc       24914
Ile Phe Pro Glu Arg  Leu Arg Leu Thr Leu  Arg Asn Gly Leu Pro
                4645                4650                4655

gac ttt atg agc caa  agc atg ttg caa aac  ttt cgc tct ttc atc       24959
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Asp Phe Met Ser Gln  Ser Met Leu Gln Asn  Phe Arg Ser Phe Ile
                4660                4665                4670

ctc gaa cgc tcc ggg  atc ctg ccc gcc acc  tgc tcc gca ctg ccc      25004
Leu Glu Arg Ser Gly  Ile Leu Pro Ala Thr  Cys Ser Ala Leu Pro
                4675                4680                4685

tcg gac ttc gtg ccg  ctg acc ttc cgc gag  tgc ccc ccg ccg ctc      25049
Ser Asp Phe Val Pro  Leu Thr Phe Arg Glu  Cys Pro Pro Pro Leu
                4690                4695                4700

tgg agc cac tgc tac  ttg ctg cgc ctg gct  aac tac ctg gcc tac      25094
Trp Ser His Cys Tyr  Leu Leu Arg Leu Ala  Asn Tyr Leu Ala Tyr
                4705                4710                4715

cac tcg gac gtg atc  gag gac gtc agc ggc  gag ggt ctg ctc gag      25139
His Ser Asp Val Ile  Glu Asp Val Ser Gly  Glu Gly Leu Leu Glu
                4720                4725                4730

tgc cac tgc cgc tgc  aac ctc tgc acg ccg  cac cgc tcc ctg gcc      25184
Cys His Cys Arg Cys  Asn Leu Cys Thr Pro  His Arg Ser Leu Ala
                4735                4740                4745

tgc aac ccc cag ctg  ctg agc gag acc cag  atc atc ggc acc ttc      25229
Cys Asn Pro Gln Leu  Leu Ser Glu Thr Gln  Ile Ile Gly Thr Phe
                4750                4755                4760

gag ttg caa ggc ccc  ggc gac agc gag ggc  aag ggg ggt ctg aaa      25274
Glu Leu Gln Gly Pro  Gly Asp Ser Glu Gly  Lys Gly Gly Leu Lys
                4765                4770                4775

ctc acc cct ggg ctg  tgg acc tcg gcc tac  ttg cgc aag ttc gtg      25319
Leu Thr Pro Gly Leu  Trp Thr Ser Ala Tyr  Leu Arg Lys Phe Val
                4780                4785                4790

ccc gag gac tac cat  ccc ttc gag atc agg  ttc tac gag gac caa      25364
Pro Glu Asp Tyr His  Pro Phe Glu Ile Arg  Phe Tyr Glu Asp Gln
                4795                4800                4805

tcc cag ccg ccc aag  gcc gag ctg tcg gcc  tgc gtc atc acc cag      25409
Ser Gln Pro Pro Lys  Ala Glu Leu Ser Ala  Cys Val Ile Thr Gln
                4810                4815                4820

ggg gcc atc ctg gcc  caa ttg caa gcc atc  cag aaa tcc cgc caa      25454
Gly Ala Ile Leu Ala  Gln Leu Gln Ala Ile  Gln Lys Ser Arg Gln
                4825                4830                4835

gaa ttt ctg ctg aaa  aag ggc cac ggg gtc  tac ctg gac ccc cag      25499
Glu Phe Leu Leu Lys  Lys Gly His Gly Val  Tyr Leu Asp Pro Gln
                4840                4845                4850

acc gga gag gag ctc  aac ccc agc ttc ccc  cag gat gcc ccg agg      25544
Thr Gly Glu Glu Leu  Asn Pro Ser Phe Pro  Gln Asp Ala Pro Arg
                4855                4860                4865

aag cag caa gaa gct  gaa agt gga gct gcc  gcc gga gga ttt gga      25589
Lys Gln Gln Glu Ala  Glu Ser Gly Ala Ala  Ala Gly Gly Phe Gly
                4870                4875                4880
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gga aga ctg gga gag  cag tca ggc aga gga  gga gat gga aga ctg       25634
Gly Arg Leu Gly Glu  Gln Ser Gly Arg Gly  Gly Asp Gly Arg Leu
                4885                4890                4895

gga cag cac tca ggc  aga gga gga cag cct  gca aga cag tct gga       25679
Gly Gln His Ser Gly  Arg Gly Gly Gln Pro  Ala Arg Gln Ser Gly
                4900                4905                4910

gga gga aga cga ggt  gga gga gga ggc aga  gga aga agc agc cgc       25724
Gly Gly Arg Arg Gly  Gly Gly Gly Gly Arg  Gly Arg Ser Ser Arg
                4915                4920                4925

cgc cag acc gtc gtc  ctc ggc gga gga gaa  agc aag cag cac gga       25769
Arg Gln Thr Val Val  Leu Gly Gly Gly Glu  Ser Lys Gln His Gly
                4930                4935                4940

tac cat ctc cgc tcc  ggg tcg ggg tcg cgg  cgg tcg ggc cca cag       25814
Tyr His Leu Arg Ser  Gly Ser Gly Ser Arg  Arg Ser Gly Pro Gln
                4945                4950                4955

tagatgggac gagaccgggc gcttcccgaa ccccaccacc cagaccggta agaaggagcg   25874

gcagggatac aagtcctggc gggggcacaa aaacgccatc gtctcctgct tgcaagcctg   25934

cgggggcaac atctccttca cccggcgcta cctgctcttc caccgcgggg tgaacttccc   25994

ccgcaacatc ttgcattact accgtcacct ccacagcccc tactactgtt tccaagaaga   26054

ggcagaaacc cagcagcagc agaaaaccag cggcagcagc agcagcagct agaaaatcca   26114

cagcggcggc ggcggcaggt ggactgagga tcgcggcgaa cgagccggcg cagacccggg   26174

agctgaggaa ccggatcttt cccaccctct atgccatctt ccagcagagt cgggggcagg   26234

agcaggaact gaaagtcaag aaccgttctc tgcgctcgct cacccgcagt tgtctgtatc   26294

acaagagcga agaccaactt cagcgcactc tcgaggacgc cgaggctctc ttcaacaagt   26354

actgcgcgct cactcttaaa gagtagcccg cgcccgccca cacacggaaa aaggcgggaa   26414

ttacgtcacc acctgcgccc ttcgcccgac catcatc atg agc aaa gag att  ccc   26469
                                        Met Ser Lys Glu Ile  Pro
                                                        4960

acg cct tac atg  tgg agc tac cag ccc  cag atg ggc ctg gcc  gcc       26514
Thr Pro Tyr Met  Trp Ser Tyr Gln Pro  Gln Met Gly Leu Ala  Ala
            4965                4970                4975

ggc gcc gcc cag  gac tac tcc acc cgc  atg aac tgg ctc agt  gcc       26559
Gly Ala Ala Gln  Asp Tyr Ser Thr Arg  Met Asn Trp Leu Ser  Ala
            4980                4985                4990

ggg ccc gcg atg  atc tca cgg gtg aat  gac atc cgc gcc cac  cga       26604
Gly Pro Ala Met  Ile Ser Arg Val Asn  Asp Ile Arg Ala His  Arg
            4995                5000                5005

aac cag ata ctc  cta gaa cag tca gcg  atc acc gcc acg ccc  cgc       26649
Asn Gln Ile Leu  Leu Glu Gln Ser Ala  Ile Thr Ala Thr Pro  Arg
            5010                5015                5020
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cat cac ctt aat  ccg cgt aat tgg ccc  gcc gcc ctg gtg tac  cag       26694
His His Leu Asn  Pro Arg Asn Trp Pro  Ala Ala Leu Val Tyr  Gln
            5025                 5030                 5035

gaa att ccc cag  ccc acg acc gta cta  ctt ccg cga gac gcc  cag       26739
Glu Ile Pro Gln  Pro Thr Thr Val Leu  Leu Pro Arg Asp Ala  Gln
            5040                 5045                 5050

gcc gaa gtc cag  ctg act aac tca ggt  gtc cag ctg gcc ggc  ggc       26784
Ala Glu Val Gln  Leu Thr Asn Ser Gly  Val Gln Leu Ala Gly  Gly
            5055                 5060                 5065

gcc gcc ctg tgt  cgt cac cgc ccc gct  cag ggt ata aag cgg  ctg       26829
Ala Ala Leu Cys  Arg His Arg Pro Ala  Gln Gly Ile Lys Arg  Leu
            5070                 5075                 5080

gtg atc cga ggc  aga ggc aca cag ctc  aac gac gag gtg gtg  agc       26874
Val Ile Arg Gly  Arg Gly Thr Gln Leu  Asn Asp Glu Val Val  Ser
            5085                 5090                 5095

tct tcg ctg ggt  ctg cga cct gac gga  gtc ttc caa ctc gcc  gga       26919
Ser Ser Leu Gly  Leu Arg Pro Asp Gly  Val Phe Gln Leu Ala  Gly
            5100                 5105                 5110

tcg ggg aga tct  tcc ttc acg cct cgt  cag gcc gtc ctg act  ttg       26964
Ser Gly Arg Ser  Ser Phe Thr Pro Arg  Gln Ala Val Leu Thr  Leu
            5115                 5120                 5125

gag agt tcg tcc  tcg cag ccc cgc tcg  ggc ggc atc ggc act  ctc       27009
Glu Ser Ser Ser  Ser Gln Pro Arg Ser  Gly Gly Ile Gly Thr  Leu
            5130                 5135                 5140

cag ttc gtg gag  gag ttc act ccc tcg  gtc tac ttc aac ccc  ttc       27054
Gln Phe Val Glu  Glu Phe Thr Pro Ser  Val Tyr Phe Asn Pro  Phe
            5145                 5150                 5155

tcc ggc tcc ccc  ggc cac tac ccg gac  gag ttc atc ccg aac  ttc       27099
Ser Gly Ser Pro  Gly His Tyr Pro Asp  Glu Phe Ile Pro Asn  Phe
            5160                 5165                 5170

gac gcc atc agc  gag tcg gtg gac ggc  tac gat tga atg tcc cat       27144
Asp Ala Ile Ser  Glu Ser Val Asp Gly  Tyr Asp     Met Ser His
            5175                 5180                      5185

ggt ggc gcg gct gac  cta gct cgg ctt cga  cac ctg gac cac tgc       27189
Gly Gly Ala Ala Asp  Leu Ala Arg Leu Arg  His Leu Asp His Cys
                5190                 5195                 5200

cgc cgc ttc cgc tgc  ttc gct cgg gat ctc  gcc gag ttt gcc tac       27234
Arg Arg Phe Arg Cys  Phe Ala Arg Asp Leu  Ala Glu Phe Ala Tyr
                5205                 5210                 5215

ttt gag ctg ccc gag  gag cac cct cag ggc  ccg gcc cac gga gtg       27279
Phe Glu Leu Pro Glu  Glu His Pro Gln Gly  Pro Ala His Gly Val
                5220                 5225                 5230

cgg atc gtc gtc gaa  ggg ggc ctc gac tcc  cac ctg ctt cgg atc       27324
Arg Ile Val Val Glu  Gly Gly Leu Asp Ser  His Leu Leu Arg Ile
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                5235                5240                5245

ttc agc cag cga ccg  atc ctg gtc gag cgc  gag caa gga cag acc       27369
Phe Ser Gln Arg Pro  Ile Leu Val Glu Arg  Glu Gln Gly Gln Thr
                5250                5255                5260

cgt ctg acc ctg tac  tgc atc tgc aac cac  ccc ggc ctg cat gaa       27414
Arg Leu Thr Leu Tyr  Cys Ile Cys Asn His  Pro Gly Leu His Glu
                5265                5270                5275

agt ctt tgt tgt ctg  ctg tgt act gag tat  aat aaa agc tgagatcagc    27463
Ser Leu Cys Cys Leu  Leu Cys Thr Glu Tyr  Asn Lys Ser
                5280                5285

gactactccg gactcgattg tggtgttcct gctatcaacc ggtccctgtt cttcaccggg   27523

aacgagaccg agctccagct ccagtgtaag ccccacaaga agtatctcac ctggctgttc   27583

cagggctccc cgatcgccgt tgtcaaccac tgcgacaacg acggagtcct gctgagcggc   27643

cccgccaacc ttacttttтc cacccgcaga agcaagctcc agctcttcca acccttcctc   27703

cccgggacct atcagtgcct ctcgggaccc tgccatcaca ccttccacct gatcccgaat   27763

accacagcgg cgctccccgc tactaacaac caaactaccc accaacgcca ccgtcgcgac   27823

ctttcctctg aatctaatac taccacccac accggaggtg agctccgagg tcaaccaacc   27883

tctgggattt actacggccc ctgggaggtg gtggggttaa tagcgctagg cctagttgcg   27943

ggtgggcttt tggctctctg ctacctatac ctcccttgct gttcttactt agtggtgctg   28003

tgttgctggt ttaagaaatg gggaagatca ccctagtgag ctgcggtgcg ctggtggcgg   28063

tggtgctttc gattgtggga ctgggcggcg cggctgtagt gaaggagaag gccgatccct   28123

gcttgcattt caatcccgac aaatgccagc tgagttttca gcccgatggc aatcggtgcg   28183

cggtgctgat caagtgcgga tgggaatgcg agaacgtgag aatcgagtac aataacaaga   28243

ctcggaacaa tactctcgcg tccgtgtggc agcccgggga ccccgagtgg tacaccgtct   28303

ctgtccccgg tgctgacggc tccccgcgca ccgtgaacaa tactttcatt tttgcacaca   28363

tgtgcgacac ggtcatgtgg atgagcaagc agtacgatat gtggcccccc acgaaggaga   28423

acatcgtggt cttctccatc gcttacagcc tgtgcacggc gctaatcacc gctatcgtgt   28483

gcctgagcat tcacatgctc atcgctattc gccccagaaa taatgccgaa aaagagaaac   28543

agccataaca cgtttttтca cacacctttt tcagacc atg gcc  tct gtt aaa ttt   28598
                                       Met Ala  Ser Val Lys Phe
                                           5290

ttt  gct tta ttt gcc agt  ctc att acc gtc att  cat gga atg agt      28643
Phe  Ala Leu Phe Ala Ser  Leu Ile Thr Val Ile  His Gly Met Ser
5295                5300                5305

aat  gag aaa att act att  tac act ggc act aat  cac aca ttg aaa      28688
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Asn  Glu Lys Ile Thr Ile  Tyr Thr Gly Thr Asn  His Thr Leu Lys
5310                5315                5320

ggt  cca gaa aaa gcc aca  gaa gtt tca tgg tat  tgt tat ttt aat       28733
Gly  Pro Glu Lys Ala Thr  Glu Val Ser Trp Tyr  Cys Tyr Phe Asn
5325                5330                5335

gaa  tca gat gta gct act  gaa ctc tgt gga aac  aac aac aaa aaa       28778
Glu  Ser Asp Val Ala Thr  Glu Leu Cys Gly Asn  Asn Asn Lys Lys
5340                5345                5350

aat  gag agc att act ctc  atc aag ttt caa tgt  gga tct gac tta       28823
Asn  Glu Ser Ile Thr Leu  Ile Lys Phe Gln Cys  Gly Ser Asp Leu
5355                5360                5365

acc  ctc att aac atc act  aga gac tat gta ggt  atg tat tat gga       28868
Thr  Leu Ile Asn Ile Thr  Arg Asp Tyr Val Gly  Met Tyr Tyr Gly
5370                5375                5380

act  aca gca ggc att tcg  gac atg gaa ttt tat  caa gtt tct gtg       28913
Thr  Thr Ala Gly Ile Ser  Asp Met Glu Phe Tyr  Gln Val Ser Val
5385                5390                5395

tct  gaa ccc acc acg cct  aga atg acc aca acc  aca aaa act aca       28958
Ser  Glu Pro Thr Thr Pro  Arg Met Thr Thr Thr  Thr Lys Thr Thr
5400                5405                5410

cct  act acc acc aca cag  ctc act acc aat ggc  ttt ttt gcc atg       29003
Pro  Thr Thr Thr Thr Gln  Leu Thr Thr Asn Gly  Phe Phe Ala Met
5415                5420                5425

ctt  caa gtg gct gaa aat  agc acc agc att caa  ccc acc cca ccc       29048
Leu  Gln Val Ala Glu Asn  Ser Thr Ser Ile Gln  Pro Thr Pro Pro
5430                5435                5440

agt  gag gaa att ccc aaa  tcc atg att ggc att  att gtt gct gta       29093
Ser  Glu Glu Ile Pro Lys  Ser Met Ile Gly Ile  Ile Val Ala Val
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gtg  gtg tgc atg ttg atc  atc gcc ttg tgc atg  gtg tac tat gcc       29138
Val  Val Cys Met Leu Ile  Ile Ala Leu Cys Met  Val Tyr Tyr Ala
5460                5465                5470

ttc  tgc tac aga aag cac  aga ctg aac gac aag  ctg gaa cac tta       29183
Phe  Cys Tyr Arg Lys His  Arg Leu Asn Asp Lys  Leu Glu His Leu
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cta  agt gtt gaa ttt taatttttta gaacc atg  aag atc cta tgc ctt       29231
Leu  Ser Val Glu Phe                Met  Lys Ile Leu Cys Leu
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tta gtt ttt tat atc  att acc tct gct ctt  tgt gaa tca gtg gat       29276
Leu Val Phe Tyr Ile  Ile Thr Ser Ala Leu  Cys Glu Ser Val Asp
               5505                5510                5515

aaa gat gtt act att  acc act ggt tct aat  tat aca ctg aaa gga       29321
Lys Asp Val Thr Ile  Thr Thr Gly Ser Asn  Tyr Thr Leu Lys Gly
               5520                5525                5530
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cca ccc tca ggt atg  ctt tcg tgg tat tgc  tat ttt gga act gac        29366
Pro Pro Ser Gly Met  Leu Ser Trp Tyr Cys  Tyr Phe Gly Thr Asp
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act gat caa act gaa  tta tgc aat ttt caa  aaa ggc aaa acc tca        29411
Thr Asp Gln Thr Glu  Leu Cys Asn Phe Gln  Lys Gly Lys Thr Ser
                5550                5555                5560

aac tct aaa atc tct  aat tat caa tgc aat  ggc act gat ctg ata        29456
Asn Ser Lys Ile Ser  Asn Tyr Gln Cys Asn  Gly Thr Asp Leu Ile
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cta ctc aat gtc acg  aaa gca tat ggt ggc  agt tat tca tgc cct        29501
Leu Leu Asn Val Thr  Lys Ala Tyr Gly Gly  Ser Tyr Ser Cys Pro
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gga caa aac act gaa  gaa atg att ttt tac  aaa gtg gaa gtg gtt        29546
Gly Gln Asn Thr Glu  Glu Met Ile Phe Tyr  Lys Val Glu Val Val
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gat ccc act act cca  cct cca ccc gcc aca  act act cac acc aca        29591
Asp Pro Thr Thr Pro  Pro Pro Pro Ala Thr  Thr Thr His Thr Thr
                5610                5615                5620

cac aca gaa caa agc  aca gca gag gca gca  aag tta gcc ttg cag        29636
His Thr Glu Gln Ser  Thr Ala Glu Ala Ala  Lys Leu Ala Leu Gln
                5625                5630                5635

gtc caa gac agt tca  ttt gtt ggc att acc  cct aca cct gat cag        29681
Val Gln Asp Ser Ser  Phe Val Gly Ile Thr  Pro Thr Pro Asp Gln
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cgg tgt ccg ggg ctg  ctc gtc agc ggc att  gtc ggt gtg ctt tcg        29726
Arg Cys Pro Gly Leu  Leu Val Ser Gly Ile  Val Gly Val Leu Ser
                5655                5660                5665

gga tta gca gtc ata  atc atc tgc atg ttc  att ttt gct tgc tgc        29771
Gly Leu Ala Val Ile  Ile Ile Cys Met Phe  Ile Phe Ala Cys Cys
                5670                5675                5680

tat aga agg ctt tac  cga caa aaa tca gac  cca ctg ctg aac ctc        29816
Tyr Arg Arg Leu Tyr  Arg Gln Lys Ser Asp  Pro Leu Leu Asn Leu
                5685                5690                5695

tat gtt taatttttc cagagcc atg aag gca  gtt agc gct cta gtt  ttt     29866
Tyr Val                   Met Lys Ala  Val Ser Ala Leu Val  Phe
                                  5700                5705

tgt tct ttg att  ggc att gtt ttt aat  agt aaa att acc aga  gtt      29911
Cys Ser Leu Ile  Gly Ile Val Phe Asn  Ser Lys Ile Thr Arg  Val
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agc ttt att aaa  cat gtt aat gta act  gaa gga gat aac atc  aca      29956
Ser Phe Ile Lys  His Val Asn Val Thr  Glu Gly Asp Asn Ile  Thr
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cta gca ggt gta  gaa ggt gct caa aac  acc acc tgg aca aaa  tac      30001
Leu Ala Gly Val  Glu Gly Ala Gln Asn  Thr Thr Trp Thr Lys  Tyr
           5740                5745                5750
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cat cta gga tgg  aga gat att tgc acc  tgg aat gta act tat  tat       30046
His Leu Gly Trp  Arg Asp Ile Cys Thr  Trp Asn Val Thr Tyr  Tyr
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tgc ata gga gtt  aat ctt acc att gtt  aac gct aac caa tct  cag       30091
Cys Ile Gly Val  Asn Leu Thr Ile Val  Asn Ala Asn Gln Ser  Gln
            5770                 5775                 5780

aat ggg tta att  aaa gga cag agt gtt  agt gtg acc agt gat  ggg       30136
Asn Gly Leu Ile  Lys Gly Gln Ser Val  Ser Val Thr Ser Asp  Gly
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tac tat acc cag  cat agt ttt aac tac  aac att act gtc ata  cca       30181
Tyr Tyr Thr Gln  His Ser Phe Asn Tyr  Asn Ile Thr Val Ile  Pro
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ctg cct acg cct  agc cca cct agc act  acc gca cag aca acc  aca       30226
Leu Pro Thr Pro  Ser Pro Pro Ser Thr  Thr Ala Gln Thr Thr  Thr
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tac agt aca tca  aat cag cct acc acc  act aca gca gca gag  gtt       30271
Tyr Ser Thr Ser  Asn Gln Pro Thr Thr  Thr Thr Ala Ala Glu  Val
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gcc agc tcg tct  ggg gtc cga gtg gca  ttt ttg atg ttg gcc  cca       30316
Ala Ser Ser Ser  Gly Val Arg Val Ala  Phe Leu Met Leu Ala  Pro
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Ser Ser Ser Pro  Thr Ala Ser Thr Asn  Glu Gln Thr Thr Glu  Phe
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ttg tcc act gtc  gag agc cac acc aca  gct acc tcc agt gcc  ttc       30406
Leu Ser Thr Val  Glu Ser His Thr Thr  Ala Thr Ser Ser Ala  Phe
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Ser Ser Thr Ala  Asn Leu Ser Ser Leu  Ser Ser Thr Pro Ile  Ser
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ccc gct act act  cct agc ccc gct cct  ctt ccc act ccc ctg  aag       30496
Pro Ala Thr Thr  Pro Ser Pro Ala Pro  Leu Pro Thr Pro Leu  Lys
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caa aca gac ggc  ggc atg caa tgg cag  atc acc ctg ctc att  gtg       30541
Gln Thr Asp Gly  Gly Met Gln Trp Gln  Ile Thr Leu Leu Ile  Val
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atc ggg ttg gtc  atc ctg gcc gtg ttg  cta tac tac atc ttc  tgc       30586
Ile Gly Leu Val  Ile Leu Ala Val Leu  Leu Tyr Tyr Ile Phe  Cys
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cgc cgc att ccc  aac gcg cac cgc aag  ccg gcc tac aag ccc  atc       30631
Arg Arg Ile Pro  Asn Ala His Arg Lys  Pro Ala Tyr Lys Pro  Ile
            5950                 5955                 5960

gtt atc ggg cag  ccg gag ccg ctt cag  gtg gaa ggg ggt cta  agg       30676
Val Ile Gly Gln  Pro Glu Pro Leu Gln  Val Glu Gly Gly Leu  Arg
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Asn Leu Leu Phe  Ser Phe Thr Val Trp            Met Ile Pro Arg
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caa  ttc ttg atc act att  ctt atc tgc ctc ctc  caa gtc tgt gcc       30770
Gln  Phe Leu Ile Thr Ile  Leu Ile Cys Leu Leu  Gln Val Cys Ala
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acc  ctc gct ctg gtg gcc  aac gcc agt cca gac  tgt att gga ccc       30815
Thr  Leu Ala Leu Val Ala  Asn Ala Ser Pro Asp  Cys Ile Gly Pro
6005                6010                6015

ttc  gcc tcc tac gtg ctc  ttt gcc ttc gtc acc  tgc atc tgc tgc       30860
Phe  Ala Ser Tyr Val Leu  Phe Ala Phe Val Thr  Cys Ile Cys Cys
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tgt  agc ata gtc tgc ctg  ctt atc acc ttc ttc  cag ttc att gac       30905
Cys  Ser Ile Val Cys Leu  Leu Ile Thr Phe Phe  Gln Phe Ile Asp
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Trp  Ile Phe Val Arg Ile  Ala Tyr Leu Arg His  His Pro Gln Tyr
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cgc  gac cag cga gtg gcg  cag ctg ctc agg ctc  ctc tgataagcat       30996
Arg  Asp Gln Arg Val Ala  Gln Leu Leu Arg Leu  Leu
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tgaggccgag ccacagcgac ccatgctccc cgctattagt tacttcaatc taaccggcgg    31416

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   Met Thr Asp Pro  Leu Ala Asn Asn Asn  Val Asn Asp Leu Leu  Leu
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Asp Met Asp Gly  Arg Ala Ser Glu Gln  Arg Leu Ala Gln Leu  Arg
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att cgc cag cag  cag gag aga gcc gtc  aag gag ctg cag gac  ggc       31553
Ile Arg Gln Gln  Gln Glu Arg Ala Val  Lys Glu Leu Gln Asp  Gly
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ata gcc atc cac  cag tgc aag aaa ggc  atc ttc tgc ctg gtg  aaa       31598
Ile Ala Ile His  Gln Cys Lys Lys Gly  Ile Phe Cys Leu Val  Lys
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Gln Ala Lys Ile  Ser Tyr Glu Val Thr  Gln Thr Asp His Arg  Leu
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tcc tac gag ctc  ctg cag cag cgc cag  aag ttc acc tgc ctg  gtc       31688
Ser Tyr Glu Leu  Leu Gln Gln Arg Gln  Lys Phe Thr Cys Leu  Val
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Gly Val Asn Pro  Ile Val Ile Thr Gln  Gln Ser Gly Asp Thr  Lys
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Gly Cys Ile His  Cys Ser Cys Asp Ser  Pro Asp Cys Val His  Thr
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Leu Ile Lys Thr  Leu Cys Gly Leu Arg  Asp Leu Leu Pro Met  Asn
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Val Asp  Asp Asp Phe Asp Pro  Val Tyr Pro Tyr Asp  Ala Asp Asn
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Asp Pro  Val Thr Thr Lys Asn  Gly Glu Ile Thr Leu  Lys Leu Gly
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Glu Gly  Val Asp Leu Asp Ser  Ser Gly Lys Leu Ile  Ser Asn Thr
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gcc gcc  aag gcc gct gcc cct  ctc agt ttt tcc aac  aac acc att       32386
Ala Ala  Lys Ala Ala Ala Pro  Leu Ser Phe Ser Asn  Asn Thr Ile
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Ser Leu  Asn Met Asp His Pro  Phe Tyr Thr Lys Asp  Gly Lys Leu
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Leu Asn  Thr Leu Ala Leu Gly  Phe Gly Ser Gly Leu  Gly Leu Arg
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ggc tct  gcc ttg gca gta cag  tta gtc tct cca ctt  aca ttt gat       32566
Gly Ser  Ala Leu Ala Val Gln  Leu Val Ser Pro Leu  Thr Phe Asp
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act gat  gga aac ata aag ctt  acc tta gac aga ggt  ttg cat gtt       32611
Thr Asp  Gly Asn Ile Lys Leu  Thr Leu Asp Arg Gly  Leu His Val
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Leu Lys  Phe Glu Asp Gly Ala  Ile Ala Thr Asn Ile  Gly Asn Gly
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Leu Glu  Phe Gly Ser Ser Ser  Thr Glu Thr Gly Val  Asp Asp Ala
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Tyr Pro  Ile Gln Val Lys Leu  Gly Ser Gly Leu Ser  Phe Asp Ser
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Thr Gly  Ala Ile Met Ala Gly  Asn Lys Glu Asp Asp  Lys Leu Thr
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Glu Asn  Asp Ala Lys Leu Thr  Leu Cys Leu Thr Lys  Cys Gly Ser
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Arg Phe  Asp Ala Asn Gly Val  Leu Leu Thr Glu His  Ser Thr Leu
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Pro Tyr  Ala Asn Ala Val Gly  Phe Met Pro Asn Leu  Lys Ala Tyr
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Pro Lys  Ser Gln Ser Ser Thr  Thr Lys Asn Asn Ile  Val Gly Gln
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Val Tyr  Met Asn Gly Asp Val  Ser Lys Pro Met Leu  Leu Thr Ile
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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 Ala 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 Thr 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 Val 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> 67
<211> 142
<212> PRT
<213> Simian adenovirus 38

<400> 67

Met Ser Gly Ser Ala Ser Phe Glu Gly Gly Val Phe Ser Pro Tyr Leu
1 5 10 15

Thr Gly Arg Leu Pro Ser Trp Ala Gly Val Arg Gln Asn Val Met Gly
20 25 30

Ser Thr Val Asp Gly Arg Pro Val Gln Pro Ala Asn Ser Ser Thr Leu
35 40 45

Thr Tyr Ala Thr Leu Ser Ser Ser Ser Val Asp Ala Ala Ala Ala Ala
50 55 60

Ala Ala Ala Ser Ala Ala Ser Ala Val Arg Gly Met Ala Leu Gly Ala
65 70 75 80

Gly Tyr Tyr Ser Ser Leu Val Ala Asn Ser Ser Ser Thr Asn Asn Pro

```
                85                  90                  95

Ala Ser Leu Asn Glu Glu Lys Leu Leu Leu Leu Met Ala Gln Leu Glu
            100                 105                 110

Ala Leu Thr Gln Arg Leu Gly Glu Leu Thr Gln Gln Val Ala Gln Leu
        115                 120                 125

Gln Ala Glu Thr Arg Ala Ala Val Ala Thr Val Lys Thr Lys
    130                 135                 140
```

<210> 68
<211> 392
<212> PRT
<213> Simian adenovirus 38

<400> 68

```
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>  69
<211>  586
<212>  PRT
<213>  Simian adenovirus 38

<400>  69

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> 70
<211> 539
<212> PRT
<213> Simian adenovirus 38

<400> 70

```
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> 71
<211> 194
<212> PRT
<213> Simian adenovirus 38

<400> 71

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> 72
<211> 349
<212> PRT
<213> Simian adenovirus 38

<400> 72

Met Ser Lys Arg Lys Tyr 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 Val Asn
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 Lys Pro Val Leu Arg Pro Gly Thr Thr Val
65 70 75 80

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

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

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

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

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

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

Leu Met Val Pro Lys Arg Gln Lys Leu Glu Asp Val Leu Glu His Met

```
            180                 185                 190

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

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

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

Thr Met Glu Val Gln Thr Asp Pro Trp Met Pro Ala Pro Ala Ser 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 Thr Ser Ser Arg Arg Arg Lys Thr
    290                 295                 300

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

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

Thr Leu Pro Arg Ala Arg Tyr His Pro Ser Ile Ala Ile
            340                 345
```

<210> 73
<211> 77
<212> PRT
<213> Simian adenovirus 38

<400> 73

```
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> 74
<211> 240
<212> PRT
<213> Simian adenovirus 38

<400> 74

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 Val Ala Pro Leu Ala Thr Gly Val Leu

```
                165                 170                 175

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

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

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

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

<210> 75
<211> 930
<212> PRT
<213> Simian adenovirus 38

<400> 75

```
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 Thr Cys Gln Trp Thr Tyr Thr Asp Asn Gln Thr Glu Lys
```

```
    130                 135                 140

Thr Ala Thr Tyr Gly Asn Ala Pro Val Glu Gly Ile Asn Ile Thr Lys
145                 150                 155                 160

Asp Gly Ile Gln Leu Gly Thr Asp Ser Asp Gly Gln Ala Ile Tyr Ala
                165                 170                 175

Asp Glu Thr Tyr Gln Pro Glu Pro Gln Val Gly Asp Pro Glu Trp His
            180                 185                 190

Asp Thr Thr Gly Thr Glu Glu Lys Tyr Gly Gly Arg Ala Leu Lys Pro
        195                 200                 205

Ala Thr Asp Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys Pro Thr Asn
    210                 215                 220

Val Lys Gly Gly Gln Ala Lys Ser Arg Thr Lys Thr Asp Gly Thr Thr
225                 230                 235                 240

Glu Pro Asp Ile Asp Met Ala Phe Phe Asp Gly Arg Asn Ala Thr Thr
                245                 250                 255

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

Glu Thr Pro Asp Thr His Ile Val Tyr Lys Ala Gly Thr Asp Asp Ser
        275                 280                 285

Ser Ser Ser Ile Asn Leu Gly Gln Gln Ser Met Pro Asn Arg Pro Asn
    290                 295                 300

Tyr Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr Asn Ser
305                 310                 315                 320

Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu Asn Ala
                325                 330                 335

Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln Leu Leu
            340                 345                 350

Leu Asp Ser Leu Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp Asn Gln
        355                 360                 365
```

```
Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn His Gly
    370                 375                 380

Val Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asn Ala Val Gly
385                 390                 395                 400

Arg Thr Asp Ser Tyr Gln Gly Ile Lys Pro Asn Gly Gly Asp Pro Ala
                405                 410                 415

Thr Trp Ala Lys Asp Glu Ser Val Asn Asp Ser Asn Glu Leu Gly Lys
            420                 425                 430

Gly Asn Pro Phe Ala Met Glu Ile Asn Ile Gln Ala Asn Leu Trp Arg
        435                 440                 445

Asn Phe Leu Tyr Ala Asn Val Ala Leu Tyr Leu Pro Asp Ser Tyr Lys
    450                 455                 460

Tyr Thr Pro Ala Asn Ile Thr Leu Pro Thr Asn Thr Asn Thr Tyr Asp
465                 470                 475                 480

Tyr Met Asn Gly Arg Val Val Ala Pro Ser Leu Val Asp Ala Tyr Ile
                485                 490                 495

Asn Ile Gly Ala Arg Trp Ser Leu Asp Pro Met Asp Asn Val Asn Pro
            500                 505                 510

Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser Met Leu Leu
        515                 520                 525

Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro Gln Lys Phe
    530                 535                 540

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

Trp Asn Phe Arg Lys Asp Val Asn Met Ile Leu Gln Ser Ser Leu Gly
                565                 570                 575

Asn Asp Leu Arg Thr Asp Gly Ala Ser Ile Ala Phe Thr Ser Ile Asn
            580                 585                 590

Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala Ser Thr Leu
        595                 600                 605
```

```
Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe Asn Asp Tyr
    610                 615                 620

Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn Ala Thr Asn
625                 630                 635                 640

Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe Arg Gly Trp
                645                 650                 655

Ser Phe Thr Arg Leu Lys Thr Arg Glu Thr Pro Ser Leu Gly Ser Gly
            660                 665                 670

Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr Leu Asp Gly
        675                 680                 685

Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile Thr Phe Asp
    690                 695                 700

Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr Pro Asn Glu
705                 710                 715                 720

Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn Val Ala Gln
                725                 730                 735

Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu Ala His Tyr
            740                 745                 750

Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr Lys Asp Arg
        755                 760                 765

Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg Gln Val Val
    770                 775                 780

Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu Thr Tyr Gln
785                 790                 795                 800

His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr Met Arg Gln
                805                 810                 815

Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile Gly Lys Ser
            820                 825                 830

Ala Val Ala Ser Val Thr Gln Lys Lys Phe Leu Cys Asp Arg Val Met
        835                 840                 845
```

```
Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly Ala Leu Thr
    850                 855                 860

Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His Ala Leu Asp
865                 870                 875                 880

Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr Leu Leu Tyr Val
                885                 890                 895

Val Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro His Arg Gly
            900                 905                 910

Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala Gly Asn Ala
        915                 920                 925

Thr Thr
    930
```

<210> 76
<211> 207
<212> PRT
<213> Simian adenovirus 38

<400> 76

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

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

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

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

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

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

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

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

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

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

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

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

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

<210> 77
<211> 795
<212> PRT
<213> Simian adenovirus 38

<400> 77

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

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

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

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

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

Glu Ala Glu Ser Glu Gln Gln Gln Ala Gly Leu Glu His Gly Asp Tyr
                85                  90                  95

Leu Ser Gly Ala Glu Asp Val Leu Ile Lys His Leu Ala Arg Gln Cys
            100                 105                 110
```

```
Ile Ile Val Lys Asp Ala Leu Leu Asp Arg Ala Glu Val Pro Leu Ser
        115                 120                 125

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

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

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

His Ile Phe Phe Lys Asn Gln Lys Ile Pro Val Ser Cys Arg Ala Asn
            180                 185                 190

Arg Thr Arg Ala Asp Ala Leu Phe Asn Leu Gly Pro Gly Ala Arg Leu
        195                 200                 205

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

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

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

Leu Ala Val Leu Lys Arg Thr Val Glu Leu Thr His Phe Ala Tyr Pro
            260                 265                 270

Ala Leu Asn Leu Pro Pro Lys Val Met Asn Ala Val Met Asp Gln Val
        275                 280                 285

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

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

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

Lys Leu Met Met Ala Val Val Leu Val Thr Val Glu Leu Glu Cys Leu
```

```
            340                 345                 350

Arg Arg Phe Phe Ala Asp Ala Glu Thr Leu Arg Lys Val Glu Glu Asn
        355                 360                 365

Leu His Tyr Leu Phe Arg His Gly Phe Val Arg Gln Ala Cys Lys Ile
    370                 375                 380

Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr Met Gly Ile Leu His
385                 390                 395                 400

Glu Asn Arg Leu Gly Gln Asn Val Leu His Thr Thr Leu Arg Gly Glu
                405                 410                 415

Ala Arg Arg Asp Tyr Ile Arg Asp Cys Val Tyr Leu Tyr Leu Cys His
            420                 425                 430

Thr Trp Gln Thr Gly Met Gly Val Trp Gln Gln Cys Leu Glu Glu Gln
        435                 440                 445

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

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

Ile Phe Pro Glu Arg Leu Arg Leu Thr Leu Arg Asn Gly Leu Pro Asp
                485                 490                 495

Phe Met Ser Gln Ser Met Leu Gln Asn Phe Arg Ser Phe Ile Leu Glu
            500                 505                 510

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

Val Pro Leu Thr Phe Arg Glu Cys Pro Pro Pro Leu Trp Ser His Cys
    530                 535                 540

Tyr Leu Leu Arg Leu Ala Asn Tyr Leu Ala Tyr His Ser Asp Val Ile
545                 550                 555                 560

Glu Asp Val Ser Gly Glu Gly Leu Leu Glu Cys His Cys Arg Cys Asn
                565                 570                 575
```

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

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

Glu Gly Lys Gly Gly Leu Lys Leu Thr Pro Gly Leu Trp Thr Ser Ala
    610                 615                 620

Tyr Leu Arg Lys Phe Val Pro Glu Asp Tyr His Pro Phe Glu Ile Arg
625                 630                 635                 640

Phe Tyr Glu Asp Gln Ser Gln Pro Pro Lys Ala Glu Leu Ser Ala Cys
                645                 650                 655

Val Ile Thr Gln Gly Ala Ile Leu Ala Gln Leu Gln Ala Ile Gln Lys
            660                 665                 670

Ser Arg Gln Glu Phe Leu Leu Lys Lys Gly His Gly Val Tyr Leu Asp
        675                 680                 685

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

Arg Lys Gln Gln Glu Ala Glu Ser Gly Ala Ala Ala Gly Gly Phe Gly
705                 710                 715                 720

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

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

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

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

Ser Gly Ser Gly Ser Arg Arg Ser Gly Pro Gln
785                 790                 795
```

<210> 78
<211> 227
<212> PRT

<213> Simian adenovirus 38

<400> 78

```
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> 79
<211> 106
<212> PRT
<213> Simian adenovirus 38

<400> 79

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 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 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> 80
<211> 206
<212> PRT
<213> Simian adenovirus 38

<400> 80

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

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

His Thr Leu Lys Gly Pro Glu Lys Ala Thr Glu Val Ser Trp Tyr Cys
35 40 45

```
Tyr Phe Asn Glu Ser Asp Val Ala Thr Glu Leu Cys Gly Asn Asn Asn
    50                  55                  60

Lys Lys Asn Glu Ser Ile Thr Leu Ile Lys Phe Gln Cys Gly Ser Asp
65                  70                  75                  80

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

Thr Thr Ala Gly Ile Ser Asp Met Glu Phe Tyr Gln Val Ser Val Ser
            100                 105                 110

Glu Pro Thr Thr Pro Arg Met Thr Thr Thr Thr Lys Thr Thr Pro Thr
        115                 120                 125

Thr Thr Thr Gln Leu Thr Thr Asn Gly Phe Phe Ala Met Leu Gln Val
    130                 135                 140

Ala Glu Asn Ser Thr Ser Ile Gln Pro Thr Pro Pro Ser Glu Glu Ile
145                 150                 155                 160

Pro Lys Ser Met Ile Gly Ile Ile Val Ala Val Val Val Cys Met Leu
                165                 170                 175

Ile Ile Ala Leu Cys Met Val Tyr Tyr Ala Phe Cys Tyr Arg Lys His
            180                 185                 190

Arg Leu Asn Asp Lys Leu Glu His Leu Leu Ser Val Glu Phe
        195                 200                 205
```

<210> 81
<211> 203
<212> PRT
<213> Simian adenovirus 38

<400> 81

```
Met Lys Ile Leu Cys Leu Leu Val Phe Tyr 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 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 Ser 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 Pro Pro Ala Thr Thr Thr His Thr Thr His Thr
        115                 120                 125

Glu Gln Ser Thr Ala 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> 82
<211> 288
<212> PRT
<213> Simian adenovirus 38

<400> 82

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

Phe Asn Ser Lys Ile Thr Arg 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 Val 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 Ala 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> 83
<211> 91
<212> PRT
<213> Simian adenovirus 38

<400> 83

Met Ile Pro Arg Gln Phe Leu Ile Thr Ile Leu Ile Cys Leu Leu Gln
1 5 10 15

Val Cys Ala Thr Leu Ala Leu Val Ala Asn Ala Ser Pro Asp Cys Ile
20 25 30

Gly Pro Phe Ala Ser Tyr Val Leu Phe Ala Phe Val Thr Cys Ile Cys
35 40 45

Cys Cys Ser Ile Val Cys Leu Leu Ile Thr Phe Phe Gln Phe Ile Asp
50 55 60

Trp Ile Phe Val Arg Ile Ala Tyr Leu Arg His His Pro Gln Tyr Arg
65 70 75 80

Asp Gln Arg Val Ala Gln Leu Leu Arg Leu Leu
85 90

<210> 84
<211> 135
<212> PRT
<213> Simian adenovirus 38

<400> 84

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> 85
<211> 425
<212> PRT
<213> Simian adenovirus 38

<400> 85

```
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 Ser Ser Gly Lys Leu Ile Ser
65                  70                  75                  80

Asn Thr Ala Ala Lys Ala Ala Ala Pro Leu Ser Phe Ser Asn Asn Thr
                85                  90                  95

Ile Ser Leu Asn Met Asp His Pro Phe Tyr Thr Lys Asp Gly Lys Leu
            100                 105                 110

Ala Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Arg Thr Ser Ile Leu
        115                 120                 125

Asn Thr Leu Ala Leu Gly Phe Gly Ser Gly Leu Gly Leu Arg Gly Ser
    130                 135                 140
```

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

Asn Ile Lys Leu Thr Leu Asp Arg Gly Leu His Val Thr Thr Gly Asp
                165                 170                 175

Ala Ile Glu Ser Asn Ile Ser Trp Ala Lys Gly Leu Lys Phe Glu Asp
            180                 185                 190

Gly Ala Ile Ala Thr Asn Ile Gly Asn Gly Leu Glu Phe Gly Ser Ser
        195                 200                 205

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

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

Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro
                245                 250                 255

Asn Cys Gln Ile Leu Ala Glu Asn Asp Ala Lys Leu Thr Leu Cys Leu
            260                 265                 270

Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Val Leu Val Val
        275                 280                 285

Gly Ser Gly Asn Leu Asn Pro Ile Thr Gly Thr Val Ser Ser Ala Gln
    290                 295                 300

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

Thr Leu Lys Lys Tyr Trp Gly Tyr Arg Gln Gly Asp Ser Ile Asp Gly
                325                 330                 335

Thr Pro Tyr Ala Asn Ala Val Gly Phe Met Pro Asn Leu Lys Ala Tyr
            340                 345                 350

Pro Lys Ser Gln Ser Ser Thr Thr Lys Asn Asn Ile Val Gly Gln Val
        355                 360                 365

Tyr Met Asn Gly Asp Val Ser Lys Pro Met Leu Leu Thr Ile Thr Leu
    370                 375                 380
```

```
Asn Gly Thr Asp Asp Ser Asn Ser Thr Tyr Ser Met Ser Phe Ser Tyr
385                 390                 395                 400


Thr Trp Thr Asn Gly Ser Tyr Val Gly Ala Thr Phe Gly Ala Asn Ser
                405                 410                 415


Tyr Thr Phe Ser Tyr Ile Ala Gln Glu
            420                 425


<210>  86
<211>  580
<212>  DNA
<213>  Simian adenovirus 38


<220>
<221>  CDS
<222>  (1)..(576)
<223>  label=Elb\19K

<400>  86
atg gag atc tgg acg gtc ttg gaa gac ttt cat cag act aga cag ctg         48
Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Gln Thr Arg Gln Leu
1               5                   10                  15

cta gag aac tca tcg gag gaa gtc tct tac ctg tgg aga ttt tgc ttc         96
Leu Glu Asn Ser Ser Glu Glu Val Ser Tyr Leu Trp Arg Phe Cys Phe
            20                  25                  30

ggt ggg gct cta gct aag cta gtc tat agg gcc aaa cag gat tat aag        144
Gly Gly Ala Leu Ala Lys Leu Val Tyr Arg Ala Lys Gln Asp Tyr Lys
        35                  40                  45

gat caa ttt gag gat att ttg aga gag tgt cct ggt att ttt gac tct        192
Asp Gln Phe Glu Asp Ile Leu Arg Glu Cys Pro Gly Ile Phe Asp Ser
    50                  55                  60

ctc aac ttg ggc cat cag tct cac ttt aac cag agt att ctg aga gcc        240
Leu Asn Leu Gly His Gln Ser His Phe Asn Gln Ser Ile Leu Arg Ala
65                  70                  75                  80

ctt gac ttt tct act cct ggc aga act acc gcc gcg gta gcc ttt ttt        288
Leu Asp Phe Ser Thr Pro Gly Arg Thr Thr Ala Ala Val Ala Phe Phe
                85                  90                  95

gcc ttt atc ctt gac aaa tgg agt caa gaa acc cat ttc agc agg gat        336
Ala Phe Ile Leu Asp Lys Trp Ser Gln Glu Thr His Phe Ser Arg Asp
            100                 105                 110

tac cgt ctg gac tgc tta gca gta gct ttg tgg aga aca tgg agg tgc        384
Tyr Arg Leu Asp Cys Leu Ala Val Ala Leu Trp Arg Thr Trp Arg Cys
        115                 120                 125

cag cgc ctg aat gca atc tcc ggc tac ttg cca gta cag ccg gta gac        432
Gln Arg Leu Asn Ala Ile Ser Gly Tyr Leu Pro Val Gln Pro Val Asp
```

```
    130                 135                 140

acg ctg agg atc ctg agt ctc cag tca ccc cag gaa cac caa cgc cgc        480
Thr Leu Arg Ile Leu Ser Leu Gln Ser Pro Gln Glu His Gln Arg Arg
145                 150                 155                 160

cag cag ccg cag cag gag cag cag caa gag gag gag gag gac cga gaa        528
Gln Gln Pro Gln Gln Glu Gln Gln Gln Glu Glu Glu Glu Asp Arg Glu
                165                 170                 175

gag aac ccg aga gcc ggt ctg gac cct ccg gtg gcg gag gag gag gag        576
Glu Asn Pro Arg Ala Gly Leu Asp Pro Pro Val Ala Glu Glu Glu Glu
            180                 185                 190

tagc                                                                   580


<210>  87
<211>  192
<212>  PRT
<213>  Simian adenovirus 38

<400>  87

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 Tyr 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 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>  88
<211>  530
<212>  DNA
<213>  Simian adenovirus 38


<220>
<221>  CDS
<222>  (1)..(528)
<223>  label=E3\gp19K

<400>  88
atg ggg aag atc acc cta gtg agc tgc ggt gcg ctg gtg gcg gtg gtg         48
Met Gly Lys Ile Thr Leu Val Ser Cys Gly Ala Leu Val Ala Val Val
1               5                   10                  15

ctt tcg att gtg gga ctg ggc ggc gcg gct gta gtg aag gag aag gcc         96
Leu Ser Ile Val Gly Leu Gly Gly Ala Ala Val Val Lys Glu Lys Ala
            20                  25                  30

gat ccc tgc ttg cat ttc aat ccc gac aaa tgc cag ctg agt ttt cag        144
Asp Pro Cys Leu His Phe Asn Pro Asp Lys Cys Gln Leu Ser Phe Gln
        35                  40                  45

ccc gat ggc aat cgg tgc gcg gtg ctg atc aag tgc gga tgg gaa tgc        192
Pro Asp Gly Asn Arg Cys Ala Val Leu Ile Lys Cys Gly Trp Glu Cys
    50                  55                  60

gag aac gtg aga atc gag tac aat aac aag act cgg aac aat act ctc        240
Glu Asn Val Arg Ile Glu Tyr Asn Asn Lys Thr Arg Asn Asn Thr Leu
65                  70                  75                  80

gcg tcc gtg tgg cag ccc ggg gac ccc gag tgg tac acc gtc tct gtc        288
Ala Ser Val Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser Val
                85                  90                  95

ccc ggt gct gac ggc tcc ccg cgc acc gtg aac aat act ttc att ttt        336
Pro Gly Ala Asp Gly Ser Pro Arg Thr Val Asn Asn Thr Phe Ile Phe
            100                 105                 110

gca cac atg tgc gac acg gtc atg tgg atg agc aag cag tac gat atg        384
Ala His Met Cys Asp Thr Val Met Trp Met Ser Lys Gln Tyr Asp Met
        115                 120                 125

tgg ccc ccc acg aag gag aac atc gtg gtc ttc tcc atc gct tac agc        432
Trp Pro Pro Thr Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr Ser
```

```
    130                 135                 140

ctg tgc acg gcg cta atc acc gct atc gtg tgc ctg agc att cac atg        480
Leu Cys Thr Ala Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His Met
145                 150                 155                 160

ctc atc gct att cgc ccc aga aat aat gcc gaa aaa gag aaa cag cca        528
Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln Pro
                165                 170                 175

ta                                                                    530


<210>  89
<211>  176
<212>  PRT
<213>  Simian adenovirus 38

<400>  89

Met Gly Lys Ile Thr Leu Val Ser Cys Gly Ala 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 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 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>  90
<211>  5900
<212>  DNA
<213>  Simian adenovirus 38


<220>
<221>  CDS
<222>  (4)..(573)
<223>  label=22K

<220>
<221>  CDS
<222>  (1880)..(2506)
<223>  label=E3\CR1\alpha

<220>
<221>  CDS
<222>  (5465)..(5893)
<223>  label=E3\RID\beta

<400>  90
agg atg ccc cga gga agc agc aag aag ctg aaa gtg gag ctg ccg ccg         48
    Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Pro
    1               5                   10                  15

gag gat ttg gag gaa gac tgg gag agc agt cag gca gag gag gag atg         96
Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu Met
                20                  25                  30

gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa gac agt        144
Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
            35                  40                  45

ctg gag gag gaa gac gag gtg gag gag gag gca gag gaa gaa gca gcc        192
Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala
        50                  55                  60

gcc gcc aga ccg tcg tcc tcg gcg gag gag aaa gca agc agc acg gat        240
Ala Ala Arg Pro Ser Ser Ser Ala Glu Glu Lys Ala Ser Ser Thr Asp
    65                  70                  75

acc atc tcc gct ccg ggt cgg ggt cgc ggc ggt cgg gcc cac agt aga        288
Thr Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser Arg
80                  85                  90                  95

tgg gac gag acc ggg cgc ttc ccg aac ccc acc acc cag acc ggt aag        336
Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys
                100                 105                 110

aag gag cgg cag gga tac aag tcc tgg cgg ggg cac aaa aac gcc atc        384
Lys Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile
            115                 120                 125
```

```
gtc tcc tgc ttg caa gcc tgc ggg ggc aac atc tcc ttc acc cgg cgc        432
Val Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg
        130                 135                 140

tac ctg ctc ttc cac cgc ggg gtg aac ttc ccc cgc aac atc ttg cat        480
Tyr Leu Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His
    145                 150                 155

tac tac cgt cac ctc cac agc ccc tac tac tgt ttc caa gaa gag gca        528
Tyr Tyr Arg His Leu His Ser Pro Tyr Tyr Cys Phe Gln Glu Glu Ala
160                 165                 170                 175

gaa acc cag cag cag cag aaa acc agc ggc agc agc agc agc agc            573
Glu Thr Gln Gln Gln Gln Lys Thr Ser Gly Ser Ser Ser Ser Ser
                180                 185                 190

tagaaaatcc acagcggcgg cggcggcagg tggactgagg atcgcggcga acgagccggc      633

gcagacccgg gagctgagga accggatctt tcccaccctc tatgccatct tccagcagag      693

tcgggggcag gagcaggaac tgaaagtcaa gaaccgttct ctgcgctcgc tcacccgcag      753

ttgtctgtat cacaagagcg aagaccaact tcagcgcact ctcgaggacg ccgaggctct      813

cttcaacaag tactgcgcgc tcactcttaa agagtagccc gcgcccgccc acacacggaa      873

aaaggcggga attacgtcac cacctgcgcc cttcgcccga ccatcatcat gagcaaagag      933

attcccacgc cttacatgtg gagctaccag ccccagatgg gcctggccgc cggcgccgcc      993

caggactact ccacccgcat gaactggctc agtgccgggc ccgcgatgat ctcacgggtg     1053

aatgacatcc gcgcccaccg aaaccagata ctcctagaac agtcagcgat caccgccacg     1113

ccccgccatc accttaatcc gcgtaattgg cccgccgccc tggtgtacca ggaaattccc     1173

cagcccacga ccgtactact tccgcgagac gcccaggccg aagtccagct gactaactca     1233

ggtgtccagc tggccggcgg cgccgccctg tgtcgtcacc gccccgctca gggtataaag     1293

cggctggtga tccgaggcag aggcacacag ctcaacgacg aggtggtgag ctcttcgctg     1353

ggtctgcgac ctgacggagt cttccaactc gccggatcgg ggagatcttc cttcacgcct     1413

cgtcaggccg tcctgacttt ggagagttcg tcctcgcagc cccgctcggg cggcatcggc     1473

actctccagt tcgtggagga gttcactccc tcggtctact tcaacccctt ctccggctcc     1533

cccggccact acccggacga gttcatcccg aacttcgacg ccatcagcga gtcggtggac     1593

ggctacgatt gaatgtccca tggtggcgcg gctgacctag ctcggcttcg acacctggac     1653

cactgccgcc gcttccgctg cttcgctcgg gatctcgccg agtttgccta ctttgagctg     1713

cccgaggagc accctcaggg cccggcccac ggagtgcgga tcgtcgtcga agggggcctc     1773

gactcccacc tgcttcggat cttcagccag cgaccgatcc tggtcgagcg cgagcaagga     1833

cagacccgtc tgaccctgta ctgcatctgc aaccaccccg gcctgc atg aaa gtc        1888
```

Met Lys Val

```
ttt gtt gtc tgc tgt gta ctg agt ata ata aaa gct gag atc agc gac       1936
Phe Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu Ile Ser Asp
    195                 200                 205

tac tcc gga ctc gat tgt ggt gtt cct gct atc aac cgg tcc ctg ttc       1984
Tyr Ser Gly Leu Asp Cys Gly Val Pro Ala Ile Asn Arg Ser Leu Phe
210                 215                 220                 225

ttc acc ggg aac gag acc gag ctc cag ctc cag tgt aag ccc cac aag       2032
Phe Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys Pro His Lys
                230                 235                 240

aag tat ctc acc tgg ctg ttc cag ggc tcc ccg atc gcc gtt gtc aac       2080
Lys Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala Val Val Asn
            245                 250                 255

cac tgc gac aac gac gga gtc ctg ctg agc ggc ccc gcc aac ctt act       2128
His Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala Asn Leu Thr
        260                 265                 270

ttt tcc acc cgc aga agc aag ctc cag ctc ttc caa ccc ttc ctc ccc       2176
Phe Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro Phe Leu Pro
    275                 280                 285

ggg acc tat cag tgc ctc tcg gga ccc tgc cat cac acc ttc cac ctg       2224
Gly Thr Tyr Gln Cys Leu Ser Gly Pro Cys His His Thr Phe His Leu
290                 295                 300                 305

atc ccg aat acc aca gcg gcg ctc ccc gct act aac aac caa act acc       2272
Ile Pro Asn Thr Thr Ala Ala Leu Pro Ala Thr Asn Asn Gln Thr Thr
                310                 315                 320

cac caa cgc cac cgt cgc gac ctt tcc tct gaa tct aat act acc acc       2320
His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn Thr Thr Thr
            325                 330                 335

cac acc gga ggt gag ctc cga ggt caa cca acc tct ggg att tac tac       2368
His Thr Gly Gly Glu Leu Arg Gly Gln Pro Thr Ser Gly Ile Tyr Tyr
        340                 345                 350

ggc ccc tgg gag gtg gtg ggg tta ata gcg cta ggc cta gtt gcg ggt       2416
Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Ala Gly
    355                 360                 365

ggg ctt ttg gct ctc tgc tac cta tac ctc cct tgc tgt tct tac tta       2464
Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr Leu
370                 375                 380                 385

gtg gtg ctg tgt tgc tgg ttt aag aaa tgg gga aga tca ccc               2506
Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
                390                 395

tagtgagctg cggtgcgctg gtggcggtgg tgctttcgat tgtgggactg ggcggcgcgg     2566

ctgtagtgaa ggagaaggcc gatccctgct tgcatttcaa tcccgacaaa tgccagctga     2626
```

gttttcagcc cgatggcaat cggtgcgcgg tgctgatcaa gtgcggatgg gaatgcgaga 2686

acgtgagaat cgagtacaat aacaagactc ggaacaatac tctcgcgtcc gtgtggcagc 2746

ccggggaccc cgagtggtac accgtctctg tccccggtgc tgacggctcc ccgcgcaccg 2806

tgaacaatac tttcattttt gcacacatgt gcgacacggt catgtggatg agcaagcagt 2866

acgatatgtg gccccccacg aaggagaaca tcgtggtctt ctccatcgct tacagcctgt 2926

gcacggcgct aatcaccgct atcgtgtgcc tgagcattca catgctcatc gctattcgcc 2986

ccagaaataa tgccgaaaaa gagaaacagc cataacacgt tttttcacac acctttttca 3046

gaccatggcc tctgttaaat tttttgcttt atttgccagt ctcattaccg tcattcatgg 3106

aatgagtaat gagaaaatta ctatttacac tggcactaat cacacattga aaggtccaga 3166

aaaagccaca gaagtttcat ggtattgtta ttttaatgaa tcagatgtag ctactgaact 3226

ctgtggaaac aacaacaaaa aaaatgagag cattactctc atcaagtttc aatgtggatc 3286

tgacttaacc ctcattaaca tcactagaga ctatgtaggt atgtattatg gaactacagc 3346

aggcatttcg gacatggaat tttatcaagt ttctgtgtct gaacccacca cgcctagaat 3406

gaccacaacc acaaaaacta cacctactac caccacacag ctcactacca atggcttttt 3466

tgccatgctt caagtggctg aaaatagcac cagcattcaa cccaccccac ccagtgagga 3526

aattcccaaa tccatgattg gcattattgt tgctgtagtg gtgtgcatgt tgatcatcgc 3586

cttgtgcatg gtgtactatg ccttctgcta cagaaagcac agactgaacg acaagctgga 3646

acacttacta agtgttgaat tttaattttt tagaaccatg aagatcctat gccttttagt 3706

tttttatatc attacctctg ctctttgtga atcagtggat aaagatgtta ctattaccac 3766

tggttctaat tatacactga aaggaccacc ctcaggtatg ctttcgtggt attgctattt 3826

tggaactgac actgatcaaa ctgaattatg caattttcaa aaaggcaaaa cctcaaactc 3886

taaaatctct aattatcaat gcaatggcac tgatctgata ctactcaatg tcacgaaagc 3946

atatggtggc agttattcat gccctggaca aaacactgaa gaaatgattt tttacaaagt 4006

ggaagtggtt gatcccacta ctccacctcc acccgccaca actactcaca ccacacacac 4066

agaacaaagc acagcagagg cagcaaagtt agccttgcag gtccaagaca gttcatttgt 4126

tggcattacc cctacacctg atcagcggtg tccggggctg ctcgtcagcg gcattgtcgg 4186

tgtgctttcg ggattagcag tcataatcat ctgcatgttc atttttgctt gctgctatag 4246

aaggctttac cgacaaaaat cagacccact gctgaacctc tatgtttaat tttttccaga 4306

gccatgaagg cagttagcgc tctagttttt tgttctttga ttggcattgt ttttaatagt 4366

aaaattacca gagttagctt tattaaacat gttaatgtaa ctgaaggaga taacatcaca 4426

```
ctagcaggtg tagaaggtgc tcaaaacacc acctggacaa aataccatct aggatggaga     4486

gatatttgca cctggaatgt aacttattat tgcataggag ttaatcttac cattgttaac     4546

gctaaccaat ctcagaatgg gttaattaaa ggacagagtg ttagtgtgac cagtgatggg     4606

tactataccc agcatagttt taactacaac attactgtca taccactgcc tacgcctagc     4666

ccacctagca ctaccgcaca gacaaccaca tacagtacat caaatcagcc taccaccact     4726

acagcagcag aggttgccag ctcgtctggg gtccgagtgg catttttgat gttggcccca     4786

tctagcagtc ccactgctag taccaatgag cagactactg aatttttgtc cactgtcgag     4846

agccacacca cagctacctc cagtgccttc tctagcaccg ccaatctctc ctcgctttcc     4906

tctacaccaa tcagtcccgc tactactcct agccccgctc ctcttcccac tcccctgaag     4966

caaacagacg gcggcatgca atggcagatc accctgctca ttgtgatcgg gttggtcatc     5026

ctggccgtgt tgctatacta catcttctgc cgccgcattc ccaacgcgca ccgcaagccg     5086

gcctacaagc ccatcgttat cgggcagccg gagccgcttc aggtggaagg gggtctaagg     5146

aatcttctct tctcttttac agtatggtga ttgaactatg attcctagac aattcttgat     5206

cactattctt atctgcctcc tccaagtctg tgccaccctc gctctggtgg ccaacgccag     5266

tccagactgt attggaccct tcgcctccta cgtgctcttt gccttcgtca cctgcatctg     5326

ctgctgtagc atagtctgcc tgcttatcac cttcttccag ttcattgact ggatctttgt     5386

gcgcatcgcc tacctgcgcc accaccccca gtaccgcgac cagcgagtgg cgcagctgct     5446

caggctcctc tgataagc atg cgg gct ctg cta ctt ctc gcg ctt ctg ctg       5497
                    Met Arg Ala Leu Leu Leu Leu Ala Leu Leu Leu
                    400                 405                 410

tta gtg ctc ccc cgt ccc gtt gac ccc cgg ccc ccc act cag tcc ccc       5545
Leu Val Leu Pro Arg Pro Val Asp Pro Arg Pro Pro Thr Gln Ser Pro
                415                 420                 425

gag gag gtc cgc aaa tgc aaa ttc caa gaa ccc tgg aaa ttc ctc aaa       5593
Glu Glu Val Arg Lys Cys Lys Phe Gln Glu Pro Trp Lys Phe Leu Lys
            430                 435                 440

tgc tac cgc caa aaa tca gac atg cat ccc agc tgg atc atg atc att       5641
Cys Tyr Arg Gln Lys Ser Asp Met His Pro Ser Trp Ile Met Ile Ile
        445                 450                 455

ggg atc gtg aac att ctg gcc tgc acc ctc atc tcc ttt gtg att tac       5689
Gly Ile Val Asn Ile Leu Ala Cys Thr Leu Ile Ser Phe Val Ile Tyr
    460                 465                 470

ccc tgc ttt gac ttt ggt tgg aac tcg cca gag gcg ctc tat ctc ccg       5737
Pro Cys Phe Asp Phe Gly Trp Asn Ser Pro Glu Ala Leu Tyr Leu Pro
475                 480                 485                 490
```

```
cct gaa cct gac aca cca cca cag caa cct cag gca cac gca cta cca       5785
Pro Glu Pro Asp Thr Pro Pro Gln Gln Pro Gln Ala His Ala Leu Pro
               495                 500                 505

cca cca cag cct agg cca caa tac atg ccc ata tta gac tat gag gcc       5833
Pro Pro Gln Pro Arg Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala
           510                 515                 520

gag cca cag cga ccc atg ctc ccc gct att agt tac ttc aat cta acc       5881
Glu Pro Gln Arg Pro Met Leu Pro Ala Ile Ser Tyr Phe Asn Leu Thr
       525                 530                 535

ggc gga gat gac tgaccca                                              5900
Gly Gly Asp Asp
    540
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<210> 91
<211> 190
<212> PRT
<213> Simian adenovirus 38

<400> 91

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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 Glu Met Glu
            20                  25                  30

Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu
        35                  40                  45

Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala Ala
    50                  55                  60

Ala Arg Pro Ser Ser Ser Ala Glu Glu Lys Ala Ser Ser Thr Asp Thr
65                  70                  75                  80

Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala 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 Cys Phe Gln Glu Glu Ala Glu
                165                 170                 175

Thr Gln Gln Gln Gln Lys Thr Ser Gly Ser Ser Ser Ser Ser Ser
            180                 185                 190
```

<210> 92
<211> 209
<212> PRT
<213> Simian adenovirus 38

<400> 92

```
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 Leu Ser Gly Pro Cys His His Thr
            100                 105                 110

Phe His Leu Ile Pro Asn Thr Thr Ala Ala 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 His Thr Gly Gly Glu Leu Arg Gly Gln Pro Thr Ser Gly
145                 150                 155                 160
```

```
Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu
                165                 170                 175

Val Ala Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys
            180                 185                 190

Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser
        195                 200                 205

Pro
```

<210> 93
<211> 143
<212> PRT
<213> Simian adenovirus 38

<400> 93

```
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> 94
<211> 1440
<212> DNA
<213> Simian adenovirus 38

<220>
<221> CDS
<222> (577)..(1144)
<223> label=Ela\13S

<220>
<221> CDS
<222> (1230)..(1435)
<223> label=Ela\13S

<400> 94
catcatcaaa taatatacct taaacttttg gtgcgcgtta atatgcaaat gaggtatttg 60

aatttgggga tgcggggcgg tgattggctg cgggagcggc gaccgttagg ggcggggcgg 120

gtgacgtttt gatgacgtgt ttgtgaggcg gagccggttt gcaagttctc gtgggaaaag 180

tgacgtcaaa cgaggtgtgg tttgaacacg gaaatactca attttcccgc gctctctgac 240

aggaaatgag gtgtttctgg gcggatgcaa gtgaaaacgg gccattttcg cgcgaaaact 300

gaatgaggaa gtgaaaatct gagtaatttc gcgtttatgg cagggaggag tatttgccga 360

gggccgagta gactttgacc gattacgtgg gggtttcgat taccgtattt ttcacctaaa 420

tttccgcgta cggtgtcaaa gtccggtgtt tttacgtagg tgtcagctga tcgccagggt 480

atttaaacct gcgctctcta gtcaagaggc cactcttgag tgccagcgag tagagttttc 540

tcctccgcgc cgcgagtcag atctacactt tgaaag atg agg cac ctg aga gac 594
Met Arg His Leu Arg Asp
1 5

ctg ccc ggt aat gtt ttc ctg gct act ggg aac gag att ctg gaa ctg 642
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 ccg gag ccc cct acc cca 690
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 738
Phe Glu Ala Pro Ser Leu Tyr Asp Leu Tyr Asp Leu Glu Val Asp Val
40 45 50

ccc gag aac gac ccc aac gag gag gcg gtg aat gat ttg ttt agc gat 786
Pro 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 834
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        882
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        930
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        978
Cys Leu Pro Pro Ser Asp Asp Glu Glu Asp Glu Glu Ala Ile Arg Ala
    120                 125                 130

gca gcg aac cag gga gtg aaa gcg gcg ggc gag ggc ttt agc ctg gac       1026
Ala Ala Asn Gln Gly Val Lys Ala Ala Gly Glu Gly Phe Ser Leu Asp
135                 140                 145                 150

tgt cct act ctg ccc gga cac ggc tgt aag tct tgt gaa ttt cat cgc       1074
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       1122
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 a gtaagtgtga ttaactttag ttgggaaggc       1174
Ala Tyr Asn His Cys Val Tyr
        185

agagggtgac tgggtgctga ctggtttatt tatgtatatg ttttttttatg tgtag gt     1231
                                                              Ser


ccc gtc tct gac gta gat gag acc ccc act tca gag tgc att tca tca       1279
Pro Val Ser Asp Val Asp Glu Thr Pro Thr Ser Glu Cys Ile Ser Ser
                195                 200                 205

ccc cca gaa att ggc gag gaa ccg ccc gaa gat att att cat aga cca       1327
Pro Pro Glu Ile Gly Glu Glu Pro Pro Glu Asp Ile Ile His Arg Pro
            210                 215                 220

gtt gca gtg aga gtc acc ggg cgg aga gca gct gtg gag agt ttg gat       1375
Val Ala Val Arg Val Thr Gly Arg Arg Ala Ala Val Glu Ser Leu Asp
        225                 230                 235

gac ttg cta cag ggt ggg gat gaa cct ttg gac ttg tgt acc cgg aaa       1423
Asp Leu Leu Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg Lys
    240                 245                 250

cgc ccc agg cac taagt                                             1440
Arg Pro Arg His
255
```

<210> 95
<211> 258
<212> PRT
<213> Simian adenovirus 38

<400> 95

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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 Pro 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 Asn Gln Gly Val Lys Ala Ala Gly
    130                 135                 140

Glu Gly 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 Pro Val
            180                 185                 190

Ser Asp Val Asp Glu Thr Pro Thr Ser Glu Cys Ile Ser Ser Pro Pro
        195                 200                 205

Glu Ile Gly Glu Glu Pro Pro Glu Asp Ile Ile His Arg Pro Val Ala
    210                 215                 220

Val Arg Val Thr Gly Arg Arg Ala Ala Val Glu Ser Leu Asp Asp Leu
```

```
225                 230                 235                 240

Leu Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro
                245                 250                 255

Arg His



<210>  96
<211>  850
<212>  DNA
<213>  Simian adenovirus 38


<220>
<221>  CDS
<222>  (4)..(331)
<223>  label=33K

<220>
<221>  CDS
<222>  (501)..(847)
<223>  label=33K

<400>  96
agg atg ccc cga gga agc agc aag aag ctg aaa gtg gag ctg ccg ccg         48
    Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro Pro
    1               5                   10                  15

gag gat ttg gag gaa gac tgg gag agc agt cag gca gag gag gag atg         96
Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu Met
                20                  25                  30

gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa gac agt        144
Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
            35                  40                  45

ctg gag gag gaa gac gag gtg gag gag gag gca gag gaa gaa gca gcc        192
Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala
        50                  55                  60

gcc gcc aga ccg tcg tcc tcg gcg gag gag aaa gca agc agc acg gat        240
Ala Ala Arg Pro Ser Ser Ser Ala Glu Glu Lys Ala Ser Ser Thr Asp
    65                  70                  75

acc atc tcc gct ccg ggt cgg ggt cgc ggc ggt cgg gcc cac agt aga        288
Thr Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser Arg
80                  85                  90                  95

tgg gac gag acc ggg cgc ttc ccg aac ccc acc acc cag acc g              331
Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr
                100                 105

gtaagaagga gcggcaggga tacaagtcct ggcgggggca caaaaacgcc atcgtctcct      391

gcttgcaagc ctgcgggggc aacatctcct tcacccggcg ctacctgctc ttccaccgcg      451
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gggtgaactt cccccgcaac atcttgcatt actaccgtca cctccacag cc  cct act      508
                                                        Ala Pro Thr

act gtt tcc aag aag agg cag aaa ccc agc agc agc aga aaa cca gcg        556
Thr Val Ser Lys Lys Arg Gln Lys Pro Ser Ser Ser Arg Lys Pro Ala
        115                 120                 125

gca gca gca gca gca gct aga aaa tcc aca gcg gcg gcg gcg gca ggt        604
Ala Ala Ala Ala Ala Ala Arg Lys Ser Thr Ala Ala Ala Ala Ala Gly
    130                 135                 140

gga ctg agg atc gcg gcg aac gag ccg gcg cag acc cgg gag ctg agg        652
Gly Leu Arg Ile Ala Ala Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg
145                 150                 155                 160

aac cgg atc ttt ccc acc ctc tat gcc atc ttc cag cag agt cgg ggg        700
Asn Arg Ile Phe Pro Thr Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly
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cag gag cag gaa ctg aaa gtc aag aac cgt tct ctg cgc tcg ctc acc        748
Gln Glu Gln Glu Leu Lys Val Lys Asn Arg Ser Leu Arg Ser Leu Thr
            180                 185                 190

cgc agt tgt ctg tat cac aag agc gaa gac caa ctt cag cgc act ctc        796
Arg Ser Cys Leu Tyr His Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu
        195                 200                 205

gag gac gcc gag gct ctc ttc aac aag tac tgc gcg ctc act ctt aaa        844
Glu Asp Ala Glu Ala Leu Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys
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Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu Met Glu
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Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu
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Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala Ala
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Ala Arg Pro Ser Ser Ser Ala Glu Glu Lys Ala Ser Ser Thr Asp Thr
65                  70                  75                  80

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

Thr Val Ser Lys Lys Arg Gln Lys Pro Ser Ser Ser Arg Lys Pro Ala
        115                 120                 125

Ala Ala Ala Ala Ala Ala Arg Lys Ser Thr Ala Ala Ala Ala Ala Gly
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Gly Leu Arg Ile Ala Ala Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg
145                 150                 155                 160

Asn Arg Ile Phe Pro Thr Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly
                165                 170                 175

Gln Glu Gln Glu Leu Lys Val Lys Asn Arg Ser Leu Arg Ser Leu Thr
            180                 185                 190

Arg Ser Cys Leu Tyr His Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu
        195                 200                 205

Glu Asp Ala Glu Ala Leu Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys
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Glu
225


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tgacgttttg atgacgtggc catgaggcgg agccggtttg caagttctcg tgggaaaagt 180

gacgtcaaac gaggtgtggt ttgaacacgg aaatactcaa ttttcccgcg ctctctgaca 240

ggaaatgagg tgtttctggg cggatgcaag tgaaaacggg ccattttcgc gcgaaaactg 300

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gtaatgtttt cctggctact gggaacgaga ttctggaact ggtggtggac gccatgatgg 660

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gggccatcag tctcacttta accagagtat tctgagagcc cttgactttt ctactcctgg     1860

cagaactacc gccgcggtag ccttttttgc ctttatcctt gacaa atg gag tca aga     1917
                                                 Met Glu Ser Arg
                                                 1

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
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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
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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
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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 agcctgc atg agg ggc      3460
Glu Ser Asp                                         Met Arg Gly
                                                        505

aga atg act aaa atc tgt gtt ttt ctg tgc agc agc atg agc gga agc       3508
Arg Met Thr Lys Ile Cys Val Phe Leu Cys Ser Ser Met Ser Gly Ser
            510                 515                 520

gcc tcc ttt gag gga ggg gta ttc agc cct tat ctg acg ggg cgt ctc       3556
Ala Ser Phe Glu Gly Gly Val Phe Ser Pro Tyr Leu Thr Gly Arg Leu
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ccc tcc tgg gcg gga gtg cgt cag aat gtg atg gga tct acg gtg gac       3604
Pro Ser Trp Ala Gly Val Arg Gln Asn Val Met Gly Ser Thr Val Asp
    540                 545                 550

ggc cgg ccc gtg cag ccc gcg aac tct tca acc ctg acc tac gcg acc       3652
Gly Arg Pro Val Gln Pro Ala Asn Ser Ser Thr Leu Thr Tyr Ala Thr
555                 560                 565                 570

ctg agc tcc tcg tcc gtg gac gca gct gcc gcc gca gct gct gct tcc       3700
Leu Ser Ser Ser Ser Val Asp Ala Ala Ala Ala Ala Ala Ala Ser
                575                 580                 585

gcc gcc agc gcc gtg cgc gga atg gcc ctg ggc gcc ggc tac tac agc       3748
Ala Ala Ser Ala Val Arg Gly Met Ala Leu Gly Ala Gly Tyr Tyr Ser
            590                 595                 600

tct ctg gtg gcc aac tcg agt tcc acc aat aat ccc gcc agc ctg aac       3796
Ser Leu Val Ala Asn Ser Ser Ser Thr Asn Asn Pro Ala Ser Leu Asn
        605                 610                 615

gag gag aag ctg ctg ctg ctg atg gcc cag ctc gag gcc ctg acc cag       3844
Glu Glu Lys Leu Leu Leu Leu Met Ala Gln Leu Glu Ala Leu Thr Gln
    620                 625                 630

cgc ctg ggc gag ctg acc cag cag gtg gct cag ctg cag gcg gag acg       3892
Arg Leu Gly Glu Leu Thr Gln Gln Val Ala Gln Leu Gln Ala Glu Thr
635                 640                 645                 650

cgg gcc gcg gtt gcc acg gtg aaa acc aaa taaaaaatga atcaataaat         3942
Arg Ala Ala Val Ala Thr Val Lys Thr Lys
                655                 660

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gcggtaggcc ctggaccacc ggtctcgatc attgagcacc cggtggatct tttccaggac     4062

ccggtagagg tgggcttgga tgttgaggta catgggcatg agcccgtccc gggggtggag     4122

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gcggctaacg agggcgtggc tgccccgtcg tttccaagac ccctagccag ccgacttctc    10782

cagttacgga gcgagcccct cttttgtttt ttgtttttgc cag atg cat ccc gta      10837
                                              Met His Pro Val

ctg cgg cag atg cgc ccc cac cac cct cca ccg caa caa cag ccc cct      10885
Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln Gln Gln Pro Pro
665                 670                 675                 680

cca cag ccg gcg ctt ctg ccc ccg ccc cag cag caa ctt cca gcc acg      10933
Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln Leu Pro Ala Thr
                685                 690                 695

acc gcc gcg gcc gcc gtg agc ggg gct gga cag agt tat gac cac cag      10981
Thr Ala Ala Ala Ala Val Ser Gly Ala Gly Gln Ser Tyr Asp His Gln
            700                 705                 710

ctg gcc ttg gaa gag ggc gag ggg ctg gcg cgc ctg ggg gcg tcg tcg      11029
Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser
        715                 720                 725

ccg gag cgg cac ccg cgc gtg cag atg aaa agg gac gct cgc gag gcc      11077
Pro Glu Arg His Pro Arg Val Gln Met Lys Arg Asp Ala Arg Glu Ala
    730                 735                 740

tac gtg ccc aag cag aac ctg ttc aga gac agg agc ggc gag gag ccc      11125
Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro
745                 750                 755                 760

gag gag atg cgc gcg gcc cgg ttc cac gcg ggg cgg gag ctg cgg cgc      11173
Glu Glu Met Arg Ala Ala Arg Phe His Ala Gly Arg Glu Leu Arg Arg
                765                 770                 775

ggc ctg gac cga aag agg gtg ctg agg gac gag gat ttc gag gcg gac      11221
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Gly Leu Asp Arg Lys Arg Val Leu Arg Asp Glu Asp Phe Glu Ala Asp
            780                 785                 790

gag ctg acg ggg atc agc ccc gcg cgc gcg cac gtg gcc gcg gcc aac      11269
Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala His Val Ala Ala Ala Asn
        795                 800                 805

ctg gtc acg gcg tac gag cag acc gtg aag gag gag agc aac ttc caa      11317
Leu Val Thr Ala Tyr Glu Gln Thr Val Lys Glu Glu Ser Asn Phe Gln
    810                 815                 820

aaa tcc ttc aac aac cac gtg cgc acg ctg atc gcg cgc gag gag gtg      11365
Lys Ser Phe Asn Asn His Val Arg Thr Leu Ile Ala Arg Glu Glu Val
825                 830                 835                 840

acc ctg ggc ctg atg cac ctg tgg gac ctg ctg gag gcc atc gtg cag      11413
Thr Leu Gly Leu Met His Leu Trp Asp Leu Leu Glu Ala Ile Val Gln
                845                 850                 855

aac ccc acg agc aag ccg ctg acg gcg cag ctg ttc ctg gtg gtg cag      11461
Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu Phe Leu Val Val Gln
            860                 865                 870

cac agt cgg gac aac gag acg ttc agg gag gcg ctg ctg aat atc acc      11509
His Ser Arg Asp Asn Glu Thr Phe Arg Glu Ala Leu Leu Asn Ile Thr
        875                 880                 885

gag ccc gag ggc cgc tgg ctc ctg gac ctg gtg aac att ctg cag agc      11557
Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu Val Asn Ile Leu Gln Ser
    890                 895                 900

atc gtg gtg cag gag cgc ggg ctg ccg ctg tcc gag aag ctg gcg gcc      11605
Ile Val Val Gln Glu Arg Gly Leu Pro Leu Ser Glu Lys Leu Ala Ala
905                 910                 915                 920

atc aac ttc tcg gtg ctg agt ttg ggc aag tac tac gct agg aag atc      11653
Ile Asn Phe Ser Val Leu Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile
                925                 930                 935

tac aag acc ccg tac gtg ccc ata gac aag gag gtg aag atc gac ggg      11701
Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu Val Lys Ile Asp Gly
            940                 945                 950

ttt tac atg cgc atg acc ctg aaa gtg ctg acc ctg agc gac gat ctg      11749
Phe Tyr Met Arg Met Thr Leu Lys Val Leu Thr Leu Ser Asp Asp Leu
        955                 960                 965

ggg gtg tac cgc aac gac agg atg cac cgt gcg gtg agc gcc agc cgc      11797
Gly Val Tyr Arg Asn Asp Arg Met His Arg Ala Val Ser Ala Ser Arg
    970                 975                 980

cgg cgc gag ctg agc gac cag gag ctg atg cac agc ctg cag cgg gcc      11845
Arg Arg Glu Leu Ser Asp Gln Glu Leu Met His Ser Leu Gln Arg Ala
985                 990                 995                 1000

ctg acc ggg gcc ggg  acc gag ggg gag agc  tac ttt gac atg ggc       11890
Leu Thr Gly Ala Gly  Thr Glu Gly Glu Ser  Tyr Phe Asp Met Gly
                1005                1010                1015
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gcg gac ctg cgc tgg  cag ccc agc cgc cgg  gcc ttg gaa gct gcc        11935
Ala Asp Leu Arg Trp  Gln Pro Ser Arg Arg  Ala Leu Glu Ala Ala
                1020                1025                1030

ggc ggt tcc ccc tac  gta gaa gag gtg gac  gat gag gtg gac gag        11980
Gly Gly Ser Pro Tyr  Val Glu Glu Val Asp  Asp Glu Val Asp Glu
                1035                1040                1045

gag ggc gag tac ctg  gaa gac tgatggcgcg accgtatttt tgctag atg caa    12033
Glu Gly Glu Tyr Leu  Glu Asp                              Met Gln
                1050

caa  cag cca cct cct gat  ccc gcg atg cgg gcg  gcg ctg cag agc       12078
Gln  Gln Pro Pro Pro Asp  Pro Ala Met Arg Ala  Ala Leu Gln Ser
1055                1060                1065

cag  ccg tcc ggc att aac  tcc tcg gac gat tgg  acc cag gcc atg       12123
Gln  Pro Ser Gly Ile Asn  Ser Ser Asp Asp Trp  Thr Gln Ala Met
1070                1075                1080

caa  cgc atc atg gcg ctg  acg acc cgc aac ccc  gaa gcc ttt aga       12168
Gln  Arg Ile Met Ala Leu  Thr Thr Arg Asn Pro  Glu Ala Phe Arg
1085                1090                1095

cag  cag ccc cag gcc aac  cgg ctc tcg gcc atc  ctg gag gcc gtg       12213
Gln  Gln Pro Gln Ala Asn  Arg Leu Ser Ala Ile  Leu Glu Ala Val
1100                1105                1110

gtg  ccc tcg cgc tcc aac  ccc acg cac gag aag  gtc ctg gcc atc       12258
Val  Pro Ser Arg Ser Asn  Pro Thr His Glu Lys  Val Leu Ala Ile
1115                1120                1125

gtg  aac gcg ctg gtg gag  aac aag gcc atc cgc  ggc gac gag gcc       12303
Val  Asn Ala Leu Val Glu  Asn Lys Ala Ile Arg  Gly Asp Glu Ala
1130                1135                1140

ggc  ctg gtg tac aac gcg  ctg ctg gag cgc gtg  gcc cgc tac aac       12348
Gly  Leu Val Tyr Asn Ala  Leu Leu Glu Arg Val  Ala Arg Tyr Asn
1145                1150                1155

agc  acc aac gtg cag acc  aac ctg gac cgc atg  gtg acc gac gtg       12393
Ser  Thr Asn Val Gln Thr  Asn Leu Asp Arg Met  Val Thr Asp Val
1160                1165                1170

cgc  gag gcc gtg gcc cag  cgc gag cgg ttc cac  cgc gag tcc aac       12438
Arg  Glu Ala Val Ala Gln  Arg Glu Arg Phe His  Arg Glu Ser Asn
1175                1180                1185

ctg  gga tcc atg gtg gcg  ctg aac gcc ttc ctc  agc acc cag ccc       12483
Leu  Gly Ser Met Val Ala  Leu Asn Ala Phe Leu  Ser Thr Gln Pro
1190                1195                1200

gcc  aac gtg ccc cgg ggc  cag gag gac tac acc  aac ttc atc agc       12528
Ala  Asn Val Pro Arg Gly  Gln Glu Asp Tyr Thr  Asn Phe Ile Ser
1205                1210                1215

gcc  ctg cgc ctg atg gtg  acc gag gtg ccc cag  agc gag gtg tac       12573
Ala  Leu Arg Leu Met Val  Thr Glu Val Pro Gln  Ser Glu Val Tyr
1220                1225                1230
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cag  tcc ggg ccg gac tac  ttc ttc cag acc agt  cgc cag ggc ttg       12618
Gln  Ser Gly Pro Asp Tyr  Phe Phe Gln Thr Ser  Arg Gln Gly Leu
1235                 1240                 1245

cag  acc gtg aac ctg agc  cag gct ttc aag aac  ttg cag gga ttg       12663
Gln  Thr Val Asn Leu Ser  Gln Ala Phe Lys Asn  Leu Gln Gly Leu
1250                 1255                 1260

tgg  ggc gtg cag gcc ccg  gtc ggg gac cgc gcg  acg gtg tcg agc       12708
Trp  Gly Val Gln Ala Pro  Val Gly Asp Arg Ala  Thr Val Ser Ser
1265                 1270                 1275

ctg  ctg acg ccg aac tcg  cgc ctg ctg ctg ctg  ctg gtg gcc ccc       12753
Leu  Leu Thr Pro Asn Ser  Arg Leu Leu Leu Leu  Leu Val Ala Pro
1280                 1285                 1290

ttc  acg gac agc ggc agc  atc aac cgc aac tcg  tac ctg ggc tac       12798
Phe  Thr Asp Ser Gly Ser  Ile Asn Arg Asn Ser  Tyr Leu Gly Tyr
1295                 1300                 1305

ctg  att aac ctg tac cgc  gag gcc atc ggc cag  gcg cac gtg gac       12843
Leu  Ile Asn Leu Tyr Arg  Glu Ala Ile Gly Gln  Ala His Val Asp
1310                 1315                 1320

gag  cag acc tac cag gag  atc acc cac gtg agc  cgc gcc ctg ggc       12888
Glu  Gln Thr Tyr Gln Glu  Ile Thr His Val Ser  Arg Ala Leu Gly
1325                 1330                 1335

cag  gac gac ccg ggc aac  ctg gaa gcc acc ctg  aac ttt ttg ctg       12933
Gln  Asp Asp Pro Gly Asn  Leu Glu Ala Thr Leu  Asn Phe Leu Leu
1340                 1345                 1350

acc  aac cgg tcg cag aag  atc ccg ccc cag tac  gcg ctc agc acc       12978
Thr  Asn Arg Ser Gln Lys  Ile Pro Pro Gln Tyr  Ala Leu Ser Thr
1355                 1360                 1365

gag  gag gag cgc atc ctg  cgt tac gtg cag cag  agc gtg ggc ctg       13023
Glu  Glu Glu Arg Ile Leu  Arg Tyr Val Gln Gln  Ser Val Gly Leu
1370                 1375                 1380

ttc  ctg atg cag gag ggg  gcc acc ccc agc gcc  gcg ctc gac atg       13068
Phe  Leu Met Gln Glu Gly  Ala Thr Pro Ser Ala  Ala Leu Asp Met
1385                 1390                 1395

acc  gcg cgc aac atg gag  ccc agc atg tac gcc  agc aac cgc ccg       13113
Thr  Ala Arg Asn Met Glu  Pro Ser Met Tyr Ala  Ser Asn Arg Pro
1400                 1405                 1410

ttc  atc aat aaa ctg atg  gac tac ttg cat cgg  gcg gcc gcc atg       13158
Phe  Ile Asn Lys Leu Met  Asp Tyr Leu His Arg  Ala Ala Ala Met
1415                 1420                 1425

aac  tct gac tat ttc acc  aac gcc atc ctg aat  ccc cac tgg ctc       13203
Asn  Ser Asp Tyr Phe Thr  Asn Ala Ile Leu Asn  Pro His Trp Leu
1430                 1435                 1440

ccg  ccg cct ggg ttc tac  acg ggc gag tac gac  atg ccc gac ccc       13248
Pro  Pro Pro Gly Phe Tyr  Thr Gly Glu Tyr Asp  Met Pro Asp Pro
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1445                1450                1455

aat  gac ggg ttc ctg tgg  gac gat gtg gac agc  agc gtg ttc tcc      13293
Asn  Asp Gly Phe Leu Trp  Asp Asp Val Asp Ser  Ser Val Phe Ser
1460                1465                1470

ccc  cga ccg ggt gct aac  gag cgc ccc ttg tgg  aag aag gaa ggc      13338
Pro  Arg Pro Gly Ala Asn  Glu Arg Pro Leu Trp  Lys Lys Glu Gly
1475                1480                1485

agc  gac cga cgc ccg tcc  tcg gcg ctg tcc ggc  cgc gag ggt gct      13383
Ser  Asp Arg Arg Pro Ser  Ser Ala Leu Ser Gly  Arg Glu Gly Ala
1490                1495                1500

gcc  gcg gcg gtg ccc gag  gcc gcc agt cct ttt  cct agc ttg ccc      13428
Ala  Ala Ala Val Pro Glu  Ala Ala Ser Pro Phe  Pro Ser Leu Pro
1505                1510                1515

ttc  tcg ctg aac agt atc  cgc agc agc gag ctg  ggg agg atc acg      13473
Phe  Ser Leu Asn Ser Ile  Arg Ser Ser Glu Leu  Gly Arg Ile Thr
1520                1525                1530

cgc  ccg cgc ttg ctg ggc  gag gag gag tac ttg  aat gac tcg ctg      13518
Arg  Pro Arg Leu Leu Gly  Glu Glu Glu Tyr Leu  Asn Asp Ser Leu
1535                1540                1545

ttg  aga ccc gag cgg gag  aag aac ttc ccc aat  aac ggg ata gag      13563
Leu  Arg Pro Glu Arg Glu  Lys Asn Phe Pro Asn  Asn Gly Ile Glu
1550                1555                1560

agc  ctg gtg gac aag atg  agc cgc tgg aag acg  tat gcg cag gag      13608
Ser  Leu Val Asp Lys Met  Ser Arg Trp Lys Thr  Tyr Ala Gln Glu
1565                1570                1575

cac  agg gac gat ccc cgg  gcg tcg cag ggg gcc  acg agc cgg ggc      13653
His  Arg Asp Asp Pro Arg  Ala Ser Gln Gly Ala  Thr Ser Arg Gly
1580                1585                1590

agc  gcc gcc cgt aaa cgc  cgg tgg cac gac agg  cag cgg gga ctg      13698
Ser  Ala Ala Arg Lys Arg  Arg Trp His Asp Arg  Gln Arg Gly Leu
1595                1600                1605

atg  tgg gac gat gag gat  tcc gcc gac gac agc  agc gtg ttg gac      13743
Met  Trp Asp Asp Glu Asp  Ser Ala Asp Asp Ser  Ser Val Leu Asp
1610                1615                1620

ttg  ggt ggg agt ggt ggt  ggt aac ccg ttc gct  cac ctg cgc ccc      13788
Leu  Gly Gly Ser Gly Gly  Gly Asn Pro Phe Ala  His Leu Arg Pro
1625                1630                1635

cgc  atc ggg cgc atg atg  taagaaaccg aaaataaatg atactcacca        13836
Arg  Ile Gly Arg Met Met
1640                1645

aggccatggc gaccagcgtg cgttcgtttc ttctctgttg ttgtatctag t atg atg   13893
                                                        Met Met


agg cgt gcg  tac ccg gag ggt cct  cct ccc tcg tac gag  agc gtg      13938
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Arg Arg Ala  Tyr Pro Glu Gly Pro  Pro Pro Ser Tyr Glu  Ser Val
        1650                1655                1660

atg cag cag  gcg atg gcg gcg gcg  gcg gcg atg cag ccc  ccg ctg       13983
Met Gln Gln  Ala Met Ala Ala Ala  Ala Ala Met Gln Pro  Pro Leu
        1665                1670                1675

gag gct cct  tac gtg ccc ccg cgg  tac ctg gcg cct acg  gag ggg       14028
Glu Ala Pro  Tyr Val Pro Pro Arg  Tyr Leu Ala Pro Thr  Glu Gly
        1680                1685                1690

cgg aac agc  att cgt tac tcg gag  ctg gca ccc ttg tac  gat acc       14073
Arg Asn Ser  Ile Arg Tyr Ser Glu  Leu Ala Pro Leu Tyr  Asp Thr
        1695                1700                1705

acc cgg ttg  tac ctg gtg gac aac  aag tcg gcg gac atc  gcc tcg       14118
Thr Arg Leu  Tyr Leu Val Asp Asn  Lys Ser Ala Asp Ile  Ala Ser
        1710                1715                1720

ctg aac tac  cag aac gac cac agc  aac ttc ctg acc acc  gtg gtg       14163
Leu Asn Tyr  Gln Asn Asp His Ser  Asn Phe Leu Thr Thr  Val Val
        1725                1730                1735

cag aac aat  gac ttc acc ccc acg  gag gcc agc acc cag  acc atc       14208
Gln Asn Asn  Asp Phe Thr Pro Thr  Glu Ala Ser Thr Gln  Thr Ile
        1740                1745                1750

aac ttt gac  gag cgc tcg cgg tgg  ggc ggc cag ctg aaa  acc atc       14253
Asn Phe Asp  Glu Arg Ser Arg Trp  Gly Gly Gln Leu Lys  Thr Ile
        1755                1760                1765

atg cac acc  aac atg ccc aac gtg  aac gag ttc atg tac  agc aac       14298
Met His Thr  Asn Met Pro Asn Val  Asn Glu Phe Met Tyr  Ser Asn
        1770                1775                1780

aag ttc aag  gcg cgg gtc atg gtc  tcc cgc aag acc ccc  aac ggg       14343
Lys Phe Lys  Ala Arg Val Met Val  Ser Arg Lys Thr Pro  Asn Gly
        1785                1790                1795

gtg gga gag  gat tat gat ggt agt  cag gat gag ctg aaa  tac gaa       14388
Val Gly Glu  Asp Tyr Asp Gly Ser  Gln Asp Glu Leu Lys  Tyr Glu
        1800                1805                1810

tgg gtg gag  ttt gag ctg ccc gaa  ggc aac ttc tcg gtg  acc atg       14433
Trp Val Glu  Phe Glu Leu Pro Glu  Gly Asn Phe Ser Val  Thr Met
        1815                1820                1825

acc atc gac  ctg atg aac aac gcc  atc atc gac aat tac  ttg gcg       14478
Thr Ile Asp  Leu Met Asn Asn Ala  Ile Ile Asp Asn Tyr  Leu Ala
        1830                1835                1840

gtg ggg cgg  cag aac ggg gtc ctg  gag agc gat atc ggc  gtg aag       14523
Val Gly Arg  Gln Asn Gly Val Leu  Glu Ser Asp Ile Gly  Val Lys
        1845                1850                1855

ttc gac act  agg aac ttc agg ctg  ggg tgg gac ccc gtg  acc gag       14568
Phe Asp Thr  Arg Asn Phe Arg Leu  Gly Trp Asp Pro Val  Thr Glu
        1860                1865                1870
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ctg gtc atg  ccc ggg gtg tac acc  aac gag gcc ttc cat  ccc gat       14613
Leu Val Met  Pro Gly Val Tyr Thr  Asn Glu Ala Phe His  Pro Asp
        1875                 1880                 1885

att gtc ttg  ctg ccc ggc tgc ggg  gtg gac ttc acc gag  agc cgc       14658
Ile Val Leu  Leu Pro Gly Cys Gly  Val Asp Phe Thr Glu  Ser Arg
        1890                 1895                 1900

ctc agc aac  ctg ctg ggc att cgc  aag agg cag cca ttc  cag gag       14703
Leu Ser Asn  Leu Leu Gly Ile Arg  Lys Arg Gln Pro Phe  Gln Glu
        1905                 1910                 1915

ggt ttc cag  atc atg tac gag gat  ctg gag ggg ggc aac  atc ccc       14748
Gly Phe Gln  Ile Met Tyr Glu Asp  Leu Glu Gly Gly Asn  Ile Pro
        1920                 1925                 1930

gcg ctc ctg  gat gtc gac gcc tat  gag aaa agc aag gag  gaa gca       14793
Ala Leu Leu  Asp Val Asp Ala Tyr  Glu Lys Ser Lys Glu  Glu Ala
        1935                 1940                 1945

gca gct gag  gca acc gca gcc gta  gcc acc gcc tct acc  gag gtc       14838
Ala Ala Glu  Ala Thr Ala Ala Val  Ala Thr Ala Ser Thr  Glu Val
        1950                 1955                 1960

agg ggc gat  aat ttt gca agc gcc  gca gca gtg gca gcg  gcc gag       14883
Arg Gly Asp  Asn Phe Ala Ser Ala  Ala Ala Val Ala Ala  Ala Glu
        1965                 1970                 1975

gcg gct gaa  acc gaa agt aag ata  gtc att cag ccg gtg  gag aag       14928
Ala Ala Glu  Thr Glu Ser Lys Ile  Val Ile Gln Pro Val  Glu Lys
        1980                 1985                 1990

gat agc aag  aac agg agc tac aac  gta cta ccg gac aag  ata aac       14973
Asp Ser Lys  Asn Arg Ser Tyr Asn  Val Leu Pro Asp Lys  Ile Asn
        1995                 2000                 2005

acc gcc tac  cgc agc tgg tac ctg  gcc tac aac tat ggc  gac ccc       15018
Thr Ala Tyr  Arg Ser Trp Tyr Leu  Ala Tyr Asn Tyr Gly  Asp Pro
        2010                 2015                 2020

gag aag ggc  gtg cgc tcc tgg acg  ctg ctc acc acc tcg  gac gtc       15063
Glu Lys Gly  Val Arg Ser Trp Thr  Leu Leu Thr Thr Ser  Asp Val
        2025                 2030                 2035

acc tgc ggc  gtg gag caa gtc tac  tgg tcg ctg ccc gac  atg atg       15108
Thr Cys Gly  Val Glu Gln Val Tyr  Trp Ser Leu Pro Asp  Met Met
        2040                 2045                 2050

caa gac ccg  gtc acc ttc cgc tcc  acg cgt caa gtt agc  aac tac       15153
Gln Asp Pro  Val Thr Phe Arg Ser  Thr Arg Gln Val Ser  Asn Tyr
        2055                 2060                 2065

ccg gtg gtg  ggc gcc gag ctc ctg  ccc gtc tac tcc aag  agc ttc       15198
Pro Val Val  Gly Ala Glu Leu Leu  Pro Val Tyr Ser Lys  Ser Phe
        2070                 2075                 2080

ttc aac gag  cag gcc gtc tac tcg  cag cag ctg cgc gcc  ttc acc       15243
Phe Asn Glu  Gln Ala Val Tyr Ser  Gln Gln Leu Arg Ala  Phe Thr
        2085                 2090                 2095
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tcg ctc acg  cac gtc ttc aac cgc  ttc ccc gag aac cag  atc ctc       15288
Ser Leu Thr  His Val Phe Asn Arg  Phe Pro Glu Asn Gln  Ile Leu
        2100                 2105                 2110

gtc cgc ccg  ccc gcg ccc acc att  acc acc gtc agt gaa  aac gtt       15333
Val Arg Pro  Pro Ala Pro Thr Ile  Thr Thr Val Ser Glu  Asn Val
        2115                 2120                 2125

cct gct ctc  aca gat cac ggg acc  ctg ccg ctg cgc agc  agt atc       15378
Pro Ala Leu  Thr Asp His Gly Thr  Leu Pro Leu Arg Ser  Ser Ile
        2130                 2135                 2140

cgg gga gtc  cag cgc gtg acc gtt  act gac gcc aga cgc  cgc acc       15423
Arg Gly Val  Gln Arg Val Thr Val  Thr Asp Ala Arg Arg  Arg Thr
        2145                 2150                 2155

tgc ccc tac  gtc tac aag gcc ctg  ggc ata gtc gcg ccg  cgc gtc       15468
Cys Pro Tyr  Val Tyr Lys Ala Leu  Gly Ile Val Ala Pro  Arg Val
        2160                 2165                 2170

ctc tcg agc  cgc acc ttc taaaaa atg tcc  att ctc atc tcg ccc  agt    15516
Leu Ser Ser  Arg Thr Phe        Met Ser  Ile Leu Ile Ser Pro  Ser
        2175                         2180                 2185

aat aac acc ggt  tgg ggc ctg cgc gcg  ccc agc aag atg tac  gga       15561
Asn Asn Thr Gly  Trp Gly Leu Arg Ala  Pro Ser Lys Met Tyr  Gly
            2190                 2195                 2200

ggc gct cgc caa  cgc tcc acg caa cac  ccc gtg cgc gtg cgc  ggg       15606
Gly Ala Arg Gln  Arg Ser Thr Gln His  Pro Val Arg Val Arg  Gly
            2205                 2210                 2215

cac ttc cgc gct  ccc tgg ggc gcc ctc  aag ggc cgc gtg cgg  tcg       15651
His Phe Arg Ala  Pro Trp Gly Ala Leu  Lys Gly Arg Val Arg  Ser
            2220                 2225                 2230

cgc acc acc gtc  gac gac gtg atc gac  cag gtg gtg gcc gac  gcg       15696
Arg Thr Thr Val  Asp Asp Val Ile Asp  Gln Val Val Ala Asp  Ala
            2235                 2240                 2245

cgc aac tac acc  ccc gcc gcc gcg ccc  gtc tcc acc gtg gac  gcc       15741
Arg Asn Tyr Thr  Pro Ala Ala Ala Pro  Val Ser Thr Val Asp  Ala
            2250                 2255                 2260

gtc atc gac agc  gtg gtg gcc gac gcg  cgc cgg tac gcc cgc  gcc       15786
Val Ile Asp Ser  Val Val Ala Asp Ala  Arg Arg Tyr Ala Arg  Ala
            2265                 2270                 2275

aag agc cgg cgg  cgg cgc atc gcc cgg  cgg cac cgg agc acc  ccc       15831
Lys Ser Arg Arg  Arg Arg Ile Ala Arg  Arg His Arg Ser Thr  Pro
            2280                 2285                 2290

gcc atg cgc gcg  gcg cga gcc ttg ctg  cgc agg gcc agg cgc  acg       15876
Ala Met Arg Ala  Ala Arg Ala Leu Leu  Arg Arg Ala Arg Arg  Thr
            2295                 2300                 2305

gga cgc agg gcc  atg ctc agg gcg gcc  aga cgc gcg gct tca  ggc       15921
Gly Arg Arg Ala  Met Leu Arg Ala Ala  Arg Arg Ala Ala Ser  Gly
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            2310                2315                2320

gcc agc gcc ggc  agg acc cgg aga cgc  gcg gcc acg gcg gcg  gca       15966
Ala Ser Ala Gly  Arg Thr Arg Arg Arg  Ala Ala Thr Ala Ala  Ala
            2325                2330                2335

gcg gcc atc gcc  agc atg tcc cgc ccg  cgg cga ggg aac gtg  tac       16011
Ala Ala Ile Ala  Ser Met Ser Arg Pro  Arg Arg Gly Asn Val  Tyr
            2340                2345                2350

tgg gtg cgc gac  gcc gcc acc ggt gtg  cgc gtg ccc gtg cgc  acc       16056
Trp Val Arg Asp  Ala Ala Thr Gly Val  Arg Val Pro Val Arg  Thr
            2355                2360                2365

cgc ccc cct cgc  act tgaagatgtt cacttcgcga tgttgatgtg tcccagcggc    16111
Arg Pro Pro Arg  Thr
            2370

gagg atg tcc aag cgc  aaa ttc aag gaa gag  atg ctc cag gtc atc       16157
     Met Ser Lys Arg  Lys Phe Lys Glu Glu  Met Leu Gln Val Ile
                 2375                2380                2385

gcg cct gag atc tac  ggc ccc gcg gcg gcg  gtg aag gag gaa aga       16202
Ala Pro Glu Ile Tyr  Gly Pro Ala Ala Ala  Val Lys Glu Glu Arg
                 2390                2395                2400

aag ccc cgc aaa atc  aag cgg gtc aaa aag  gac aaa aag gaa gaa       16247
Lys Pro Arg Lys Ile  Lys Arg Val Lys Lys  Asp Lys Lys Glu Glu
                 2405                2410                2415

gat gtg gac gat gtg  gtg gag ttt gtg cgc  gag ttc gcc ccc cgg       16292
Asp Val Asp Asp Val  Val Glu Phe Val Arg  Glu Phe Ala Pro Arg
                 2420                2425                2430

cgg cgc gtg cag tgg  cgc ggg cgg aag gtg  cag ccg gtg ctg aga       16337
Arg Arg Val Gln Trp  Arg Gly Arg Lys Val  Gln Pro Val Leu Arg
                 2435                2440                2445

ccc ggc acc acc gtg  gtc ttc acg ccc ggc  gag cgc tcc ggc acc       16382
Pro Gly Thr Thr Val  Val Phe Thr Pro Gly  Glu Arg Ser Gly Thr
                 2450                2455                2460

gct tcc aag cgc tcc  tac gac gag gtg tac  ggg gat gat gat att       16427
Ala Ser Lys Arg Ser  Tyr Asp Glu Val Tyr  Gly Asp Asp Asp Ile
                 2465                2470                2475

ctg gag cag gcg gcc  gag cgc ctg ggc gag  ttt gct tac ggc aag       16472
Leu Glu Gln Ala Ala  Glu Arg Leu Gly Glu  Phe Ala Tyr Gly Lys
                 2480                2485                2490

cgc agc cgc tcc gcg  ccg aag gaa gag gcg  gtg tcc atc ccg ctg       16517
Arg Ser Arg Ser Ala  Pro Lys Glu Glu Ala  Val Ser Ile Pro Leu
                 2495                2500                2505

gac cac ggc aac ccc  acg ccg agc ctc aag  ccc gtg acc ctg cag       16562
Asp His Gly Asn Pro  Thr Pro Ser Leu Lys  Pro Val Thr Leu Gln
                 2510                2515                2520

cag gtg ctg ccg agc  gcg gcg ccg cga agg  ggg ttc aag cgc gag       16607
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Gln Val Leu Pro Ser  Ala Ala Pro Arg Arg  Gly Phe Lys Arg Glu
                2525                2530                2535

ggc gag gat ctg tat  ccc acc atg cag ctg  atg gtg ccc aaa cgc        16652
Gly Glu Asp Leu Tyr  Pro Thr Met Gln Leu  Met Val Pro Lys Arg
                2540                2545                2550

cag aag ctg gaa gac  gtg ctg gaa acc atg  aag gtg gac ccg gac        16697
Gln Lys Leu Glu Asp  Val Leu Glu Thr Met  Lys Val Asp Pro Asp
                2555                2560                2565

gtg cag ccc gag gtc  aag gtg cgg ccc atc  aag cag gtg gcc ccg        16742
Val Gln Pro Glu Val  Lys Val Arg Pro Ile  Lys Gln Val Ala Pro
                2570                2575                2580

ggt ctg ggc gtg cag  acc gtg gac atc aag  atc ccc acg gag ccc        16787
Gly Leu Gly Val Gln  Thr Val Asp Ile Lys  Ile Pro Thr Glu Pro
                2585                2590                2595

atg gaa acg cag acc  gag ccc atg atc aag  ccc agt acc agc acc        16832
Met Glu Thr Gln Thr  Glu Pro Met Ile Lys  Pro Ser Thr Ser Thr
                2600                2605                2610

atg gag gtg cag acg  gat ccc tgg atg cca  gcc gcc ccc acc agc        16877
Met Glu Val Gln Thr  Asp Pro Trp Met Pro  Ala Ala Pro Thr Ser
                2615                2620                2625

agc cga aga ccc cgg  cgc aag tac ggc gcg  gcc agc ctg ctg atg        16922
Ser Arg Arg Pro Arg  Arg Lys Tyr Gly Ala  Ala Ser Leu Leu Met
                2630                2635                2640

ccc aac tac gcg ctg  cat cct tcc atc atc  ccc acg ccg ggc tac        16967
Pro Asn Tyr Ala Leu  His Pro Ser Ile Ile  Pro Thr Pro Gly Tyr
                2645                2650                2655

cgc ggc acg cgc ttc  tac cgc ggt cat aca  acc agc tcc cgc cgc        17012
Arg Gly Thr Arg Phe  Tyr Arg Gly His Thr  Thr Ser Ser Arg Arg
                2660                2665                2670

cgc aag acc acc act  cgc cgc cgc cgt cgc  cgc aca gcc gcc gct        17057
Arg Lys Thr Thr Thr  Arg Arg Arg Arg Arg  Arg Thr Ala Ala Ala
                2675                2680                2685

gca acc acc ccc gcc  gcc ctg gtg cgg aga  gtg tac cgc cgc ggc        17102
Ala Thr Thr Pro Ala  Ala Leu Val Arg Arg  Val Tyr Arg Arg Gly
                2690                2695                2700

cgc gcg cct ctg acc  ctg ccg cgc gcg cgc  tac cac ccg agc atc        17147
Arg Ala Pro Leu Thr  Leu Pro Arg Ala Arg  Tyr His Pro Ser Ile
                2705                2710                2715

gcc att taaaactttc gcctgctttg cag atg gct ctc  aca tgc cgc ctc       17197
Ala Ile                          Met Ala Leu  Thr Cys Arg Leu
                                            2720

cgc  gtc ccc att acg ggc  tac cga gga aga aaa  ccg cgc cgt aga       17242
Arg  Val Pro Ile Thr Gly  Tyr Arg Gly Arg Lys  Pro Arg Arg Arg
2725                2730                2735
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agg  ctg gcg ggg aac ggg  atg cgt cgc cac cac  cac cgg cgg cgg       17287
Arg  Leu Ala Gly Asn Gly  Met Arg Arg His His  His Arg Arg Arg
2740                 2745                 2750

cgc  gcc atc agc aag cgg  ttg ggg gga ggc ttc  ctg ccc gcg ctg       17332
Arg  Ala Ile Ser Lys Arg  Leu Gly Gly Gly Phe  Leu Pro Ala Leu
2755                 2760                 2765

atc  ccc atc atc gcc gcg  gcg atc ggg gcg atc  ccc ggc att gct       17377
Ile  Pro Ile Ile Ala Ala  Ala Ile Gly Ala Ile  Pro Gly Ile Ala
2770                 2775                 2780

tcc  gtg gcg gtg cag gcc  tct cag cgc cac tgagacacac ttggaaacat      17427
Ser  Val Ala Val Gln Ala  Ser Gln Arg His
2785                 2790

cttgtaataa acca atg  gac tct gac gct cct  ggt cct gtg atg tgt        17474
               Met  Asp Ser Asp Ala Pro  Gly Pro Val Met Cys
               2795                 2800                 2805

ttt cgt aga cag atg  gaa gac atc aat ttt  tcg tcc ctg gct ccg       17519
Phe Arg Arg Gln Met  Glu Asp Ile Asn Phe  Ser Ser Leu Ala Pro
               2810                 2815                 2820

cga cac ggc acg cgg  ccg ttc atg ggc acc  tgg agc gac atc ggc       17564
Arg His Gly Thr Arg  Pro Phe Met Gly Thr  Trp Ser Asp Ile Gly
               2825                 2830                 2835

acc agc caa ctg aac  ggg ggc gcc ttc aat  tgg agc agt ctc tgg       17609
Thr Ser Gln Leu Asn  Gly Gly Ala Phe Asn  Trp Ser Ser Leu Trp
               2840                 2845                 2850

agc ggg ctt aag aat  ttc ggg tcc acg ctt  aaa acc tat ggc agc       17654
Ser Gly Leu Lys Asn  Phe Gly Ser Thr Leu  Lys Thr Tyr Gly Ser
               2855                 2860                 2865

aag gcg tgg aac agc  acc aca ggg cag gcg  ctg agg gat aag ctg       17699
Lys Ala Trp Asn Ser  Thr Thr Gly Gln Ala  Leu Arg Asp Lys Leu
               2870                 2875                 2880

aaa gag cag aac ttc  cag cag aag gtg gtc  gat ggg ctc gcc tcg       17744
Lys Glu Gln Asn Phe  Gln Gln Lys Val Val  Asp Gly Leu Ala Ser
               2885                 2890                 2895

ggc atc aac ggg gtg  gtg gac ctg gcc aac  cag gcc gtg cag cgg       17789
Gly Ile Asn Gly Val  Val Asp Leu Ala Asn  Gln Ala Val Gln Arg
               2900                 2905                 2910

cag atc aac agc cgc  ctg gac ccg gtg ccg  ccc gcc ggc tcc gtg       17834
Gln Ile Asn Ser Arg  Leu Asp Pro Val Pro  Pro Ala Gly Ser Val
               2915                 2920                 2925

gag atg ccg cag gtg  gag gag gag ctg cct  ccc ctg gac aag cgg       17879
Glu Met Pro Gln Val  Glu Glu Glu Leu Pro  Pro Leu Asp Lys Arg
               2930                 2935                 2940

ggc gag aag cga ccc  cgc ccc gac gcg gag  gag acg ctg ctg acg       17924
Gly Glu Lys Arg Pro  Arg Pro Asp Ala Glu  Glu Thr Leu Leu Thr
               2945                 2950                 2955
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cac acg gac gag ccg  ccc ccg tac gag gag  gcg gtg aaa ctg ggt        17969
His Thr Asp Glu Pro  Pro Pro Tyr Glu Glu  Ala Val Lys Leu Gly
                2960                2965                2970

ctg ccc acc acg cgg  ccc atc gcg ccc ctg  gcc acc ggg gtg ctg        18014
Leu Pro Thr Thr Arg  Pro Ile Ala Pro Leu  Ala Thr Gly Val Leu
                2975                2980                2985

aaa ccc gaa agt aat  aag ccc gcg acc ctg  gac ttg cct cct ccc        18059
Lys Pro Glu Ser Asn  Lys Pro Ala Thr Leu  Asp Leu Pro Pro Pro
                2990                2995                3000

cag cct tct cgc ccc  tcc aca gtg gct aag  ccc ctg ccg ccg gtg        18104
Gln Pro Ser Arg Pro  Ser Thr Val Ala Lys  Pro Leu Pro Pro Val
                3005                3010                3015

gcc gtg gcc cgc gcg  cga ccc ggg ggc acc  gcc cgc cct cat gcg        18149
Ala Val Ala Arg Ala  Arg Pro Gly Gly Thr  Ala Arg Pro His Ala
                3020                3025                3030

aac tgg cag agc act  ctg aac agc atc gtg  ggt ctg gga gtg cag        18194
Asn Trp Gln Ser Thr  Leu Asn Ser Ile Val  Gly Leu Gly Val Gln
                3035                3040                3045

agt gtg aag cgc cgc  cgc tgc tat taaacctacc gtagcgctta acttgcttgt    18248
Ser Val Lys Arg Arg  Arg Cys Tyr
                3050

ctgtgtgtgt atgtattatg tcgccgccgc cgctgtccac cagaaggagg agtgaagagg    18308

cgcgtcgccg agttgcaag atg gcc  acc cca tcg atg ctg  ccc cag tgg       18357
                     Met Ala  Thr Pro Ser Met Leu  Pro Gln Trp
                         3055                3060

gcg tac  atg cac atc gcc gga  cag gac gct tcg gag  tac ctg agt       18402
Ala Tyr  Met His Ile Ala Gly  Gln Asp Ala Ser Glu  Tyr Leu Ser
    3065                3070                3075

ccg ggt  ctg gtg cag ttc gcc  cgc gcc aca gac acc  tac ttc agt       18447
Pro Gly  Leu Val Gln Phe Ala  Arg Ala Thr Asp Thr  Tyr Phe Ser
    3080                3085                3090

ctg ggg  aac aag ttt agg aac  ccc acg gtg gcg ccc  acg cac gat       18492
Leu Gly  Asn Lys Phe Arg Asn  Pro Thr Val Ala Pro  Thr His Asp
    3095                3100                3105

gtg acc  acc gac cgc agc cag  cgg ctg acg ctg cgc  ttc gtg ccc       18537
Val Thr  Thr Asp Arg Ser Gln  Arg Leu Thr Leu Arg  Phe Val Pro
    3110                3115                3120

gtg gac  cgc gag gac aac acc  tac tcg tac aaa gtg  cgc tac acg       18582
Val Asp  Arg Glu Asp Asn Thr  Tyr Ser Tyr Lys Val  Arg Tyr Thr
    3125                3130                3135

ctg gcc  gtg ggc gac aac cgc  gtg ctg gac atg gcc  agc acc tac       18627
Leu Ala  Val Gly Asp Asn Arg  Val Leu Asp Met Ala  Ser Thr Tyr
    3140                3145                3150
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ttt gac  atc cgc ggc gtg ttg  gac cgg ggc cct agc  ttc aaa ccc       18672
Phe Asp  Ile Arg Gly Val Leu  Asp Arg Gly Pro Ser  Phe Lys Pro
    3155                 3160                 3165

tac tcc  ggc acc gcc tac aac  agc ctg gct ccc aag  gga gcg ccc       18717
Tyr Ser  Gly Thr Ala Tyr Asn  Ser Leu Ala Pro Lys  Gly Ala Pro
    3170                 3175                 3180

aat tcc  agc cag tgg gag caa  aat gaa aac aat ggt  caa ggt caa       18762
Asn Ser  Ser Gln Trp Glu Gln  Asn Glu Asn Asn Gly  Gln Gly Gln
    3185                 3190                 3195

gct aag  aca cac acc tat ggt  gtt gct gct atg ggc  gga ctt gat       18807
Ala Lys  Thr His Thr Tyr Gly  Val Ala Ala Met Gly  Gly Leu Asp
    3200                 3205                 3210

att acg  aaa gag ggt ctt caa  att gga act gat gct  agt aag gaa       18852
Ile Thr  Lys Glu Gly Leu Gln  Ile Gly Thr Asp Ala  Ser Lys Glu
    3215                 3220                 3225

gat gac  aat gaa att tat gcc  gat gaa aca tat cag  ccc gag cct       18897
Asp Asp  Asn Glu Ile Tyr Ala  Asp Glu Thr Tyr Gln  Pro Glu Pro
    3230                 3235                 3240

caa ata  gga gag gaa aat tgg  caa gac act gaa aac  ttt tat gga       18942
Gln Ile  Gly Glu Glu Asn Trp  Gln Asp Thr Glu Asn  Phe Tyr Gly
    3245                 3250                 3255

ggc aga  gct ctt aaa aaa gat  acc aag atg aag cca  tgc tat ggc       18987
Gly Arg  Ala Leu Lys Lys Asp  Thr Lys Met Lys Pro  Cys Tyr Gly
    3260                 3265                 3270

tca ttt  gcc aga cct acc aat  gtg aag gga ggg caa  gcc aaa gtg       19032
Ser Phe  Ala Arg Pro Thr Asn  Val Lys Gly Gly Gln  Ala Lys Val
    3275                 3280                 3285

aaa aca  gaa gaa aat gtt cag  tca ttc gac ata gat  ctg gct ttc       19077
Lys Thr  Glu Glu Asn Val Gln  Ser Phe Asp Ile Asp  Leu Ala Phe
    3290                 3295                 3300

ttt gat  att cca agc acc ggc  aca ggg agc aat ggt  aca aat gta       19122
Phe Asp  Ile Pro Ser Thr Gly  Thr Gly Ser Asn Gly  Thr Asn Val
    3305                 3310                 3315

aat gat  aag cca gac atg gtc  atg tac act gaa aat  gtg aat ttg       19167
Asn Asp  Lys Pro Asp Met Val  Met Tyr Thr Glu Asn  Val Asn Leu
    3320                 3325                 3330

gag acg  cca gat act cat att  gtg tac aaa cct gga  act tca gat       19212
Glu Thr  Pro Asp Thr His Ile  Val Tyr Lys Pro Gly  Thr Ser Asp
    3335                 3340                 3345

gac agc  tct gaa gcc aac ttg  tgc cag cag gcc atg  cca aac aga       19257
Asp Ser  Ser Glu Ala Asn Leu  Cys Gln Gln Ala Met  Pro Asn Arg
    3350                 3355                 3360

cct aac  tac att ggt ttc aga  gac aat ttt att ggg  ctc atg tac       19302
Pro Asn  Tyr Ile Gly Phe Arg  Asp Asn Phe Ile Gly  Leu Met Tyr
    3365                 3370                 3375
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tac aac  agt act ggc aac atg  ggt gta ctg gct ggt  cag gcc tca       19347
Tyr Asn  Ser Thr Gly Asn Met  Gly Val Leu Ala Gly  Gln Ala Ser
    3380                 3385                 3390

cag ctg  aat gct gtg gtt gac  ttg caa gac aga aac  acc gag ctg       19392
Gln Leu  Asn Ala Val Val Asp  Leu Gln Asp Arg Asn  Thr Glu Leu
    3395                 3400                 3405

tcc tac  cag ctc ttg ctt gac  tct ctg ggc gac aga  acc cgg tat       19437
Ser Tyr  Gln Leu Leu Leu Asp  Ser Leu Gly Asp Arg  Thr Arg Tyr
    3410                 3415                 3420

ttc agt  atg tgg aat cag gcg  gtg gac agt tat gat  cct gat gtg       19482
Phe Ser  Met Trp Asn Gln Ala  Val Asp Ser Tyr Asp  Pro Asp Val
    3425                 3430                 3435

cgc att  att gaa aac cac ggt  gtg gaa gat gaa ctt  ccc aac tat       19527
Arg Ile  Ile Glu Asn His Gly  Val Glu Asp Glu Leu  Pro Asn Tyr
    3440                 3445                 3450

tgc ttc  cca ttg gat gga gct  ggt act aat gct gtt  tac cag ggt       19572
Cys Phe  Pro Leu Asp Gly Ala  Gly Thr Asn Ala Val  Tyr Gln Gly
    3455                 3460                 3465

gtt aaa  gaa aaa act ggc aat  aat ggc gag tgg gaa  gca gat acc       19617
Val Lys  Glu Lys Thr Gly Asn  Asn Gly Glu Trp Glu  Ala Asp Thr
    3470                 3475                 3480

aat gtt  gcc tct cag aac cag  ata tgc aag ggt aac  atc tat gcc       19662
Asn Val  Ala Ser Gln Asn Gln  Ile Cys Lys Gly Asn  Ile Tyr Ala
    3485                 3490                 3495

atg gaa  att aac ctc caa gcc  aac ctg tgg aga agt  ttc ctc tac       19707
Met Glu  Ile Asn Leu Gln Ala  Asn Leu Trp Arg Ser  Phe Leu Tyr
    3500                 3505                 3510

tcg aac  gtg gcc ctg tac ctg  ccc gat tct tac aag  tac acg ccg       19752
Ser Asn  Val Ala Leu Tyr Leu  Pro Asp Ser Tyr Lys  Tyr Thr Pro
    3515                 3520                 3525

gcc aac  atc acc ctg ccc acc  aac acc aac act tat  gat tac atg       19797
Ala Asn  Ile Thr Leu Pro Thr  Asn Thr Asn Thr Tyr  Asp Tyr Met
    3530                 3535                 3540

aat ggg  aga gtg gtg cct ccc  tcg ctg gtg gac gcc  tac atc aac       19842
Asn Gly  Arg Val Val Pro Pro  Ser Leu Val Asp Ala  Tyr Ile Asn
    3545                 3550                 3555

atc ggg  gcg cgc tgg tcg ctg  gac ccc atg gac aac  gtg aac ccc       19887
Ile Gly  Ala Arg Trp Ser Leu  Asp Pro Met Asp Asn  Val Asn Pro
    3560                 3565                 3570

ttc aac  cac cac cgc aat gcg  ggg ctg cgc tac cgc  tcc atg ctc       19932
Phe Asn  His His Arg Asn Ala  Gly Leu Arg Tyr Arg  Ser Met Leu
    3575                 3580                 3585

ctg ggc  aac ggg cgc tac gtg  ccc ttc cac atc cag  gtg ccc cag       19977
Leu Gly  Asn Gly Arg Tyr Val  Pro Phe His Ile Gln  Val Pro Gln
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    3590                3595                3600

aaa ttt  ttc gcc atc aag agc  ctc ctg ctc ctg ccc  ggg tcc tac       20022
Lys Phe  Phe Ala Ile Lys Ser  Leu Leu Leu Leu Pro  Gly Ser Tyr
    3605                3610                3615

acc tac  gag tgg aac ttc cgc  aag gac gtc aac atg  atc ctg cag       20067
Thr Tyr  Glu Trp Asn Phe Arg  Lys Asp Val Asn Met  Ile Leu Gln
    3620                3625                3630

agc tcc  ctc ggc aac gac ctg  cgc acg gac ggg gcc  tcc atc tcc       20112
Ser Ser  Leu Gly Asn Asp Leu  Arg Thr Asp Gly Ala  Ser Ile Ser
    3635                3640                3645

ttc acc  agc atc aac ctc tac  gcc acc ttc ttc ccc  atg gcg cac       20157
Phe Thr  Ser Ile Asn Leu Tyr  Ala Thr Phe Phe Pro  Met Ala His
    3650                3655                3660

aac acg  gcc tcc acg ctc gag  gcc atg ctg cgc aac  gac acc aac       20202
Asn Thr  Ala Ser Thr Leu Glu  Ala Met Leu Arg Asn  Asp Thr Asn
    3665                3670                3675

gac cag  tcc ttc aac gac tac  ctc tcg gcg gcc aac  atg ctc tac       20247
Asp Gln  Ser Phe Asn Asp Tyr  Leu Ser Ala Ala Asn  Met Leu Tyr
    3680                3685                3690

ccc atc  ccg gcc aac gcc acc  aac gtg ccc atc tcc  atc ccc tcg       20292
Pro Ile  Pro Ala Asn Ala Thr  Asn Val Pro Ile Ser  Ile Pro Ser
    3695                3700                3705

cgc aac  tgg gcc gcc ttc cgc  ggc tgg tcc ttc acg  cgt ctc aag       20337
Arg Asn  Trp Ala Ala Phe Arg  Gly Trp Ser Phe Thr  Arg Leu Lys
    3710                3715                3720

acc aag  gag acg ccc tcg ctg  ggc tcc ggg ttc gac  ccc tac ttc       20382
Thr Lys  Glu Thr Pro Ser Leu  Gly Ser Gly Phe Asp  Pro Tyr Phe
    3725                3730                3735

gtc tac  tcg ggc tcc atc ccc  tac ctc gac ggc acc  ttc tac ctc       20427
Val Tyr  Ser Gly Ser Ile Pro  Tyr Leu Asp Gly Thr  Phe Tyr Leu
    3740                3745                3750

aac cac  acc ttc aag aag gtc  tcc atc acc ttc gac  tcc tcc gtc       20472
Asn His  Thr Phe Lys Lys Val  Ser Ile Thr Phe Asp  Ser Ser Val
    3755                3760                3765

agc tgg  ccc ggc aac gac cgg  ctc ctg aca ccc aac  gag ttc gaa       20517
Ser Trp  Pro Gly Asn Asp Arg  Leu Leu Thr Pro Asn  Glu Phe Glu
    3770                3775                3780

atc aag  cgc acc gtc gac ggc  gag ggc tac aac gtg  gcc cag tgc       20562
Ile Lys  Arg Thr Val Asp Gly  Glu Gly Tyr Asn Val  Ala Gln Cys
    3785                3790                3795

aac atg  acc aag gac tgg ttc  ctg gtc cag atg ctg  gcc cac tac       20607
Asn Met  Thr Lys Asp Trp Phe  Leu Val Gln Met Leu  Ala His Tyr
    3800                3805                3810

aac atc  ggc tac cag ggc ttc  tac gtg ccc gag ggc  tac aag gac       20652
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Asn Ile  Gly Tyr Gln Gly Phe  Tyr Val Pro Glu Gly  Tyr Lys Asp
    3815                 3820                 3825

cgc atg  tac tcc ttc ttc cgc  aac ttc cag ccc atg  agc cgc cag       20697
Arg Met  Tyr Ser Phe Phe Arg  Asn Phe Gln Pro Met  Ser Arg Gln
    3830                 3835                 3840

gtg gtg  gac gag gtc aac tac  aag gac tac cag gcc  gtc acc ctg       20742
Val Val  Asp Glu Val Asn Tyr  Lys Asp Tyr Gln Ala  Val Thr Leu
    3845                 3850                 3855

gcc tac  cag cac aac aac tcg  ggc ttc gtc ggc tac  ctc gcg ccc       20787
Ala Tyr  Gln His Asn Asn Ser  Gly Phe Val Gly Tyr  Leu Ala Pro
    3860                 3865                 3870

acc atg  cgc cag ggg cag ccc  tac ccc gcc aac tac  ccg tac ccg       20832
Thr Met  Arg Gln Gly Gln Pro  Tyr Pro Ala Asn Tyr  Pro Tyr Pro
    3875                 3880                 3885

ctc atc  ggc aag agc gcc gtc  acc agc gtc acc cag  aaa aag ttc       20877
Leu Ile  Gly Lys Ser Ala Val  Thr Ser Val Thr Gln  Lys Lys Phe
    3890                 3895                 3900

ctc tgc  gac agg gtc atg tgg  cgc atc ccc ttc tcc  agc aac ttc       20922
Leu Cys  Asp Arg Val Met Trp  Arg Ile Pro Phe Ser  Ser Asn Phe
    3905                 3910                 3915

atg tcc  atg ggc gcg ctc acc  gac ctc ggc cag aac  atg ctc tat       20967
Met Ser  Met Gly Ala Leu Thr  Asp Leu Gly Gln Asn  Met Leu Tyr
    3920                 3925                 3930

gcc aac  tcc gcc cac gcg cta  gac atg aat ttc gaa  gtc gac ccc       21012
Ala Asn  Ser Ala His Ala Leu  Asp Met Asn Phe Glu  Val Asp Pro
    3935                 3940                 3945

atg gat  gag tcc acc ctt ctc  tat gtt gtc ttc gaa  gtc ttc gac       21057
Met Asp  Glu Ser Thr Leu Leu  Tyr Val Val Phe Glu  Val Phe Asp
    3950                 3955                 3960

gtc gtc  cga gtg cac cag ccc  cac cgc ggc gtc atc  gag gcc gtc       21102
Val Val  Arg Val His Gln Pro  His Arg Gly Val Ile  Glu Ala Val
    3965                 3970                 3975

tac ctg  cgc acc ccc ttc tcg  gcc ggt aac gcc acc  acc taagctcttg    21151
Tyr Leu  Arg Thr Pro Phe Ser  Ala Gly Asn Ala Thr  Thr
    3980                 3985                 3990

cttcttgc atg atg gct gag  ccc acg ggc tcc ggc  gag cag gag ctc       21198
         Met Met Ala Glu  Pro Thr Gly Ser Gly  Glu Gln Glu Leu
                    3995                 4000

agg  gcc atc atc cgc gac  ctg ggc tgc ggg ccc  tac ttc ctg ggc       21243
Arg  Ala Ile Ile Arg Asp  Leu Gly Cys Gly Pro  Tyr Phe Leu Gly
4005                 4010                 4015

acc  ttc gat aag cgc ttc  ccg gga ttc atg gcc  ccg cac aag ctg       21288
Thr  Phe Asp Lys Arg Phe  Pro Gly Phe Met Ala  Pro His Lys Leu
4020                 4025                 4030
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gcc  tgc gcc atc gtc aac  acg gcc ggt cgc gag  acc ggg ggc gag       21333
Ala  Cys Ala Ile Val Asn  Thr Ala Gly Arg Glu  Thr Gly Gly Glu
4035                4040                4045

cac  tgg ctg gcc ttc gcc  tgg aac ccg cgc tcg  aac acc tgc tac       21378
His  Trp Leu Ala Phe Ala  Trp Asn Pro Arg Ser  Asn Thr Cys Tyr
4050                4055                4060

ctc  ttc gac ccc ttc ggg  ttc tcg gac gag cgc  ctc aag cag atc       21423
Leu  Phe Asp Pro Phe Gly  Phe Ser Asp Glu Arg  Leu Lys Gln Ile
4065                4070                4075

tac  cag ttc gag tac gag  ggc ctg ctg cgc cgc  agc gcc ctg gcc       21468
Tyr  Gln Phe Glu Tyr Glu  Gly Leu Leu Arg Arg  Ser Ala Leu Ala
4080                4085                4090

acc  gag gac cgc tgc gtc  acc ctg gaa aag tcc  acc cag acc gtg       21513
Thr  Glu Asp Arg Cys Val  Thr Leu Glu Lys Ser  Thr Gln Thr Val
4095                4100                4105

cag  ggt ccg cgc tcg gcc  gcc tgc ggg ctc ttc  tgc tgc atg ttc       21558
Gln  Gly Pro Arg Ser Ala  Ala Cys Gly Leu Phe  Cys Cys Met Phe
4110                4115                4120

ctg  cac gcc ttc gtg cac  tgg ccc gac cgc ccc  atg gac aag aac       21603
Leu  His Ala Phe Val His  Trp Pro Asp Arg Pro  Met Asp Lys Asn
4125                4130                4135

ccc  acc atg aac ttg ctg  acg ggg gtg ccc aac  ggc atg ctc cag       21648
Pro  Thr Met Asn Leu Leu  Thr Gly Val Pro Asn  Gly Met Leu Gln
4140                4145                4150

tcg  ccc cag gtg gaa ccc  acc ctg cgc cgc aac  cag gag gcg ctc       21693
Ser  Pro Gln Val Glu Pro  Thr Leu Arg Arg Asn  Gln Glu Ala Leu
4155                4160                4165

tac  cgc ttc ctc aac gcc  cac tcc gcc tac ttt  cgc tcc cac cgc       21738
Tyr  Arg Phe Leu Asn Ala  His Ser Ala Tyr Phe  Arg Ser His Arg
4170                4175                4180

gcg  cgc atc gag aag gcc  acc gcc ttc gac cgc  atg aat caa gac       21783
Ala  Arg Ile Glu Lys Ala  Thr Ala Phe Asp Arg  Met Asn Gln Asp
4185                4190                4195

atg  taaaccgtgt gtgtatgtga atgctttatt cataataaac agcacatgtt         21836
Met
4200

tatgccacct tctctgaggc tctgacttta tttagaaatc gaaggggttc tgccggctct  21896

cggcgtgccc cgcgggcagg gatacgttgc ggaactggta cttgggcagc cacttgaact  21956

cggggatcag cagcttcggc acggggaggt cggggaacga gtcgctccac agcttgcgcg  22016

tgagttgcag ggcgcccagc aggtcgggcg cggagatctt gaaatcgcag ttgggacccg  22076

cgttctgcgc gcgagagttg cggtacacgg ggttgcagca ctggaacacc atcagggccg  22136

ggtgcttcac gctcgccagc accgtcgcgt cggtgatgcc ctccacgtcc agatcctcgg  22196
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cgttggccat cccgaagggg gtcatcttgc aggtctgccg ccccatgctg ggcacgcagc    22256

cgggcttgtg gttgcaatcg cagtgcaggg ggatcagcat catctgggcc tgctcggagc    22316

tcatgcccgg gtacatggcc ttcatgaaag cctccagctg gcggaaggcc tgctgcgcct    22376

tgccgccctc ggtgaagaag accccgcagg acttgctaga gaactggttg gtagcgcagc    22436

ccgcgtcgtg cacgcagcag cgcgcgtcgt tgttggccag ctgcaccacg ctgcgccccc    22496

agcggttctg ggtgatcttg gcccggtcgg ggttctcctt cagcgcgcgc tgcccgttct    22556

cgctcgccac atccatctcg atcgtgtgct ccttctggat catcacggtc ccgtgcaggc    22616

accgcagctt gccctcggcc tcggtgcagc cgtgcagcca cagcgcgcag ccggtgctct    22676

cccagttctt gtgggcgatc tgggagtgcg agtgcacgaa gccctgcagg aagcggccca    22736

tcatcgtggt cagggtcttg ttgctggtga aggtcagcgg gatgccgcgg tgctcctcgt    22796

tcacatacag gtggcagatg cggcggtaca cctcgccctg ctcgggcatc agctggaagg    22856

cggacttcag gtcgctctcc acgcggtacc gctccatcag cagcgtcatc acttccatgc    22916

ccttctccca ggccgaaacg atcggcaggc tcaggggttt cttcaccgtc atcttagtcg    22976

ccgccgccga ggtcaggggg tcgttctcgt ccagggtctc aaacactcgc ttgccgtcct    23036

tctcggtgat gcgcacgggg gggaaggcga agcccacggc cgccagctcc tcctcggcct    23096

gcctttcgtc ctcgctgtcc tggctgatgt cttgcaaagg cacatgcttg gtcttgcggg    23156

gtttcttttt gggcggcaga ggcggcggcg gagacgtgct gggcgagcgc gagttctcgc    23216

tcaccacgac tatttcttct ccttggccgt cgtccgagac cacgcggcgg taggcatgcc    23276

tcttctgggg cagaggcgga ggcgacgggc tctcgcggtt cggcgggcgg ctggcagagc    23336

cccttccgcg ttcgggggtg cgctcctggc ggcgctgctc tgactgactt cctccgcggc    23396

cggccattgt gttctcctag ggagcaagc atg gag act cag cca  tcg tcg cca      23449
                               Met Glu Thr Gln Pro  Ser Ser Pro
                                                  4205

aca tcg  cca tct gcc ccc gcc  tcc acc gcc gac gag  aac cag cag        23494
Thr Ser  Pro Ser Ala Pro Ala  Ser Thr Ala Asp Glu  Asn Gln Gln
    4210                 4215                 4220

cag cag  aat gaa agc tta acc  gcc ccg ccg ccc agc  ccc acc tcc        23539
Gln Gln  Asn Glu Ser Leu Thr  Ala Pro Pro Pro Ser  Pro Thr Ser
    4225                 4230                 4235

gac gcc  gcg gcc cca gac atg  caa gag atg gag gaa  tcc atc gag        23584
Asp Ala  Ala Ala Pro Asp Met  Gln Glu Met Glu Glu  Ser Ile Glu
    4240                 4245                 4250

att gac  ctg ggc tac gtg acg  ccc gcg gag cac gag  gag gag ctg        23629
Ile Asp  Leu Gly Tyr Val Thr  Pro Ala Glu His Glu  Glu Glu Leu
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    4255                4260                4265

gca gcg  cgc ttt tca gcc ccg  gaa gaa aac cac caa  gag cag cca       23674
Ala Ala  Arg Phe Ser Ala Pro  Glu Glu Asn His Gln  Glu Gln Pro
    4270                4275                4280

gag cag  gaa gca gag aac gag  cag aac cag gct ggg  ctc gag cat       23719
Glu Gln  Glu Ala Glu Asn Glu  Gln Asn Gln Ala Gly  Leu Glu His
    4285                4290                4295

ggc gac  tac ctg agc ggg gca  gag gac gtg ctc atc  aag cat ctg       23764
Gly Asp  Tyr Leu Ser Gly Ala  Glu Asp Val Leu Ile  Lys His Leu
    4300                4305                4310

gcc cgc  caa tgc atc atc gtc  aag gac gcg ctg ctc  gac cgc gcc       23809
Ala Arg  Gln Cys Ile Ile Val  Lys Asp Ala Leu Leu  Asp Arg Ala
    4315                4320                4325

gag gtg  ccc ctc agc gtg gcg  gag ctc agc cgc gcc  tac gag cgc       23854
Glu Val  Pro Leu Ser Val Ala  Glu Leu Ser Arg Ala  Tyr Glu Arg
    4330                4335                4340

aac ctc  ttc tcg cca cgc gtg  ccc ccc aag cgc cag  ccc aac ggc       23899
Asn Leu  Phe Ser Pro Arg Val  Pro Pro Lys Arg Gln  Pro Asn Gly
    4345                4350                4355

acc tgc  gag ccc aac ccg cgc  ctc aac ttc tac ccg  gtc ttc gcg       23944
Thr Cys  Glu Pro Asn Pro Arg  Leu Asn Phe Tyr Pro  Val Phe Ala
    4360                4365                4370

gtg ccc  gag gcc ctg gcc acc  tac cac ctc ttt ttc  aag aac caa       23989
Val Pro  Glu Ala Leu Ala Thr  Tyr His Leu Phe Phe  Lys Asn Gln
    4375                4380                4385

agg atc  ccc gtc tcc tgc cgc  gcc aac cgc acc cgc  gcc gac gcc       24034
Arg Ile  Pro Val Ser Cys Arg  Ala Asn Arg Thr Arg  Ala Asp Ala
    4390                4395                4400

ctg ctc  aac ctg ggc ccc ggc  gcc cgc cta cct gat  atc gcc tcc       24079
Leu Leu  Asn Leu Gly Pro Gly  Ala Arg Leu Pro Asp  Ile Ala Ser
    4405                4410                4415

ttg gaa  gag gtt ccc aag atc  ttc gag ggt ctg ggc  agc gac gag       24124
Leu Glu  Glu Val Pro Lys Ile  Phe Glu Gly Leu Gly  Ser Asp Glu
    4420                4425                4430

act cgg  gcc gcg aac gct ctg  caa gga agc gga gag  gag cat gag       24169
Thr Arg  Ala Ala Asn Ala Leu  Gln Gly Ser Gly Glu  Glu His Glu
    4435                4440                4445

cac cac  agc gcc ctg gtg gag  ttg gaa ggc gac aac  gcg cgc ctg       24214
His His  Ser Ala Leu Val Glu  Leu Glu Gly Asp Asn  Ala Arg Leu
    4450                4455                4460

gcg gtc  ctc aag cgc acg gtc  gag ctg acc cac ttc  gcc tac cca       24259
Ala Val  Leu Lys Arg Thr Val  Glu Leu Thr His Phe  Ala Tyr Pro
    4465                4470                4475

gcg ctc  aac ctg ccc ccc aag  gtc atg agc gcc gtc  atg gac cag       24304
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Ala Leu  Asn Leu Pro Pro Lys  Val Met Ser Ala Val  Met Asp Gln
    4480                 4485                 4490

gtg ctc  atc aag cgc gcc tcg  ccc ctc tcg gag gag  gag atg cag       24349
Val Leu  Ile Lys Arg Ala Ser  Pro Leu Ser Glu Glu  Glu Met Gln
    4495                 4500                 4505

gac ccc  gag agc tcg gac gag  ggc aag ccc gtg gtc  agc gac gag       24394
Asp Pro  Glu Ser Ser Asp Glu  Gly Lys Pro Val Val  Ser Asp Glu
    4510                 4515                 4520

cag ctg  gcg cgc tgg ctg gga  gcg agt agc acc ccc  cag agc ctg       24439
Gln Leu  Ala Arg Trp Leu Gly  Ala Ser Ser Thr Pro  Gln Ser Leu
    4525                 4530                 4535

gaa gag  cgg cgc aag ctc atg  atg gcc gtg gtc ctg  gtg acc gtg       24484
Glu Glu  Arg Arg Lys Leu Met  Met Ala Val Val Leu  Val Thr Val
    4540                 4545                 4550

gag ctg  gag tgt ctg cgc cgc  ttc ttt gcc gac gcg  gag acc ctg       24529
Glu Leu  Glu Cys Leu Arg Arg  Phe Phe Ala Asp Ala  Glu Thr Leu
    4555                 4560                 4565

cgc aag  gtc gag gag aac ctg  cac tac ctc ttc agg  cac ggg ttc       24574
Arg Lys  Val Glu Glu Asn Leu  His Tyr Leu Phe Arg  His Gly Phe
    4570                 4575                 4580

gtg cgc  cag gcc tgc aag atc  tcc aac gtg gag ctg  acc aac ctg       24619
Val Arg  Gln Ala Cys Lys Ile  Ser Asn Val Glu Leu  Thr Asn Leu
    4585                 4590                 4595

gtc tcc  tac atg ggc atc ctg  cac gag aac cgc ctg  ggg cag aac       24664
Val Ser  Tyr Met Gly Ile Leu  His Glu Asn Arg Leu  Gly Gln Asn
    4600                 4605                 4610

gtg ctg  cac acc acc ctg cgc  ggg gag gcc cgc cgc  gac tac atc       24709
Val Leu  His Thr Thr Leu Arg  Gly Glu Ala Arg Arg  Asp Tyr Ile
    4615                 4620                 4625

cgc gac  tgc gtc tac ctg tac  ctc tgc cac acc tgg  cag acg ggc       24754
Arg Asp  Cys Val Tyr Leu Tyr  Leu Cys His Thr Trp  Gln Thr Gly
    4630                 4635                 4640

atg ggc  gtg tgg cag cag tgc  ctg gag gag cag aac  ctg aaa gag       24799
Met Gly  Val Trp Gln Gln Cys  Leu Glu Glu Gln Asn  Leu Lys Glu
    4645                 4650                 4655

ctc tgc  aag ctc ctg cag aag  aac ctc aag gcc ctg  tgg acc ggg       24844
Leu Cys  Lys Leu Leu Gln Lys  Asn Leu Lys Ala Leu  Trp Thr Gly
    4660                 4665                 4670

ttc gac  gag cgc acc acc gcc  tcg gac ctg gcc gac  ctc atc ttc       24889
Phe Asp  Glu Arg Thr Thr Ala  Ser Asp Leu Ala Asp  Leu Ile Phe
    4675                 4680                 4685

ccc gag  cgc ctg cgg ctg acg  ctg cgc aac ggg ctg  ccc gac ttt       24934
Pro Glu  Arg Leu Arg Leu Thr  Leu Arg Asn Gly Leu  Pro Asp Phe
    4690                 4695                 4700
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atg agc  caa agc atg ttg caa  aac ttt cgc tct ttc  atc ctc gaa       24979
Met Ser  Gln Ser Met Leu Gln  Asn Phe Arg Ser Phe  Ile Leu Glu
    4705                 4710                 4715

cgc tcc  ggg atc ctg ccc gcc  acc tgc tcc gcg ctg  ccc tcg gac       25024
Arg Ser  Gly Ile Leu Pro Ala  Thr Cys Ser Ala Leu  Pro Ser Asp
    4720                 4725                 4730

ttc gtg  ccg ctg acc ttc cgc  gag tgc ccc ccg ccg  ctc tgg agc       25069
Phe Val  Pro Leu Thr Phe Arg  Glu Cys Pro Pro Pro  Leu Trp Ser
    4735                 4740                 4745

cac tgc  tac ctg ctg cgc ctg  gcc aac tac ctg gcc  tac cac tcg       25114
His Cys  Tyr Leu Leu Arg Leu  Ala Asn Tyr Leu Ala  Tyr His Ser
    4750                 4755                 4760

gac gtg  atc gag gac gtc agc  ggc gag ggt ctg ctc  gag tgc cac       25159
Asp Val  Ile Glu Asp Val Ser  Gly Glu Gly Leu Leu  Glu Cys His
    4765                 4770                 4775

tgc cgc  tgc aac ctc tgc acg  ccg cac cgc tcc ctg  gcc tgc aac       25204
Cys Arg  Cys Asn Leu Cys Thr  Pro His Arg Ser Leu  Ala Cys Asn
    4780                 4785                 4790

ccc cag  ctg ctg agc gag acc  cag atc atc ggc acc  ttc gag ttg       25249
Pro Gln  Leu Leu Ser Glu Thr  Gln Ile Ile Gly Thr  Phe Glu Leu
    4795                 4800                 4805

caa ggc  ccc ggc gac agc gag  ggc aag ggg ggt ctg  aaa ctc acc       25294
Gln Gly  Pro Gly Asp Ser Glu  Gly Lys Gly Gly Leu  Lys Leu Thr
    4810                 4815                 4820

ccg ggg  ctg tgg acc tcg gcc  tac ttg cgc aag ttc  gtg ccc gag       25339
Pro Gly  Leu Trp Thr Ser Ala  Tyr Leu Arg Lys Phe  Val Pro Glu
    4825                 4830                 4835

gac tac  cat ccc ttc gag atc  agg ttc tac gag gac  caa tcc cag       25384
Asp Tyr  His Pro Phe Glu Ile  Arg Phe Tyr Glu Asp  Gln Ser Gln
    4840                 4845                 4850

ccg ccc  aag gcc gag ctg tcg  gcc tgc gtc atc acc  cag ggg gcc       25429
Pro Pro  Lys Ala Glu Leu Ser  Ala Cys Val Ile Thr  Gln Gly Ala
    4855                 4860                 4865

atc ctg  gcc caa ttg caa gcc  atc cag aaa tcc cgc  caa gaa ttt       25474
Ile Leu  Ala Gln Leu Gln Ala  Ile Gln Lys Ser Arg  Gln Glu Phe
    4870                 4875                 4880

ctg ctg  aaa aag ggc cac ggg  gtc tac ttg gac ccc  cag acc gga       25519
Leu Leu  Lys Lys Gly His Gly  Val Tyr Leu Asp Pro  Gln Thr Gly
    4885                 4890                 4895

gag gag  ctc aac ccc agc ttc  ccc cag gat gcc ccg  agg aag cag       25564
Glu Glu  Leu Asn Pro Ser Phe  Pro Gln Asp Ala Pro  Arg Lys Gln
    4900                 4905                 4910

caa gaa  gct gaa agt gga gct  gcc gcc gga gga ttt  gga gga aga       25609
Gln Glu  Ala Glu Ser Gly Ala  Ala Ala Gly Gly Phe  Gly Gly Arg
    4915                 4920                 4925
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ctg gga  gag cag tca ggc aga  gga gga gat gga aga  ctg gga cag       25654
Leu Gly  Glu Gln Ser Gly Arg  Gly Gly Asp Gly Arg  Leu Gly Gln
    4930                 4935                 4940

cac tca  ggc aga gga gga cag  cct gca aga cag tct  gga gga gga       25699
His Ser  Gly Arg Gly Gly Gln  Pro Ala Arg Gln Ser  Gly Gly Gly
    4945                 4950                 4955

aga cga  ggt gga gga gga ggc  aga gga aga agc agc  cgc cgc cag       25744
Arg Arg  Gly Gly Gly Gly Gly  Arg Gly Arg Ser Ser  Arg Arg Gln
    4960                 4965                 4970

acc gtc  gtc ctc ggc gga gga  gaa agc aag cag cac  gga tac cat       25789
Thr Val  Val Leu Gly Gly Gly  Glu Ser Lys Gln His  Gly Tyr His
    4975                 4980                 4985

ctc cgc  tcc ggg tcg ggg tcg  cgg cgg ccg ggc cca  cag tagatgggac    25838
Leu Arg  Ser Gly Ser Gly Ser  Arg Arg Pro Gly Pro  Gln
    4990                 4995                 5000

gagaccgggc gcttcccgaa ccccaccacc cagaccggta agaaggagcg gcagggatac    25898

aagtcctggc gggggcacaa aaacgccatc gtctcctgct tgcaagcctg cgggggcaac    25958

atctccttca cccggcgcta cctgctcttc caccgcgggg tgaacttccc ccgcaacatc    26018

ttgcattact accgtcacct ccacagcccc tactactgtt tccaagaaga ggcagaaacc    26078

cagcagcagc agaaaaccag cggcagcagc agctagaaaa tccacagcgg cggcaggtgg    26138

actgaggatc gcggcgaacg agccggcgca gacccgggag ctgaggaacc ggatctttcc    26198

caccctctat gccatcttcc agcagagtcg ggggcaggag caggaactga aagtcaagaa    26258

ccgttctctg cgctcgctca cccgcagttg tctgtatcac aagagcgaag accaacttca    26318

gcgcactctc gaggacgccg aggctctctt caacaagtac tgcgcgctca ctcttaaaga    26378

gtagcccgcg cccgcccaca cacggaaaaa ggcgggaatt acgtcaccac ctgcgccctt    26438

cgcccgacca tc atg agc aaa gag  att ccc acg cct tac  atg tgg agc      26486
             Met Ser Lys Glu  Ile Pro Thr Pro Tyr  Met Trp Ser
                         5005                 5010

tac cag  ccc cag atg ggc ctg  gcc gcc ggc gcc gcc  cag gac tac      26531
Tyr Gln  Pro Gln Met Gly Leu  Ala Ala Gly Ala Ala  Gln Asp Tyr
    5015                 5020                 5025

tcc acc  cgc atg aac tgg ctc  agt gcc ggg ccc gcg  atg atc tca      26576
Ser Thr  Arg Met Asn Trp Leu  Ser Ala Gly Pro Ala  Met Ile Ser
    5030                 5035                 5040

cgg gtg  aat gac atc cgc gcc  cgc cga aac cag ata  ctc cta gaa      26621
Arg Val  Asn Asp Ile Arg Ala  Arg Arg Asn Gln Ile  Leu Leu Glu
    5045                 5050                 5055

cag tca  gcg atc acc gcc acg  ccc cgc cat cac ctt  aat ccg cgt      26666
Gln Ser  Ala Ile Thr Ala Thr  Pro Arg His His Leu  Asn Pro Arg
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    5060                5065                5070

aat tgg  ccc gcc gcc ctg gtg  tac cag gaa att ccc  cag ccc acg       26711
Asn Trp  Pro Ala Ala Leu Val  Tyr Gln Glu Ile Pro  Gln Pro Thr
    5075                5080                5085

acc gta  cta ctt ccg cga gac  gcc cag gcc gaa gtc  cag ctg act       26756
Thr Val  Leu Leu Pro Arg Asp  Ala Gln Ala Glu Val  Gln Leu Thr
    5090                5095                5100

aac tca  ggt gtc cag ctg gcc  ggc ggc gcc gcc ctg  tgt cgt cac       26801
Asn Ser  Gly Val Gln Leu Ala  Gly Gly Ala Ala Leu  Cys Arg His
    5105                5110                5115

cgc ccc  gct cag ggt ata aag  cgg ctg gtg atc cga  ggc aga ggc       26846
Arg Pro  Ala Gln Gly Ile Lys  Arg Leu Val Ile Arg  Gly Arg Gly
    5120                5125                5130

aca cag  ctc aac gac gag gtg  gtg agc tct tcg ctg  ggt ctg cga       26891
Thr Gln  Leu Asn Asp Glu Val  Val Ser Ser Ser Leu  Gly Leu Arg
    5135                5140                5145

cct gac  gga gtc ttc caa ctc  gcc gga tcg ggg aga  tct tcc ttc       26936
Pro Asp  Gly Val Phe Gln Leu  Ala Gly Ser Gly Arg  Ser Ser Phe
    5150                5155                5160

acg cct  cgt cag gcc gtc ctg  act ttg gag agt tcg  tcc tcg cag       26981
Thr Pro  Arg Gln Ala Val Leu  Thr Leu Glu Ser Ser  Ser Ser Gln
    5165                5170                5175

ccc cgc  tcg ggc ggc atc ggc  act ctc cag ttc gtg  gag gag ttc       27026
Pro Arg  Ser Gly Gly Ile Gly  Thr Leu Gln Phe Val  Glu Glu Phe
    5180                5185                5190

act ccc  tcg gtc tac ttc aac  ccc ttc tcc ggc tcc  ccc ggc cac       27071
Thr Pro  Ser Val Tyr Phe Asn  Pro Phe Ser Gly Ser  Pro Gly His
    5195                5200                5205

tac ccg  gac gag ttc atc ccg  aac ttc gac gcc atc  agc gag tcg       27116
Tyr Pro  Asp Glu Phe Ile Pro  Asn Phe Asp Ala Ile  Ser Glu Ser
    5210                5215                5220

gtg gac  ggc tac gat tgaatgtccc atggtggcgc agctgaccta gctcggcttc    27171
Val Asp  Gly Tyr Asp
    5225

gacacctgga ccactgccgc cgcttccgct gcttcgctcg ggatctcgcc gagtttgcct    27231

actttgagct gcccgaggag caccctcagg gcccagccca cggagtgcgg atcatcgtcg    27291

aaggggggcct cgactcccac ctgcttcgga tcttcagcca gcgaccgatc ctggtcgagc   27351

gcgaacaagg acagacccgt ctgaccctgt actgcatctg caaccacccc ggcctgc       27408

atg aaa  gtc ttt gtt gtc tgc  tgt gta ctg agt ata  ata aaa gct       27453
Met Lys  Val Phe Val Val Cys  Cys Val Leu Ser Ile  Ile Lys Ala
    5230                5235                5240

gag atc  agc gac tac tcc gga  ctc gat tgt ggt gtt  cct gct atc       27498
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Glu Ile  Ser Asp Tyr Ser Gly  Leu Asp Cys Gly Val  Pro Ala Ile
    5245                 5250                 5255

aac cgg  tcc ctg ttc ttc acc  ggg aac gaa acc gag  ctc cag ctc      27543
Asn Arg  Ser Leu Phe Phe Thr  Gly Asn Glu Thr Glu  Leu Gln Leu
    5260                 5265                 5270

cag tgt  aag ccc cac aag aag  tac ctc acc tgg ctg  ttc cag ggc      27588
Gln Cys  Lys Pro His Lys Lys  Tyr Leu Thr Trp Leu  Phe Gln Gly
    5275                 5280                 5285

tcc ccc  atc gcc gtt gtc aac  cac tgc gac aac gac  gga gtc ctg      27633
Ser Pro  Ile Ala Val Val Asn  His Cys Asp Asn Asp  Gly Val Leu
    5290                 5295                 5300

ctg agc  ggc cct gcc aac ctt  act ttt tcc acc cgc  aga agc aag      27678
Leu Ser  Gly Pro Ala Asn Leu  Thr Phe Ser Thr Arg  Arg Ser Lys
    5305                 5310                 5315

ctc cag  ctc ttc caa ccc ttc  ctc ccc ggg acc tat  cag tgc gtc      27723
Leu Gln  Leu Phe Gln Pro Phe  Leu Pro Gly Thr Tyr  Gln Cys Val
    5320                 5325                 5330

tcg gga  ccc tgc cat cac acc  ttc cac ctg atc ccg  aat acc aca      27768
Ser Gly  Pro Cys His His Thr  Phe His Leu Ile Pro  Asn Thr Thr
    5335                 5340                 5345

gcg ccg  ctc ccc gct act aac  aac caa act aac ctc  cac caa cgc      27813
Ala Pro  Leu Pro Ala Thr Asn  Asn Gln Thr Asn Leu  His Gln Arg
    5350                 5355                 5360

cac cgt  cgc gac ctt tcc tct  gaa tct aat acc act  acc gga ggt      27858
His Arg  Arg Asp Leu Ser Ser  Glu Ser Asn Thr Thr  Thr Gly Gly
    5365                 5370                 5375

gag ctc  cga ggt cga cca acc  tct ggg att tac tac  ggc ccc tgg      27903
Glu Leu  Arg Gly Arg Pro Thr  Ser Gly Ile Tyr Tyr  Gly Pro Trp
    5380                 5385                 5390

gag gtg  gtg ggg tta ata gcg  cta ggc cta gtt gtg  ggt ggg ctt      27948
Glu Val  Val Gly Leu Ile Ala  Leu Gly Leu Val Val  Gly Gly Leu
    5395                 5400                 5405

ttg gct  ctc tgc tac cta tac  ctc cct tgc tgt tcg  tac tta gtg      27993
Leu Ala  Leu Cys Tyr Leu Tyr  Leu Pro Cys Cys Ser  Tyr Leu Val
    5410                 5415                 5420

gtg ctg  tgt tgc tgg ttt aag  aaa tgg ggc aga tca  ccc tagtgagctg    28042
Val Leu  Cys Cys Trp Phe Lys  Lys Trp Gly Arg Ser  Pro
    5425                 5430                 5435

cggtgtgctg gtggcggtgc tttcgattgt gggactgggc ggcgcggctg tagtgaagga    28102

ggagaaggcc gatccctgct tgcatttcaa tcccgacaaa tgccagctga gttttcagcc    28162

cgatggcaat cggtgcgcgg tgctgatcaa gtgcggatgg gaatgcgaga acgtgagaat    28222

cgagtacaat aacaagactc ggaacaatac tctcgcgtcc gtgtggcagc ccggggaccc    28282
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cgagtggtac accgtctctg tccccggtgc tgacggctcc ccgcgcaccg tgaataatac    28342

tttcattttt gcgcacatgt gcaacacggt catgtggatg agcaagcagt acgatatgtg    28402

gccccccacg aaggagaaca tcgtggtctt ctccatcgct tacagcctgt gcacggcgct    28462

aatcaccgct atcgtgtgcc tgagcattca catgctcatc gctattcgcc ccagaaataa    28522

tgccgagaaa gagaaacagc cataacacgt tttttcacac accttgtttt tacagaca      28580

atg cgt ctg tta  aat ttt tta aac att  gtg ctc agt att gct  tat       28625
Met Arg Leu Leu  Asn Phe Leu Asn Ile  Val Leu Ser Ile Ala  Tyr
            5440                5445                5450

gcc tct ggt tat  gca aac ata cag aaa  acc ctt tat gta gga  tct       28670
Ala Ser Gly Tyr  Ala Asn Ile Gln Lys  Thr Leu Tyr Val Gly  Ser
            5455                5460                5465

gat ggt aca cta  gag ggt acc caa tca  caa gcc aag gtt gca  tgg       28715
Asp Gly Thr Leu  Glu Gly Thr Gln Ser  Gln Ala Lys Val Ala  Trp
            5470                5475                5480

tat ttt tat aga  acc aac act gat cca  gtt aaa ctt tgt aag  ggt       28760
Tyr Phe Tyr Arg  Thr Asn Thr Asp Pro  Val Lys Leu Cys Lys  Gly
            5485                5490                5495

gaa ttg ccg cgt  aca cat aaa act cca  ctt aca ttt agt tgc  agc       28805
Glu Leu Pro Arg  Thr His Lys Thr Pro  Leu Thr Phe Ser Cys  Ser
            5500                5505                5510

aat aat aat ctt  aca ctt ttt tca att  aca aaa caa tat act  ggt       28850
Asn Asn Asn Leu  Thr Leu Phe Ser Ile  Thr Lys Gln Tyr Thr  Gly
            5515                5520                5525

act tat tac agt  aca aac ttt cat aca  gga caa gat aaa tat  tat       28895
Thr Tyr Tyr Ser  Thr Asn Phe His Thr  Gly Gln Asp Lys Tyr  Tyr
            5530                5535                5540

act gtt aag gta  gaa aat cct acc act  cct aga act acc acc  acc       28940
Thr Val Lys Val  Glu Asn Pro Thr Thr  Pro Arg Thr Thr Thr  Thr
            5545                5550                5555

acc acc act act  gca aag ccc act gtg  aaa act aca act agg  acc       28985
Thr Thr Thr Thr  Ala Lys Pro Thr Val  Lys Thr Thr Thr Arg  Thr
            5560                5565                5570

acc aca act aca  gaa acc acc acc agc  aca aca ctt gct gca  act       29030
Thr Thr Thr Thr  Glu Thr Thr Thr Ser  Thr Thr Leu Ala Ala  Thr
            5575                5580                5585

aca cac aca cac  act aag cta acc tta  cag acc act aat gat  ttg       29075
Thr His Thr His  Thr Lys Leu Thr Leu  Gln Thr Thr Asn Asp  Leu
            5590                5595                5600

atc gcc ctg ctg  caa aag ggg gat aac  agc acc act tcc aat  gag       29120
Ile Ala Leu Leu  Gln Lys Gly Asp Asn  Ser Thr Thr Ser Asn  Glu
            5605                5610                5615

gag ata ccc aaa  tcc atg att ggc att  att gtt gct gta gtg  gtg       29165
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Glu Ile Pro Lys  Ser Met Ile Gly Ile  Ile Val Ala Val Val  Val
            5620                5625                5630

tgc atg ttg atc  atc gcc ttg tgc atg  gtg tac tat gcc ttc  tgc       29210
Cys Met Leu Ile  Ile Ala Leu Cys Met  Val Tyr Tyr Ala Phe  Cys
            5635                5640                5645

tac aga aag cac  aga ctg aac gac aag  ctg gaa cac tta cta  agt       29255
Tyr Arg Lys His  Arg Leu Asn Asp Lys  Leu Glu His Leu Leu  Ser
            5650                5655                5660

gtt gaa ttt taatttttta gaacc atg  aag atc cta ggc ctt  ttt agt       29303
Val Glu Phe                 Met  Lys Ile Leu Gly Leu  Phe Ser
                            5665                5670

ttt tct atc  att acc tct gct ctt  tgt gaa tca gtg gat  aga gat       29348
Phe Ser Ile  Ile Thr Ser Ala Leu  Cys Glu Ser Val Asp  Arg Asp
        5675                5680                5685

gtt act att  acc act ggt tct aat  tat aca ctg aaa ggg  cca ccc       29393
Val Thr Ile  Thr Thr Gly Ser Asn  Tyr Thr Leu Lys Gly  Pro Pro
        5690                5695                5700

tca ggt atg  ctt tcg tgg tat tgc  tat ttt gga act gac  act gat       29438
Ser Gly Met  Leu Ser Trp Tyr Cys  Tyr Phe Gly Thr Asp  Thr Asp
        5705                5710                5715

caa act gaa  tta tgc aat ttt caa  aaa ggc aaa acc tca  aac tct       29483
Gln Thr Glu  Leu Cys Asn Phe Gln  Lys Gly Lys Thr Ser  Asn Ser
        5720                5725                5730

aaa atc tct  aat tat caa tgc aat  ggc act gat ctg ata  cta ctc       29528
Lys Ile Ser  Asn Tyr Gln Cys Asn  Gly Thr Asp Leu Ile  Leu Leu
        5735                5740                5745

aat gtc acg  aaa gca tat ggt ggc  agt tat tat tgc cct  gga caa       29573
Asn Val Thr  Lys Ala Tyr Gly Gly  Ser Tyr Tyr Cys Pro  Gly Gln
        5750                5755                5760

aac act gaa  gaa atg att ttt tac  aaa gtg gaa gtg gtt  gat ccc       29618
Asn Thr Glu  Glu Met Ile Phe Tyr  Lys Val Glu Val Val  Asp Pro
        5765                5770                5775

act aca cca  ccc acc acc aca act  att cat acc aca cac  aca gaa       29663
Thr Thr Pro  Pro Thr Thr Thr Thr  Ile His Thr Thr His  Thr Glu
        5780                5785                5790

caa aca cca  gag gca aca gaa gca  gag ttg gcc ttc cag  gtt cac       29708
Gln Thr Pro  Glu Ala Thr Glu Ala  Glu Leu Ala Phe Gln  Val His
        5795                5800                5805

gga gat tcc  ttt gct gtc aat acc  cct aca ccc gat cag  cgg tgt       29753
Gly Asp Ser  Phe Ala Val Asn Thr  Pro Thr Pro Asp Gln  Arg Cys
        5810                5815                5820

ccg ggg ccg  cta gtc agc ggc att  gtc ggt gtg ctt tcg  gga tta       29798
Pro Gly Pro  Leu Val Ser Gly Ile  Val Gly Val Leu Ser  Gly Leu
        5825                5830                5835
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gca gtc ata  atc atc tgc atg ttc  att ttt gct tgc tgc  tat aga       29843
Ala Val Ile  Ile Ile Cys Met Phe  Ile Phe Ala Cys Cys  Tyr Arg
        5840                 5845                 5850

agg ctt tac  cga caa aaa tca gac  cca ctg ctg aac ctc  tat gtt       29888
Arg Leu Tyr  Arg Gln Lys Ser Asp  Pro Leu Leu Asn Leu  Tyr Val
        5855                 5860                 5865

taatttttc cagagcc atg aag gca  gtt agc gct cta gtt  ttt tgt tct     29938
                  Met Lys Ala  Val Ser Ala Leu Val  Phe Cys Ser
                       5870                 5875

ttg att  ggc att gtt ttt aat  agt aaa att acc aaa  gtt agc ttt      29983
Leu Ile  Gly Ile Val Phe Asn  Ser Lys Ile Thr Lys  Val Ser Phe
    5880                 5885                 5890

att aaa  cat gtt aat gta act  gaa gga gat aac atc  aca cta gca      30028
Ile Lys  His Val Asn Val Thr  Glu Gly Asp Asn Ile  Thr Leu Ala
    5895                 5900                 5905

ggt gta  gaa ggt gct caa aac  acc acc tgg aca aaa  tac cat cta      30073
Gly Val  Glu Gly Ala Gln Asn  Thr Thr Trp Thr Lys  Tyr His Leu
    5910                 5915                 5920

gga tgg  aga gat att tgc acc  tgg aat gta act tat  tat tgc ata      30118
Gly Trp  Arg Asp Ile Cys Thr  Trp Asn Val Thr Tyr  Tyr Cys Ile
    5925                 5930                 5935

gga att  aat ctt acc att gtt  aac gct aac caa tct  cag aat ggg      30163
Gly Ile  Asn Leu Thr Ile Val  Asn Ala Asn Gln Ser  Gln Asn Gly
    5940                 5945                 5950

tta att  aaa gga cag agt gtt  agt gtg acc agt gat  ggg tac tat      30208
Leu Ile  Lys Gly Gln Ser Val  Ser Val Thr Ser Asp  Gly Tyr Tyr
    5955                 5960                 5965

acc cag  cat agt ttt aac tac  aac att act gtc ata  cca ctg cct      30253
Thr Gln  His Ser Phe Asn Tyr  Asn Ile Thr Val Ile  Pro Leu Pro
    5970                 5975                 5980

acg cct  agc cca cct agc act  acc aca cag aca acc  aca tac agt      30298
Thr Pro  Ser Pro Pro Ser Thr  Thr Thr Gln Thr Thr  Thr Tyr Ser
    5985                 5990                 5995

aca tca  aat cag cct acc acc  act aca gca gca gag  gtt gcc agc      30343
Thr Ser  Asn Gln Pro Thr Thr  Thr Thr Ala Ala Glu  Val Ala Ser
    6000                 6005                 6010

tcg tct  ggg gtc cga gtg gca  ttt ttg atg ttg gcc  cca tct agc      30388
Ser Ser  Gly Val Arg Val Ala  Phe Leu Met Leu Ala  Pro Ser Ser
    6015                 6020                 6025

agt ccc  act gct agt acc aat  gag cag act act gaa  ttt ttg tcc      30433
Ser Pro  Thr Ala Ser Thr Asn  Glu Gln Thr Thr Glu  Phe Leu Ser
    6030                 6035                 6040

act gtc  gag agc cac acc aca  gct acc tcc agt gcc  ttc tct agc      30478
Thr Val  Glu Ser His Thr Thr  Ala Thr Ser Ser Ala  Phe Ser Ser
    6045                 6050                 6055
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acc gcc  aat ctc tcc tcg ctt  tcc tct aca cca atc  agc ccc gct       30523
Thr Ala  Asn Leu Ser Ser Leu  Ser Ser Thr Pro Ile  Ser Pro Ala
    6060                 6065                 6070

act act  cct agc ccc gct cct  ctt ccc act ccc ctg  aag caa aca       30568
Thr Thr  Pro Ser Pro Ala Pro  Leu Pro Thr Pro Leu  Lys Gln Thr
    6075                 6080                 6085

gac ggc  ggc atg caa tgg cag  atc acc ctg ctc att  gtg atc ggg       30613
Asp Gly  Gly Met Gln Trp Gln  Ile Thr Leu Leu Ile  Val Ile Gly
    6090                 6095                 6100

ttg gtc  atc ctg gcc gtg ttg  ctc tac tac atc ttc  tgc cgc cgc       30658
Leu Val  Ile Leu Ala Val Leu  Leu Tyr Tyr Ile Phe  Cys Arg Arg
    6105                 6110                 6115

att ccc  aac gcg cac cgc aag  ccg gcc tac aag ccc  atc gtt atc       30703
Ile Pro  Asn Ala His Arg Lys  Pro Ala Tyr Lys Pro  Ile Val Ile
    6120                 6125                 6130

ggg cag  ccg gag ccg ctt cag  gtg gaa ggg ggt cta  agg aat ctt       30748
Gly Gln  Pro Glu Pro Leu Gln  Val Glu Gly Gly Leu  Arg Asn Leu
    6135                 6140                 6145

ctc ttc  tct ttt aca gta tgg  tgattgaact atg att cct aga caa  ttc    30797
Leu Phe  Ser Phe Thr Val Trp            Met Ile Pro Arg Gln  Phe
    6150                 6155                             6160

ttg atc act att  ctt atc tgc ctc ctc  caa gtc tgt gcc acc  ctc      30842
Leu Ile Thr Ile  Leu Ile Cys Leu Leu  Gln Val Cys Ala Thr  Leu
            6165                 6170                 6175

gct ctg gtg gcc  aac gcc agt cca gac  tgt att ggg ccc ttc  gcc      30887
Ala Leu Val Ala  Asn Ala Ser Pro Asp  Cys Ile Gly Pro Phe  Ala
            6180                 6185                 6190

tcc tac gtg ctc  ttt gcc ttc atc acc  tgc atc tgc tgc tgt  agc      30932
Ser Tyr Val Leu  Phe Ala Phe Ile Thr  Cys Ile Cys Cys Cys  Ser
            6195                 6200                 6205

ata gtc tgc ctg  ctt atc acc ttc ttc  cag ttc att gac tgg  atc      30977
Ile Val Cys Leu  Leu Ile Thr Phe Phe  Gln Phe Ile Asp Trp  Ile
            6210                 6215                 6220

ttt gtg cgc atc  gcc tac ctg cgc cac  cac ccc cag tac cgc  gac      31022
Phe Val Arg Ile  Ala Tyr Leu Arg His  His Pro Gln Tyr Arg  Asp
            6225                 6230                 6235

cag cga gtg gcg  cag ctg ctc agg ctc  ctc tgataagc atg cgg gct      31069
Gln Arg Val Ala  Gln Leu Leu Arg Leu  Leu          Met Arg Ala
            6240                 6245

ctg  cta ctt ctc gcg ctt  ctg ctg tta gtg ctc  ccc cgt ccc gtt      31114
Leu  Leu Leu Leu Ala Leu  Leu Leu Leu Val Leu  Pro Arg Pro Val
6250                 6255                 6260

gac  ccc cgg ccc ccc act  cag tcc ccc gag gag  gtc cgc aaa tgc      31159
Asp  Pro Arg Pro Pro Thr  Gln Ser Pro Glu Glu  Val Arg Lys Cys
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6265                6270                6275

aaa  ttc caa gaa ccc tgg  aaa ttc ctc aaa tgc  tac cgc caa aaa      31204
Lys  Phe Gln Glu Pro Trp  Lys Phe Leu Lys Cys  Tyr Arg Gln Lys
6280                6285                6290

tca  gac atg cat ccc agc  tgg atc atg atc att  ggg atc gtg aac      31249
Ser  Asp Met His Pro Ser  Trp Ile Met Ile Ile  Gly Ile Val Asn
6295                6300                6305

att  ctg gcc tgc acc ctc  atc tcc ttt gtg att  tac ccc tgc ttt      31294
Ile  Leu Ala Cys Thr Leu  Ile Ser Phe Val Ile  Tyr Pro Cys Phe
6310                6315                6320

gac  ttt ggt tgg aac tcg  cca gag gcg ctc tat  ctc ccg cct gaa      31339
Asp  Phe Gly Trp Asn Ser  Pro Glu Ala Leu Tyr  Leu Pro Pro Glu
6325                6330                6335

cct  gac aca cca cca cag  caa cct cag gca cac  gca cta cca cca      31384
Pro  Asp Thr Pro Pro Gln  Gln Pro Gln Ala His  Ala Leu Pro Pro
6340                6345                6350

cca  cca cag cct agg cca  caa tac atg ccc ata  tta gac tat gag      31429
Pro  Pro Gln Pro Arg Pro  Gln Tyr Met Pro Ile  Leu Asp Tyr Glu
6355                6360                6365

gcc  gag cca cag cga ccc  atg ctc ccc gct att  agt tac ttc aat      31474
Ala  Glu Pro Gln Arg Pro  Met Leu Pro Ala Ile  Ser Tyr Phe Asn
6370                6375                6380

cta  acc ggc gga gat gac  tgacccactg gccaacaaca acgtcaacga          31522
Leu  Thr Gly Gly Asp Asp
6385                6390

ccttctcctg gacatggacg gccgcgcctc ggagcagcga ctcgcccaac ttcgcattcg   31582

ccagcagcag gagagagccg tcaaggagct gcaggacggc atagccatcc accagtgcaa   31642

gaaaggcatc ttctgcctgg tgaaacaggc caagatctcc tacgaggtca cccagaccga   31702

ccatcgcctc tcctacgagc tcatgcagca gcgccagaag ttcacctgcc tggtcggagt   31762

caaccccatc gtcatcaccc agcagtcggg cgataccaag gggtgcatcc actgctcctg   31822

cgactccccc gactgcgtcc acactctgat caagaccctc tgcggcctcc gcgacctcct   31882

ccccatgaac taatcacccc cttatccagt gaaataaaga tcatattgat gattaaataa   31942

aaaaaataat catttgattt gaaataaaga tacaatcata ttgatgattt gagtttaata   32002

aaaataaaga atcacttact tgaaatctga taccaggtct ctgtccatgt tttctgccaa   32062

caccacttca ctcccctctt cccagctctg gtactgcagg ccccggcggg ctgcaaactt   32122

cctccacacc ctgaagggga tgtcaaattc ctcctgtccc tcaatcttca ttttatcttc   32182

tatcag atg tcc aaa aag cgc  gtc cgg gtg gat gat  gac ttc gac ccc     32230
       Met Ser Lys Lys Arg  Val Arg Val Asp Asp  Asp Phe Asp Pro
                        6395                6400
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gtc  tac ccc tac gat gca  gac aac gca ccg acc  gtg ccc ttc atc       32275
Val  Tyr Pro Tyr Asp Ala  Asp Asn Ala Pro Thr  Val Pro Phe Ile
6405                 6410                 6415

aac  ccc ccc ttc gtc tct  tca gat gga ttc caa  gag aag ccc ctg       32320
Asn  Pro Pro Phe Val Ser  Ser Asp Gly Phe Gln  Glu Lys Pro Leu
6420                 6425                 6430

ggg  gtg ctg tcc ctg cgt  ctg gcc gat ccc gtc  acc acc aag aac       32365
Gly  Val Leu Ser Leu Arg  Leu Ala Asp Pro Val  Thr Thr Lys Asn
6435                 6440                 6445

ggg  gaa atc acc ctc aag  ctg gga gat ggg gtg  gac ctc gac gac       32410
Gly  Glu Ile Thr Leu Lys  Leu Gly Asp Gly Val  Asp Leu Asp Asp
6450                 6455                 6460

tcg  gga aaa ctc atc tcc  aac acg gcc acc aag  gcc gcc gcc cct       32455
Ser  Gly Lys Leu Ile Ser  Asn Thr Ala Thr Lys  Ala Ala Ala Pro
6465                 6470                 6475

ctc  agt ttt tcc aac aac  acc att tcc ctt aac  atg gat acc cct       32500
Leu  Ser Phe Ser Asn Asn  Thr Ile Ser Leu Asn  Met Asp Thr Pro
6480                 6485                 6490

ctt  tac aac aac aat gga  aag cta ggt atg aag  gta acc gca cca       32545
Leu  Tyr Asn Asn Asn Gly  Lys Leu Gly Met Lys  Val Thr Ala Pro
6495                 6500                 6505

tta  aag ata tta gac aca  gat cta cta aaa aca  ctt gtt gtt gct       32590
Leu  Lys Ile Leu Asp Thr  Asp Leu Leu Lys Thr  Leu Val Val Ala
6510                 6515                 6520

tat  ggg cag gga tta gga  aca aac acc aat ggt  gct ctt gtt gcc       32635
Tyr  Gly Gln Gly Leu Gly  Thr Asn Thr Asn Gly  Ala Leu Val Ala
6525                 6530                 6535

caa  cta gca tac cca ctt  gtt ttt aat acc gct  agc aaa att gcc       32680
Gln  Leu Ala Tyr Pro Leu  Val Phe Asn Thr Ala  Ser Lys Ile Ala
6540                 6545                 6550

ctt  aat tta ggc aat gga  cca tta aaa gtg gat  gca aat aga ctg       32725
Leu  Asn Leu Gly Asn Gly  Pro Leu Lys Val Asp  Ala Asn Arg Leu
6555                 6560                 6565

aac  att aat tgc aaa aga  ggt atc tat gtc act  acc aca aaa gat       32770
Asn  Ile Asn Cys Lys Arg  Gly Ile Tyr Val Thr  Thr Thr Lys Asp
6570                 6575                 6580

gca  ctg gag att aat atc  agt tgg gca aat gct  atg aca ttt ata       32815
Ala  Leu Glu Ile Asn Ile  Ser Trp Ala Asn Ala  Met Thr Phe Ile
6585                 6590                 6595

gga  aat gcc att ggt gtc  aat att gac aca aaa  aaa ggc cta cag       32860
Gly  Asn Ala Ile Gly Val  Asn Ile Asp Thr Lys  Lys Gly Leu Gln
6600                 6605                 6610

ttc  ggc act tca agc act  gaa aca gat gtt aaa  aat gct ttt cca       32905
Phe  Gly Thr Ser Ser Thr  Glu Thr Asp Val Lys  Asn Ala Phe Pro
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6615                6620                6625

ctc caa gta aaa ctt gga gct ggt ctt aca ttt gac agc aca ggt      32950
Leu Gln Val Lys Leu Gly Ala Gly Leu Thr Phe Asp Ser Thr Gly
6630                6635                6640

gcc att gtt gct tgg aac aaa gaa gat gac aaa ctt aca ctg tgg      32995
Ala Ile Val Ala Trp Asn Lys Glu Asp Asp Lys Leu Thr Leu Trp
6645                6650                6655

acc aca gcc gat cca tct cca aac tgt cac ata tat tct gca aag      33040
Thr Thr Ala Asp Pro Ser Pro Asn Cys His Ile Tyr Ser Ala Lys
6660                6665                6670

gat gct aag ctt aca ctc tgc ttg aca aag tgt ggt agt cag ata      33085
Asp Ala Lys Leu Thr Leu Cys Leu Thr Lys Cys Gly Ser Gln Ile
6675                6680                6685

ctg ggc act gtt tct ctc ata gct gtt gat act ggt agc tta aat      33130
Leu Gly Thr Val Ser Leu Ile Ala Val Asp Thr Gly Ser Leu Asn
6690                6695                6700

cca ata aca gga aaa gta acc act gct ctt gtt tca ctt aaa ttc      33175
Pro Ile Thr Gly Lys Val Thr Thr Ala Leu Val Ser Leu Lys Phe
6705                6710                6715

gat gcc aat gga gtt ttg caa gcc agt tca aca cta gat aaa gaa      33220
Asp Ala Asn Gly Val Leu Gln Ala Ser Ser Thr Leu Asp Lys Glu
6720                6725                6730

tat tgg aat ttc aga aaa gga gat gtg aca cct gct gac ccc tac      33265
Tyr Trp Asn Phe Arg Lys Gly Asp Val Thr Pro Ala Asp Pro Tyr
6735                6740                6745

act aat gct ata ggc ttt atg ccc aac ctt aat gca tac cca aaa      33310
Thr Asn Ala Ile Gly Phe Met Pro Asn Leu Asn Ala Tyr Pro Lys
6750                6755                6760

aac aca aac gca gct gca aaa agt cac att gtt gga aaa gta tac      33355
Asn Thr Asn Ala Ala Ala Lys Ser His Ile Val Gly Lys Val Tyr
6765                6770                6775

cta cat ggg gat gta agc aag cca cta gac ttg ata att aca ttt      33400
Leu His Gly Asp Val Ser Lys Pro Leu Asp Leu Ile Ile Thr Phe
6780                6785                6790

aat gaa acc agt gat gaa tcc tgt act tat tgc att aac ttt cag      33445
Asn Glu Thr Ser Asp Glu Ser Cys Thr Tyr Cys Ile Asn Phe Gln
6795                6800                6805

tgg cag tgg gga act gac caa tat aaa gat gaa aca ctt gca gtc      33490
Trp Gln Trp Gly Thr Asp Gln Tyr Lys Asp Glu Thr Leu Ala Val
6810                6815                6820

agt tca ttc acc ttc tca tac att gct aaa gaa taacatccac          33533
Ser Ser Phe Thr Phe Ser Tyr Ile Ala Lys Glu
6825                6830                6835

cctgcatgcc aacccatttc cctctatcta tacatggaaa actctgaagc agaaaaaata  33593
```

aagttcaagt gttttattga ttcaacagtt tttacagaat tcgagtagtt attttccctc 33653

caccctccca actcatggaa tacaccatcc tctccccacg cacagcctta aacatctgaa 33713

tgccattggt aatggacatg gttttggcct ccacattcca cacagtttca gagcgagcca 33773

gtctcgggtc ggtcagggag atgaaaccct ccgggcactc ctgcatctgc acctcacagt 33833

tcaacagctg agggctgtcc tcggtggtcg ggatcacggt tatctggaag aagagcgatg 33893

agaatcataa tccgcgaacg ggatcgggcg gttgtggcgc atcaggcccc gcagcagtcg 33953

ctgtctgcgc cgctccgtca agctgctgct caaggggtcc gggtccaggg actccctgcg 34013

catgatgccg atggccctga gcatcagtcg cctggtgcgg cgggcgcagc agcggatgcg 34073

gatctcactc aggtcggagc agtacgtgca gcacagcacc accaagttgt tcaacagtcc 34133

atagttcaac acgctccagc caaaactcat ctgtggaact atgctgccca cgtgtccatc 34193

gtaccagatc ctgatgtaaa tcaggtggcg ccccctccag aacacactgc ccatgtacat 34253

gatctccttg ggcatatgca ggttcaccac ctcccggtac cacatcaccc gctggttgaa 34313

catgcagccc tggataattc tgcggaacca gatggccagc accgccccgc ccgccatgca 34373

gcgcagggac cccgggtcct gacagtggca gtggaggacc caccgctcgc ggccgtggat 34433

caactgggag ctgaacaggt ctatgttggc acagcacagg cacacgctca tgcatgtctt 34493

cagcactctc agttcctcgg gggtcaggac catgtcccag ggcacgggga actcttgcag 34553

gacagtgaac ccggcagaac agggcagccc tcgcacacaa cttacattgt gcatggacag 34613

ggtatcgcaa tcaggcagca ccggatgatc ctccaccaga gaagcgcggg tctcggtctc 34673

ctcacaacga ggtaaggggg ccggcggttg gtacggatga tggcgggatg acgctaatcg 34733

tgttctggat cgtgtcatga tggagcttct tcctgacatc ttcgtatttc atgtagcaga 34793

acctggtccg ggcactgcac accgctcgcc ggcgacggtc tcggcgcttc gagcgctcgg 34853

tgttgaagtt gtaaaacagc cactccctca gagcgtgcag tatctcttga gcctcttggg 34913

tgatgaaaat cccatccgcc ctgatggctc tgatcacatc gaccacggtg gaatgggcca 34973

gacccagcca gatgatgcaa ttttgttggg tttcggtgac ggcgggggag ggaagaacag 35033

gaagaaccat gattaacttt attccaaacg gtctcggagc acttcaaaat gcaggtcgcg 35093

gagatggcac ctctcgcccc cactgtgttg atggaaaata acagccaggt caaaggtgac 35153

acggttctcg agatgttcca cggtggcttc cagcaaagcc tccacgcgca catccagaaa 35213

caagaggaca gcgaaagcgg gagcgttctc taattcctca atcatcatat tacactcctg 35273

caccatcccc agataatttt catttttcca gccttgaatg atttgaacta gttcctgagg 35333

taaatccaag ccagccatga taaaaagctc gcgcagagcg ccctccaccg gcattcttaa 35393

gcacaccctc ataattccaa gagattctgc tcctggttca cctgcagcag attaacaagg 35453

ggaatatcaa aatctctgcc gcgatctcta agctcctccc tcagcaataa ctgcaagtac 35513

tctttcatat cttctccgaa atttttagcc atagggccgc caggaatgag agcagggcaa 35573

gccacattac agataaagcg aagtcctccc cagtgagcat tgccaaatgt aagattgaaa 35633

taagcatgct ggctagaccc ggtgatatct tccagataac tggacagaaa atcaggcaag 35693

caatttttaa gaaaatcaac aaaagaaaag tcgtccaggt gcaagtttag agcctcagga 35753

acaacgatgg aataagtgca aggagtgcgt tccagcatgg ttagtgtttt tttggtgatc 35813

tgtagaacaa aaaataaaca tgcaatatta aaccatgcta gcctggcgaa caggtgggta 35873

aatcactctt tccagcacca ggcaggctac ggggtctccg gcgcgaccct cgtagaagct 35933

gtcgccatga ttgaaaagca tcaccgaaag actttcccgg tggccggcat ggatgattcg 35993

cgaagacgcg tacactccgg gaacattggc atccgtgagt gaaaaaaatc gccccaagaa 36053

gccccgaggc actacaatgc tcaaccttaa ttccagcaga gcgaccccat gcggatgaag 36113

cacaaaattg gtaggtgcgt aaaaaatgta attactcccc tcctgcacag gcagcaaagc 36173

ccccgctccc tccagaaaca catacaaagc ctcagcgtcc atagcttacc gagcacggca 36233

ggcgcaagat tcagagaaaa ggctgagctc taacctgact gcccgctcct gagctcaata 36293

tatagcccta acctacactg acgtaaaggc caaagtctaa aaatacccgc caaaatgaca 36353

cacacgccca gcacacgccc agaaaccggt gacacactca aaaaaatacg tgcgcttcct 36413

caaacgccca aaccggcgtc atttccgggt tcccacgcta cgtcaccgct cagcgacttt 36473

caaatttcgt cgaccgttaa acacgtcact cgccccgccc ctaacggtcg ccctcctctc 36533

ggccaatcac agccccgcat ccccaaattc aaacgcctca tttgcatatt aacgcgcacc 36593

aaaagtttga ggtatattat tgatgatg 36621

<210> 99
<211> 503
<212> PRT
<213> Simian adenovirus 30

<400> 99

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> 100
<211> 157
<212> PRT
<213> Simian adenovirus 30

<400> 100

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

Ser Gly Ser Ala Ser Phe Glu Gly Gly Val Phe Ser Pro Tyr Leu Thr
20 25 30

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

Thr Val Asp Gly Arg Pro Val Gln Pro Ala Asn Ser Ser Thr Leu Thr
50 55 60

Tyr Ala Thr Leu Ser Ser Ser Ser Val Asp Ala Ala Ala Ala Ala Ala
65 70 75 80

Ala Ala Ser Ala Ala Ser Ala Val Arg Gly Met Ala Leu Gly Ala Gly
85 90 95

Tyr Tyr Ser Ser Leu Val Ala Asn Ser Ser Ser Thr Asn Asn Pro Ala
100 105 110

Ser Leu Asn Glu Glu Lys Leu Leu Leu Leu Met Ala Gln Leu Glu Ala
115 120 125

Leu Thr Gln Arg Leu Gly Glu Leu Thr Gln Gln Val Ala Gln Leu Gln
130 135 140

Ala Glu Thr Arg Ala Ala Val Ala Thr Val Lys Thr Lys
145 150 155

<210> 101
<211> 392
<212> PRT
<213> Simian adenovirus 30

<400> 101

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

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

Tyr Asp His Gln 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 Ala 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 Ser Pro Tyr Val Glu Glu Val Asp Asp Glu Val Asp
    370                 375                 380

Glu Glu Gly Glu Tyr Leu Glu Asp
385                 390


<210>  102
<211>  593
<212>  PRT
<213>  Simian adenovirus 30

<400>  102

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 Ala Leu Ser Thr 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 Arg Ala Ser Gln Gly Ala Thr Ser Arg Gly Ser Ala
    530                 535                 540

Ala Arg Lys Arg Arg Trp His Asp Arg Gln Arg Gly Leu Met Trp Asp
545                 550                 555                 560

Asp Glu Asp Ser Ala Asp Asp Ser Ser Val Leu Asp Leu Gly Gly Ser
                565                 570                 575

Gly Gly Gly Asn Pro Phe Ala His Leu Arg Pro Arg Ile Gly Arg Met
            580                 585                 590

Met
```

<210> 103
<211> 533
<212> PRT
<213> Simian adenovirus 30

<400> 103

```
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 Gly Glu Asp Tyr Asp Gly Ser
145                 150                 155                 160

Gln Asp Glu Leu Lys 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 Met Tyr Glu Asp Leu Glu Gly Gly Asn Ile Pro Ala
        275                 280                 285

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

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

Asn Phe Ala Ser Ala Ala Ala Val Ala Ala Ala Glu Ala Ala Glu Thr
                325                 330                 335

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

Ser Tyr Asn Val Leu Pro Asp Lys Ile Asn Thr Ala Tyr Arg Ser Trp
        355                 360                 365
```

```
Tyr Leu Ala Tyr Asn Tyr Gly Asp Pro Glu Lys Gly Val Arg Ser Trp
    370                 375                 380

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

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

Arg Gln Val Ser Asn Tyr Pro Val Val Gly Ala Glu Leu Leu Pro Val
            420                 425                 430

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

Arg Ala Phe Thr Ser Leu Thr His Val Phe Asn Arg Phe Pro Glu Asn
    450                 455                 460

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

Asn Val Pro Ala Leu Thr Asp His Gly Thr Leu Pro Leu Arg Ser Ser
                485                 490                 495

Ile Arg Gly Val Gln Arg Val Thr Val Thr Asp Ala Arg Arg Arg Thr
            500                 505                 510

Cys Pro Tyr Val Tyr Lys Ala Leu Gly Ile Val Ala Pro Arg Val Leu
        515                 520                 525

Ser Ser Arg Thr Phe
    530


<210>  104
<211>  193
<212>  PRT
<213>  Simian adenovirus 30

<400>  104

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> 105
<211> 346
<212> PRT
<213> Simian adenovirus 30

<400> 105

```
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 Ile Lys Arg Val Lys Lys Asp Lys Lys Glu Glu Asp Val Asp Asp
        35                  40                  45

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

Arg Gly Arg Lys Val Gln 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 Ser Ala Pro Lys Glu Glu
        115                 120                 125

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

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

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

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

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

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

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

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

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

```
            260                 265                 270

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

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

Arg Arg Arg Arg Arg Arg Thr Ala Ala Ala Ala Thr Thr Pro Ala Ala
305                 310                 315                 320

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

Arg Ala Arg Tyr His Pro Ser Ile Ala Ile
            340                 345


<210>  106
<211>  77
<212>  PRT
<213>  Simian adenovirus 30

<400>  106

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>  107
<211>  259
<212>  PRT
<213>  Simian adenovirus 30

<400>  107

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 Asn 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> 108
<211> 938
<212> PRT
<213> Simian adenovirus 30

<400> 108

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 Asn Glu Asn Asn Gly Gln Gly
130 135 140

Gln Ala Lys Thr His Thr Tyr Gly Val Ala Ala Met Gly Gly Leu Asp
145 150 155 160

Ile Thr Lys Glu Gly Leu Gln Ile Gly Thr Asp Ala Ser Lys Glu Asp
165 170 175

Asp Asn Glu Ile Tyr Ala Asp Glu Thr Tyr Gln Pro Glu Pro Gln Ile

```
            180                 185                 190

Gly Glu Glu Asn Trp Gln Asp Thr Glu Asn Phe Tyr Gly Gly Arg Ala
        195                 200                 205

Leu Lys Lys Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Arg
    210                 215                 220

Pro Thr Asn Val Lys Gly Gly Gln Ala Lys Val Lys Thr Glu Glu Asn
225                 230                 235                 240

Val Gln Ser Phe Asp Ile Asp Leu Ala Phe Phe Asp Ile Pro Ser Thr
                245                 250                 255

Gly Thr Gly Ser Asn Gly Thr Asn Val Asn Asp Lys Pro Asp Met Val
            260                 265                 270

Met Tyr Thr Glu Asn Val Asn Leu Glu Thr Pro Asp Thr His Ile Val
        275                 280                 285

Tyr Lys Pro Gly Thr Ser Asp Asp Ser Ser Glu Ala Asn Leu Cys Gln
    290                 295                 300

Gln Ala Met Pro Asn Arg Pro Asn Tyr Ile Gly Phe Arg Asp Asn Phe
305                 310                 315                 320

Ile Gly Leu Met Tyr Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala
                325                 330                 335

Gly Gln Ala Ser Gln Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn
            340                 345                 350

Thr Glu Leu Ser Tyr Gln Leu Leu Leu Asp Ser Leu Gly Asp Arg Thr
        355                 360                 365

Arg Tyr Phe Ser Met Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp
    370                 375                 380

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

Cys Phe Pro Leu Asp Gly Ala Gly Thr Asn Ala Val Tyr Gln Gly Val
                405                 410                 415
```

```
Lys Glu Lys Thr Gly Asn Asn Gly Glu Trp Glu Ala Asp Thr Asn Val
            420                 425                 430

Ala Ser Gln Asn Gln Ile Cys Lys Gly Asn Ile Tyr Ala Met Glu Ile
        435                 440                 445

Asn Leu Gln Ala Asn Leu Trp Arg Ser Phe Leu Tyr Ser Asn Val Ala
    450                 455                 460

Leu Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Pro Ala Asn Ile Thr Leu
465                 470                 475                 480

Pro Thr Asn Thr Asn Thr Tyr Asp Tyr Met Asn Gly Arg Val Val Pro
                485                 490                 495

Pro Ser Leu Val Asp Ala Tyr Ile Asn Ile Gly Ala Arg Trp Ser Leu
            500                 505                 510

Asp Pro Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly
        515                 520                 525

Leu Arg Tyr Arg Ser Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe
    530                 535                 540

His Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Ser Leu Leu Leu
545                 550                 555                 560

Leu Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn
                565                 570                 575

Met Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Thr Asp Gly Ala
            580                 585                 590

Ser Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met
        595                 600                 605

Ala His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr
    610                 615                 620

Asn Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr
625                 630                 635                 640

Pro Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg
                645                 650                 655
```

```
Asn Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Lys
            660                 665                 670

Glu Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro Tyr Phe Val Tyr Ser
        675                 680                 685

Gly Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe
    690                 695                 700

Lys Lys Val Ser Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn
705                 710                 715                 720

Asp Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp
                725                 730                 735

Gly Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe
            740                 745                 750

Leu Val Gln Met Leu Ala His Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr
        755                 760                 765

Val Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe
    770                 775                 780

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

Gln Ala Val Thr Leu Ala Tyr Gln His Asn Asn Ser Gly Phe Val Gly
                805                 810                 815

Tyr Leu Ala Pro Thr Met Arg Gln Gly Gln Pro Tyr Pro Ala Asn Tyr
            820                 825                 830

Pro Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr Ser Val Thr Gln Lys
        835                 840                 845

Lys Phe Leu Cys Asp Arg Val Met Trp Arg Ile Pro Phe Ser Ser Asn
    850                 855                 860

Phe Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Met Leu Tyr
865                 870                 875                 880

Ala Asn Ser Ala His Ala Leu Asp Met Asn Phe Glu Val Asp Pro Met
                885                 890                 895
```

```
Asp Glu Ser Thr Leu Leu Tyr Val Val Phe Glu Val Phe Asp Val Val
            900                 905                 910

Arg Val His Gln Pro His Arg Gly Val Ile Glu Ala Val Tyr Leu Arg
        915                 920                 925

Thr Pro Phe Ser Ala Gly Asn Ala Thr Thr
    930                 935
```

<210> 109
<211> 209
<212> PRT
<213> Simian adenovirus 30

<400> 109

```
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> 110
<211> 801
<212> PRT
<213> Simian adenovirus 30

<400> 110

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

Pro Pro Ser Pro Thr Ser Asp 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 Asn Glu Gln Asn 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 Ser Glu Gly Lys Gly Gly Leu Lys Leu Thr Pro
    610                 615                 620

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

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

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

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

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

Phe Pro Gln Asp Ala Pro Arg Lys Gln Gln Glu Ala Glu Ser Gly 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 Asp Gly Arg Leu Gly Gln His Ser Gly Arg Gly Gly Gln Pro Ala
            740                 745                 750

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

Ser Ser Arg Arg Gln Thr Val Val Leu Gly Gly Gly Glu Ser Lys Gln
    770                 775                 780

His Gly Tyr His Leu Arg Ser Gly Ser Gly Ser Arg Arg Pro Gly Pro
785                 790                 795                 800

Gln
```

<210> 111
<211> 227
<212> PRT
<213> Simian adenovirus 30

<400> 111

```
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 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> 112
<211> 208
<212> PRT
<213> Simian adenovirus 30

<400> 112

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> 113
<211> 228
<212> PRT
<213> Simian adenovirus 30

<400> 113

```
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> 114
<211> 203
<212> PRT
<213> Simian adenovirus 30

<400> 114

```
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> 115
<211> 288
<212> PRT
<213> Simian adenovirus 30

<400> 115

```
Met Lys Ala Val Ser Ala Leu Val Phe Cys Ser Leu Ile Gly 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> 116
<211> 91
<212> PRT
<213> Simian adenovirus 30

<400> 116

```
Met Ile Pro Arg Gln Phe Leu Ile Thr Ile Leu Ile Cys Leu Leu Gln
1               5                   10                  15

Val Cys Ala Thr Leu Ala Leu Val Ala Asn Ala Ser Pro Asp Cys Ile
            20                  25                  30

Gly Pro Phe Ala Ser Tyr Val Leu Phe Ala Phe Ile Thr Cys Ile Cys
        35                  40                  45

Cys Cys Ser Ile Val Cys Leu Leu Ile Thr Phe Phe Gln Phe Ile Asp
    50                  55                  60

Trp Ile Phe Val Arg Ile Ala Tyr Leu Arg His His Pro Gln Tyr Arg
65                  70                  75                  80

Asp Gln Arg Val Ala Gln Leu Leu Arg Leu Leu
                85                  90
```

<210> 117
<211> 144
<212> PRT
<213> Simian adenovirus 30

<400> 117

```
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
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<210> 118
<211> 445
<212> PRT
<213> Simian adenovirus 30

<400> 118

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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 Lys Val
305                 310                 315                 320

Thr Thr Ala Leu Val Ser Leu Lys Phe Asp Ala Asn Gly Val Leu Gln
                325                 330                 335

Ala Ser Ser Thr Leu Asp Lys Glu Tyr Trp Asn Phe Arg Lys Gly Asp
            340                 345                 350

Val Thr Pro Ala Asp Pro Tyr Thr Asn Ala Ile Gly Phe Met Pro Asn
        355                 360                 365

Leu Asn Ala Tyr Pro Lys Asn Thr Asn Ala Ala Ala Lys Ser His Ile
    370                 375                 380

Val Gly Lys Val Tyr Leu His Gly Asp Val Ser 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 Thr Asp Gln Tyr Lys Asp Glu Thr Leu
            420                 425                 430

Ala Val Ser Ser Phe Thr Phe Ser Tyr Ile Ala Lys Glu
        435                 440                 445


<210>  119
<211>  580
<212>  DNA
<213>  Simian adenovirus 30


<220>
<221>  CDS
<222>  (1)..(573)
<223>  label=Elb\19K

<400>  119
atg gag atc tgg aca gtc ttg gaa gac ttt cac cag act aga cag ctg        48
Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Gln Thr Arg Gln Leu
```

```
1               5                   10                  15

cta gag aac tca tcg gag gga gtc tct tac ctg tgg aga ttc tgc ttc          96
Leu Glu Asn Ser Ser Glu Gly Val Ser Tyr Leu Trp Arg Phe Cys Phe
            20                  25                  30

gct ggg cct cta gct aag cta gtc tat agg gcc aag cag gat tat agg         144
Ala Gly Pro Leu Ala Lys Leu Val Tyr Arg Ala Lys Gln Asp Tyr Arg
        35                  40                  45

gaa caa ttt gag gat att ttg aga gag tgt cct ggt att ttt gac tct         192
Glu Gln Phe Glu Asp Ile Leu Arg Glu Cys Pro Gly Ile Phe Asp Ser
    50                  55                  60

ctc aac ttg ggc cat cag tct cac ttt aac cag agt att ctg aga gcc         240
Leu Asn Leu Gly His Gln Ser His Phe Asn Gln Ser Ile Leu Arg Ala
65                  70                  75                  80

ctt gac ttt tct act cct ggc aga act acc gcc gcg gta gcc ttt ttt         288
Leu Asp Phe Ser Thr Pro Gly Arg Thr Thr Ala Ala Val Ala Phe Phe
                85                  90                  95

gcc ttt atc ctt gac aaa tgg agt caa gaa acc cat ttc agc agg gat         336
Ala Phe Ile Leu Asp Lys Trp Ser Gln Glu Thr His Phe Ser Arg Asp
            100                 105                 110

tac cgt ctg gac tgc tta gca gta gct ttg tgg aga aca tgg agg tgc         384
Tyr Arg Leu Asp Cys Leu Ala Val Ala Leu Trp Arg Thr Trp Arg Cys
        115                 120                 125

cag cgc ctg aat gca atc tcc ggc tac ttg cca gta cag ccg gta gac         432
Gln Arg Leu Asn Ala Ile Ser Gly Tyr Leu Pro Val Gln Pro Val Asp
    130                 135                 140

acg ctg agg atc ctg agt ctc cag tca ccc cag gaa cac caa cgc cgc         480
Thr Leu Arg Ile Leu Ser Leu Gln Ser Pro Gln Glu His Gln Arg Arg
145                 150                 155                 160

cag cag ccg cag cag gag cag cag caa gag gag gag gac cga gaa gag         528
Gln Gln Pro Gln Gln Glu Gln Gln Gln Glu Glu Glu Asp Arg Glu Glu
                165                 170                 175

aac ccg aga gcc ggt ctg gac cct ccg gtg gcg gag gag gag gag             573
Asn Pro Arg Ala Gly Leu Asp Pro Pro Val Ala Glu Glu Glu Glu
            180                 185                 190

tagctga                                                                 580


<210>  120
<211>  191
<212>  PRT
<213>  Simian adenovirus 30

<400>  120

Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Gln Thr Arg Gln Leu
1               5                   10                  15
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```
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>  121
<211>  6360
<212>  DNA
<213>  Simian adenovirus 30


<220>
<221>  CDS
<222>  (8)..(571)
<223>  label=22K

<220>
<221>  CDS
<222>  (1595)..(1912)
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<223> label=E3\12.5K

<220>
<221> CDS
<222> (2477)..(3004)
<223> label=E3\gp19K

<220>
<221> CDS
<222> (5948)..(6352)
<223> label=E3\14.7K

<400> 121

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ccccagg atg ccc cga gga agc agc aag aag ctg aaa gtg gag ctg ccg          49
        Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro
        1               5                   10

ccg gag gat ttg gag gaa gac tgg gag agc agt cag gca gag gag gag          97
Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu
15                  20                  25                  30

atg gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa gac         145
Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp
                35                  40                  45

agt ctg gag gag gaa gac gag gtg gag gag gag gca gag gaa gaa gca         193
Ser Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala
            50                  55                  60

gcc gcc gcc aga ccg tcg tcc tcg gcg gag gag aaa gca agc agc acg         241
Ala Ala Ala Arg Pro Ser Ser Ser Ala Glu Glu Lys Ala Ser Ser Thr
        65                  70                  75

gat acc atc tcc gct ccg ggt cgg ggt cgc ggc ggc cgg gcc cac agt         289
Asp Thr Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser
    80                  85                  90

aga tgg gac gag acc ggg cgc ttc ccg aac ccc acc acc cag acc ggt         337
Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly
95                  100                 105                 110

aag aag gag cgg cag gga tac aag tcc tgg cgg ggg cac aaa aac gcc         385
Lys Lys Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala
                115                 120                 125

atc gtc tcc tgc ttg caa gcc tgc ggg ggc aac atc tcc ttc acc cgg         433
Ile Val Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg
            130                 135                 140

cgc tac ctg ctc ttc cac cgc ggg gtg aac ttc ccc cgc aac atc ttg         481
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         529
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 agc agc                 571
Ala Glu Thr Gln Gln Gln Gln Lys Thr Ser Gly Ser Ser Ser
```

```
175                 180                 185

tagaaaatcc acagcggcgg caggtggact gaggatcgcg gcgaacgagc cggcgcagac      631

ccgggagctg aggaaccgga tctttcccac cctctatgcc atcttccagc agagtcgggg      691

gcaggagcag gaactgaaag tcaagaaccg ttctctgcgc tcgctcaccc gcagttgtct      751

gtatcacaag agcgaagacc aacttcagcg cactctcgag gacgccgagg ctctcttcaa      811

caagtactgc gcgctcactc ttaaagagta gcccgcgccc gcccacacac ggaaaaaggc      871

gggaattacg tcaccacctg cgcccttcgc ccgaccatca tgagcaaaga gattcccacg      931

ccttacatgt ggagctacca gccccagatg ggcctggccg ccggcgccgc ccaggactac      991

tccacccgca tgaactggct cagtgccggg cccgcgatga tctcacgggt gaatgacatc     1051

cgcgcccgcc gaaaccagat actcctagaa cagtcagcga tcaccgccac gccccgccat     1111

caccttaatc cgcgtaattg gcccgccgcc ctggtgtacc aggaaattcc ccagcccacg     1171

accgtactac ttccgcgaga cgcccaggcc gaagtccagc tgactaactc aggtgtccag     1231

ctggccggcg gcgccgccct gtgtcgtcac cgccccgctc agggtataaa gcggctggtg     1291

atccgaggca gaggcacaca gctcaacgac gaggtggtga gctcttcgct gggtctgcga     1351

cctgacggag tcttccaact cgccggatcg gggagatctt ccttcacgcc tcgtcaggcc     1411

gtcctgactt tggagagttc gtcctcgcag ccccgctcgg gcggcatcgg cactctccag     1471

ttcgtggagg agttcactcc ctcggtctac ttcaacccct tctccggctc ccccggccac     1531

tacccggacg agttcatccc gaacttcgac gccatcagcg agtcggtgga cggctacgat     1591

tga atg tcc cat ggt ggc gca gct gac cta gct cgg ctt cga cac ctg       1639
    Met Ser His Gly Gly Ala Ala Asp Leu Ala Arg Leu Arg His Leu
        190                 195                 200

gac cac tgc cgc cgc ttc cgc tgc ttc gct cgg gat ctc gcc gag ttt       1687
Asp His Cys Arg Arg Phe Arg Cys Phe Ala Arg Asp Leu Ala Glu Phe
    205                 210                 215

gcc tac ttt gag ctg ccc gag gag cac cct cag ggc cca gcc cac gga       1735
Ala Tyr Phe Glu Leu Pro Glu Glu His Pro Gln Gly Pro Ala His Gly
220                 225                 230                 235

gtg cgg atc atc gtc gaa ggg ggc ctc gac tcc cac ctg ctt cgg atc       1783
Val Arg Ile Ile Val Glu Gly Gly Leu Asp Ser His Leu Leu Arg Ile
                240                 245                 250

ttc agc cag cga ccg atc ctg gtc gag cgc gaa caa gga cag acc cgt       1831
Phe Ser Gln Arg Pro Ile Leu Val Glu Arg Glu Gln Gly Gln Thr Arg
            255                 260                 265

ctg acc ctg tac tgc atc tgc aac cac ccc ggc ctg cat gaa agt ctt       1879
Leu Thr Leu Tyr Cys Ile Cys Asn His Pro Gly Leu His Glu Ser Leu
        270                 275                 280
```

```
tgt tgt ctg ctg tgt act gag tat aat aaa agc tgagatcagc gactactccg     1932
Cys Cys Leu Leu Cys Thr Glu Tyr Asn Lys Ser
    285                 290

gactcgattg tggtgttcct gctatcaacc ggtccctgtt cttcaccggg aacgaaaccg     1992

agctccagct ccagtgtaag ccccacaaga agtacctcac ctggctgttc cagggctccc     2052

ccatcgccgt tgtcaaccac tgcgacaacg acggagtcct gctgagcggc cctgccaacc     2112

ttacttttc cacccgcaga agcaagctcc agctcttcca acccttcctc cccgggacct     2172

atcagtgcgt ctcgggaccc tgccatcaca ccttccacct gatcccgaat accacagcgc     2232

cgctccccgc tactaacaac caaactaacc tccaccaacg ccaccgtcgc gacctttcct     2292

ctgaatctaa taccactacc ggaggtgagc tccgaggtcg accaacctct gggatttact     2352

acggcccctg ggaggtggtg gggttaatag cgctaggcct agttgtgggt gggcttttgg     2412

ctctctgcta cctatacctc ccttgctgtt cgtacttagt ggtgctgtgt tgctggttta     2472

agaa atg ggg cag atc acc cta gtg agc tgc ggt gtg ctg gtg gcg gtg      2521
     Met Gly Gln Ile Thr Leu Val Ser Cys Gly Val Leu Val Ala Val
     295                 300                 305

ctt tcg att gtg gga ctg ggc ggc gcg gct gta gtg aag gag gag aag      2569
Leu Ser Ile Val Gly Leu Gly Gly Ala Ala Val Val Lys Glu Glu Lys
310                 315                 320                 325

gcc gat ccc tgc ttg cat ttc aat ccc gac aaa tgc cag ctg agt ttt      2617
Ala Asp Pro Cys Leu His Phe Asn Pro Asp Lys Cys Gln Leu Ser Phe
                330                 335                 340

cag ccc gat ggc aat cgg tgc gcg gtg ctg atc aag tgc gga tgg gaa      2665
Gln Pro Asp Gly Asn Arg Cys Ala Val Leu Ile Lys Cys Gly Trp Glu
            345                 350                 355

tgc gag aac gtg aga atc gag tac aat aac aag act cgg aac aat act      2713
Cys Glu Asn Val Arg Ile Glu Tyr Asn Asn Lys Thr Arg Asn Asn Thr
        360                 365                 370

ctc gcg tcc gtg tgg cag ccc ggg gac ccc gag tgg tac acc gtc tct      2761
Leu Ala Ser Val Trp Gln Pro Gly Asp Pro Glu Trp Tyr Thr Val Ser
    375                 380                 385

gtc ccc ggt gct gac ggc tcc ccg cgc acc gtg aat aat act ttc att      2809
Val Pro Gly Ala Asp Gly Ser Pro Arg Thr Val Asn Asn Thr Phe Ile
390                 395                 400                 405

ttt gcg cac atg tgc aac acg gtc atg tgg atg agc aag cag tac gat      2857
Phe Ala His Met Cys Asn Thr Val Met Trp Met Ser Lys Gln Tyr Asp
                410                 415                 420

atg tgg ccc ccc acg aag gag aac atc gtg gtc ttc tcc atc gct tac      2905
Met Trp Pro Pro Thr Lys Glu Asn Ile Val Val Phe Ser Ile Ala Tyr
            425                 430                 435
```

```
agc ctg tgc acg gcg cta atc acc gct atc gtg tgc ctg agc att cac      2953
Ser Leu Cys Thr Ala Leu Ile Thr Ala Ile Val Cys Leu Ser Ile His
        440                 445                 450

atg ctc atc gct att cgc ccc aga aat aat gcc gag aaa gag aaa cag      3001
Met Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys Gln
    455                 460                 465

cca taacacgttt tttcacacac cttgttttta cagacaatgc gtctgttaaa           3054
Pro
470

ttttttaaac attgtgctca gtattgctta tgcctctggt tatgcaaaca tacagaaaac    3114

cctttatgta ggatctgatg gtacactaga gggtacccaa tcacaagcca aggttgcatg    3174

gtatttttat agaaccaaca ctgatccagt taaactttgt aagggtgaat tgccgcgtac    3234

acataaaact ccacttacat ttagttgcag caataataat cttacacttt tttcaattac    3294

aaaacaatat actggtactt attacagtac aaactttcat acaggacaag ataaatatta    3354

tactgttaag gtagaaaatc ctaccactcc tagaactacc accaccacca ccactactgc    3414

aaagcccact gtgaaaacta caactaggac caccacaact acagaaacca ccaccagcac    3474

aacacttgct gcaactacac acacacacac taagctaacc ttacagacca ctaatgattt    3534

gatcgccctg ctgcaaaagg gggataacag caccacttcc aatgaggaga tacccaaatc    3594

catgattggc attattgttg ctgtagtggt gtgcatgttg atcatcgcct tgtgcatggt    3654

gtactatgcc ttctgctaca gaaagcacag actgaacgac aagctggaac acttactaag    3714

tgttgaattt taatttttta gaaccatgaa gatcctaggc ctttttagtt tttctatcat    3774

tacctctgct ctttgtgaat cagtggatag agatgttact attaccactg gttctaatta    3834

tacactgaaa gggccaccct caggtatgct ttcgtggtat tgctattttg gaactgacac    3894

tgatcaaact gaattatgca attttcaaaa aggcaaaacc tcaaactcta aaatctctaa    3954

ttatcaatgc aatggcactg atctgatact actcaatgtc acgaaagcat atggtggcag    4014

ttattattgc cctggacaaa acactgaaga aatgattttt tacaaagtgg aagtggttga    4074

tcccactaca ccacccacca ccacaactat tcataccaca cacacagaac aaacaccaga    4134

ggcaacagaa gcagagttgg ccttccaggt tcacggagat tcctttgctg tcaatacccc    4194

tacacccgat cagcggtgtc cggggccgct agtcagcggc attgtcggtg tgctttcggg    4254

attagcagtc ataatcatct gcatgttcat ttttgcttgc tgctatagaa ggctttaccg    4314

acaaaaatca gacccactgc tgaacctcta tgtttaattt tttccagagc catgaaggca    4374

gttagcgctc tagttttttg ttctttgatt ggcattgttt ttaatagtaa aattaccaaa    4434

gttagcttta ttaaacatgt taatgtaact gaaggagata acatcacact agcaggtgta    4494
```

```
gaaggtgctc aaaacaccac ctggacaaaa taccatctag gatggagaga tatttgcacc     4554

tggaatgtaa cttattattg cataggaatt aatcttacca ttgttaacgc taaccaatct     4614

cagaatgggt taattaaagg acagagtgtt agtgtgacca gtgatgggta ctatacccag     4674

catagtttta actacaacat tactgtcata ccactgccta cgcctagccc acctagcact     4734

accacacaga caaccacata cagtacatca aatcagccta ccaccactac agcagcagag     4794

gttgccagct cgtctggggt ccgagtggca tttttgatgt tggccccatc tagcagtccc     4854

actgctagta ccaatgagca gactactgaa tttttgtcca ctgtcgagag ccacaccaca     4914

gctacctcca gtgccttctc tagcaccgcc aatctctcct cgctttcctc tacaccaatc     4974

agccccgcta ctactcctag ccccgctcct cttcccactc ccctgaagca aacagacggc     5034

ggcatgcaat ggcagatcac cctgctcatt gtgatcgggt tggtcatcct ggccgtgttg     5094

ctctactaca tcttctgccg ccgcattccc aacgcgcacc gcaagccggc ctacaagccc     5154

atcgttatcg ggcagccgga gccgcttcag gtggaagggg gtctaaggaa tcttctcttc     5214

tcttttacag tatggtgatt gaactatgat tcctagacaa ttcttgatca ctattcttat     5274

ctgcctcctc caagtctgtg ccaccctcgc tctggtggcc aacgccagtc cagactgtat     5334

tgggcccttc gcctcctacg tgctctttgc cttcatcacc tgcatctgct gctgtagcat     5394

agtctgcctg cttatcacct tcttccagtt cattgactgg atctttgtgc gcatcgccta     5454

cctgcgccac cacccccagt accgcgacca gcgagtggcg cagctgctca ggctcctctg     5514

ataagcatgc gggctctgct acttctcgcg cttctgctgt tagtgctccc ccgtcccgtt     5574

gacccccggc cccccactca gtcccccgag gaggtccgca aatgcaaatt ccaagaaccc     5634

tggaaattcc tcaaatgcta ccgccaaaaa tcagacatgc atcccagctg gatcatgatc     5694

attgggatcg tgaacattct ggcctgcacc ctcatctcct ttgtgattta cccctgcttt     5754

gactttggtt ggaactcgcc agaggcgctc tatctcccgc ctgaacctga cacaccacca     5814

cagcaacctc aggcacacgc actaccacca ccaccacagc ctaggccaca atacatgccc     5874

atattagact atgaggccga gccacagcga cccatgctcc ccgctattag ttacttcaat     5934

ctaaccggcg gag atg act gac cca ctg gcc aac aac aac gtc aac gac         5983
              Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp
                              475                 480

ctt ctc ctg gac atg gac ggc cgc gcc tcg gag cag cga ctc gcc caa       6031
Leu Leu Leu Asp Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln
        485                 490                 495

ctt cgc att cgc cag cag cag gag aga gcc gtc aag gag ctg cag gac       6079
Leu Arg Ile Arg Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp
```

```
    500                 505                 510

ggc ata gcc atc cac cag tgc aag aaa ggc atc ttc tgc ctg gtg aaa       6127
Gly Ile Ala Ile His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys
515                 520                 525                 530

cag gcc aag atc tcc tac gag gtc acc cag acc gac cat cgc ctc tcc       6175
Gln Ala Lys Ile Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser
                535                 540                 545

tac gag ctc atg cag cag cgc cag aag ttc acc tgc ctg gtc gga gtc       6223
Tyr Glu Leu Met Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val
            550                 555                 560

aac ccc atc gtc atc acc cag cag tcg ggc gat acc aag ggg tgc atc       6271
Asn Pro Ile Val Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile
        565                 570                 575

cac tgc tcc tgc gac tcc ccc gac tgc gtc cac act ctg atc aag acc       6319
His Cys Ser Cys Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr
    580                 585                 590

ctc tgc ggc ctc cgc gac ctc ctc ccc atg aac taatcacc                 6360
Leu Cys Gly Leu Arg Asp Leu Leu Pro Met Asn
595                 600                 605
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<210> 122
<211> 188
<212> PRT
<213> Simian adenovirus 30

<400> 122

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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 Glu Met Glu
            20                  25                  30

Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu
        35                  40                  45

Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala Ala
    50                  55                  60

Ala Arg Pro Ser Ser Ser Ala Glu Glu Lys Ala Ser Ser Thr Asp Thr
65                  70                  75                  80

Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala 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 Cys Phe Gln Glu Glu Ala Glu
                165                 170                 175

Thr Gln Gln Gln Gln Lys Thr Ser Gly Ser Ser Ser
            180                 185


<210>  123
<211>  106
<212>  PRT
<213>  Simian adenovirus 30

<400>  123

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>  124
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<211> 176
<212> PRT
<213> Simian adenovirus 30

<400> 124

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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> 125
<211> 135
<212> PRT
<213> Simian adenovirus 30

<400> 125

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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 Met
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>  126
<211>  870
<212>  DNA
<213>  Simian adenovirus 30


<220>
<221>  CDS
<222>  (6)..(573)
<223>  label=Ela

<220>
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<222>  (659)..(864)
<223>  label=Ela

<400>  126
gaaag atg agg cac ctg aga gac ctg ccc ggt aat gtt ttc ctg gct act       50
      Met Arg His Leu Arg Asp Leu Pro Gly Asn Val Phe Leu Ala Thr
      1               5                   10                  15

ggg aac gag att ctg gaa ctg gtg gtg gac gcc atg atg ggt gac gac         98
Gly Asn Glu Ile Leu Glu Leu Val Val Asp Ala Met Met Gly Asp Asp
                20                  25                  30
```

```
cct ccc gag ccc cct acc cca ttt gag gcg cct tcg ctg tac gat ttg        146
Pro Pro Glu Pro Pro Thr Pro Phe Glu Ala Pro Ser Leu Tyr Asp Leu
            35                  40                  45

tat gat ctg gag gtg gat gtg tcc gag aac gac ccc aac gag gag gcg        194
Tyr Asp Leu Glu Val Asp Val Ser Glu Asn Asp Pro Asn Glu Glu Ala
        50                  55                  60

gtg aat gat ttg ttt agc gat gcc gcg ctg ctg gct gcc gag cag gct        242
Val Asn Asp Leu Phe Ser Asp Ala Ala Leu Leu Ala Ala Glu Gln Ala
    65                  70                  75

aat acg gac tct ggc tca gac agc gat tcc tct ctc cat acc ccg aga        290
Asn Thr Asp Ser Gly Ser Asp Ser Asp Ser Ser Leu His Thr Pro Arg
80                  85                  90                  95

ccc ggc aga ggt gag aaa aag atc ccc gag ctt aaa ggg gaa gag ctc        338
Pro Gly Arg Gly Glu Lys Lys Ile Pro Glu Leu Lys Gly Glu Glu Leu
                100                 105                 110

gac ctg cgc tgc tat gag gaa tgc ttg cct ccg agc gat gat gag gag        386
Asp Leu Arg Cys Tyr Glu Glu Cys Leu Pro Pro Ser Asp Asp Glu Glu
            115                 120                 125

gac gag gag gcg att cga gct gca gcg agc gag gga gtg aaa gtt gcg        434
Asp Glu Glu Ala Ile Arg Ala Ala Ala Ser Glu Gly Val Lys Val Ala
        130                 135                 140

ggc gag agc ttt agc ctg gac tgt cct act ctg ccc gga cac ggc tgt        482
Gly Glu Ser Phe Ser Leu Asp Cys Pro Thr Leu Pro Gly His Gly Cys
    145                 150                 155

aag tct tgt gaa ttt cat cgc atg aat act gga gat aag aat gtg atg        530
Lys Ser Cys Glu Phe His Arg Met Asn Thr Gly Asp Lys Asn Val Met
160                 165                 170                 175

tgt gcc ctg tgc tat atg aga gct tac aac cat tgt gtt tac a             573
Cys Ala Leu Cys Tyr Met Arg Ala Tyr Asn His Cys Val Tyr
                180                 185

gtaagtgtga ttaactttag ttgggaaagg cagagggtga ctgggtgctg actggtttat      633

ttatgtatat gtttttttatg tgtag gt  ccc gtc tct gac gca gat gag acc        684
                                Ser Pro Val Ser Asp Ala Asp Glu Thr
                                                    195

ccc act tca gag tgc att tca tca ccc cca gaa att ggc gag gaa ccg        732
Pro Thr Ser Glu Cys Ile Ser Ser Pro Pro Glu Ile Gly Glu Glu Pro
    200                 205                 210

ccc gaa gat att att cat aga cca gtt gca gtg aga gtc acc ggg cgg        780
Pro Glu Asp Ile Ile His Arg Pro Val Ala Val Arg Val Thr Gly Arg
215                 220                 225                 230

aga gca gct gtg gag agt ttg gat gac ttg cta cag ggt ggg gat gaa        828
Arg Ala Ala Val Glu Ser Leu Asp Asp Leu Leu Gln Gly Gly Asp Glu
                235                 240                 245

cct ttg gac ttg tgt acc cgg aaa cgc ccc agg cac taagtg                 870
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```
Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro Arg His
            250                 255


<210>  127
<211>  258
<212>  PRT
<213>  Simian adenovirus 30

<400>  127

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 Pro Val
            180                 185                 190
```

```
Ser Asp Ala Asp Glu Thr Pro Thr Ser Glu Cys Ile Ser Ser Pro Pro
        195                 200                 205


Glu Ile Gly Glu Glu Pro Pro Glu Asp Ile Ile His Arg Pro Val Ala
    210                 215                 220


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


Leu Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro
                245                 250                 255


Arg His



<210>  128
<211>  840
<212>  DNA
<213>  Simian adenovirus 30


<220>
<221>  CDS
<222>  (8)..(335)
<223>  label=33K

<220>
<221>  CDS
<222>  (505)..(839)
<223>  label=33K

<400>  128
ccccagg atg ccc cga gga agc agc aag aag ctg aaa gtg gag ctg ccg         49
        Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro
        1               5                   10

ccg gag gat ttg gag gaa gac tgg gag agc agt cag gca gag gag gag         97
Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu Glu Glu
15                  20                  25                  30

atg gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa gac        145
Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp
                35                  40                  45

agt ctg gag gag gaa gac gag gtg gag gag gag gca gag gaa gaa gca        193
Ser Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala
            50                  55                  60

gcc gcc gcc aga ccg tcg tcc tcg gcg gag gag aaa gca agc agc acg        241
Ala Ala Ala Arg Pro Ser Ser Ser Ala Glu Glu Lys Ala Ser Ser Thr
        65                  70                  75

gat acc atc tcc gct ccg ggt cgg ggt cgc ggc ggc cgg gcc cac agt        289
Asp Thr Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser
```

```
    80                  85                  90

aga tgg gac gag acc ggg cgc ttc ccg aac ccc acc acc cag acc g          335
Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr
95                  100                 105

gtaagaagga gcggcaggga tacaagtcct ggcgggggca caaaaacgcc atcgtctcct      395

gcttgcaagc ctgcgggggc aacatctcct tcacccggcg ctacctgctc ttccaccgcg      455

gggtgaactt cccccgcaac atcttgcatt actaccgtca cctccacag cc  cct act      512
                                                        Ala Pro Thr


act gtt tcc aag aag agg cag aaa ccc agc agc agc aga aaa cca gcg         560
Thr Val Ser Lys Lys Arg Gln Lys Pro Ser Ser Ser Arg Lys Pro Ala
        115                 120                 125

gca gca gca gct aga aaa tcc aca gcg gcg gca ggt gga ctg agg atc         608
Ala Ala Ala Ala Arg Lys Ser Thr Ala Ala Ala Gly Gly Leu Arg Ile
    130                 135                 140

gcg gcg aac gag ccg gcg cag acc cgg gag ctg agg aac cgg atc ttt         656
Ala Ala Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg Asn Arg Ile Phe
145                 150                 155                 160

ccc acc ctc tat gcc atc ttc cag cag agt cgg ggg cag gag cag gaa         704
Pro Thr Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly Gln Glu Gln Glu
                165                 170                 175

ctg aaa gtc aag aac cgt tct ctg cgc tcg ctc acc cgc agt tgt ctg         752
Leu Lys Val Lys Asn Arg Ser Leu Arg Ser Leu Thr Arg Ser Cys Leu
            180                 185                 190

tat cac aag agc gaa gac caa ctt cag cgc act ctc gag gac gcc gag         800
Tyr His Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu Glu Asp Ala Glu
        195                 200                 205

gct ctc ttc aac aag tac tgc gcg ctc act ctt aaa gag t                  840
Ala Leu Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys Glu
    210                 215                 220


<210>  129
<211>  221
<212>  PRT
<213>  Simian adenovirus 30

<400>  129

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 Glu Met Glu
            20                  25                  30


Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser Leu
```

```
        35                  40                  45

Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala Ala
    50                  55                  60

Ala Arg Pro Ser Ser Ser Ala Glu Glu Lys Ala Ser Ser Thr Asp Thr
65                  70                  75                  80

Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser Arg Trp
                85                  90                  95

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

Thr Val Ser Lys Lys Arg Gln Lys Pro Ser Ser Ser Arg Lys Pro Ala
        115                 120                 125

Ala Ala Ala Ala Arg Lys Ser Thr Ala Ala Ala Gly Gly Leu Arg Ile
    130                 135                 140

Ala Ala Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg Asn Arg Ile Phe
145                 150                 155                 160

Pro Thr Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly Gln Glu Gln Glu
                165                 170                 175

Leu Lys Val Lys Asn Arg Ser Leu Arg Ser Leu Thr Arg Ser Cys Leu
            180                 185                 190

Tyr His Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu Glu Asp Ala Glu
        195                 200                 205

Ala Leu Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys Glu
    210                 215                 220


<210>  130
<211>  36629
<212>  DNA
<213>  Simian adenovirus 25.2


<220>
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<222>  (1)..(126)
<223>  label=ITR

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<222> (1905)..(3416)
<223> label=Elb\55K

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<222> (3501)..(3926)
<223> label=pIX

<220>
<221> misc_feature
<222> (3990)..(5611)
<223> complement (3990..5320, 5599..5611) label=IVa2

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<222> (5093)..(13834)
<223> complement (5093..8665, 13826..13834) label=pol

<220>
<221> misc_feature
<222> (8467)..(13834)
<223> complement (8467..10398, 13826..13834) label=pTP

<220>
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<222> (10833)..(12017)
<223> label=52K

<220>
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<222> (12044)..(13792)
<223> label=pIIIa

<220>
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<222> (13874)..(15466)
<223> label=penton

<220>
<221> CDS
<222> (15473)..(16054)
<223> label=pVII

<220>
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<222> (16102)..(17145)
<223> label=V

<220>
<221> CDS
<222> (17173)..(17403)
<223> label=pX

<220>
<221> CDS
<222> (17478)..(18209)
<223> label=pVI

<220>
<221> CDS
<222> (18315)..(21113)
<223> label=hexon

<220>
<221> CDS
<222> (21136)..(21759)
<223> label=protease

<220>
<221> misc_feature
<222> (21845)..(23377)
<223> complement label=DBP

<220>
<221> CDS
<222> (23400)..(25790)
<223> label=100K

<220>
<221> CDS
<222> (26425)..(27105)
<223> label=pVIII

<220>
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<222> (27109)..(27426)
<223> label=E3\12.5K

<220>
<221> CDS
<222> (27994)..(28527)
<223> label=E3\gp19K

<220>
<221> CDS
<222> (28560)..(29285)
<223> label=E3\CR1\beta

<220>
<221> CDS
<222> (29301)..(29906)
<223> label=E3\CR1\gamma

<220>
<221> CDS
<222> (29924)..(30784)
<223> label=E3\CR1\delta

<220>
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<222> (30795)..(31067)
<223> label=E3\RID\alpha

<220>
<221> CDS
<222> (31076)..(31507)
<223> label=E3\RID\beta

<220>
<221> CDS
<222> (32207)..(33535)
<223> label=fiber

<220>
<221> misc_feature
<222> (33632)..(34782)
<223> complement (33632..33880, 34603..34782) label=E4\orf6/7

<220>
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<222> (33880)..(34782)
<223> complement label=E4\orf6

<220>
<221> misc_feature
<222> (34691)..(35053)
<223> complement label=E4\orf4

<220>
<221> misc_feature
<222> (35066)..(35416)
<223> complement label=E4\orf3

<220>
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<222> (35416)..(35802)
<223> complement label=E4\orf2

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<221> misc_feature
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<223> complement label=E4\orf1

<220>
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<222> (36504)..(36629)
<223> complement label=ITR

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catcatcaat aatatacctc aaacttttgg tgcgcgttaa tatgcaaatg aggcgtttga 60

atttggggat gcggggcgct gattggctgt gacgaaggcg 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 accgtatttt tcacctaaat 420

ttccgcgtac ggtgtcaaag tccggtgttt ttacgtaggt gtcagctgat cgccagggta 480

tttaaacctg cgctctctag tcaagaggcc actcttgagt gccagcgagt agagttttct 540

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cctccgcgcc gcgagtcaga tctacacttt gaaagatgag gcacctgaga gacctgcccg      600

gtaatgtttt cctggctact gggaacgaga ttctggaact ggtggtggac gccatgatgg      660

gtgacgaccc tccggagccc cctaccccat ttgaggcgcc ttcgctgtac gatttgtatg      720

atctggaggt ggatgtgccc 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 gcgaaccagg gagtgaaagc ggcgggcgag ggctttagcc     1020

tggactgtcc tactctgccc ggacacggct gtaagtcttg tgaatttcat cgcatgaata     1080

ctggagataa gaatgtgatg tgtgccctgt gctatatgag agcttacaac cattgtgttt     1140

acagtaagtg tgattaactt tagttgggaa ggcagagggt gactgggtgc tgactggttt     1200

atttatgtat atgttttttt atgtgtaggt cccgtctctg acgtagatga 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

atccgtgttg actttaagtg cgtgttttat gactcagggg tggggactgt gggtatataa     1560

gcaggtgcag acctgtgtgg tcagttcaga gcaggactca tggagatctg gacggtcttg     1620

gaagactttc atcagactag acagctgcta gagaactcat cggaggaagt ctcttacctg     1680

tggagatttt gcttcggtgg ggctctagct aagctagtct atagggccaa acaggattat     1740

aaggatcaat ttgaggatat tttgagagag tgtcctggta tttttgactc tctcaacttg     1800

ggccatcagt ctcactttaa ccagagtatt ctgagagccc ttgacttttc tactcctggc     1860

agaactaccg ccgcggtagc ctttttttgcc tttatccttg acaa atg gag tca aga     1916
                                                  Met Glu Ser Arg
                                                  1

aac cca ttt cag cag gga tta ccg tct gga ctg ctt agc agt agc ttt       1964
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       2012
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       2060
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       2108
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       2156
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       2204
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       2252
Val Leu Thr Arg Ser Ser Ser Gly Arg Glu Arg Gly Ile Lys Arg Glu
                105                 110                 115

agg cat gag gag act agc cac aga act gaa ctg act gtc agt ctg atg       2300
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 gtg cag tcg cag       2348
Ser Arg Arg Arg Pro Glu Ser Val Trp Trp His Glu Val Gln Ser Gln
        135                 140                 145

ggg ata gat gag gtc tca gtg atg cat gag aaa tat tcc cta gaa caa       2396
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 tta gcc atc       2444
Val Lys Thr Cys Trp Leu Glu Pro Glu Asp Asp Trp Glu Leu Ala Ile
165                 170                 175                 180

agg aat tat gcc aag cta gct ctg aag cca gac aag aag tac aag att       2492
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 tca ggg aat ggg       2540
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 tgt tgt       2588
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 gtc acc ttt       2636
Met Met Asn Met Tyr Pro Gly Val Val Gly Met Glu Gly Val Thr Phe
    230                 235                 240

atg aac gcg agg ttc agg ggt gat ggg tat aat ggg gtg gtc ttt atg       2684
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       2732
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       2780
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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       2828
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       2876
Ser Val Lys Lys Cys Leu Phe Glu Arg Cys His Leu Gly Val Met Ser
    310                 315                 320

gag ggc gaa gcc aaa gtc aaa cac tgc gcc tct acc gag acg ggc tgc       2924
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       2972
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       3020
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       3068
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       3116
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 ccc tac cag tgc aac atg caa       3164
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       3212
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       3260
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       3308
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       3356
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       3404
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 agtgcttggg ggaggtggag ggcttgtatg           3456
Glu Glu Ser Asp
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aggggcagaa tgactaaaat ctgtgttttt ctgtgtgttg cagc atg agc gga agc      3512
                                                  Met Ser Gly Ser
                                                  505

gcc tcc ttt gag gga ggg gta ttc agc cct tat ctg acg ggg cgt ctc      3560
Ala Ser Phe Glu Gly Gly Val Phe Ser Pro Tyr Leu Thr Gly Arg Leu
    510                 515                 520

ccc tcc tgg gct gga gtg cgt cag aat gtg atg gga tcc acg gtg gac      3608
Pro Ser Trp Ala Gly Val Arg Gln Asn Val Met Gly Ser Thr Val Asp
525                 530                 535                 540

ggc cgg ccc gtg cag ccc gcg aac tct tca acc ctg acc tac gcg acc      3656
Gly Arg Pro Val Gln Pro Ala Asn Ser Ser Thr Leu Thr Tyr Ala Thr
                545                 550                 555

ctg agc tct tcg tcc gtg gac gca gct gcc gcc gca gct gct gct tcc      3704
Leu Ser Ser Ser Ser Val Asp Ala Ala Ala Ala Ala Ala Ala Ala Ser
            560                 565                 570

gcc gcc agc gcc gtg cgc gga atg gcc ctg ggc gcc ggc tac tac agc      3752
Ala Ala Ser Ala Val Arg Gly Met Ala Leu Gly Ala Gly Tyr Tyr Ser
        575                 580                 585

tct ctg gtg gcc aac tcg agt tcc acc aat aat ccc gcc agc ctg aac      3800
Ser Leu Val Ala Asn Ser Ser Ser Thr Asn Asn Pro Ala Ser Leu Asn
    590                 595                 600

gag gag aag ctg ctg ctg ctg atg gcc cag ctc gag gcc ctg acc cag      3848
Glu Glu Lys Leu Leu Leu Leu Met Ala Gln Leu Glu Ala Leu Thr Gln
605                 610                 615                 620

cgc ctg ggc gag ctg acc cag cag gtg gct cag ctg cag gcg gag acg      3896
Arg Leu Gly Glu Leu Thr Gln Gln Val Ala Gln Leu Gln Ala Glu Thr
                625                 630                 635

cgg gcc gcg gtt gcc acg gtg aaa acc aaa taaaaaatga atcaataaat        3946
Arg Ala Ala Val Ala Thr Val Lys Thr Lys
            640                 645

aaacggagac ggttgttgat tttaacagag tcttgaatct ttatttgatt tttcgcgcgc    4006

ggtaggccct ggaccaccgg tctcgatcat tgagcacccg gtggatcttt tccaggaccc    4066

ggtagaggtg ggcttggatg ttgaggtaca tgggcatgag cccgtcccgg gggtggaggt    4126

agctccattg cagggcctcg tgctcggggg tggtgttgta aatcacccag tcatagcagg    4186

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ccttggtgta ggtgttgacg aacctgttga gctgggaggg atgcatgcgg ggggagatga    4306

gatgcatctt ggcctggatc ttgagattgg cgatgttccc gcccagatcc cgccgggggt    4366

tcatgttgtg caggaccacc agcacggtgt atccggtgca cttggggaat ttgtcatgca    4426

acttggaagg gaaggcgtga aagaatttgg agacgccctt gtggccgccc aggttttcca    4486

tgcactcatc catgatgatg gcgatgggcc cgtgggcggc ggcctgggca aagacgtttc    4546
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tgccctcgca gatctgcatc tcccaggcct tgagctcgga gggggggatc atgtccacct 4726

gcggggcgat gaaaaaaacg gtttccgggg cgggggagat gagctgggcc gaaagcaggt 4786

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tggatctggg tgagggtggt ctggaagtcg tcaaagtcga cgaagcggtg gtaggctccg    10006

gtgttgatgg tgtaggagca gttggccatg acggaccagt tgacggtctg gtggccggga    10066

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tccgcggcta acgagggcgt ggctgccccg tcgtttccaa gacccctagc cagccgactt    10786

ctccagttac ggagcgagcc cctcttttgt tttttgtttt tgccag atg cat ccc       10841
                                                    Met His Pro

gta ctg cgg cag atg cgc ccc cac cac cct cca ccg caa caa cag ccc       10889
Val Leu Arg Gln Met Arg Pro His His Pro Pro Pro Gln Gln Gln Pro
650                 655                 660                 665

cct cct cca cag ccg gcg ctt ctg ccc ccg ccc cag cag cag cag caa       10937
Pro Pro Pro Gln Pro Ala Leu Leu Pro Pro Pro Gln Gln Gln Gln Gln
                670                 675                 680

ctt cca gcc acg acc gcc gcg gcc gcc gtg agc ggg gct gga cag act       10985
Leu Pro Ala Thr Thr Ala Ala Ala Ala Val Ser Gly Ala Gly Gln Thr
            685                 690                 695

tct cag tat gat cac ctg gcc ttg gaa gag ggc gag ggg ctg gcg cgc       11033
Ser Gln Tyr Asp His Leu Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg
        700                 705                 710

ctg ggg gcg tcg tcg ccg gag cgg cac ccg cgc gtg cag atg aaa agg       11081
Leu Gly Ala Ser Ser Pro Glu Arg His Pro Arg Val Gln Met Lys Arg
    715                 720                 725

gac gct cgc gag gcc tac gtg ccc aag cag aac ctg ttc aga gac agg       11129
Asp Ala Arg Glu Ala Tyr Val Pro Lys Gln Asn Leu Phe Arg Asp Arg
730                 735                 740                 745
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agc ggc gag gag ccc gag gag atg cgc gcg gcc cgg ttc cac gcg ggg      11177
Ser Gly Glu Glu Pro Glu Glu Met Arg Ala Ala Arg Phe His Ala Gly
                750                 755                 760

cgg gag ctg cgg cgc ggc ctg gac cga aag agg gtg ctg agg gac gag      11225
Arg Glu Leu Arg Arg Gly Leu Asp Arg Lys Arg Val Leu Arg Asp Glu
            765                 770                 775

gat ttc gag gcg gac gag ctg acg ggg atc agc ccc gcg cgc gcg cac      11273
Asp Phe Glu Ala Asp Glu Leu Thr Gly Ile Ser Pro Ala Arg Ala His
        780                 785                 790

gtg gcc gcg gcc aac ctg gtc acg gcg tac gag cag acc gtg aag gag      11321
Val Ala Ala Ala Asn Leu Val Thr Ala Tyr Glu Gln Thr Val Lys Glu
    795                 800                 805

gag agc aac ttc caa aaa tcc ttc aac aac cac gtg cgc acc ctg atc      11369
Glu Ser Asn Phe Gln Lys Ser Phe Asn Asn His Val Arg Thr Leu Ile
810                 815                 820                 825

gcg cgc gag gag gtg acc ctg ggc ctg atg cac ctg tgg gac ctg ctg      11417
Ala Arg Glu Glu Val Thr Leu Gly Leu Met His Leu Trp Asp Leu Leu
                830                 835                 840

gag gcc atc gtg cag aac ccc acc agc aag ccg ctg acg gcg cag ctg      11465
Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu
            845                 850                 855

ttc ctg gtg gtg cag cat agt cgg gac aac gag gcg ttc agg gag gcg      11513
Phe Leu Val Val Gln His Ser Arg Asp Asn Glu Ala Phe Arg Glu Ala
        860                 865                 870

ctg ctg aat atc acc gag ccc gag ggc cgc tgg ctc ctg gac ctg gtg      11561
Leu Leu Asn Ile Thr Glu Pro Glu Gly Arg Trp Leu Leu Asp Leu Val
    875                 880                 885

aac att ctg cag agc atc gtg gtg cag gag cgc ggg ctg ccg ctg tcc      11609
Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu Pro Leu Ser
890                 895                 900                 905

gag aag ctg gcg gcc atc aac ttc tcg gtg ctg agt ctg ggc aag tac      11657
Glu Lys Leu Ala Ala Ile Asn Phe Ser Val Leu Ser Leu Gly Lys Tyr
                910                 915                 920

tac gct agg aag atc tac aag acc ccg tac gtg ccc ata gac aag gag      11705
Tyr Ala Arg Lys Ile Tyr Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu
            925                 930                 935

gtg aag atc gac ggg ttt tac atg cgc atg acc ctg aaa gtg ctg acc      11753
Val Lys Ile Asp Gly Phe Tyr Met Arg Met Thr Leu Lys Val Leu Thr
        940                 945                 950

ctg agc gac gat ctg ggg gtg tac cgc aac gac agg atg cac cgc gcg      11801
Leu Ser Asp Asp Leu Gly Val Tyr Arg Asn Asp Arg Met His Arg Ala
    955                 960                 965

gtg agc gcc agc agg cgg cgc gag ctg agc gac cag gag ctg atg cac      11849
Val Ser Ala Ser Arg Arg Arg Glu Leu Ser Asp Gln Glu Leu Met His
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970                 975                 980                 985

agc ctg cag cgg gcc ctg acc ggg gcc ggg acc gag ggg gag agc  tac     11897
Ser Leu Gln Arg Ala Leu Thr Gly Ala Gly Thr Glu Gly Glu Ser  Tyr
                990                 995                1000

ttt gac atg ggc  gcg gac ctg cac tgg  caa ccc agc cgc cgg  gcc      11942
Phe Asp Met Gly  Ala Asp Leu His Trp  Gln Pro Ser Arg Arg  Ala
            1005                1010                1015

ttg gag gcg gcg  gca gga ccc tac gta  gaa gag gtg gac gat  gag      11987
Leu Glu Ala Ala  Ala Gly Pro Tyr Val  Glu Glu Val Asp Asp  Glu
            1020                1025                1030

gtg gac gag gag  ggc gag tac ctg gaa  gac tgatggcgcg accgtatttt     12037
Val Asp Glu Glu  Gly Glu Tyr Leu Glu  Asp
            1035                1040

tgctag atg caa caa cag  cca cct cct gat ccc  gcg atg cgg gcg gcg    12085
       Met Gln Gln Gln  Pro Pro Pro Asp Pro  Ala Met Arg Ala Ala
                   1045                1050                1055

ctg cag agc cag ccg  tcc ggc att aac tcc  tcg gac gat tgg acc       12130
Leu Gln Ser Gln Pro  Ser Gly Ile Asn Ser  Ser Asp Asp Trp Thr
                1060                1065                1070

cag gcc atg caa cgc  atc atg gcg ctg acg  acc cgc aac ccc gaa       12175
Gln Ala Met Gln Arg  Ile Met Ala Leu Thr  Thr Arg Asn Pro Glu
                1075                1080                1085

gcc ttt aga cag cag  ccc cag gcc aac cgg  ctc tcg gcc atc ctg       12220
Ala Phe Arg Gln Gln  Pro Gln Ala Asn Arg  Leu Ser Ala Ile Leu
                1090                1095                1100

gag gcc gtg gtg ccc  tcg cgc tcc aac ccc  acg cac gag aag gtc       12265
Glu Ala Val Val Pro  Ser Arg Ser Asn Pro  Thr His Glu Lys Val
                1105                1110                1115

ctg gcc atc gtg aac  gcg ctg gtg gag aac  aag gcc atc cgc ggc       12310
Leu Ala Ile Val Asn  Ala Leu Val Glu Asn  Lys Ala Ile Arg Gly
                1120                1125                1130

gac gag gcc ggc ctg  gtg tac aac gcg ctg  ctg gag cgc gtg gcc       12355
Asp Glu Ala Gly Leu  Val Tyr Asn Ala Leu  Leu Glu Arg Val Ala
                1135                1140                1145

cgc tac aac agc acc  aac gtg cag acc aac  ctg gac agg atg gtg       12400
Arg Tyr Asn Ser Thr  Asn Val Gln Thr Asn  Leu Asp Arg Met Val
                1150                1155                1160

acc gac gtg cgc gag  gcc gtg gcc cag cgc  gag cgg ttc cac cgc       12445
Thr Asp Val Arg Glu  Ala Val Ala Gln Arg  Glu Arg Phe His Arg
                1165                1170                1175

gag tcc aac ctg gga  tcc atg gtg gcg ctg  aac gcc ttc ctc agc       12490
Glu Ser Asn Leu Gly  Ser Met Val Ala Leu  Asn Ala Phe Leu Ser
                1180                1185                1190

acc cag ccc gcc aac  gtg ccc cgg ggc cag  gag gac tac acc aac       12535
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Thr Gln Pro Ala Asn  Val Pro Arg Gly Gln  Glu Asp Tyr Thr Asn
                1195                1200                1205

ttc atc agc gcc ctg  cgc ctg atg gtg acc  gag gtg ccc cag agc       12580
Phe Ile Ser Ala Leu  Arg Leu Met Val Thr  Glu Val Pro Gln Ser
                1210                1215                1220

gag gtg tac cag tcc  ggg ccg gac tac ttc  ttc cag acc agt cgc       12625
Glu Val Tyr Gln Ser  Gly Pro Asp Tyr Phe  Phe Gln Thr Ser Arg
                1225                1230                1235

cag ggc ttg cag acc  gtg aac ctg agc cag  gcg ttc aag aac ttg       12670
Gln Gly Leu Gln Thr  Val Asn Leu Ser Gln  Ala Phe Lys Asn Leu
                1240                1245                1250

cag ggc ctg tgg ggc  gtg cag gcc ccg gtc  ggg gac cgc gcg acg       12715
Gln Gly Leu Trp Gly  Val Gln Ala Pro Val  Gly Asp Arg Ala Thr
                1255                1260                1265

gtg tcg agc ctg ctg  acg ccg aac tcg cgc  ctg ctg ctg ctg ctg       12760
Val Ser Ser Leu Leu  Thr Pro Asn Ser Arg  Leu Leu Leu Leu Leu
                1270                1275                1280

gtg gcc ccc ttc acg  gac agc ggc agt atc  aac cgc gac tcg tac       12805
Val Ala Pro Phe Thr  Asp Ser Gly Ser Ile  Asn Arg Asp Ser Tyr
                1285                1290                1295

ctg ggc tac ctg att  aac ctg tac cgc gag  gcc atc ggc cag gcg       12850
Leu Gly Tyr Leu Ile  Asn Leu Tyr Arg Glu  Ala Ile Gly Gln Ala
                1300                1305                1310

cac gtg gac gag cag  acc tac cag gag atc  acc cac gtg agc cgc       12895
His Val Asp Glu Gln  Thr Tyr Gln Glu Ile  Thr His Val Ser Arg
                1315                1320                1325

gcg ctg ggc cag gag  gac ccg ggc aac ctg  gag gcc acc ctg aac       12940
Ala Leu Gly Gln Glu  Asp Pro Gly Asn Leu  Glu Ala Thr Leu Asn
                1330                1335                1340

ttc ctg ctg acc aac  cgg tcg cag aag atc  ccg ccc cag tac gcg       12985
Phe Leu Leu Thr Asn  Arg Ser Gln Lys Ile  Pro Pro Gln Tyr Ala
                1345                1350                1355

ctg agc acc gag gag  gag cgc att ttg cgc  tac gtg cag cag agc       13030
Leu Ser Thr Glu Glu  Glu Arg Ile Leu Arg  Tyr Val Gln Gln Ser
                1360                1365                1370

gtg ggg ctg ttc ctg  atg cag gag ggg gcc  acg ccc agc gcc gcg       13075
Val Gly Leu Phe Leu  Met Gln Glu Gly Ala  Thr Pro Ser Ala Ala
                1375                1380                1385

ctc gac atg acc gcg  cgc aac atg gag ccc  agc atg tac gcc cgc       13120
Leu Asp Met Thr Ala  Arg Asn Met Glu Pro  Ser Met Tyr Ala Arg
                1390                1395                1400

aac cgc ccg ttc atc  aat aag ctg atg gac  tac ttg cat cgg gcg       13165
Asn Arg Pro Phe Ile  Asn Lys Leu Met Asp  Tyr Leu His Arg Ala
                1405                1410                1415
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gcc gcc atg aac tcg  gac tac ttt acc aac  gcc atc ttg aac ccg        13210
Ala Ala Met Asn Ser  Asp Tyr Phe Thr Asn  Ala Ile Leu Asn Pro
                1420                1425                1430

cac tgg ctc ccg ccg  ccc ggg ttc tac acg  ggc gag tac gac atg        13255
His Trp Leu Pro Pro  Pro Gly Phe Tyr Thr  Gly Glu Tyr Asp Met
                1435                1440                1445

ccc gac ccc aac gac  ggg ttc ctg tgg gat  gac gtg gac agc agc        13300
Pro Asp Pro Asn Asp  Gly Phe Leu Trp Asp  Asp Val Asp Ser Ser
                1450                1455                1460

gtg ttc tcg ccg cgc  ccc gcc acc acc gtg  tgg aag aaa gag ggc        13345
Val Phe Ser Pro Arg  Pro Ala Thr Thr Val  Trp Lys Lys Glu Gly
                1465                1470                1475

ggg gac cgg cgg ccg  tcc tcg gcg ctg tcc  ggt cgc gcg ggt gct        13390
Gly Asp Arg Arg Pro  Ser Ser Ala Leu Ser  Gly Arg Ala Gly Ala
                1480                1485                1490

gcc gcg gcg gtg ccc  gag gcc gcc agt ccg  ttc ccg agc ttg ccc        13435
Ala Ala Ala Val Pro  Glu Ala Ala Ser Pro  Phe Pro Ser Leu Pro
                1495                1500                1505

ttc tcg ctg aac agt  att cgc agc agc gag  ctg ggc agg atc acg        13480
Phe Ser Leu Asn Ser  Ile Arg Ser Ser Glu  Leu Gly Arg Ile Thr
                1510                1515                1520

cgc ccg cgc ttg ctg  ggc gag gag gag tac  ttg aat gac tcg ctg        13525
Arg Pro Arg Leu Leu  Gly Glu Glu Glu Tyr  Leu Asn Asp Ser Leu
                1525                1530                1535

ttg aga ccc gag cgc  gag aag aac ttc ccc  aat aac ggg ata gag        13570
Leu Arg Pro Glu Arg  Glu Lys Asn Phe Pro  Asn Asn Gly Ile Glu
                1540                1545                1550

agc ctg gtg gac aag  atg agc cgc tgg aag  acg tac gcg cac gag        13615
Ser Leu Val Asp Lys  Met Ser Arg Trp Lys  Thr Tyr Ala His Glu
                1555                1560                1565

cac agg gac gag ccc  cga gct agc agc gcc  acc cgt aga cgc cag        13660
His Arg Asp Glu Pro  Arg Ala Ser Ser Ala  Thr Arg Arg Arg Gln
                1570                1575                1580

cgg cac gac agg cag  cgg gga ctg gtg tgg  gac gat gag gat tcc        13705
Arg His Asp Arg Gln  Arg Gly Leu Val Trp  Asp Asp Glu Asp Ser
                1585                1590                1595

gcc gac gac agc agc  gtg ttg gac ttg ggt  ggg agt ggt ggt ggt        13750
Ala Asp Asp Ser Ser  Val Leu Asp Leu Gly  Gly Ser Gly Gly Gly
                1600                1605                1610

aac ccg ttc gct cac  ctg cgt ccc cgt atc  ggg cgc ctg atg            13792
Asn Pro Phe Ala His  Leu Arg Pro Arg Ile  Gly Arg Leu Met
                1615                1620

taagaatctg aaaaaataaa aaacggtact caccaaggcc atggcgacca gcgtgcgttc    13852

ttctctgttg tttgtagtag t atg  atg agg cgc gtg tac  ccg gag ggt cct    13903
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                          Met  Met Arg Arg Val Tyr  Pro Glu Gly Pro
                          1625                1630

cct  ccc tcg tac gag agc  gtg atg cag cag gcg  gtg gcg gcg gcg       13948
Pro  Pro Ser Tyr Glu Ser  Val Met Gln Gln Ala  Val Ala Ala Ala
1635                1640                1645

atg  cag ccc ccg ctg gag  gcg cct tac gtg ccc  ccg cgg tac ctg       13993
Met  Gln Pro Pro Leu Glu  Ala Pro Tyr Val Pro  Pro Arg Tyr Leu
1650                1655                1660

gcg  cct acg gag ggg cgg  aac agc att cgt tac  tcg gag ctg gca       14038
Ala  Pro Thr Glu Gly Arg  Asn Ser Ile Arg Tyr  Ser Glu Leu Ala
1665                1670                1675

ccc  ttg tac gat acc acc  cgg ttg tac ctg gtg  gac aac aag tcg       14083
Pro  Leu Tyr Asp Thr Thr  Arg Leu Tyr Leu Val  Asp Asn Lys Ser
1680                1685                1690

gcg  gac atc gcc tcg ctg  aac tac cag aac gac  cac agc aac ttc       14128
Ala  Asp Ile Ala Ser Leu  Asn Tyr Gln Asn Asp  His Ser Asn Phe
1695                1700                1705

ctg  acc acc gtg gtg cag  aac aac gat ttc acc  ccc acg gag gcc       14173
Leu  Thr Thr Val Val Gln  Asn Asn Asp Phe Thr  Pro Thr Glu Ala
1710                1715                1720

agc  acc cag acc atc aac  ttt gac gag cgc tcg  cgg tgg ggc ggc       14218
Ser  Thr Gln Thr Ile Asn  Phe Asp Glu Arg Ser  Arg Trp Gly Gly
1725                1730                1735

cag  ctg aaa acc atc atg  cac acc aac atg ccc  aac gtg aac gag       14263
Gln  Leu Lys Thr Ile Met  His Thr Asn Met Pro  Asn Val Asn Glu
1740                1745                1750

ttc  atg tac agc aac aag  ttc aag gcg cgg gtg  atg gtc tcg cgc       14308
Phe  Met Tyr Ser Asn Lys  Phe Lys Ala Arg Val  Met Val Ser Arg
1755                1760                1765

aag  acc ccc aac ggg gtg  acg gta ggg gat gat  tat gat ggt agt       14353
Lys  Thr Pro Asn Gly Val  Thr Val Gly Asp Asp  Tyr Asp Gly Ser
1770                1775                1780

cag  gac gag ctg acc tac  gag tgg gtg gag ttt  gag ctg ccc gag       14398
Gln  Asp Glu Leu Thr Tyr  Glu Trp Val Glu Phe  Glu Leu Pro Glu
1785                1790                1795

ggc  aac ttc tcg gtg acc  atg acc atc gat ctg  atg aac aac gcc       14443
Gly  Asn Phe Ser Val Thr  Met Thr Ile Asp Leu  Met Asn Asn Ala
1800                1805                1810

atc  atc gac aac tac ttg  gcg gtg ggg cgg cag  aac ggg gtg ctg       14488
Ile  Ile Asp Asn Tyr Leu  Ala Val Gly Arg Gln  Asn Gly Val Leu
1815                1820                1825

gag  agc gac atc ggc gtg  aag ttc gac acg cgc  aac ttc cgg ctg       14533
Glu  Ser Asp Ile Gly Val  Lys Phe Asp Thr Arg  Asn Phe Arg Leu
1830                1835                1840
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ggc  tgg gac ccc gtg acc  gag ctg gtg atg ccg  ggc gtg tac acc       14578
Gly  Trp Asp Pro Val Thr  Glu Leu Val Met Pro  Gly Val Tyr Thr
1845                1850                1855

aac  gag gcc ttc cac ccc  gac atc gtc ctg ctg  ccc ggc tgc ggc       14623
Asn  Glu Ala Phe His Pro  Asp Ile Val Leu Leu  Pro Gly Cys Gly
1860                1865                1870

gtg  gac ttc acc gag agc  cgc ctc agc aac ctg  ctg ggc atc cgc       14668
Val  Asp Phe Thr Glu Ser  Arg Leu Ser Asn Leu  Leu Gly Ile Arg
1875                1880                1885

aag  cgg cag ccc ttc cag  gag ggc ttc cag atc  ctg tac gag gac       14713
Lys  Arg Gln Pro Phe Gln  Glu Gly Phe Gln Ile  Leu Tyr Glu Asp
1890                1895                1900

ctg  gag ggg ggc aac atc  ccc gcg ctg ctg gat  gtg gac gcc tac       14758
Leu  Glu Gly Gly Asn Ile  Pro Ala Leu Leu Asp  Val Asp Ala Tyr
1905                1910                1915

gag  aaa agc aag gag gat  agc gcc gcc gcg gcg  acc gca gcc gtg       14803
Glu  Lys Ser Lys Glu Asp  Ser Ala Ala Ala Ala  Thr Ala Ala Val
1920                1925                1930

gcc  acc gcc tct acc gag  gtg cgg ggc gat aat  ttt gct agc gcc       14848
Ala  Thr Ala Ser Thr Glu  Val Arg Gly Asp Asn  Phe Ala Ser Ala
1935                1940                1945

gcg  gca gtg gcc gag gcg  gct gaa acc gaa agt  aag ata gtg atc       14893
Ala  Ala Val Ala Glu Ala  Ala Glu Thr Glu Ser  Lys Ile Val Ile
1950                1955                1960

cag  ccg gtg gag aag gac  agc aag aac agg agc  tac aac gtg ctc       14938
Gln  Pro Val Glu Lys Asp  Ser Lys Asn Arg Ser  Tyr Asn Val Leu
1965                1970                1975

gcg  gac aag aaa aac acc  gcc tac cgc agc tgg  tac ctg gcc tac       14983
Ala  Asp Lys Lys Asn Thr  Ala Tyr Arg Ser Trp  Tyr Leu Ala Tyr
1980                1985                1990

aac  tac ggc gac ccc gag  aag ggc gtg cgc tcc  tgg acg ctg ctc       15028
Asn  Tyr Gly Asp Pro Glu  Lys Gly Val Arg Ser  Trp Thr Leu Leu
1995                2000                2005

acc  acc tcg gac gtc acc  tgc ggc gtg gag caa  gtc tac tgg tcg       15073
Thr  Thr Ser Asp Val Thr  Cys Gly Val Glu Gln  Val Tyr Trp Ser
2010                2015                2020

ctg  ccc gac atg atg caa  gac ccg gtc acc ttc  cgc tcc acg cga       15118
Leu  Pro Asp Met Met Gln  Asp Pro Val Thr Phe  Arg Ser Thr Arg
2025                2030                2035

caa  gtt agc aac tac ccg  gtg gtg ggc gcc gag  ctc ctg ccc gtc       15163
Gln  Val Ser Asn Tyr Pro  Val Val Gly Ala Glu  Leu Leu Pro Val
2040                2045                2050

tac  tcc aag agc ttc ttc  aac gag cag gcc gtc  tac tcg cag cag       15208
Tyr  Ser Lys Ser Phe Phe  Asn Glu Gln Ala Val  Tyr Ser Gln Gln
2055                2060                2065
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ctg  cgc gcc ttc acc tcg  ctc acg cac gtc ttc  aac cgc ttc ccc       15253
Leu  Arg Ala Phe Thr Ser  Leu Thr His Val Phe  Asn Arg Phe Pro
2070                2075                2080

gag  aac cag atc ctc gtt  cgc ccg ccc gcg ccc  acc att acc acc       15298
Glu  Asn Gln Ile Leu Val  Arg Pro Pro Ala Pro  Thr Ile Thr Thr
2085                2090                2095

gtc  agt gaa aac gtt cct  gct ctc aca gat cac  ggg acc ctg ccg       15343
Val  Ser Glu Asn Val Pro  Ala Leu Thr Asp His  Gly Thr Leu Pro
2100                2105                2110

ctg  cgc agc agt atc cgg  gga gtc cag cgc gtg  acc gtc act gac       15388
Leu  Arg Ser Ser Ile Arg  Gly Val Gln Arg Val  Thr Val Thr Asp
2115                2120                2125

gcc  aga cgc cgc acc tgc  ccc tac gtc tac aag  gcc ctg ggc gta       15433
Ala  Arg Arg Arg Thr Cys  Pro Tyr Val Tyr Lys  Ala Leu Gly Val
2130                2135                2140

gtc  gcg ccg cgc gtc ctc  tcg agc cgc acc ttc  taaaaa atg tcc att    15481
Val  Ala Pro Arg Val Leu  Ser Ser Arg Thr Phe         Met Ser Ile
2145                2150                2155

ctc atc  tcg ccc agt aat aac  acc ggt tgg ggc ctg  cgc gcg ccc      15526
Leu Ile  Ser Pro Ser Asn Asn  Thr Gly Trp Gly Leu  Arg Ala Pro
    2160                2165                2170

agc aag  atg tac gga ggc gct  cgc caa cgc tcc acg  caa cac ccc      15571
Ser Lys  Met Tyr Gly Gly Ala  Arg Gln Arg Ser Thr  Gln His Pro
    2175                2180                2185

gtg cgc  gtg cgc ggg cac ttc  cgc gct ccc tgg ggc  gcc ctc aag      15616
Val Arg  Val Arg Gly His Phe  Arg Ala Pro Trp Gly  Ala Leu Lys
    2190                2195                2200

ggc cgc  gtg cgc tcg cgc acc  acc gtc gac gac gtg  atc gac cag      15661
Gly Arg  Val Arg Ser Arg Thr  Thr Val Asp Asp Val  Ile Asp Gln
    2205                2210                2215

gtg gtg  gcc gac gcg cgc aac  tac acg ccc gcc gcc  gcg ccc gtc      15706
Val Val  Ala Asp Ala Arg Asn  Tyr Thr Pro Ala Ala  Ala Pro Val
    2220                2225                2230

tcc acc  gtg gac gcc gtc atc  gac agc gtg gtg gcc  gac gcg cgc      15751
Ser Thr  Val Asp Ala Val Ile  Asp Ser Val Val Ala  Asp Ala Arg
    2235                2240                2245

cgg tac  gcc cgc gcc aag agc  cgg cgg cgg cgc atc  gcc cgg cgg      15796
Arg Tyr  Ala Arg Ala Lys Ser  Arg Arg Arg Arg Ile  Ala Arg Arg
    2250                2255                2260

cac cgg  agc acc ccc gcc atg  cgc gcg gca cga gcc  ttg ctg cgc      15841
His Arg  Ser Thr Pro Ala Met  Arg Ala Ala Arg Ala  Leu Leu Arg
    2265                2270                2275

agg gcc  agg cgc acg gga cgc  agg gcc atg ctc agg  gcg gcc aga      15886
Arg Ala  Arg Arg Thr Gly Arg  Arg Ala Met Leu Arg  Ala Ala Arg
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    2280                2285                2290

cgc gcg  gcc tcc ggc agc agc  agc gcc ggc agg acc  cgc aga cgc       15931
Arg Ala  Ala Ser Gly Ser Ser  Ser Ala Gly Arg Thr  Arg Arg Arg
    2295                2300                2305

gcg gcc  acg gcg gcg gcg gcg  gcc atc gcc agc atg  tcc cgc ccg       15976
Ala Ala  Thr Ala Ala Ala Ala  Ala Ile Ala Ser Met  Ser Arg Pro
    2310                2315                2320

cgg cgc  ggc aac gtg tac tgg  gtg cgc gac gcc gcc  acc ggt gtg       16021
Arg Arg  Gly Asn Val Tyr Trp  Val Arg Asp Ala Ala  Thr Gly Val
    2325                2330                2335

cgc gtg  ccc gtg cgc acc cgc  ccc cct cgc act tgaagatgct           16064
Arg Val  Pro Val Arg Thr Arg  Pro Pro Arg Thr
    2340                2345

gacttcgcga tgttgatgtg tcccagcggc gaggagg atg  tcc aag cgc aaa       16116
                                          Met  Ser Lys Arg Lys
                                          2350

tac  aag gaa gag atg ctc  cag gtc atc gcg cct  gag atc tac ggc       16161
Tyr  Lys Glu Glu Met Leu  Gln Val Ile Ala Pro  Glu Ile Tyr Gly
2355                2360                2365

ccc  gcg gtg gtg aag gag  gaa aga aag ccc cgc  aaa ctg aag cgg       16206
Pro  Ala Val Val Lys Glu  Glu Arg Lys Pro Arg  Lys Leu Lys Arg
2370                2375                2380

gtc  aaa aag gac aaa aag  gag gag gaa gat gac  gga ctg gtg gag       16251
Val  Lys Lys Asp Lys Lys  Glu Glu Glu Asp Asp  Gly Leu Val Glu
2385                2390                2395

ttt  gtg cgc gag ttc gcc  ccc cgg cgg cgc gtg  cag tgg cgc ggg       16296
Phe  Val Arg Glu Phe Ala  Pro Arg Arg Arg Val  Gln Trp Arg Gly
2400                2405                2410

cgg  aaa gtg aaa ccg gtg  ctg cga ccc ggc acc  acg gtg gtc ttc       16341
Arg  Lys Val Lys Pro Val  Leu Arg Pro Gly Thr  Thr Val Val Phe
2415                2420                2425

acg  ccc ggc gag cgt tcc  ggc tcc gcc tcc aag  cgc tcc tac gac       16386
Thr  Pro Gly Glu Arg Ser  Gly Ser Ala Ser Lys  Arg Ser Tyr Asp
2430                2435                2440

gag  gtg tac ggg gac gag  gac atc ctc gag cag  gcg gtc gag cgt       16431
Glu  Val Tyr Gly Asp Glu  Asp Ile Leu Glu Gln  Ala Val Glu Arg
2445                2450                2455

ctg  ggc gag ttt gct tac  ggc aag cgc agc cgc  ccc gcg ccc ttg       16476
Leu  Gly Glu Phe Ala Tyr  Gly Lys Arg Ser Arg  Pro Ala Pro Leu
2460                2465                2470

aaa  gag gag gcg gtg tcc  atc ccg ctg gac cac  ggc aac ccc acg       16521
Lys  Glu Glu Ala Val Ser  Ile Pro Leu Asp His  Gly Asn Pro Thr
2475                2480                2485

ccg  agc ctg aag ccg gtg  acc ctg cag cag gtg  ctg ccg agc gcg       16566
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Pro  Ser Leu Lys Pro Val  Thr Leu Gln Gln Val  Leu Pro Ser Ala
2490                2495                2500

gcg  ccg cgc cgg ggc ttc  aag cgc gag ggc ggc  gag gat ctg tac      16611
Ala  Pro Arg Arg Gly Phe  Lys Arg Glu Gly Gly  Glu Asp Leu Tyr
2505                2510                2515

ccg  acc atg cag ctg atg  gtg ccc aag cgc cag  aag ctg gag gac      16656
Pro  Thr Met Gln Leu Met  Val Pro Lys Arg Gln  Lys Leu Glu Asp
2520                2525                2530

gtg  ctg gag cac atg aag  gtg gac ccc gag gtg  cag ccc gag gtc      16701
Val  Leu Glu His Met Lys  Val Asp Pro Glu Val  Gln Pro Glu Val
2535                2540                2545

aag  gtg cgg ccc atc aag  cag gtg gcc ccg ggc  ctg ggc gtg cag      16746
Lys  Val Arg Pro Ile Lys  Gln Val Ala Pro Gly  Leu Gly Val Gln
2550                2555                2560

acc  gtg gac atc aag atc  ccc acg gag ccc atg  gaa acg cag acc      16791
Thr  Val Asp Ile Lys Ile  Pro Thr Glu Pro Met  Glu Thr Gln Thr
2565                2570                2575

gag  ccc gtg aag ccc agc  acc agc acc atg gag  gtg cag acg gat      16836
Glu  Pro Val Lys Pro Ser  Thr Ser Thr Met Glu  Val Gln Thr Asp
2580                2585                2590

ccc  tgg atg ccc gcg gct  ccc acc acc acc act  cgc cga aga cgc      16881
Pro  Trp Met Pro Ala Ala  Pro Thr Thr Thr Thr  Arg Arg Arg Arg
2595                2600                2605

aag  tac ggc gcg gcc agc  ctg ctg atg ccc aac  tac gcg ctg cat      16926
Lys  Tyr Gly Ala Ala Ser  Leu Leu Met Pro Asn  Tyr Ala Leu His
2610                2615                2620

cct  tcc atc atc ccc acg  ccg ggc tac cgc ggc  acg cgc ttc tac      16971
Pro  Ser Ile Ile Pro Thr  Pro Gly Tyr Arg Gly  Thr Arg Phe Tyr
2625                2630                2635

cgc  ggc tac acc agc agc  cgc cgc cgc aag acc  acc acc cgc cgc      17016
Arg  Gly Tyr Thr Ser Ser  Arg Arg Arg Lys Thr  Thr Thr Arg Arg
2640                2645                2650

cgc  cgc cgt cgc cac acc  cgc cgc agc agc acc  gcg act tcc gcc      17061
Arg  Arg Arg Arg His Thr  Arg Arg Ser Ser Thr  Ala Thr Ser Ala
2655                2660                2665

gcc  gcc ttg gtg cgg aga  gtg tac cgc agc ggg  cgc gag cct ctg      17106
Ala  Ala Leu Val Arg Arg  Val Tyr Arg Ser Gly  Arg Glu Pro Leu
2670                2675                2680

acc  ctg ccg cgc gcg cgc  tac cac ccg agc atc  gcc att taactctgcc    17155
Thr  Leu Pro Arg Ala Arg  Tyr His Pro Ser Ile  Ala Ile
2685                2690                2695

gtcgcctcct tgcagat atg gcc ctc  aca tgc cgc ctc cgc  gtc ccc att     17205
                  Met Ala Leu  Thr Cys Arg Leu Arg  Val Pro Ile
                         2700                2705
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acg ggc  tac cga gga aga aag  ccg cgc cgt aga agg  ctg acg ggg       17250
Thr Gly  Tyr Arg Gly Arg Lys  Pro Arg Arg Arg Arg  Leu Thr Gly
    2710                 2715                 2720

aac ggg  ctg cgt cgc cat cac  cac cgg cgg cgg cgc  gcc atc agc       17295
Asn Gly  Leu Arg Arg His His  His Arg Arg Arg Arg  Ala Ile Ser
    2725                 2730                 2735

aag cgg  ttg ggg gga ggc ttc  ctg ccc gcg ctg atc  ccc atc atc       17340
Lys Arg  Leu Gly Gly Gly Phe  Leu Pro Ala Leu Ile  Pro Ile Ile
    2740                 2745                 2750

gcc gcg  gcg atc ggg gcg atc  ccc ggc ata gct tcc  gtg gcg gtg       17385
Ala Ala  Ala Ile Gly Ala Ile  Pro Gly Ile Ala Ser  Val Ala Val
    2755                 2760                 2765

cag gcc  tct cag cgc cac tgagacacaa aaaagcatgg atttgtaata           17433
Gln Ala  Ser Gln Arg His
    2770

aaaaaatgga ctgacgctcc tggtcctgtg atgtgtgttt ttag atg  gaa gac atc   17489
                                                Met  Glu Asp Ile
                                                2775

aat ttt  tcg tcc ctg gca ccg  cga cac ggc acg cgg  ccg ttt atg       17534
Asn Phe  Ser Ser Leu Ala Pro  Arg His Gly Thr Arg  Pro Phe Met
    2780                 2785                 2790

ggc acc  tgg agc gac atc ggc  aac agc caa ctg aac  ggg ggc gcc       17579
Gly Thr  Trp Ser Asp Ile Gly  Asn Ser Gln Leu Asn  Gly Gly Ala
    2795                 2800                 2805

ttc aat  tgg agc agt ctc tgg  agc ggg ctt aag aat  ttc ggg tcc       17624
Phe Asn  Trp Ser Ser Leu Trp  Ser Gly Leu Lys Asn  Phe Gly Ser
    2810                 2815                 2820

acg ctc  aaa acc tat ggc aac  aag gcg tgg aac agc  agc aca ggg       17669
Thr Leu  Lys Thr Tyr Gly Asn  Lys Ala Trp Asn Ser  Ser Thr Gly
    2825                 2830                 2835

cag gcg  ctg agg gaa aag ctg  aaa gag cag aac ttc  cag cag aag       17714
Gln Ala  Leu Arg Glu Lys Leu  Lys Glu Gln Asn Phe  Gln Gln Lys
    2840                 2845                 2850

gtg gtc  gat ggc ctg gcc tcg  ggc atc aac ggg gtg  gtg gac ctg       17759
Val Val  Asp Gly Leu Ala Ser  Gly Ile Asn Gly Val  Val Asp Leu
    2855                 2860                 2865

gcc aac  cag gcc gtg cag aaa  cag atc aac agc cgc  ctg gac gcg       17804
Ala Asn  Gln Ala Val Gln Lys  Gln Ile Asn Ser Arg  Leu Asp Ala
    2870                 2875                 2880

gtc ccg  ccc gcg ggc tcc gtg  gag atg ccc cag gtg  gag gag gag       17849
Val Pro  Pro Ala Gly Ser Val  Glu Met Pro Gln Val  Glu Glu Glu
    2885                 2890                 2895

ctg cct  ccc ctg gac aag cgc  ggc gac aag cga ccg  cgt ccc gac       17894
Leu Pro  Pro Leu Asp Lys Arg  Gly Asp Lys Arg Pro  Arg Pro Asp
    2900                 2905                 2910
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gcg gag  gag acg ctg ctg acg  cac acg gac gag ccg  ccc ccg tac       17939
Ala Glu  Glu Thr Leu Leu Thr  His Thr Asp Glu Pro  Pro Pro Tyr
    2915                2920                2925

gag gag  gcg gtg aaa ctg ggt  ctg ccc acc acg cgg  ccc atc gcg       17984
Glu Glu  Ala Val Lys Leu Gly  Leu Pro Thr Thr Arg  Pro Ile Ala
    2930                2935                2940

ccc ctg  gcc acc ggg gtg ctg  aaa ccc gaa agt aat  aag ccc gcg       18029
Pro Leu  Ala Thr Gly Val Leu  Lys Pro Glu Ser Asn  Lys Pro Ala
    2945                2950                2955

acc ctg  gac ttg cct cct ccc  cag cct tcc cgc ccc  tcc aca gtg       18074
Thr Leu  Asp Leu Pro Pro Pro  Gln Pro Ser Arg Pro  Ser Thr Val
    2960                2965                2970

gct aag  ccc ctg ccg ccg gtg  gcc gtg gcc cgc gcg  cga ccc ggg       18119
Ala Lys  Pro Leu Pro Pro Val  Ala Val Ala Arg Ala  Arg Pro Gly
    2975                2980                2985

ggc acc  gcc cgc cct cat gcg  aac tgg cag agc act  ctg aac agc       18164
Gly Thr  Ala Arg Pro His Ala  Asn Trp Gln Ser Thr  Leu Asn Ser
    2990                2995                3000

atc gtg  ggt ctg gga gtg cag  agt gtg aag cgc cgc  cgc tgc tat       18209
Ile Val  Gly Leu Gly Val Gln  Ser Val Lys Arg Arg  Arg Cys Tyr
    3005                3010                3015

taaacctacc gtagcgctta acttgcttgt ctgtgtgtgt atgtattatg tcgccgccgc    18269

tgtcgccaga aggaggagtg aagaggcgcg tcgccgagtt gcaag atg gcc  acc       18323
                                                 Met Ala  Thr
                                                     3020

cca tcg atg ctg  ccc cag tgg gcg tac  atg cac atc gcc gga  cag       18368
Pro Ser Met Leu  Pro Gln Trp Ala Tyr  Met His Ile Ala Gly  Gln
            3025                3030                3035

gac gct tcg gag  tac ctg agt ccg ggt  ctg gtg cag ttt gcc  cgc       18413
Asp Ala Ser Glu  Tyr Leu Ser Pro Gly  Leu Val Gln Phe Ala  Arg
            3040                3045                3050

gcc aca gac acc  tac ttc agt ctg ggg  aac aag ttt agg aac  ccc       18458
Ala Thr Asp Thr  Tyr Phe Ser Leu Gly  Asn Lys Phe Arg Asn  Pro
            3055                3060                3065

acg gtg gcg ccc  acg cac gat gtg acc  acc gac cgc agc cag  cgg       18503
Thr Val Ala Pro  Thr His Asp Val Thr  Thr Asp Arg Ser Gln  Arg
            3070                3075                3080

ctg acg ctg cgc  ttc gtg ccc gtg gac  cgc gag gac aac acc  tac       18548
Leu Thr Leu Arg  Phe Val Pro Val Asp  Arg Glu Asp Asn Thr  Tyr
            3085                3090                3095

tcg tac aaa gtg  cgc tac acg ctg gcc  gtg ggc gac aac cgc  gtg       18593
Ser Tyr Lys Val  Arg Tyr Thr Leu Ala  Val Gly Asp Asn Arg  Val
            3100                3105                3110
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ctg gac atg gcc  agc acc tac ttt gac  atc cgg ggc gtg ctg  gac       18638
Leu Asp Met Ala  Ser Thr Tyr Phe Asp  Ile Arg Gly Val Leu  Asp
            3115                3120                3125

cgg ggc cct agc  ttc aaa ccc tac tcc  ggc acc gcc tac aac  agc       18683
Arg Gly Pro Ser  Phe Lys Pro Tyr Ser  Gly Thr Ala Tyr Asn  Ser
            3130                3135                3140

ctg gcc ccc aag  gga gca ccc aac act  tgt cag tgg aca tat  aaa       18728
Leu Ala Pro Lys  Gly Ala Pro Asn Thr  Cys Gln Trp Thr Tyr  Lys
            3145                3150                3155

gcc gat ggt gaa  act gcc aca gaa aaa  acc tat aca tat gga  aat       18773
Ala Asp Gly Glu  Thr Ala Thr Glu Lys  Thr Tyr Thr Tyr Gly  Asn
            3160                3165                3170

gca ccc gtg cag  ggc att aac atc aca  aaa gat ggt att caa  ctt       18818
Ala Pro Val Gln  Gly Ile Asn Ile Thr  Lys Asp Gly Ile Gln  Leu
            3175                3180                3185

gga act gac acc  gat gat cag cca atc  tat gca gat gaa acc  tat       18863
Gly Thr Asp Thr  Asp Asp Gln Pro Ile  Tyr Ala Asp Glu Thr  Tyr
            3190                3195                3200

cag cct gaa cct  caa gtg ggt gat gct  gaa tgg cat gac atc  act       18908
Gln Pro Glu Pro  Gln Val Gly Asp Ala  Glu Trp His Asp Ile  Thr
            3205                3210                3215

ggt act gat gaa  aag tat gga ggc aga  gct ctt aag cct gat  acc       18953
Gly Thr Asp Glu  Lys Tyr Gly Gly Arg  Ala Leu Lys Pro Asp  Thr
            3220                3225                3230

aaa atg aag cct  tgt tat ggt tct ttt  gcc aag cct act aat  aaa       18998
Lys Met Lys Pro  Cys Tyr Gly Ser Phe  Ala Lys Pro Thr Asn  Lys
            3235                3240                3245

gaa gga ggt cag  gca aat gtg aaa aca  gga aca ggc act act  aaa       19043
Glu Gly Gly Gln  Ala Asn Val Lys Thr  Gly Thr Gly Thr Thr  Lys
            3250                3255                3260

gaa tat gac ata  gac atg gct ttc ttt  gac aac aga agt gcg  gcc       19088
Glu Tyr Asp Ile  Asp Met Ala Phe Phe  Asp Asn Arg Ser Ala  Ala
            3265                3270                3275

gct gcc ggc cta  gct cca gaa att gtt  ttg tat act gaa aat  gtg       19133
Ala Ala Gly Leu  Ala Pro Glu Ile Val  Leu Tyr Thr Glu Asn  Val
            3280                3285                3290

gat ttg gaa act  cca gat acc cat att  gta tac aaa gca ggc  aca       19178
Asp Leu Glu Thr  Pro Asp Thr His Ile  Val Tyr Lys Ala Gly  Thr
            3295                3300                3305

gat gac agc agc  tct tct att aat ttg  ggc cag caa gcc atg  ccc       19223
Asp Asp Ser Ser  Ser Ser Ile Asn Leu  Gly Gln Gln Ala Met  Pro
            3310                3315                3320

aac aga cct aac  tac att ggc ttc aga  gac aac ttt atc ggg  ctc       19268
Asn Arg Pro Asn  Tyr Ile Gly Phe Arg  Asp Asn Phe Ile Gly  Leu
            3325                3330                3335
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atg tac tac aac  agc act ggc aat atg  ggg gtg ctg gcc ggt  cag       19313
Met Tyr Tyr Asn  Ser Thr Gly Asn Met  Gly Val Leu Ala Gly  Gln
            3340                3345                3350

gct tct cag ctg  aat gct gtg gtt gac  ttg caa gac aga aac  acc       19358
Ala Ser Gln Leu  Asn Ala Val Val Asp  Leu Gln Asp Arg Asn  Thr
            3355                3360                3365

gag ctg tcc tac  cag ctc ttg ctt gac  tct ctg ggc gac aga  acc       19403
Glu Leu Ser Tyr  Gln Leu Leu Leu Asp  Ser Leu Gly Asp Arg  Thr
            3370                3375                3380

cgg tat ttc agt  atg tgg aat cag gcg  gtg gac agc tat gat  cct       19448
Arg Tyr Phe Ser  Met Trp Asn Gln Ala  Val Asp Ser Tyr Asp  Pro
            3385                3390                3395

gat gta cgc att  att gaa aat cat ggt  gtg gag gat gaa ctt  ccc       19493
Asp Val Arg Ile  Ile Glu Asn His Gly  Val Glu Asp Glu Leu  Pro
            3400                3405                3410

aac tat tgt ttc  cct ctg gat gct gtt  ggc aaa aca gat act  tat       19538
Asn Tyr Cys Phe  Pro Leu Asp Ala Val  Gly Lys Thr Asp Thr  Tyr
            3415                3420                3425

cag gga att aag  gct aat gga act gat  caa acc aca tgg acc  aaa       19583
Gln Gly Ile Lys  Ala Asn Gly Thr Asp  Gln Thr Thr Trp Thr  Lys
            3430                3435                3440

gat gac agt gtc  aat gat gct aat gag  ata ggc aag ggt aat  cca       19628
Asp Asp Ser Val  Asn Asp Ala Asn Glu  Ile Gly Lys Gly Asn  Pro
            3445                3450                3455

ttt gct atg gag  atc aac atc caa gcc  aac ctg tgg agg aac  ttc       19673
Phe Ala Met Glu  Ile Asn Ile Gln Ala  Asn Leu Trp Arg Asn  Phe
            3460                3465                3470

ctc tac gcc aac  gtg gcc ctg tac ctg  ccc gat tct tac aag  tac       19718
Leu Tyr Ala Asn  Val Ala Leu Tyr Leu  Pro Asp Ser Tyr Lys  Tyr
            3475                3480                3485

acg ccg gcc aac  gtc acc ctg ccc gcc  aac acc aac acc tac  gat       19763
Thr Pro Ala Asn  Val Thr Leu Pro Ala  Asn Thr Asn Thr Tyr  Asp
            3490                3495                3500

tac atg aac ggc  cgg gtg gtg gcg ccc  tcg ctg gtg gac gcc  tat       19808
Tyr Met Asn Gly  Arg Val Val Ala Pro  Ser Leu Val Asp Ala  Tyr
            3505                3510                3515

atc aac atc ggg  gcg cgc tgg tcg ctg  gac ccc atg gac aac  gtc       19853
Ile Asn Ile Gly  Ala Arg Trp Ser Leu  Asp Pro Met Asp Asn  Val
            3520                3525                3530

aat ccc ttc aac  cac cac cgc aac gcg  ggg ctg cgc tac cgc  tcc       19898
Asn Pro Phe Asn  His His Arg Asn Ala  Gly Leu Arg Tyr Arg  Ser
            3535                3540                3545

atg ctc ctg ggc  aac ggg cgc tac gtg  ccc ttc cac atc cag  gtg       19943
Met Leu Leu Gly  Asn Gly Arg Tyr Val  Pro Phe His Ile Gln  Val
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            3550                3555                3560

ccc cag aaa ttt  ttc gcc atc aag agc  ctc ctg ctc ctg ccc  ggg       19988
Pro Gln Lys Phe  Phe Ala Ile Lys Ser  Leu Leu Leu Leu Pro  Gly
            3565                3570                3575

tcc tac acc tac  gag tgg aac ttc cgc  aag gac gtc aac atg  atc       20033
Ser Tyr Thr Tyr  Glu Trp Asn Phe Arg  Lys Asp Val Asn Met  Ile
            3580                3585                3590

ctg cag agc tcc  ctc ggc aac gac ctg  cgc acg gac ggg gcc  tcc       20078
Leu Gln Ser Ser  Leu Gly Asn Asp Leu  Arg Thr Asp Gly Ala  Ser
            3595                3600                3605

atc tcc ttc acc  agc atc aac ctc tac  gcc acc ttc ttc ccc  atg       20123
Ile Ser Phe Thr  Ser Ile Asn Leu Tyr  Ala Thr Phe Phe Pro  Met
            3610                3615                3620

gcg cac aac acg  gcc tcc acg ctc gag  gcc atg ctg cgc aac  gac       20168
Ala His Asn Thr  Ala Ser Thr Leu Glu  Ala Met Leu Arg Asn  Asp
            3625                3630                3635

acc aac gac cag  tcc ttc aac gac tac  ctc tcg gcg gcc aac  atg       20213
Thr Asn Asp Gln  Ser Phe Asn Asp Tyr  Leu Ser Ala Ala Asn  Met
            3640                3645                3650

ctc tac ccc atc  ccg gcc aac gcc acc  aac gtg ccc atc tcc  atc       20258
Leu Tyr Pro Ile  Pro Ala Asn Ala Thr  Asn Val Pro Ile Ser  Ile
            3655                3660                3665

ccc tcg cgc aac  tgg gcc gcc ttc cgc  ggc tgg tcc ttc acg  cgt       20303
Pro Ser Arg Asn  Trp Ala Ala Phe Arg  Gly Trp Ser Phe Thr  Arg
            3670                3675                3680

ctc aag acc aag  gag acg ccc tcg ctg  ggc tcc ggg ttc gac  ccc       20348
Leu Lys Thr Lys  Glu Thr Pro Ser Leu  Gly Ser Gly Phe Asp  Pro
            3685                3690                3695

tac ttc gtc tac  tcg ggc tcc atc ccc  tac ctc gac ggc acc  ttc       20393
Tyr Phe Val Tyr  Ser Gly Ser Ile Pro  Tyr Leu Asp Gly Thr  Phe
            3700                3705                3710

tac ctc aac cac  acc ttc aag aag gtc  tcc atc acc ttc gac  tcc       20438
Tyr Leu Asn His  Thr Phe Lys Lys Val  Ser Ile Thr Phe Asp  Ser
            3715                3720                3725

tcc gtc agc tgg  ccc ggc aac gac cgg  ctc ctg acg ccc aac  gag       20483
Ser Val Ser Trp  Pro Gly Asn Asp Arg  Leu Leu Thr Pro Asn  Glu
            3730                3735                3740

ttc gaa atc aag  cgc acc gtc gac ggc  gag gga tac aac gtg  gcc       20528
Phe Glu Ile Lys  Arg Thr Val Asp Gly  Glu Gly Tyr Asn Val  Ala
            3745                3750                3755

cag tgc aac atg  acc aag gac tgg ttc  ctg gtc cag atg ctg  gcc       20573
Gln Cys Asn Met  Thr Lys Asp Trp Phe  Leu Val Gln Met Leu  Ala
            3760                3765                3770

cac tac aac atc  ggc tac cag ggc ttc  tac gtg ccc gag ggc  tac       20618
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His Tyr Asn Ile  Gly Tyr Gln Gly Phe  Tyr Val Pro Glu Gly  Tyr
            3775                3780                3785

aag gac cgc atg  tac tcc ttc ttc cgc  aac ttc cag ccc atg  agc       20663
Lys Asp Arg Met  Tyr Ser Phe Phe Arg  Asn Phe Gln Pro Met  Ser
            3790                3795                3800

cgc cag gtg gtg  gac gag gtc aac tac  aag gac tac cag gcc  gtc       20708
Arg Gln Val Val  Asp Glu Val Asn Tyr  Lys Asp Tyr Gln Ala  Val
            3805                3810                3815

acc cta gcc tac  cag cac aac aac tcg  ggc ttc gtc ggc tac  ctc       20753
Thr Leu Ala Tyr  Gln His Asn Asn Ser  Gly Phe Val Gly Tyr  Leu
            3820                3825                3830

gcg ccc acc atg  cgc cag gga cag ccc  tac ccc gcc aac tac  ccc       20798
Ala Pro Thr Met  Arg Gln Gly Gln Pro  Tyr Pro Ala Asn Tyr  Pro
            3835                3840                3845

tac ccg ctc atc  ggc aag agc gcc gtc  gcc agc gtc acc cag  aaa       20843
Tyr Pro Leu Ile  Gly Lys Ser Ala Val  Ala Ser Val Thr Gln  Lys
            3850                3855                3860

aag ttc ctc tgc  gac cgg gtc atg tgg  cgc atc ccc ttc tcc  agc       20888
Lys Phe Leu Cys  Asp Arg Val Met Trp  Arg Ile Pro Phe Ser  Ser
            3865                3870                3875

aac ttc atg tcc  atg ggc gcg ctc acc  gac ctc ggc cag aac  atg       20933
Asn Phe Met Ser  Met Gly Ala Leu Thr  Asp Leu Gly Gln Asn  Met
            3880                3885                3890

ctc tac gcc aac  tcc gcc cac gcg cta  gac atg aat ttc gaa  gtc       20978
Leu Tyr Ala Asn  Ser Ala His Ala Leu  Asp Met Asn Phe Glu  Val
            3895                3900                3905

gac ccc atg gat  gag tcc acc ctt ctc  tat gtt gtc ttc gaa  gtc       21023
Asp Pro Met Asp  Glu Ser Thr Leu Leu  Tyr Val Val Phe Glu  Val
            3910                3915                3920

ttc gac gtc gtc  cga gtg cac cag ccc  cac cgc ggc gtc atc  gag       21068
Phe Asp Val Val  Arg Val His Gln Pro  His Arg Gly Val Ile  Glu
            3925                3930                3935

gcc gtc tac ctg  cgc acg ccc ttc tcg  gcc ggc aac gcc acc  acc       21113
Ala Val Tyr Leu  Arg Thr Pro Phe Ser  Ala Gly Asn Ala Thr  Thr
            3940                3945                3950

taagcctctt gcttcttgca ag atg acg gcc tgt  gcg ggc tcc ggc gag       21162
                         Met Thr Ala Cys  Ala Gly Ser Gly Glu
                                     3955                3960

cag gag ctc agg gcc  atc ctc cgc gac ctg  ggc tgc ggg ccc tgc       21207
Gln Glu Leu Arg Ala  Ile Leu Arg Asp Leu  Gly Cys Gly Pro Cys
               3965                3970                3975

ttc ctg ggc acc ttc  gac aag cgc ttc ccg  gga ttc atg gcc ccg       21252
Phe Leu Gly Thr Phe  Asp Lys Arg Phe Pro  Gly Phe Met Ala Pro
               3980                3985                3990
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cac aag ctg gcc tgc  gcc atc gtc aac acg  gcc ggc cgc gag acc        21297
His Lys Leu Ala Cys  Ala Ile Val Asn Thr  Ala Gly Arg Glu Thr
                3995                 4000                 4005

ggg ggc gag cac tgg  ctg gcc ttc gcc tgg  aac ccg cgc acc cac        21342
Gly Gly Glu His Trp  Leu Ala Phe Ala Trp  Asn Pro Arg Thr His
                4010                 4015                 4020

acc tgc tac ctc ttc  gac ccc ttc ggg ttc  tca gac gag cgc ctc        21387
Thr Cys Tyr Leu Phe  Asp Pro Phe Gly Phe  Ser Asp Glu Arg Leu
                4025                 4030                 4035

aag cag atc tac cag  ttc gag tac gag ggc  ctg ctg cgc cgc agc        21432
Lys Gln Ile Tyr Gln  Phe Glu Tyr Glu Gly  Leu Leu Arg Arg Ser
                4040                 4045                 4050

gcc ctg gcc acc gag  gac cgc tgc gtc acc  ctg gaa aag tcc acc        21477
Ala Leu Ala Thr Glu  Asp Arg Cys Val Thr  Leu Glu Lys Ser Thr
                4055                 4060                 4065

cag acc gtg cag ggt  ccg cgc tcg gcc gcc  tgc ggg ctc ttc tgc        21522
Gln Thr Val Gln Gly  Pro Arg Ser Ala Ala  Cys Gly Leu Phe Cys
                4070                 4075                 4080

tgc atg ttc ctg cac  gcc ttc gtg cac tgg  ccc gac cgc ccc atg        21567
Cys Met Phe Leu His  Ala Phe Val His Trp  Pro Asp Arg Pro Met
                4085                 4090                 4095

gac aag aac ccc acc  atg aac ttg ctg acg  ggg gtg ccc aac ggc        21612
Asp Lys Asn Pro Thr  Met Asn Leu Leu Thr  Gly Val Pro Asn Gly
                4100                 4105                 4110

atg ctc cag tcg ccc  cag gtg gaa acc acc  ctg cgc cgc aac cag        21657
Met Leu Gln Ser Pro  Gln Val Glu Thr Thr  Leu Arg Arg Asn Gln
                4115                 4120                 4125

gag gcg ctc tac cgc  ttc ctc aac gcc cac  tcc gcc tac ttt cgc        21702
Glu Ala Leu Tyr Arg  Phe Leu Asn Ala His  Ser Ala Tyr Phe Arg
                4130                 4135                 4140

tcc cac cgc gcg cgc  atc gag aag gcc acc  gcc ttc gac cgc atg        21747
Ser His Arg Ala Arg  Ile Glu Lys Ala Thr  Ala Phe Asp Arg Met
                4145                 4150                 4155

aat caa gac atg taaaaaaccg gtgtgtgtat gtgaatgctt tattaataaa        21799
Asn Gln Asp Met

cagcacatgt ttatgccacc ttctctgagg ctctgacttt atttagaaat cgaaggggtt  21859

ctgccggctc tcggcgtgcc ccgcgggcag ggatacgttg cggaactggt acttgggcag  21919

ccacttgaac tcggggatca gcagcttggg cacggggagg tcggggaacg agtcgctcca  21979

cagcttgcgc gtgagttgca gggcgcccag caggtcgggc gcggagatct tgaaatcgca  22039

gttgggaccc gcgttctgcg cgcgagagtt acggtacacg gggttgcagc actggaacac  22099

catcagggcc gggtgcttca cgctcgccag caccgtcgcg tcggtgatgc cctccacgtc  22159
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cagatcctcg gcgttggtca tcccgaaggg ggtcatcttg caggtctgcc gccccatgct    22219

gggcacgcag ccgggcttgt ggttgcaatc gcagtgcagg gggatcagca tcatctgggc    22279

ctgctcggag ctcatgcccg ggtacatggc cttcatgaaa gcctccagct ggcggaaggc    22339

ctgctgcgcc ttgccgccct cggtgaagaa gaccccgcag gacttgctag agaactggtt    22399

ggtggcgcag ccggcgtcgt gcacgcagca gcgcgcgtcg ttgttggcca gctgcaccac    22459

gctgcgtccc cagcggttct gggtgatctt ggcccggtcg gggttctcct tcagcgcgcg    22519

ctgcccgttc tcgctcgcca catccatctc gatcgtgtgc tccttctgga tcatcacggt    22579

cccgtgcagg caccgcagct tgccctcggc ctcggtgcag ccgtgcagcc acagcgcgca    22639

gccggtgctc tcccagttct tgtgggcgat ctgggagtgc gagtgcacga agccctgcag    22699

gaagcggccc atcatcgtgg tcagggtctt gttgctggtg aaggtcagcg ggatgccgcg    22759

gtgctcctcg ttcacataca ggtggcagat gcggcggtac acctcgccct gctcgggcat    22819

cagctggaag gcggacttca ggtcgctctc cacgcggtac cggtccatca gcagcgtcat    22879

cacttccatg cccttctccc aggccgagac gatcggcagg ctcaggggtt tcttcaccgt    22939

tgtcatctta gtcgccgccg ccgaggtcag ggggtcgttc tcgtccaggg tctcaaacac    22999

tcgcttgccg tccttctcgg tgatgcgcac gggggggaag gcgaagccca cggccgccag    23059

ctcctcctcg gcctgccttt cgtcctcgct gtcctggctg atgtcttgca aaggcacatg    23119

cttggtcttg cggggtttct ttttgggcgg cagaggcggc ggcgatgtgc tgggcgagcg    23179

cgagttctcg ctcaccacga ctatttcttc tccttggccg tcgtccgaga ccacgcggcg    23239

gtaggcatgc ctcttctggg gcagaggcgg aggcgacggg ctctcgcggt tcggcgggcg    23299

gctggcagag ccccttccgc gttcgggggt gcgctcctgg cggcgctgct ctgactgact    23359

tcctccgcgg ccggccattg tgttctccta gggagcaagc atg  gag act cag cca      23414
                                               Met  Glu Thr Gln Pro
                                               4160

tcg  tcg cca aca tcg cca  tct gcc ccc gcc gcc  gcc gac gag aac        23459
Ser  Ser Pro Thr Ser Pro  Ser Ala Pro Ala Ala  Ala Asp Glu Asn
4165                 4170                 4175

cag  cag cag cag aat gaa  agc tta acc gcc ccg  ccg ccc agc ccc        23504
Gln  Gln Gln Gln Asn Glu  Ser Leu Thr Ala Pro  Pro Pro Ser Pro
4180                 4185                 4190

acc  tcc gac gcg gcc cca  gac atg caa gag atg  gag gaa tcc atc        23549
Thr  Ser Asp Ala Ala Pro  Asp Met Gln Glu Met  Glu Glu Ser Ile
4195                 4200                 4205

gag  att gac ctg ggc tac  gtg acg ccc gcg gag  cac gag gag gag        23594
Glu  Ile Asp Leu Gly Tyr  Val Thr Pro Ala Glu  His Glu Glu Glu
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4210                4215                4220

ctg  gca gcg cgc ttt tca  gcc ccg gaa gag aac  cac caa gag cag      23639
Leu  Ala Ala Arg Phe Ser  Ala Pro Glu Glu Asn  His Gln Glu Gln
4225                4230                4235

cca  gag cag gaa gca gag  agc gag cag cag cag  gct ggg ctc gag      23684
Pro  Glu Gln Glu Ala Glu  Ser Glu Gln Gln Gln  Ala Gly Leu Glu
4240                4245                4250

cat  ggc gac tac ctg agc  ggg gca gag gac gtg  ctc atc aag cat      23729
His  Gly Asp Tyr Leu Ser  Gly Ala Glu Asp Val  Leu Ile Lys His
4255                4260                4265

ctg  gcc cgc caa tgc atc  atc gtc aag gac gcg  ctg ctc gac cgc      23774
Leu  Ala Arg Gln Cys Ile  Ile Val Lys Asp Ala  Leu Leu Asp Arg
4270                4275                4280

gcc  gag gtg ccc ctc agc  gtg gcg gag ctc agc  cgc gcc tac gag      23819
Ala  Glu Val Pro Leu Ser  Val Ala Glu Leu Ser  Arg Ala Tyr Glu
4285                4290                4295

cgc  aac ctc ttc tcg ccg  cgc gtg ccc ccc aag  cgc cag ccc aac      23864
Arg  Asn Leu Phe Ser Pro  Arg Val Pro Pro Lys  Arg Gln Pro Asn
4300                4305                4310

ggc  acc tgc gag ccc aac  ccg cgc ctc aac ttc  tac ccg gtc ttc      23909
Gly  Thr Cys Glu Pro Asn  Pro Arg Leu Asn Phe  Tyr Pro Val Phe
4315                4320                4325

gcg  gtg ccc gag gcc ctg  gcc acc tac cac ctc  ttt ttc aag aac      23954
Ala  Val Pro Glu Ala Leu  Ala Thr Tyr His Leu  Phe Phe Lys Asn
4330                4335                4340

caa  agg atc ccc gtc tcc  tgc cgc gcc aac cgc  acc cgc gcc gac      23999
Gln  Arg Ile Pro Val Ser  Cys Arg Ala Asn Arg  Thr Arg Ala Asp
4345                4350                4355

gcc  ctg ctc aac ctg ggc  ccc ggc gcc cgc cta  cct gat atc gcc      24044
Ala  Leu Leu Asn Leu Gly  Pro Gly Ala Arg Leu  Pro Asp Ile Ala
4360                4365                4370

tcc  ttg gaa gag gtt ccc  aag atc ttc gag ggt  ctg ggc agc gac      24089
Ser  Leu Glu Glu Val Pro  Lys Ile Phe Glu Gly  Leu Gly Ser Asp
4375                4380                4385

gag  act cgg gcc gcg aac  gct ctg caa gga agc  gga gag gag cat      24134
Glu  Thr Arg Ala Ala Asn  Ala Leu Gln Gly Ser  Gly Glu Glu His
4390                4395                4400

gag  cac cac agc gcc ctg  gtg gag ttg gaa ggc  gac aac gcg cgc      24179
Glu  His His Ser Ala Leu  Val Glu Leu Glu Gly  Asp Asn Ala Arg
4405                4410                4415

ctg  gcg gtc ctc aag cgc  acg gtc gag ctg acc  cac ttc gcc tac      24224
Leu  Ala Val Leu Lys Arg  Thr Val Glu Leu Thr  His Phe Ala Tyr
4420                4425                4430

ccg  gcg ctc aac ctg ccc  ccc aag gtc atg agc  gcc gtc atg gac      24269
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Pro  Ala Leu Asn Leu Pro  Pro Lys Val Met Ser  Ala Val Met Asp
4435                4440                4445

cag  gtg ctc atc aag cgc  gcc tcg ccc ctc tcg  gag gag gag atg      24314
Gln  Val Leu Ile Lys Arg  Ala Ser Pro Leu Ser  Glu Glu Glu Met
4450                4455                4460

cag  gac ccc gag agc tcg  gac gag ggc aag ccc  gtg gtc agc gac      24359
Gln  Asp Pro Glu Ser Ser  Asp Glu Gly Lys Pro  Val Val Ser Asp
4465                4470                4475

gag  cag ctg gcg cgc tgg  ctg gga gcg agt agc  acc ccc cag agc      24404
Glu  Gln Leu Ala Arg Trp  Leu Gly Ala Ser Ser  Thr Pro Gln Ser
4480                4485                4490

ctg  gaa gag cgg cgc aag  ctc atg atg gcc gtg  gtc ctg gtg acc      24449
Leu  Glu Glu Arg Arg Lys  Leu Met Met Ala Val  Val Leu Val Thr
4495                4500                4505

gtg  gag ctg gag tgt ctg  cgc cgc ttc ttc gcc  gac gcg gag acc      24494
Val  Glu Leu Glu Cys Leu  Arg Arg Phe Phe Ala  Asp Ala Glu Thr
4510                4515                4520

ctg  cgc aag gtc gag gaa  aac ctg cac tac ctc  ttc agg cac ggg      24539
Leu  Arg Lys Val Glu Glu  Asn Leu His Tyr Leu  Phe Arg His Gly
4525                4530                4535

ttc  gtg cgc cag gcc tgc  aag atc tcc aac gtg  gag ctg acc aac      24584
Phe  Val Arg Gln Ala Cys  Lys Ile Ser Asn Val  Glu Leu Thr Asn
4540                4545                4550

ctg  gtc tcc tac atg ggc  atc ctg cac gag aac  cgc ctg ggg cag      24629
Leu  Val Ser Tyr Met Gly  Ile Leu His Glu Asn  Arg Leu Gly Gln
4555                4560                4565

aac  gtg ctg cac acc acc  ctg cgc ggg gag gcc  cgc cgc gac tac      24674
Asn  Val Leu His Thr Thr  Leu Arg Gly Glu Ala  Arg Arg Asp Tyr
4570                4575                4580

atc  cgc gac tgc gtc tac  ctg tac ctc tgc cac  acc tgg cag acg      24719
Ile  Arg Asp Cys Val Tyr  Leu Tyr Leu Cys His  Thr Trp Gln Thr
4585                4590                4595

ggc  atg ggc gtg tgg cag  cag tgc ctg gag gag  cag aac ctg aaa      24764
Gly  Met Gly Val Trp Gln  Gln Cys Leu Glu Glu  Gln Asn Leu Lys
4600                4605                4610

gag  ctc tgc aag ctc ctg  cag aag aac ctc aag  gcc ctg tgg acc      24809
Glu  Leu Cys Lys Leu Leu  Gln Lys Asn Leu Lys  Ala Leu Trp Thr
4615                4620                4625

ggg  ttc gac gag cgc acc  acc gcc tcg gac ctg  gcc gac ctc atc      24854
Gly  Phe Asp Glu Arg Thr  Thr Ala Ser Asp Leu  Ala Asp Leu Ile
4630                4635                4640

ttc  ccc gag cgc ctg cgg  ctg acg ctg cgc aac  ggt ctg ccc gac      24899
Phe  Pro Glu Arg Leu Arg  Leu Thr Leu Arg Asn  Gly Leu Pro Asp
4645                4650                4655
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ttt  atg agc caa agc atg  ttg caa aac ttt cgc  tct ttc atc ctc       24944
Phe  Met Ser Gln Ser Met  Leu Gln Asn Phe Arg  Ser Phe Ile Leu
4660                4665                4670

gaa  cgc tcc ggg atc ctg  ccc gcc acc tgc tcc  gcg ctg ccc tcg       24989
Glu  Arg Ser Gly Ile Leu  Pro Ala Thr Cys Ser  Ala Leu Pro Ser
4675                4680                4685

gac  ttc gtg ccg ctg acc  ttc cgc gag tgc ccc  ccg ccg ctc tgg       25034
Asp  Phe Val Pro Leu Thr  Phe Arg Glu Cys Pro  Pro Pro Leu Trp
4690                4695                4700

agc  cac tgc tac ttg ctg  cgc ctg gcc aac tac  ctg gcc tac cac       25079
Ser  His Cys Tyr Leu Leu  Arg Leu Ala Asn Tyr  Leu Ala Tyr His
4705                4710                4715

tcg  gac gtg atc gag gac  gtc agc ggc gag ggt  ctg ctc gag tgc       25124
Ser  Asp Val Ile Glu Asp  Val Ser Gly Glu Gly  Leu Leu Glu Cys
4720                4725                4730

cac  tgc cgc tgc aac ctc  tgc acg ccg cac cgc  tcc ctg gcc tgc       25169
His  Cys Arg Cys Asn Leu  Cys Thr Pro His Arg  Ser Leu Ala Cys
4735                4740                4745

aac  ccc cag ctg ctg agc  gag acc cag atc atc  ggc acc ttc gag       25214
Asn  Pro Gln Leu Leu Ser  Glu Thr Gln Ile Ile  Gly Thr Phe Glu
4750                4755                4760

ttg  caa ggc ccc ggc gag  ggc aag ggg ggt ctg  aaa ctc acc ccg       25259
Leu  Gln Gly Pro Gly Glu  Gly Lys Gly Gly Leu  Lys Leu Thr Pro
4765                4770                4775

ggg  ctg tgg acc tcg gcc  tac ttg cgc aag ttc  gtg ccc gag gac       25304
Gly  Leu Trp Thr Ser Ala  Tyr Leu Arg Lys Phe  Val Pro Glu Asp
4780                4785                4790

tac  cat ccc ttc gag atc  agg ttc tac gag gac  caa tcc cag ccg       25349
Tyr  His Pro Phe Glu Ile  Arg Phe Tyr Glu Asp  Gln Ser Gln Pro
4795                4800                4805

ccc  aag gcc gag ctg tcg  gcc tgc gtc atc acc  cag ggg gcc atc       25394
Pro  Lys Ala Glu Leu Ser  Ala Cys Val Ile Thr  Gln Gly Ala Ile
4810                4815                4820

ctg  gcc caa ttg caa gcc  atc cag aaa tcc cgc  caa gaa ttt ctg       25439
Leu  Ala Gln Leu Gln Ala  Ile Gln Lys Ser Arg  Gln Glu Phe Leu
4825                4830                4835

ctg  aaa aag ggc cac ggg  gtc tac ctg gac ccc  cag acc gga gag       25484
Leu  Lys Lys Gly His Gly  Val Tyr Leu Asp Pro  Gln Thr Gly Glu
4840                4845                4850

gag  ctc aac ccc agc ttc  ccc cag gat gcc ccg  agg aag cag caa       25529
Glu  Leu Asn Pro Ser Phe  Pro Gln Asp Ala Pro  Arg Lys Gln Gln
4855                4860                4865

gaa  gct gaa agt gga gct  gcc gct gcc gcc gga  gga ttt gga gga       25574
Glu  Ala Glu Ser Gly Ala  Ala Ala Ala Ala Gly  Gly Phe Gly Gly
4870                4875                4880
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aga  ctg gga gag cag tca  ggc aga gga gat gga  aga ctg gga cag       25619
Arg  Leu Gly Glu Gln Ser  Gly Arg Gly Asp Gly  Arg Leu Gly Gln
4885                 4890                 4895

cac  tca ggc aga gga gga  cag cct gca aga cag  tct gga gga gga       25664
His  Ser Gly Arg Gly Gly  Gln Pro Ala Arg Gln  Ser Gly Gly Gly
4900                 4905                 4910

aga  cga ggt gga gga gga  ggc aga gga aga agc  agc cgc cgc cag       25709
Arg  Arg Gly Gly Gly Gly  Gly Arg Gly Arg Ser  Ser Arg Arg Gln
4915                 4920                 4925

acc  gtc gtc ctc ggc gga  gaa agc aag cag cac  gga tac cat ctc       25754
Thr  Val Val Leu Gly Gly  Glu Ser Lys Gln His  Gly Tyr His Leu
4930                 4935                 4940

cgc  tcc ggg tcg ggg tcg  cgg cgg ccg ggc cca  cag tagatgggac       25800
Arg  Ser Gly Ser Gly Ser  Arg Arg Pro Gly Pro  Gln
4945                 4950                 4955

gagaccgggc gcttcccaaa ccccaccacc cagaccggta agaaggagcg gcagggatac   25860

aagtcctggc gggggcacaa aaacgccatc gtctcctgct tgcaagcctg cgggggcaac   25920

atctccttca cccggcgcta cctgctcttc caccgcgggg tgaacttccc ccgcaacatc   25980

ttgcattact accgtcacct ccacagcccc tactactgtt tccaagaaga ggcagaaacc   26040

cagcagcagc agaaaaccag cagcagcagc agcagcagct agaaaatcca cagcggcggc   26100

ggcaggtgga ctgaggatcg cggcgaacga gccggcgcag acccgggagc tgaggaaccg   26160

gatctttccc accctctatg ccatcttcca gcagagtcgg gggcaggagc aggaactgaa   26220

agtcaagaac cgttctctgc gctcgctcac ccgcagttgt ctgtatcaca agagcgaaga   26280

ccaacttcag cgcactctcg aggacgccga ggctctcttc aacaagtact gcgcgctcac   26340

tcttaaagag tagcccgcgc ccgcccacac acggaaaaag gcgggaatta cgtcaccacc   26400

tgcgcccttc gcccgaccat catc atg agc aaa gag  att ccc acg cct tac      26451
                          Met Ser Lys Glu  Ile Pro Thr Pro Tyr
                                        4960                 4965

atg tgg agc tac cag  ccc cag atg ggc ctg  gcc gcc ggc gcc gcc       26496
Met Trp Ser Tyr Gln  Pro Gln Met Gly Leu  Ala Ala Gly Ala Ala
                4970                 4975                 4980

cag gac tac tcc acc  cgc atg aac tgg ctc  agt gcc ggg ccc gcg       26541
Gln Asp Tyr Ser Thr  Arg Met Asn Trp Leu  Ser Ala Gly Pro Ala
                4985                 4990                 4995

atg atc tca cgg gtg  aat gac atc cgc gcc  cac cga aac cag ata       26586
Met Ile Ser Arg Val  Asn Asp Ile Arg Ala  His Arg Asn Gln Ile
                5000                 5005                 5010

ctc cta gaa cag tca  gca atc acc gcc acg  ccc cgc cat cac ctt       26631
Leu Leu Glu Gln Ser  Ala Ile Thr Ala Thr  Pro Arg His His Leu
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                5015                5020                5025

aat ccg cgt aat tgg  ccc gcc gcc ctg gtg  tac cag gaa att ccc        26676
Asn Pro Arg Asn Trp  Pro Ala Ala Leu Val  Tyr Gln Glu Ile Pro
                5030                5035                5040

cag ccc acg acc gta  cta ctt ccg cga gac  gcc cag gcc gaa gtc        26721
Gln Pro Thr Thr Val  Leu Leu Pro Arg Asp  Ala Gln Ala Glu Val
                5045                5050                5055

cag ctg act aac tca  ggt gtc cag ctg gcc  ggc ggc gcc gcc ctg        26766
Gln Leu Thr Asn Ser  Gly Val Gln Leu Ala  Gly Gly Ala Ala Leu
                5060                5065                5070

tgt cgt cac cgc ccc  gct cag ggt ata aag  cgg ctg gtg atc cga        26811
Cys Arg His Arg Pro  Ala Gln Gly Ile Lys  Arg Leu Val Ile Arg
                5075                5080                5085

ggc aga ggc aca cag  ctc aac gac gag gtg  gtg agc tct tcg ctg        26856
Gly Arg Gly Thr Gln  Leu Asn Asp Glu Val  Val Ser Ser Ser Leu
                5090                5095                5100

ggt ctg cga cct gac  gga gtc ttc caa ctc  gcc gga tcg ggg aga        26901
Gly Leu Arg Pro Asp  Gly Val Phe Gln Leu  Ala Gly Ser Gly Arg
                5105                5110                5115

tct tcc ttc acg cct  cgt cag gcc gtc ctg  act ttg gag agt tcg        26946
Ser Ser Phe Thr Pro  Arg Gln Ala Val Leu  Thr Leu Glu Ser Ser
                5120                5125                5130

tcc tcg cag ccc cgc  tcg ggt ggc atc ggc  act ctc cag ttc gtg        26991
Ser Ser Gln Pro Arg  Ser Gly Gly Ile Gly  Thr Leu Gln Phe Val
                5135                5140                5145

gag gag ttc act ccc  tcg gtc tac ttc aac  ccc ttc tcc ggc tcc        27036
Glu Glu Phe Thr Pro  Ser Val Tyr Phe Asn  Pro Phe Ser Gly Ser
                5150                5155                5160

ccc ggc cac tac ccg  gac gag ttc atc ccg  aac ttc gac gcc atc        27081
Pro Gly His Tyr Pro  Asp Glu Phe Ile Pro  Asn Phe Asp Ala Ile
                5165                5170                5175

agc gag tcg gtg gac  ggc tac gat tga atg tcc  cat ggt ggc gcg        27126
Ser Glu Ser Val Asp  Gly Tyr Asp     Met Ser  His Gly Gly Ala
                5180                    5185

gct  gac cta gct cgg ctt  cga cac ctg gac cac  tgc cgc cgc ttc       27171
Ala  Asp Leu Ala Arg Leu  Arg His Leu Asp His  Cys Arg Arg Phe
5190                5195                5200

cgc  tgc ttc gct cgg gat  ctc gcc gag ttt gcc  tac ttt gag ctg       27216
Arg  Cys Phe Ala Arg Asp  Leu Ala Glu Phe Ala  Tyr Phe Glu Leu
5205                5210                5215

ccc  gag gag cac cct cag  ggc ccg gcc cac gga  gtg cgg atc gtc       27261
Pro  Glu Glu His Pro Gln  Gly Pro Ala His Gly  Val Arg Ile Val
5220                5225                5230

gtc  gaa ggg ggc ctc gac  tcc cac ctg ctt cgg  atc ttc agc cag       27306
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Val  Glu Gly Gly Leu Asp  Ser His Leu Leu Arg  Ile Phe Ser Gln
5235                5240                5245

cga  ccg atc ctg gtc gag  cgc gag caa gga cag  acc ctt ctg acc      27351
Arg  Pro Ile Leu Val Glu  Arg Glu Gln Gly Gln  Thr Leu Leu Thr
5250                5255                5260

ctg  tac tgc atc tgc aac  cgc ccc ggc ctg cat  gaa agt ctt tgt      27396
Leu  Tyr Cys Ile Cys Asn  Arg Pro Gly Leu His  Glu Ser Leu Cys
5265                5270                5275

tgt  ctg ctg tgt act gag  tat aat aaa agc tgaaatcagc gactactccg     27446
Cys  Leu Leu Cys Thr Glu  Tyr Asn Lys Ser
5280                5285

gactcgattg tggtgttcct gctatcaacc ggtccctgtt cttcaccggg aacgagaccg   27506

agcttcagct ccagtgtaag ccccacaaga agtacctcac ctggctgttc cagggctctc   27566

cgatcgccgt tgtcaaccac tgcgacaacg acggagtcct gctgagcggc cctgccaacc   27626

ttacttttc cacccgcaga agcaagctcc agctcttcca acccttcctc cccgggacct   27686

atcagtgcgt ctcgggaccc tgccatcaca ccttccacct gatcccgaat accacagcgt   27746

cgctccccgc tactaacaac caatctaccc accaacgcca ccgtcgcgac ctttcctctg   27806

aatctaatac taccacccac accggaggtg agctccgagg tcgaccaacc tctgggattt   27866

actacggccc ctgggaggtg gtggggttaa tagcgctagg cctagttgtg ggtgggcttt   27926

tggctctctg ctacctatac ctcccttgct gttcgtactt agtggtgctg tgttgctggt   27986

ttaagaa atg  ggg aag atc acc cta  gtg agc tgc ggt gtg  ccg gtg      28032
       Met  Gly Lys Ile Thr Leu  Val Ser Cys Gly Val  Pro Val
       5290                5295                5300

gcg gtg gtg  gtg ctt tcg att gtg  gga ctg ggc ggc gcg  gct gta      28077
Ala Val Val  Val Leu Ser Ile Val  Gly Leu Gly Gly Ala  Ala Val
       5305                5310                5315

gtg aag gag  gag aag gcc gat tcc  tgc ttg cat ttc aat  ccc gac      28122
Val Lys Glu  Glu Lys Ala Asp Ser  Cys Leu His Phe Asn  Pro Asp
       5320                5325                5330

aaa tgc cag  ctg agt ttt cag ccc  gat ggc aat cgg tgc  acg gtg      28167
Lys Cys Gln  Leu Ser Phe Gln Pro  Asp Gly Asn Arg Cys  Thr Val
       5335                5340                5345

ctg atc aag  tgc gga tgg gaa tgc  gag aac gtg aga atc  gag tac      28212
Leu Ile Lys  Cys Gly Trp Glu Cys  Glu Asn Val Arg Ile  Glu Tyr
       5350                5355                5360

aat aac aag  act cgg aac aat act  ctc gcg tcc gtg tgg  cag ccc      28257
Asn Asn Lys  Thr Arg Asn Asn Thr  Leu Ala Ser Val Trp  Gln Pro
       5365                5370                5375

ggg gac ccc  gag tgg tac acc gtc  tct gtc ccc ggt gct  gac ggc      28302
Gly Asp Pro  Glu Trp Tyr Thr Val  Ser Val Pro Gly Ala  Asp Gly
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        5380                5385                5390

tcc ccg cgc  acc gtg aat aat act  ttc att ttt gca cac  atg tgc       28347
Ser Pro Arg  Thr Val Asn Asn Thr  Phe Ile Phe Ala His  Met Cys
        5395                5400                5405

gac acg gtc  atg tgg atg agc aag  cag tac gat atg tgg  ccc ccc       28392
Asp Thr Val  Met Trp Met Ser Lys  Gln Tyr Asp Met Trp  Pro Pro
        5410                5415                5420

acg aag gag  aac atc gtg gtc ttc  tcc atc gct tac agc  ctg tgc       28437
Thr Lys Glu  Asn Ile Val Val Phe  Ser Ile Ala Tyr Ser  Leu Cys
        5425                5430                5435

acg gcg cta  atc acc gct atc gtg  tgc ctg agc att cac  atg ctc       28482
Thr Ala Leu  Ile Thr Ala Ile Val  Cys Leu Ser Ile His  Met Leu
        5440                5445                5450

atc gct att  cgc ccc aga aat aat  gcc gag aaa gag aaa  cag cca       28527
Ile Ala Ile  Arg Pro Arg Asn Asn  Ala Glu Lys Glu Lys  Gln Pro
        5455                5460                5465

taacacgttt ttttacacac ctttttcaga cc atg gcc tct  gtt act gcc cta     28580
                                     Met Ala Ser  Val Thr Ala Leu
                                             5470

att  att ttt ttg ggc ctt  gtg ggc act agc agc  act ttt gat cat       28625
Ile  Ile Phe Leu Gly Leu  Val Gly Thr Ser Ser  Thr Phe Asp His
5475                5480                5485

aaa  aac tta act gtt ttt  gtt ggt tct gat gtt  aca cta ccc ggg       28670
Lys  Asn Leu Thr Val Phe  Val Gly Ser Asp Val  Thr Leu Pro Gly
5490                5495                5500

cat  caa tcg cac cag agg  gtt tca tgg tat cat  ttt aat aaa cag       28715
His  Gln Ser His Gln Arg  Val Ser Trp Tyr His  Phe Asn Lys Gln
5505                5510                5515

aac  aca gct tat aca ctt  tgc aaa ggt cat cag  caa gcc aca tat       28760
Asn  Thr Ala Tyr Thr Leu  Cys Lys Gly His Gln  Gln Ala Thr Tyr
5520                5525                5530

cgc  agt ggt ctt tat tac  aga tgc aat aac aat  aac ctc aca cta       28805
Arg  Ser Gly Leu Tyr Tyr  Arg Cys Asn Asn Asn  Asn Leu Thr Leu
5535                5540                5545

ctc  tca gtt aat gca aat  tat tct ggc aca tac  tat gga acc aat       28850
Leu  Ser Val Asn Ala Asn  Tyr Ser Gly Thr Tyr  Tyr Gly Thr Asn
5550                5555                5560

ttt  aac aca aaa cag gac  act tac tat agt gtc  aaa gta ttg aat       28895
Phe  Asn Thr Lys Gln Asp  Thr Tyr Tyr Ser Val  Lys Val Leu Asn
5565                5570                5575

cca  acc tct cct aga act  acc act aag cct acc  gct acc acc act       28940
Pro  Thr Ser Pro Arg Thr  Thr Thr Lys Pro Thr  Ala Thr Thr Thr
5580                5585                5590

act  act gca aag ccc act  aaa cct aaa act acc  aag aaa acc act       28985
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Thr  Thr Ala Lys Pro Thr  Lys Pro Lys Thr Thr  Lys Lys Thr Thr
5595                5600                5605

gtg  aag act aca aca act  aga acc acc aca act  aca gag acc acc       29030
Val  Lys Thr Thr Thr Thr  Arg Thr Thr Thr Thr  Thr Glu Thr Thr
5610                5615                5620

acc  agc aca ctt gct gcc  act aca cac aca cac  att gag cta acc       29075
Thr  Ser Thr Leu Ala Ala  Thr Thr His Thr His  Ile Glu Leu Thr
5625                5630                5635

tta  cag acc act aat gat  ttg atc gcc ctg ttg  caa aag ggg gat       29120
Leu  Gln Thr Thr Asn Asp  Leu Ile Ala Leu Leu  Gln Lys Gly Asp
5640                5645                5650

aac  agc acc act tcc gat  gag gaa ata ccc aaa  tcc atg att ggc       29165
Asn  Ser Thr Thr Ser Asp  Glu Glu Ile Pro Lys  Ser Met Ile Gly
5655                5660                5665

att  att gtt gct gta gtg  gtg tgc atg ttg atc  atc gcc ttg tgc       29210
Ile  Ile Val Ala Val Val  Val Cys Met Leu Ile  Ile Ala Leu Cys
5670                5675                5680

atg  gtg tac tat gcc ttc  tgc tac aga aag cac  aga ctg aac gac       29255
Met  Val Tyr Tyr Ala Phe  Cys Tyr Arg Lys His  Arg Leu Asn Asp
5685                5690                5695

aag  ctg gaa cac tta cta  agt gtt gaa ttt taatttttta gaacc atg       29303
Lys  Leu Glu His Leu Leu  Ser Val Glu Phe                  Met
5700                5705                                   5710

aag atc cta ggc ctt  tta gtt ttt tct atc  att acc tct gct ctt       29348
Lys Ile Leu Gly Leu  Leu Val Phe Ser Ile  Ile Thr Ser Ala Leu
               5715                5720                5725

tgt gaa tcg gtg gat  aaa gat gtt act att  acc act ggt tct aac       29393
Cys Glu Ser Val Asp  Lys Asp Val Thr Ile  Thr Thr Gly Ser Asn
               5730                5735                5740

tat aca ctg aaa ggg  cca ccc tca ggt atg  ctt tcg tgg tat tgc       29438
Tyr Thr Leu Lys Gly  Pro Pro Ser Gly Met  Leu Ser Trp Tyr Cys
               5745                5750                5755

tat ttt gga act gac  tct gaa caa act gag  ctt tgc aat gca atg       29483
Tyr Phe Gly Thr Asp  Ser Glu Gln Thr Glu  Leu Cys Asn Ala Met
               5760                5765                5770

aga ggc caa atg cca  acc tca aaa att aaa  cat aaa tgc aat ggt       29528
Arg Gly Gln Met Pro  Thr Ser Lys Ile Lys  His Lys Cys Asn Gly
               5775                5780                5785

act gat ttg ata ctc  ctc aat gtc acg aaa  gca tat gct ggc agt       29573
Thr Asp Leu Ile Leu  Leu Asn Val Thr Lys  Ala Tyr Ala Gly Ser
               5790                5795                5800

tac acc tgc cct gga  gat gat gct gac agt  atg att ttt tac aaa       29618
Tyr Thr Cys Pro Gly  Asp Asp Ala Asp Ser  Met Ile Phe Tyr Lys
               5805                5810                5815
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gta act gtt gtt gat  ccc act act cca cca  ccc acc acc aca act        29663
Val Thr Val Val Asp  Pro Thr Thr Pro Pro  Pro Thr Thr Thr Thr
                5820                 5825                 5830

act cat acc aca cac  aca gaa caa aca cca  gag gca gca gga gag        29708
Thr His Thr Thr His  Thr Glu Gln Thr Pro  Glu Ala Ala Gly Glu
                5835                 5840                 5845

tta gcc ttg cag gtt  cag gaa gat tcc ctt  atg gct aat acc cct        29753
Leu Ala Leu Gln Val  Gln Glu Asp Ser Leu  Met Ala Asn Thr Pro
                5850                 5855                 5860

aca ccc gat cat cgg  tgt ccg ggg ttg ctc  gtc agc ggc att gtc        29798
Thr Pro Asp His Arg  Cys Pro Gly Leu Leu  Val Ser Gly Ile Val
                5865                 5870                 5875

ggt gtg ctt tcg gga  tta gca gtc ata atc  atc tgc atg ttc att        29843
Gly Val Leu Ser Gly  Leu Ala Val Ile Ile  Ile Cys Met Phe Ile
                5880                 5885                 5890

ttt gct tgc tgc tat  aga agg ctt tac cga  caa aaa tca gac cca        29888
Phe Ala Cys Cys Tyr  Arg Arg Leu Tyr Arg  Gln Lys Ser Asp Pro
                5895                 5900                 5905

ctg ctg aac ctc tat  gtt taatttttc cagagcc atg aag gca gtt  aga      29938
Leu Leu Asn Leu Tyr  Val                   Met Lys Ala Val  Arg
                5910                                 5915

gtt cta gtt ttt  tgt tct ttg att ggc  att gtt ttt agt gct  ggg      29983
Val Leu Val Phe  Cys Ser Leu Ile Gly  Ile Val Phe Ser Ala  Gly
            5920                 5925                 5930

ttt ttg aaa aat  ctt acc att tat gaa  ggt gag aat gcc act  cta      30028
Phe Leu Lys Asn  Leu Thr Ile Tyr Glu  Gly Glu Asn Ala Thr  Leu
            5935                 5940                 5945

gtg ggc atc agt  ggt caa aat gtc agc  tgg cta aaa tac cat  cta      30073
Val Gly Ile Ser  Gly Gln Asn Val Ser  Trp Leu Lys Tyr His  Leu
            5950                 5955                 5960

gat agg tgg aaa  gac att tgc gat tgg  aat gtc act gtg tat  aca      30118
Asp Arg Trp Lys  Asp Ile Cys Asp Trp  Asn Val Thr Val Tyr  Thr
            5965                 5970                 5975

tgt aat gga gtt  aac ctc acc att act  aat gcc acc caa gat  caa      30163
Cys Asn Gly Val  Asn Leu Thr Ile Thr  Asn Ala Thr Gln Asp  Gln
            5980                 5985                 5990

aat ggt agg ttt  aag ggt cag agt ttc  act aga aat aat ggg  tat      30208
Asn Gly Arg Phe  Lys Gly Gln Ser Phe  Thr Arg Asn Asn Gly  Tyr
            5995                 6000                 6005

gaa tcc cat aac  atg ttt atc tat gac  gtc act gtc atc aga  aat      30253
Glu Ser His Asn  Met Phe Ile Tyr Asp  Val Thr Val Ile Arg  Asn
            6010                 6015                 6020

gag act gcc acc  acc acc aca cag atg  caa acc aca cag acg  acc      30298
Glu Thr Ala Thr  Thr Thr Thr Gln Met  Gln Thr Thr Gln Thr  Thr
            6025                 6030                 6035
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aca tac agt aca  tca aat cag cct acc  acc act aca gca gca  gag       30343
Thr Tyr Ser Thr  Ser Asn Gln Pro Thr  Thr Thr Thr Ala Ala  Glu
            6040                6045                6050

gtt gcc agc tcg  tct ggt gtc aaa gtg  gca ttt ttg ttg ttg  ccc       30388
Val Ala Ser Ser  Ser Gly Val Lys Val  Ala Phe Leu Leu Leu  Pro
            6055                6060                6065

cca tct agc agt  ccc act gct agt acc  aat gag cag act act  gaa       30433
Pro Ser Ser Ser  Pro Thr Ala Ser Thr  Asn Glu Gln Thr Thr  Glu
            6070                6075                6080

ttt ttg tcc act  gtc gag agc cac acc  aca gct acc tcg agt  gcc       30478
Phe Leu Ser Thr  Val Glu Ser His Thr  Thr Ala Thr Ser Ser  Ala
            6085                6090                6095

ttc tct agc acc  gcc aat ctc tcc tcg  ctt tcc tct aca cca  atc       30523
Phe Ser Ser Thr  Ala Asn Leu Ser Ser  Leu Ser Ser Thr Pro  Ile
            6100                6105                6110

agt tcc gct act  act act cct agc ccc  gct cct ctt ccc act  ccc       30568
Ser Ser Ala Thr  Thr Thr Pro Ser Pro  Ala Pro Leu Pro Thr  Pro
            6115                6120                6125

ctg aag caa act  gag gac agc ggc atg  caa tgg cag atc acc  ctg       30613
Leu Lys Gln Thr  Glu Asp Ser Gly Met  Gln Trp Gln Ile Thr  Leu
            6130                6135                6140

ctc att gtg atc  ggg ttg gtc atc ctg  gcc gtg ttg ctc tac  tac       30658
Leu Ile Val Ile  Gly Leu Val Ile Leu  Ala Val Leu Leu Tyr  Tyr
            6145                6150                6155

atc ttc tgc cgc  cgc att ccc aac gcg  cac cgc aag ccg gtc  tac       30703
Ile Phe Cys Arg  Arg Ile Pro Asn Ala  His Arg Lys Pro Val  Tyr
            6160                6165                6170

aag ccc atc att  gtc ggg cag cca gag  ccg ctt cag gtg gaa  ggg       30748
Lys Pro Ile Ile  Val Gly Gln Pro Glu  Pro Leu Gln Val Glu  Gly
            6175                6180                6185

ggt cta agg aat  ctt ctc ttc tct ttt  aca gta tgg tgattgaact atg     30797
Gly Leu Arg Asn  Leu Leu Phe Ser Phe  Thr Val Trp           Met
            6190                6195

att  cct aga caa ttc ttg  atc act att ctt atc  tgc ctc ctc caa       30842
Ile  Pro Arg Gln Phe Leu  Ile Thr Ile Leu Ile  Cys Leu Leu Gln
6200                6205                6210

gtc  tgt gcc acc ctc gct  ctg gtg gcc aac gcc  agt cca gac tgt       30887
Val  Cys Ala Thr Leu Ala  Leu Val Ala Asn Ala  Ser Pro Asp Cys
6215                6220                6225

att  ggg ccc ttc gcc tcc  tac gtg ctc ttt gcc  ttc atc acc tgc       30932
Ile  Gly Pro Phe Ala Ser  Tyr Val Leu Phe Ala  Phe Ile Thr Cys
6230                6235                6240

atc  tgc tgc tgt agc ata  gtc tgc ctg ctt atc  acc ttc ttc cag       30977
Ile  Cys Cys Cys Ser Ile  Val Cys Leu Leu Ile  Thr Phe Phe Gln
```

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6245                6250                6255

ttc  att gac tgg atc ttt  gtg cgc atc gcc tac  ctg cgc cac cac      31022
Phe  Ile Asp Trp Ile Phe  Val Arg Ile Ala Tyr  Leu Arg His His
6260                6265                6270

ccc  cag tac cgc gac cag  cga gtg gcg cga ctg  ctc agg ctc ctc      31067
Pro  Gln Tyr Arg Asp Gln  Arg Val Ala Arg Leu  Leu Arg Leu Leu
6275                6280                6285

tgataagc atg  cgg gct ctg cta ctt  ctc gcg ctt ctg ctg  tta gtg     31114
         Met  Arg Ala Leu Leu Leu  Leu Ala Leu Leu Leu  Leu Val
          6290                6295                6300

ctc ccc cgt  ccc gtc gac ccc cgg  tcc ccc act cag tcc  ccc gag      31159
Leu Pro Arg  Pro Val Asp Pro Arg  Ser Pro Thr Gln Ser  Pro Glu
        6305                6310                6315

gag gtc cgc  aaa tgc aaa ttc caa  gaa ccc tgg aaa ttc  ctc aaa      31204
Glu Val Arg  Lys Cys Lys Phe Gln  Glu Pro Trp Lys Phe  Leu Lys
        6320                6325                6330

tgc tac cgc  caa aaa tca gac atg  cat ccc agc tgg atc  atg atc      31249
Cys Tyr Arg  Gln Lys Ser Asp Met  His Pro Ser Trp Ile  Met Ile
        6335                6340                6345

att ggg atc  gtg aac att ctg gcc  tgc acc ctc atc tcc  ttt gtg      31294
Ile Gly Ile  Val Asn Ile Leu Ala  Cys Thr Leu Ile Ser  Phe Val
        6350                6355                6360

att tac ccc  tgc ttt gac ttt ggt  tgg aac tcg cca gag  gcg ctc      31339
Ile Tyr Pro  Cys Phe Asp Phe Gly  Trp Asn Ser Pro Glu  Ala Leu
        6365                6370                6375

tat ctc ccg  cct gaa cct gac aca  cca cca cag cag caa  cct cag      31384
Tyr Leu Pro  Pro Glu Pro Asp Thr  Pro Pro Gln Gln Gln  Pro Gln
        6380                6385                6390

gca cac gca  cta cca cca cca cag  cct agg cca caa tac  atg ccc      31429
Ala His Ala  Leu Pro Pro Pro Gln  Pro Arg Pro Gln Tyr  Met Pro
        6395                6400                6405

ata tta gac  tat gag gcc gag cca  cag cga ccc atg ctc  ccc gct      31474
Ile Leu Asp  Tyr Glu Ala Glu Pro  Gln Arg Pro Met Leu  Pro Ala
        6410                6415                6420

att agt tac  ttc aat cta acc ggc  gga gat gac tgacccactg            31517
Ile Ser Tyr  Phe Asn Leu Thr Gly  Gly Asp Asp
        6425                6430

gccaacaaca acgtcaacga ccttctcctg gacatggacg gccgcgcctc ggagcagcga   31577

ctcgcccaac ttcgcattcg ccagcagcag gagagagccg tcaaggagct gcaggacggc   31637

atagccatcc accagtgcaa gaaaggcatc ttctgcctgg tgaaacaggc caagatctcc   31697

tacgaggtca cccagaccga ccatcgcctc tcctacgagc tcctgcagca gcgccagaag   31757

ttcacctgcc tggtcggagt caaccccatc gtcatcaccc agcagtcggg cgataccaag   31817
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gggtgcatcc actgctcctg cgactccccc gactgcgtcc acactctgat caagaccctc    31877

tgcggcctcc gcgacctcct ccccatgaac taatcacccc cttatccagt gaaataaaga    31937

tcatattgat gatgatttaa ataaaaaata atcatttgat ttgaaaataa agatacaatc    31997

atattgatga tttgagttta acaaaaataa agaatcactt acttgaaatc tgataccagg    32057

tctctgtcca tgttttctgc caacaccacc tcactcccct cttcccagct ctggtactgc    32117

aggccccggc gggctgcaaa cttcctccac acgctgaagg ggatgtcaaa ttcctcctgt    32177

ccctcaatct tcattttatc ttctatcag atg tcc  aaa aag cgc gtc cgg  gtg    32230
                               Met Ser  Lys Lys Arg Val Arg  Val
                                   6435                 6440

gat gat gac ttc  gac ccc gtc tac ccc  tac gat gca gac aac  gca      32275
Asp Asp Asp Phe  Asp Pro Val Tyr Pro  Tyr Asp Ala Asp Asn  Ala
            6445                 6450                 6455

ccg acc gtg ccc  ttc atc aac ccc ccc  ttc gtc tct tca gat  gga      32320
Pro Thr Val Pro  Phe Ile Asn Pro Pro  Phe Val Ser Ser Asp  Gly
            6460                 6465                 6470

ttc caa gag aag  ccc ctg ggg gtg ctg  tcc ctg cgc ctg gcc  gac      32365
Phe Gln Glu Lys  Pro Leu Gly Val Leu  Ser Leu Arg Leu Ala  Asp
            6475                 6480                 6485

ccc gtc acc acc  aag aac ggg gct gtc  acc ctc aag ctg ggg  gag      32410
Pro Val Thr Thr  Lys Asn Gly Ala Val  Thr Leu Lys Leu Gly  Glu
            6490                 6495                 6500

ggg gtg gac ctc  gac gac tcg gga aaa  ctc atc tcc aaa aat  gcc      32455
Gly Val Asp Leu  Asp Asp Ser Gly Lys  Leu Ile Ser Lys Asn  Ala
            6505                 6510                 6515

acc aag gcc act  gcc cct ctc agt att  tcc aac agc acc att  tcc      32500
Thr Lys Ala Thr  Ala Pro Leu Ser Ile  Ser Asn Ser Thr Ile  Ser
            6520                 6525                 6530

ctt aac atg gct  gcc cct ttt tac aac  aac aat gga acg tta  agt      32545
Leu Asn Met Ala  Ala Pro Phe Tyr Asn  Asn Asn Gly Thr Leu  Ser
            6535                 6540                 6545

ctc aat gtt tct  aca cca tta gca gta  ttt ccc act ttt aac  act      32590
Leu Asn Val Ser  Thr Pro Leu Ala Val  Phe Pro Thr Phe Asn  Thr
            6550                 6555                 6560

tta ggt atc agt  ctt ggc aac ggt ctt  caa act tct aat aag  ttg      32635
Leu Gly Ile Ser  Leu Gly Asn Gly Leu  Gln Thr Ser Asn Lys  Leu
            6565                 6570                 6575

ctg act gta cag  tta act cat cct ctt  aca ttc agc tca aat  agc      32680
Leu Thr Val Gln  Leu Thr His Pro Leu  Thr Phe Ser Ser Asn  Ser
            6580                 6585                 6590

atc aca gta aaa  aca gac aaa gga ctc  tat att aat tct agt  gga      32725
Ile Thr Val Lys  Thr Asp Lys Gly Leu  Tyr Ile Asn Ser Ser  Gly
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            6595                6600                6605

aac aga ggg ctt  gag gct aac ata agc  cta aaa aga gga ctg  att       32770
Asn Arg Gly Leu  Glu Ala Asn Ile Ser  Leu Lys Arg Gly Leu  Ile
            6610                6615                6620

ttt gat ggt aat  gct att gca aca tac  ctt gga agt ggt tta  gac       32815
Phe Asp Gly Asn  Ala Ile Ala Thr Tyr  Leu Gly Ser Gly Leu  Asp
            6625                6630                6635

tat gga tcc tat  gat agc gat gga aaa  aca aga ccc atc atc  acc       32860
Tyr Gly Ser Tyr  Asp Ser Asp Gly Lys  Thr Arg Pro Ile Ile  Thr
            6640                6645                6650

aaa att gga gca  ggt ttg aat ttt gat  gct aat aaa gcc atg  gct       32905
Lys Ile Gly Ala  Gly Leu Asn Phe Asp  Ala Asn Lys Ala Met  Ala
            6655                6660                6665

gtg aag cta ggc  aca ggt tta agt ttt  gac tct gcc ggt gcc  tta       32950
Val Lys Leu Gly  Thr Gly Leu Ser Phe  Asp Ser Ala Gly Ala  Leu
            6670                6675                6680

aca gct gga aac  aaa gag gat gac aag  cta aca ctt tgg act  aca       32995
Thr Ala Gly Asn  Lys Glu Asp Asp Lys  Leu Thr Leu Trp Thr  Thr
            6685                6690                6695

cct gac ccc agc  cct aat tgt caa tta  ctt tca gac aga gat  gcc       33040
Pro Asp Pro Ser  Pro Asn Cys Gln Leu  Leu Ser Asp Arg Asp  Ala
            6700                6705                6710

aaa ttt acc cta  tgt ctt aca aaa tgc  ggt agt caa ata cta  ggc       33085
Lys Phe Thr Leu  Cys Leu Thr Lys Cys  Gly Ser Gln Ile Leu  Gly
            6715                6720                6725

act gtt gca gta  gct gct gtt act gta  ggt tca gca cta aat  cca       33130
Thr Val Ala Val  Ala Ala Val Thr Val  Gly Ser Ala Leu Asn  Pro
            6730                6735                6740

att aat gac aca  gta aaa agc gcc ata  gta ttc ctt aga ttt  gat       33175
Ile Asn Asp Thr  Val Lys Ser Ala Ile  Val Phe Leu Arg Phe  Asp
            6745                6750                6755

tcc aat ggt gtg  ctc atg tca aac tca  tca atg gta ggc gat  tac       33220
Ser Asn Gly Val  Leu Met Ser Asn Ser  Ser Met Val Gly Asp  Tyr
            6760                6765                6770

tgg aac ttt agg  gaa gga cag acc acc  caa agt gtg gcc tat  aca       33265
Trp Asn Phe Arg  Glu Gly Gln Thr Thr  Gln Ser Val Ala Tyr  Thr
            6775                6780                6785

aat gct gtg gga  ttt atg ccc aat cta  ggt gca tat cct aaa  acc       33310
Asn Ala Val Gly  Phe Met Pro Asn Leu  Gly Ala Tyr Pro Lys  Thr
            6790                6795                6800

caa agc aaa aca  cca aaa aat agt ata  gtt agt cag gta tat  tta       33355
Gln Ser Lys Thr  Pro Lys Asn Ser Ile  Val Ser Gln Val Tyr  Leu
            6805                6810                6815

aat gga gaa acc  act atg cca atg aca  cta aca ata act ttc  aat       33400
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Asn Gly Glu Thr  Thr Met Pro Met Thr  Leu Thr Ile Thr Phe  Asn
            6820                6825                6830

ggc act gat gaa  aaa gat aca aca cct  gtc agc act tac tct  atg       33445
Gly Thr Asp Glu  Lys Asp Thr Thr Pro  Val Ser Thr Tyr Ser  Met
            6835                6840                6845

act ttt aca tgg  cag tgg act gga gac  tat aag gac aag aat  att       33490
Thr Phe Thr Trp  Gln Trp Thr Gly Asp  Tyr Lys Asp Lys Asn  Ile
            6850                6855                6860

acc ttt gct acc  aac tca ttc tct ttc  tcc tac atg gcc caa  gaa       33535
Thr Phe Ala Thr  Asn Ser Phe Ser Phe  Ser Tyr Met Ala Gln  Glu
            6865                6870                6875

taaaccctgc atgccaaccc catccccacc gctctatgga aaactctgaa gcagaaaaat    33595

aaagttcaag tgtttttatt gattcaacag ttttcacagg attcgagtag ttattttccc    33655

tcctccctcc caactcatgg aatacaccac cctctcccca cgcacagcct taaacatctg    33715

aatgccattg gtaatggaca tggttttggt ctccacgttc cacacagttt cagagcgagc    33775

cagtctcggg tcggtcaggg agatgaaacc ctccgggcac tcccgcatct gcacctcaca    33835

gctcaacagc tgaggattgt cctcggtggt cgggatcacg gttatctgga agaagcagaa    33895

gagcggcggt gggaatcata gtccgcgaac gggatcggtc ggtggtgccg catcaggccc    33955

cgcagcagtc gctgccgccg ccgctccgtc aagctgctgc tcagggggtc cgggtccagt    34015

gactccctca gcatgatgcc cacggccctc agcatcagtc gtctggtgcg gcgggcgcag    34075

cagcgcatgc ggatctcgct caggtcactg cagtacgtgc aacacaggac caccaggttg    34135

ttcaacagtc catagttcaa cacgctccag ccgaaactca tcgcgggaag gatgctaccc    34195

acgtggccgt cgtaccagat cctcaggtaa atcaagtggc gctccctcca gaagacgctg    34255

cccatgtaca tgatctcctt gggcatgtgg cggttcacca cctcccggta ccacatcacc    34315

ctctggttga acatgcagcc ccggatgatc ctgcggaacc acagggccag caccgccccg    34375

cccgccatgc agcgaagaga ccccggatcc cggcaatgac aatggaggac ccaccgctcg    34435

tacccgtgga tcatctggga gctgaacaag tctatgttgg cacagcacag gcacacgctc    34495

atgcatctct tcagcactct cagctcctcg ggggtcaaaa ccatatccca gggcacgggg    34555

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gctgatcgtg ttctcgaccg tgtcatgatg cagttgcttt cggacatttt cgtacttgct    34795

gtagcagaac ctggtccggg cgctgcacac cgatcgccgg cggcggtctc ggcgcttgga    34855
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acgctcggtg ttaaagttgt aaaacagcca ctctctcaga ccgtgcagca gatctagggc 34915

ctcaggagtg atgaagatcc catcatgcct gatagctctg atcacatcga ccaccgtgga 34975

atgggccagg cccagccaga tgatgcaatt ttgttgggtt tcggtgacgg cgggggaggg 35035

aagaacagga agaaccatga ttaactttta atccaaacgg tctcggagca cttcaaaatg 35095

aaggtcacgg agatggcacc tctcgccccc gctgtgttgg tggaaaataa cagccaggtc 35155

aaaggtgata cggttctcga gatgttccac ggtggcttcc agcaaagcct ccacgcgcac 35215

atccagaaac aagacaatag cgaaagcggg agggttctct aattcctcaa tcatcatgtt 35275

acactcctgc accatcccca gataattttc atttttccag ccttgaatga ttcgaactag 35335

ttcctgaggt aaatccaagc cagccatgat aaagagctcg cgcagagcgc cctccaccgg 35395

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tgtaagtact ctttcatatc ctctccgaaa tttttagcca taggaccgcc aggaatgaga 35575

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aatcgttctc tccagcacca ggcaggccac ggggtctccg gcgcgaccct cgtaaaaatt 35935

gtcgctatga ttgaaaacca tcacagagag acgttcccgg tggccggcgt gaatgattcg 35995

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cttcctcaaa cgcccaaact gtcgtcattt ccgggttccc acgctacgtc atcagaattc 36475

gactttcaaa ttccgtcgac cgttaaacac gtcacccgcc ccgcccctaa cggtcgcctt 36535

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<210> 131
<211> 504
<212> PRT
<213> Simian adenovirus 25.2

<400> 131

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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 Leu 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
```

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        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
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<210> 132
<211> 142
<212> PRT
<213> Simian adenovirus 25.2

<400> 132

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Met Ser Gly Ser Ala Ser Phe Glu Gly Gly Val Phe Ser Pro Tyr Leu
1               5                   10                  15

Thr Gly Arg Leu Pro Ser Trp Ala Gly Val Arg Gln Asn Val Met Gly
            20                  25                  30

Ser Thr Val Asp Gly Arg Pro Val Gln Pro Ala Asn Ser Ser Thr Leu
        35                  40                  45

Thr Tyr Ala Thr Leu Ser Ser Ser Ser Val Asp Ala Ala Ala Ala Ala
    50                  55                  60

Ala Ala Ala Ser Ala Ala Ser Ala Val Arg Gly Met Ala Leu Gly Ala
65                  70                  75                  80

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

Ala Ser Leu Asn Glu Glu Lys Leu Leu Leu Leu Met Ala Gln Leu Glu
            100                 105                 110

Ala Leu Thr Gln Arg Leu Gly Glu Leu Thr Gln Gln Val Ala Gln Leu
        115                 120                 125

Gln Ala Glu Thr Arg Ala Ala Val Ala Thr Val Lys Thr Lys
```

130 135 140

<210> 133
<211> 395
<212> PRT
<213> Simian adenovirus 25.2

<400> 133

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

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

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

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

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

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

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

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

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

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

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

Asp Leu Leu Glu Ala Ile Val Gln Asn Pro Thr Ser Lys Pro Leu Thr

```
        195                 200                 205

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

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

Asp Leu Val Asn Ile Leu Gln Ser Ile Val Val Gln Glu Arg Gly Leu
                245                 250                 255

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

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

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

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

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

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

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

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

Glu Val Asp Glu Glu Gly Glu Tyr Leu Glu Asp
385                 390                 395


<210>  134
<211>  583
<212>  PRT
<213>  Simian adenovirus 25.2

<400>  134

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 Asp 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

Glu 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 Ala Leu Ser Thr 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 Arg 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 Ala Thr Thr Val Trp Lys Lys
           420                 425                 430

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

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

Phe Ser Leu Asn Ser Ile Arg Ser Ser Glu Leu Gly Arg Ile Thr Arg
465                 470                 475                 480
```

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

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

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

Pro Arg Ala Ser Ser Ala Thr Arg Arg Arg Gln Arg His Asp Arg Gln
    530                 535                 540

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

Leu Asp Leu Gly Gly Ser Gly Gly Gly Asn Pro Phe Ala His Leu Arg
                565                 570                 575

Pro Arg Ile Gly Arg Leu Met
            580
```

<210> 135
<211> 531
<212> PRT
<213> Simian adenovirus 25.2

<400> 135

```
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 Gly Asp Asp 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 Asp Ala Tyr Glu Lys Ser Lys Glu Asp Ser Ala Ala
    290                 295                 300

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

Asn Phe Ala Ser Ala Ala Ala Val Ala Glu Ala Ala Glu Thr Glu Ser
                325                 330                 335
```

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

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

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

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

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

Val Ser Asn Tyr Pro Val Val Gly Ala Glu Leu Leu Pro Val Tyr Ser
            420                 425                 430

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

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

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

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

Gly Val Gln Arg Val Thr Val Thr Asp Ala Arg Arg Arg Thr Cys Pro
            500                 505                 510

Tyr Val Tyr Lys Ala Leu Gly Val Val Ala Pro Arg Val Leu Ser Ser
        515                 520                 525

Arg Thr Phe
    530
```

<210> 136
<211> 194
<212> PRT
<213> Simian adenovirus 25.2

<400> 136

```
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 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> 137
<211> 348
<212> PRT
<213> Simian adenovirus 25.2

<400> 137

```
Met Ser Lys Arg Lys Tyr 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

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

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

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

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

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

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

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

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

Phe Lys Arg Glu Gly 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 Glu 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 Pro Thr Thr Thr Thr
245 250 255

Arg Arg Arg Arg Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn Tyr
260 265 270

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

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

Arg Arg Arg Arg Arg His Thr Arg Arg Ser Ser 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> 138
<211> 77
<212> PRT
<213> Simian adenovirus 25.2

<400> 138

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> 139

<211> 244
<212> PRT
<213> Simian adenovirus 25.2

<400> 139

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 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 Thr 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> 140
<211> 933
<212> PRT
<213> Simian adenovirus 25.2

<400> 140

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 Thr Cys Gln Trp Thr Tyr Lys Ala Asp Gly Glu Thr Ala
130 135 140

Thr Glu Lys Thr Tyr Thr Tyr Gly Asn Ala Pro Val Gln Gly Ile Asn
145 150 155 160

Ile Thr Lys Asp Gly Ile Gln Leu Gly Thr Asp Thr Asp Asp Gln Pro

```
                165                 170                 175

Ile Tyr Ala Asp Glu Thr Tyr Gln Pro Glu Pro Gln Val Gly Asp Ala
            180                 185                 190

Glu Trp His Asp Ile Thr Gly Thr Asp Glu Lys Tyr Gly Gly Arg Ala
        195                 200                 205

Leu Lys Pro Asp Thr Lys Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys
    210                 215                 220

Pro Thr Asn Lys Glu Gly Gly Gln Ala Asn Val Lys Thr Gly Thr Gly
225                 230                 235                 240

Thr Thr Lys Glu Tyr Asp Ile Asp Met Ala Phe Phe Asp Asn Arg Ser
                245                 250                 255

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

Val Asp Leu Glu Thr Pro Asp Thr His Ile Val Tyr Lys Ala Gly Thr
        275                 280                 285

Asp Asp Ser Ser Ser Ser Ile Asn Leu Gly Gln Gln Ala Met Pro Asn
    290                 295                 300

Arg Pro Asn Tyr Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr
305                 310                 315                 320

Tyr Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln
                325                 330                 335

Leu Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr
            340                 345                 350

Gln Leu Leu Leu Asp Ser Leu Gly Asp Arg Thr Arg Tyr Phe Ser Met
        355                 360                 365

Trp Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu
    370                 375                 380

Asn His Gly Val Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asp
385                 390                 395                 400
```

```
Ala Val Gly Lys Thr Asp Thr Tyr Gln Gly Ile Lys Ala Asn Gly Thr
                405                 410                 415

Asp Gln Thr Thr Trp Thr Lys Asp Asp Ser Val Asn Asp Ala Asn Glu
            420                 425                 430

Ile Gly Lys Gly Asn Pro Phe Ala Met Glu Ile Asn Ile Gln Ala Asn
        435                 440                 445

Leu Trp Arg Asn Phe Leu Tyr Ala Asn Val Ala Leu Tyr Leu Pro Asp
    450                 455                 460

Ser Tyr Lys Tyr Thr Pro Ala Asn Val Thr Leu Pro Ala Asn Thr Asn
465                 470                 475                 480

Thr Tyr Asp Tyr Met Asn Gly Arg Val Val Ala Pro Ser Leu Val Asp
                485                 490                 495

Ala Tyr Ile Asn Ile Gly Ala Arg Trp Ser Leu Asp Pro Met Asp Asn
            500                 505                 510

Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu Arg Tyr Arg Ser
        515                 520                 525

Met Leu Leu Gly Asn Gly Arg Tyr Val Pro Phe His Ile Gln Val Pro
    530                 535                 540

Gln Lys Phe Phe Ala Ile Lys Ser Leu Leu Leu Leu Pro Gly Ser Tyr
545                 550                 555                 560

Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met Ile Leu Gln Ser
                565                 570                 575

Ser Leu Gly Asn Asp Leu Arg Thr Asp Gly Ala Ser Ile Ser Phe Thr
            580                 585                 590

Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala His Asn Thr Ala
        595                 600                 605

Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn Asp Gln Ser Phe
    610                 615                 620

Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro Ile Pro Ala Asn
625                 630                 635                 640
```

```
Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn Trp Ala Ala Phe
                645                 650                 655

Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu Thr Pro Ser Leu
            660                 665                 670

Gly Ser Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly Ser Ile Pro Tyr
        675                 680                 685

Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys Lys Val Ser Ile
    690                 695                 700

Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp Arg Leu Leu Thr
705                 710                 715                 720

Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp Gly Glu Gly Tyr Asn
                725                 730                 735

Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu Val Gln Met Leu
            740                 745                 750

Ala His Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Val Pro Glu Gly Tyr
        755                 760                 765

Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln Pro Met Ser Arg
    770                 775                 780

Gln Val Val Asp Glu Val Asn Tyr Lys Asp Tyr Gln Ala Val Thr Leu
785                 790                 795                 800

Ala Tyr Gln His Asn Asn Ser Gly Phe Val Gly Tyr Leu Ala Pro Thr
                805                 810                 815

Met Arg Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro Tyr Pro Leu Ile
            820                 825                 830

Gly Lys Ser Ala Val Ala Ser Val Thr Gln Lys Lys Phe Leu Cys Asp
        835                 840                 845

Arg Val Met Trp Arg Ile Pro Phe Ser Ser Asn Phe Met Ser Met Gly
    850                 855                 860

Ala Leu Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala Asn Ser Ala His
865                 870                 875                 880
```

```
Ala Leu Asp Met Asn Phe Glu Val Asp Pro Met Asp Glu Ser Thr Leu
                885                 890                 895

Leu Tyr Val Val Phe Glu Val Phe Asp Val Val Arg Val His Gln Pro
            900                 905                 910

His Arg Gly Val Ile Glu Ala Val Tyr Leu Arg Thr Pro Phe Ser Ala
        915                 920                 925

Gly Asn Ala Thr Thr
    930
```

<210> 141
<211> 208
<212> PRT
<213> Simian adenovirus 25.2

<400> 141

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

Arg Asp Leu Gly Cys Gly Pro Cys 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 Thr His 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 Thr 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> 142
<211> 797
<212> PRT
<213> Simian adenovirus 25.2

<400> 142

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

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

Gly Asp Tyr Leu Ser Gly Ala Glu Asp Val Leu Ile Lys His Leu Ala
            100                 105                 110

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

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

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

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

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

Arg Ala Asn Arg Thr Arg Ala Asp Ala Leu Leu Asn Leu Gly Pro Gly
        195                 200                 205

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

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

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

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

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

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

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

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

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

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

Val Glu Glu Asn Leu His Tyr Leu Phe Arg His Gly Phe Val Arg Gln
```

```
    370                 375                 380

Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr Met
385                 390                 395                 400

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

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

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

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

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

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

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

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

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

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

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

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

Gln Leu Leu Ser Glu Thr Gln Ile Ile Gly Thr Phe Glu Leu Gln Gly
        595                 600                 605
```

```
Pro Gly Glu Gly Lys Gly Gly Leu Lys Leu Thr Pro Gly Leu Trp Thr
    610                 615                 620

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

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

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

Gln Lys Ser Arg Gln Glu Phe Leu Leu Lys Lys Gly His Gly Val Tyr
        675                 680                 685

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

Ala Pro Arg Lys Gln Gln Glu Ala Glu Ser Gly Ala Ala 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 Gly Gly Arg Arg Gly Gly Gly Gly Gly Arg Gly Arg Ser Ser Arg
        755                 760                 765

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

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


<210>  143
<211>  227
<212>  PRT
<213>  Simian adenovirus 25.2

<400>  143

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> 144
<211> 106
<212> PRT

<213> Simian adenovirus 25.2

<400> 144

```
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 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 Glu Gln Gly Gln Thr Leu Leu
65                  70                  75                  80

Thr Leu Tyr Cys Ile Cys Asn Arg Pro Gly Leu His Glu Ser Leu Cys
                85                  90                  95

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

<210> 145
<211> 178
<212> PRT
<213> Simian adenovirus 25.2

<400> 145

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

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

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

Phe Gln Pro Asp Gly Asn Arg Cys Thr Val Leu Ile Lys Cys Gly Trp
    50                  55                  60

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

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

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

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

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

Tyr Ser Leu Cys Thr Ala Leu Ile Thr Ala Ile Val Cys Leu Ser Ile
145                 150                 155                 160

His Met Leu Ile Ala Ile Arg Pro Arg Asn Asn Ala Glu Lys Glu Lys
                165                 170                 175

Gln Pro
```

<210> 146
<211> 242
<212> PRT
<213> Simian adenovirus 25.2

<400> 146

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

Ser Ser Thr Phe Asp His Lys Asn Leu Thr Val Phe Val Gly Ser Asp
            20                  25                  30

Val Thr Leu Pro Gly His Gln Ser His Gln Arg Val Ser Trp Tyr His
        35                  40                  45

Phe Asn Lys Gln Asn Thr Ala Tyr Thr Leu Cys Lys Gly His Gln Gln
    50                  55                  60

Ala Thr Tyr Arg Ser Gly Leu Tyr Tyr Arg Cys Asn Asn Asn Asn Leu
65                  70                  75                  80

Thr Leu Leu Ser Val Asn Ala Asn Tyr Ser Gly Thr Tyr Tyr Gly Thr
                85                  90                  95
```

```
Asn Phe Asn Thr Lys Gln Asp Thr Tyr Tyr Ser Val Lys Val Leu Asn
            100                 105                 110

Pro Thr Ser Pro Arg Thr Thr Thr Lys Pro Thr Ala Thr Thr Thr Thr
        115                 120                 125

Thr Ala Lys Pro Thr Lys Pro Lys Thr Thr Lys Lys Thr Thr Val Lys
    130                 135                 140

Thr Thr Thr Thr Arg Thr Thr Thr Thr Thr Glu Thr Thr Thr Ser Thr
145                 150                 155                 160

Leu Ala Ala Thr Thr His Thr His Ile Glu Leu Thr Leu Gln Thr Thr
                165                 170                 175

Asn Asp Leu Ile Ala Leu Leu Gln Lys Gly Asp Asn Ser Thr Thr Ser
            180                 185                 190

Asp Glu Glu Ile Pro Lys Ser Met Ile Gly Ile Ile Val Ala Val Val
        195                 200                 205

Val Cys Met Leu Ile Ile Ala Leu Cys Met Val Tyr Tyr Ala Phe Cys
    210                 215                 220

Tyr Arg Lys His Arg Leu Asn Asp Lys Leu Glu His Leu Leu Ser Val
225                 230                 235                 240

Glu Phe
```

<210> 147
<211> 202
<212> PRT
<213> Simian adenovirus 25.2

<400> 147

```
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 Thr Asp Ser Glu Gln Thr Glu Leu Cys Asn Ala Met Arg Gly Gln
    50                  55                  60

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

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

Asp Asp Ala Asp Ser Met Ile Phe Tyr Lys Val Thr 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 Pro Glu Ala Ala Gly Glu Leu Ala Leu Gln Val Gln Glu Asp
    130                 135                 140

Ser Leu Met Ala Asn Thr Pro Thr Pro Asp His Arg Cys Pro Gly Leu
145                 150                 155                 160

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

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

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

<210> 148
<211> 287
<212> PRT
<213> Simian adenovirus 25.2

<400> 148

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

Phe Ser Ala Gly Phe Leu Lys Asn Leu Thr Ile Tyr Glu Gly Glu 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 Arg Trp Lys Asp Ile Cys Asp Trp Asn Val Thr Val Tyr
    50                  55                  60

Thr Cys Asn 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 Arg Asn Asn Gly Tyr Glu
                85                  90                  95

Ser His Asn Met Phe Ile Tyr Asp Val Thr Val Ile Arg Asn Glu Thr
            100                 105                 110

Ala Thr Thr Thr Thr Gln Met Gln Thr Thr Gln Thr Thr Thr Tyr Ser
        115                 120                 125

Thr Ser Asn Gln Pro Thr Thr Thr Thr Ala Ala Glu Val Ala Ser Ser
    130                 135                 140

Ser Gly Val Lys Val Ala Phe Leu Leu Leu Pro Pro Ser Ser Ser Pro
145                 150                 155                 160

Thr Ala Ser Thr Asn Glu Gln Thr Thr Glu Phe Leu Ser Thr Val Glu
                165                 170                 175

Ser His Thr Thr Ala Thr Ser Ser Ala Phe Ser Ser Thr Ala Asn Leu
            180                 185                 190

Ser Ser Leu Ser Ser Thr Pro Ile Ser Ser Ala Thr Thr Thr Pro Ser
        195                 200                 205

Pro Ala Pro Leu Pro Thr Pro Leu Lys Gln Thr Glu Asp Ser Gly Met
    210                 215                 220

Gln Trp Gln Ile Thr Leu Leu Ile Val Ile Gly Leu Val Ile Leu Ala
225                 230                 235                 240

Val Leu Leu Tyr Tyr Ile Phe Cys Arg Arg Ile Pro Asn Ala His Arg
                245                 250                 255

Lys Pro Val Tyr Lys Pro Ile Ile Val Gly Gln Pro Glu Pro Leu Gln
            260                 265                 270

Val Glu Gly Gly Leu Arg Asn Leu Leu Phe Ser Phe Thr Val Trp
        275                 280                 285
```

<210> 149
<211> 91
<212> PRT
<213> Simian adenovirus 25.2

<400> 149

Met Ile Pro Arg Gln Phe Leu Ile Thr Ile Leu Ile Cys Leu Leu Gln
1 5 10 15

Val Cys Ala Thr Leu Ala Leu Val Ala Asn Ala Ser Pro Asp Cys Ile
20 25 30

Gly Pro Phe Ala Ser Tyr Val Leu Phe Ala Phe Ile Thr Cys Ile Cys
35 40 45

Cys Cys Ser Ile Val Cys Leu Leu Ile Thr Phe Phe Gln Phe Ile Asp
50 55 60

Trp Ile Phe Val Arg Ile Ala Tyr Leu Arg His His Pro Gln Tyr Arg
65 70 75 80

Asp Gln Arg Val Ala Arg Leu Leu Arg Leu Leu
85 90

<210> 150
<211> 144
<212> PRT
<213> Simian adenovirus 25.2

<400> 150

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 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 Gln Pro Gln Ala His Ala Leu 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> 151
<211> 443
<212> PRT
<213> Simian adenovirus 25.2

<400> 151

```
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 Ala Val 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 Ala Ala Pro Phe Tyr Asn Asn Asn Gly Thr Leu
            100                 105                 110

Ser Leu Asn Val Ser Thr Pro Leu Ala Val Phe Pro Thr Phe Asn Thr
        115                 120                 125

Leu Gly Ile Ser Leu Gly Asn Gly Leu Gln Thr Ser Asn Lys Leu Leu
    130                 135                 140
```

```
Thr Val Gln Leu Thr His Pro Leu Thr Phe Ser Ser Asn Ser Ile Thr
145                 150                 155                 160

Val Lys Thr Asp Lys Gly Leu Tyr Ile Asn Ser Ser Gly Asn Arg Gly
                165                 170                 175

Leu Glu Ala Asn Ile Ser Leu Lys Arg Gly Leu Ile Phe Asp Gly Asn
            180                 185                 190

Ala Ile Ala Thr Tyr Leu Gly Ser Gly Leu Asp Tyr Gly Ser Tyr Asp
        195                 200                 205

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

Asn Phe Asp Ala Asn Lys Ala Met Ala Val Lys Leu Gly Thr Gly Leu
225                 230                 235                 240

Ser Phe Asp Ser Ala Gly Ala Leu Thr Ala Gly Asn Lys Glu Asp Asp
                245                 250                 255

Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro Asn Cys Gln Leu
            260                 265                 270

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

Ser Gln Ile Leu Gly Thr Val Ala Val Ala Ala Val Thr Val Gly Ser
    290                 295                 300

Ala Leu Asn Pro Ile Asn Asp Thr Val Lys Ser Ala Ile Val Phe Leu
305                 310                 315                 320

Arg Phe Asp Ser Asn Gly Val Leu Met Ser Asn Ser Ser Met Val Gly
                325                 330                 335

Asp Tyr Trp Asn Phe Arg Glu Gly Gln Thr Thr Gln Ser Val Ala Tyr
            340                 345                 350

Thr Asn Ala Val Gly Phe Met Pro Asn Leu Gly Ala Tyr Pro Lys Thr
        355                 360                 365

Gln Ser Lys Thr Pro Lys Asn Ser Ile Val Ser Gln Val Tyr Leu Asn
    370                 375                 380
```

```
Gly Glu Thr Thr Met Pro Met Thr Leu Thr Ile Thr Phe Asn Gly Thr
385                 390                 395                 400


Asp Glu Lys Asp Thr Thr Pro Val Ser Thr Tyr Ser Met Thr Phe Thr
                405                 410                 415


Trp Gln Trp Thr Gly Asp Tyr Lys Asp Lys Asn Ile Thr Phe Ala Thr
            420                 425                 430


Asn Ser Phe Ser Phe Ser Tyr Met Ala Gln Glu
        435                 440


<210>  152
<211>  590
<212>  DNA
<213>  Simian adenovirus 25.2


<220>
<221>  CDS
<222>  (10)..(585)
<223>  label=Elb\19K

<400>  152
gcaggactc atg gag atc tgg acg gtc ttg gaa gac ttt cat cag act aga       51
          Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Gln Thr Arg
          1               5                   10

cag ctg cta gag aac tca tcg gag gaa gtc tct tac ctg tgg aga ttt         99
Gln Leu Leu Glu Asn Ser Ser Glu Glu Val Ser Tyr Leu Trp Arg Phe
15                  20                  25                  30

tgc ttc ggt ggg gct cta gct aag cta gtc tat agg gcc aaa cag gat        147
Cys Phe Gly Gly Ala Leu Ala Lys Leu Val Tyr Arg Ala Lys Gln Asp
                35                  40                  45

tat aag gat caa ttt gag gat att ttg aga gag tgt cct ggt att ttt        195
Tyr Lys Asp Gln Phe Glu Asp Ile Leu Arg Glu Cys Pro Gly Ile Phe
            50                  55                  60

gac tct ctc aac ttg ggc cat cag tct cac ttt aac cag agt att ctg        243
Asp Ser Leu Asn Leu Gly His Gln Ser His Phe Asn Gln Ser Ile Leu
        65                  70                  75

aga gcc ctt gac ttt tct act cct ggc aga act acc gcc gcg gta gcc        291
Arg Ala Leu Asp Phe Ser Thr Pro Gly Arg Thr Thr Ala Ala Val Ala
    80                  85                  90

ttt ttt gcc ttt atc ctt gac aaa tgg agt caa gaa acc cat ttc agc        339
Phe Phe Ala Phe Ile Leu Asp Lys Trp Ser Gln Glu Thr His Phe Ser
95                  100                 105                 110

agg gat tac cgt ctg gac tgc tta gca gta gct ttg tgg aga aca tgg        387
Arg Asp Tyr Arg Leu Asp Cys Leu Ala Val Ala Leu Trp Arg Thr Trp
```

```
                115                 120                 125

agg tgc cag cgc ctg aat gca atc tcc ggc tac ttg cca gta cag ccg        435
Arg Cys Gln Arg Leu Asn Ala Ile Ser Gly Tyr Leu Pro Val Gln Pro
            130                 135                 140

gta gac acg ctg agg atc ctg agt ctc cag tca ccc cag gaa cac caa        483
Val Asp Thr Leu Arg Ile Leu Ser Leu Gln Ser Pro Gln Glu His Gln
        145                 150                 155

cgc cgc cag cag ccg cag cag gag cag cag caa gag gag gag gag gac        531
Arg Arg Gln Gln Pro Gln Gln Glu Gln Gln Gln Glu Glu Glu Glu Asp
    160                 165                 170

cga gaa gag aac ccg aga gcc ggt ctg gac cct ccg gtg gcg gag gag        579
Arg Glu Glu Asn Pro Arg Ala Gly Leu Asp Pro Pro Val Ala Glu Glu
175                 180                 185                 190

gag gag tagct                                                         590
Glu Glu
```

<210> 153
<211> 192
<212> PRT
<213> Simian adenovirus 25.2

<400> 153

```
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 Tyr 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 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>  154
<211>  6410
<212>  DNA
<213>  Simian adenovirus 25.2


<220>
<221>  CDS
<222>  (10)..(579)
<223>  label=22K

<220>
<221>  CDS
<222>  (1883)..(2509)
<223>  label=E3\CR1\alpha

<220>
<221>  CDS
<222>  (6003)..(6407)
<223>  label=E3\14.7K

<400>  154
tcccccagg atg ccc cga gga agc agc aag aag ctg aaa gtg gag ctg ccg       51
          Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro
          1               5                   10

ctg ccg ccg gag gat ttg gag gaa gac tgg gag agc agt cag gca gag         99
Leu Pro Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu
15                  20                  25                  30

gag atg gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa        147
Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
                35                  40                  45

gac agt ctg gag gag gaa gac gag gtg gag gag gag gca gag gaa gaa        195
Asp Ser Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu
            50                  55                  60

gca gcc gcc gcc aga ccg tcg tcc tcg gcg gag aaa gca agc agc acg        243
Ala Ala Ala Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr
```

```
        65                  70                  75

gat acc atc tcc gct ccg ggt cgg ggt cgc ggc ggc cgg gcc cac agt        291
Asp Thr Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser
    80                  85                  90

aga tgg gac gag acc ggg cgc ttc cca aac ccc acc acc cag acc ggt        339
Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly
95                  100                 105                 110

aag aag gag cgg cag gga tac aag tcc tgg cgg ggg cac aaa aac gcc        387
Lys Lys Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala
                115                 120                 125

atc gtc tcc tgc ttg caa gcc tgc ggg ggc aac atc tcc ttc acc cgg        435
Ile Val Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg
            130                 135                 140

cgc tac ctg ctc ttc cac cgc ggg gtg aac ttc ccc cgc aac atc ttg        483
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        531
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 agc agc agc agc agc agc        579
Ala Glu Thr Gln Gln Gln Gln Lys Thr Ser Ser Ser Ser Ser Ser Ser
175                 180                 185                 190

tagaaaatcc acagcggcgg cggcaggtgg actgaggatc gcggcgaacg agccggcgca      639

gacccgggag ctgaggaacc ggatctttcc caccctctat gccatcttcc agcagagtcg      699

ggggcaggag caggaactga aagtcaagaa ccgttctctg cgctcgctca cccgcagttg      759

tctgtatcac aagagcgaag accaacttca gcgcactctc gaggacgccg aggctctctt      819

caacaagtac tgcgcgctca ctcttaaaga gtagcccgcg cccgcccaca cacggaaaaa      879

ggcgggaatt acgtcaccac ctgcgccctt cgcccgacca tcatcatgag caaagagatt      939

cccacgcctt acatgtggag ctaccagccc cagatgggcc tggccgccgg cgccgcccag      999

gactactcca cccgcatgaa ctggctcagt gccgggcccg cgatgatctc acgggtgaat     1059

gacatccgcg cccaccgaaa ccagatactc ctagaacagt cagcaatcac cgccacgccc     1119

cgccatcacc ttaatccgcg taattggccc gccgccctgg tgtaccagga aattccccag     1179

cccacgaccg tactacttcc gcgagacgcc caggccgaag tccagctgac taactcaggt     1239

gtccagctgg ccggcggcgc cgccctgtgt cgtcaccgcc ccgctcaggg tataaagcgg     1299

ctggtgatcc gaggcagagg cacacagctc aacgacgagg tggtgagctc ttcgctgggt     1359

ctgcgacctg acggagtctt ccaactcgcc ggatcgggga gatcttcctt cacgcctcgt     1419

caggccgtcc tgactttgga gagttcgtcc tcgcagcccc gctcgggtgg catcggcact     1479
```

```
ctccagttcg tggaggagtt cactccctcg gtctacttca acccccttctc cggctccccc     1539

ggccactacc cggacgagtt catcccgaac ttcgacgcca tcagcgagtc ggtggacggc     1599

tacgattgaa tgtcccatgg tggcgcggct gacctagctc ggcttcgaca cctggaccac     1659

tgccgccgct tccgctgctt cgctcgggat ctcgccgagt ttgcctactt tgagctgccc     1719

gaggagcacc ctcagggccc ggcccacgga gtgcggatcg tcgtcgaagg gggcctcgac     1779

tcccacctgc ttcggatctt cagccagcga ccgatcctgg tcgagcgcga gcaaggacag     1839

acccttctga ccctgtactg catctgcaac cgccccggcc tgc atg aaa gtc ttt       1894
                                              Met Lys Val Phe

gtt gtc tgc tgt gta ctg agt ata ata aaa gct gaa atc agc gac tac       1942
Val Val Cys Cys Val Leu Ser Ile Ile Lys Ala Glu Ile Ser Asp Tyr
195                 200                 205                 210

tcc gga ctc gat tgt ggt gtt cct gct atc aac cgg tcc ctg ttc ttc       1990
Ser Gly Leu Asp Cys Gly Val Pro Ala Ile Asn Arg Ser Leu Phe Phe
                215                 220                 225

acc ggg aac gag acc gag ctt cag ctc cag tgt aag ccc cac aag aag       2038
Thr Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys Pro His Lys Lys
            230                 235                 240

tac ctc acc tgg ctg ttc cag ggc tct ccg atc gcc gtt gtc aac cac       2086
Tyr Leu Thr Trp Leu Phe Gln Gly Ser Pro Ile Ala Val Val Asn His
        245                 250                 255

tgc gac aac gac gga gtc ctg ctg agc ggc cct gcc aac ctt act ttt       2134
Cys Asp Asn Asp Gly Val Leu Leu Ser Gly Pro Ala Asn Leu Thr Phe
    260                 265                 270

tcc acc cgc aga agc aag ctc cag ctc ttc caa ccc ttc ctc ccc ggg       2182
Ser Thr Arg Arg Ser Lys Leu Gln Leu Phe Gln Pro Phe Leu Pro Gly
275                 280                 285                 290

acc tat cag tgc gtc tcg gga ccc tgc cat cac acc ttc cac ctg atc       2230
Thr Tyr Gln Cys Val Ser Gly Pro Cys His His Thr Phe His Leu Ile
                295                 300                 305

ccg aat acc aca gcg tcg ctc ccc gct act aac aac caa tct acc cac       2278
Pro Asn Thr Thr Ala Ser Leu Pro Ala Thr Asn Asn Gln Ser Thr His
            310                 315                 320

caa cgc cac cgt cgc gac ctt tcc tct gaa tct aat act acc acc cac       2326
Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn Thr Thr Thr His
        325                 330                 335

acc gga ggt gag ctc cga ggt cga cca acc tct ggg att tac tac ggc       2374
Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly Ile Tyr Tyr Gly
    340                 345                 350

ccc tgg gag gtg gtg ggg tta ata gcg cta ggc cta gtt gtg ggt ggg       2422
Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Val Gly Gly
```

```
355                 360                 365                 370

ctt ttg gct ctc tgc tac cta tac ctc cct tgc tgt tcg tac tta gtg       2470
Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys Ser Tyr Leu Val
                375                 380                 385

gtg ctg tgt tgc tgg ttt aag aaa tgg gga aga tca ccc tagtgagctg       2519
Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
            390                 395

cggtgtgccg gtggcggtgg tggtgctttc gattgtggga ctgggcggcg cggctgtagt     2579

gaaggaggag aaggccgatt cctgcttgca tttcaatccc gacaaatgcc agctgagttt     2639

tcagcccgat ggcaatcggt gcacggtgct gatcaagtgc ggatgggaat gcgagaacgt     2699

gagaatcgag tacaataaca agactcggaa caatactctc gcgtccgtgt ggcagcccgg     2759

ggaccccgag tggtacaccg tctctgtccc cggtgctgac ggctccccgc gcaccgtgaa     2819

taatactttc atttttgcac acatgtgcga cacggtcatg tggatgagca agcagtacga     2879

tatgtggccc cccacgaagg agaacatcgt ggtcttctcc atcgcttaca gcctgtgcac     2939

ggcgctaatc accgctatcg tgtgcctgag cattcacatg ctcatcgcta ttcgccccag     2999

aaataatgcc gagaaagaga aacagccata acacgttttt ttacacacct ttttcagacc     3059

atggcctctg ttactgccct aattattttt ttgggccttg tgggcactag cagcactttt     3119

gatcataaaa acttaactgt ttttgttggt tctgatgtta cactacccgg gcatcaatcg     3179

caccagaggg tttcatggta tcattttaat aaacagaaca cagcttatac actttgcaaa     3239

ggtcatcagc aagccacata tcgcagtggt ctttattaca gatgcaataa caataacctc     3299

acactactct cagttaatgc aaattattct ggcacatact atggaaccaa ttttaacaca     3359

aaacaggaca cttactatag tgtcaaagta ttgaatccaa cctctcctag aactaccact     3419

aagcctaccg ctaccaccac tactactgca aagcccacta aacctaaaac taccaagaaa     3479

accactgtga agactacaac aactagaacc accacaacta cagagaccac caccagcaca     3539

cttgctgcca ctacacacac acacattgag ctaaccttac agaccactaa tgatttgatc     3599

gccctgttgc aaaaggggga taacagcacc acttccgatg aggaaatacc caaatccatg     3659

attggcatta ttgttgctgt agtggtgtgc atgttgatca tcgccttgtg catggtgtac     3719

tatgccttct gctacagaaa gcacagactg aacgacaagc tggaacactt actaagtgtt     3779

gaattttaat tttttagaac catgaagatc ctaggccttt tagtttttc tatcattacc     3839

tctgctcttt gtgaatcggt ggataaagat gttactatta ccactggttc taactataca     3899

ctgaaagggc caccctcagg tatgctttcg tggtattgct attttggaac tgactctgaa     3959

caaactgagc tttgcaatgc aatgagaggc caaatgccaa cctcaaaaat taaacataaa     4019
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tgcaatggta ctgatttgat actcctcaat gtcacgaaag catatgctgg cagttacacc 4079

tgccctggag atgatgctga cagtatgatt ttttacaaag taactgttgt tgatcccact 4139

actccaccac ccaccaccac aactactcat accacacaca cagaacaaac accagaggca 4199

gcaggagagt tagccttgca ggttcaggaa gattccctta tggctaatac ccctacaccc 4259

gatcatcggt gtccggggtt gctcgtcagc ggcattgtcg gtgtgctttc gggattagca 4319

gtcataatca tctgcatgtt cattttgct tgctgctata gaaggcttta ccgacaaaaa 4379

tcagacccac tgctgaacct ctatgtttaa ttttttccag agccatgaag gcagttagag 4439

ttctagtttt ttgttctttg attggcattg tttttagtgc tgggtttttg aaaaatctta 4499

ccatttatga aggtgagaat gccactctag tgggcatcag tggtcaaaat gtcagctggc 4559

taaaatacca tctagatagg tggaaagaca tttgcgattg gaatgtcact gtgtatacat 4619

gtaatggagt taacctcacc attactaatg ccacccaaga tcaaaatggt aggtttaagg 4679

gtcagagttt cactagaaat aatgggtatg aatcccataa catgtttatc tatgacgtca 4739

ctgtcatcag aaatgagact gccaccacca ccacacagat gcaaaccaca cagacgacca 4799

catacagtac atcaaatcag cctaccacca ctacagcagc agaggttgcc agctcgtctg 4859

gtgtcaaagt ggcatttttg ttgttgcccc catctagcag tcccactgct agtaccaatg 4919

agcagactac tgaatttttg tccactgtcg agagccacac cacagctacc tcgagtgcct 4979

tctctagcac cgccaatctc tcctcgcttt cctctacacc aatcagttcc gctactacta 5039

ctcctagccc cgctcctctt cccactcccc tgaagcaaac tgaggacagc ggcatgcaat 5099

ggcagatcac cctgctcatt gtgatcgggt tggtcatcct ggccgtgttg ctctactaca 5159

tcttctgccg ccgcattccc aacgcgcacc gcaagccggt ctacaagccc atcattgtcg 5219

ggcagccaga gccgcttcag gtggaagggg gtctaaggaa tcttctcttc tcttttacag 5279

tatggtgatt gaactatgat tcctagacaa ttcttgatca ctattcttat ctgcctcctc 5339

caagtctgtg ccaccctcgc tctggtggcc aacgccagtc cagactgtat tgggcccttc 5399

gcctcctacg tgctctttgc cttcatcacc tgcatctgct gctgtagcat agtctgcctg 5459

cttatcacct tcttccagtt cattgactgg atctttgtgc gcatcgccta cctgcgccac 5519

caccccagt accgcgacca gcgagtggcg cgactgctca ggctcctctg ataagcatgc 5579

gggctctgct acttctcgcg cttctgctgt tagtgctccc ccgtcccgtc gacccccggt 5639

cccccactca gtcccccgag gaggtccgca aatgcaaatt ccaagaaccc tggaaattcc 5699

tcaaatgcta ccgccaaaaa tcagacatgc atcccagctg gatcatgatc attgggatcg 5759

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tgaacattct ggcctgcacc ctcatctcct ttgtgattta cccctgcttt gactttggtt     5819

ggaactcgcc agaggcgctc tatctcccgc ctgaacctga cacaccacca cagcagcaac     5879

ctcaggcaca cgcactacca ccaccacagc ctaggccaca atacatgccc atattagact     5939

atgaggccga gccacagcga cccatgctcc ccgctattag ttacttcaat ctaaccggcg     5999

gag atg act gac cca ctg gcc aac aac aac gtc aac gac ctt ctc ctg       6047
    Met Thr Asp Pro Leu Ala Asn Asn Asn Val Asn Asp Leu Leu Leu
    400                 405                 410

gac atg gac ggc cgc gcc tcg gag cag cga ctc gcc caa ctt cgc att       6095
Asp Met Asp Gly Arg Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile
415                 420                 425                 430

cgc cag cag cag gag aga gcc gtc aag gag ctg cag gac ggc ata gcc       6143
Arg Gln Gln Gln Glu Arg Ala Val Lys Glu Leu Gln Asp Gly Ile Ala
                435                 440                 445

atc cac cag tgc aag aaa ggc atc ttc tgc ctg gtg aaa cag gcc aag       6191
Ile His Gln Cys Lys Lys Gly Ile Phe Cys Leu Val Lys Gln Ala Lys
            450                 455                 460

atc tcc tac gag gtc acc cag acc gac cat cgc ctc tcc tac gag ctc       6239
Ile Ser Tyr Glu Val Thr Gln Thr Asp His Arg Leu Ser Tyr Glu Leu
        465                 470                 475

ctg cag cag cgc cag aag ttc acc tgc ctg gtc gga gtc aac ccc atc       6287
Leu Gln Gln Arg Gln Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile
    480                 485                 490

gtc atc acc cag cag tcg ggc gat acc aag ggg tgc atc cac tgc tcc       6335
Val Ile Thr Gln Gln Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser
495                 500                 505                 510

tgc gac tcc ccc gac tgc gtc cac act ctg atc aag acc ctc tgc ggc       6383
Cys Asp Ser Pro Asp Cys Val His Thr Leu Ile Lys Thr Leu Cys Gly
                515                 520                 525

ctc cgc gac ctc ctc ccc atg aac taa                                  6410
Leu Arg Asp Leu Leu Pro Met Asn
            530


<210>  155
<211>  190
<212>  PRT
<213>  Simian adenovirus 25.2

<400>  155

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 Met
            20                  25                  30
```

```
Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
        35                  40                  45

Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala
    50                  55                  60

Ala Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr Asp Thr
65                  70                  75                  80

Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala 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 Cys Phe Gln Glu Glu Ala Glu
                165                 170                 175

Thr Gln Gln Gln Gln Lys Thr Ser Ser Ser Ser Ser Ser Ser
            180                 185                 190


<210>  156
<211>  209
<212>  PRT
<213>  Simian adenovirus 25.2

<400>  156

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 Ser Leu Pro Ala Thr Asn Asn
        115                 120                 125

Gln Ser Thr His Gln Arg His Arg Arg Asp Leu Ser Ser Glu Ser Asn
    130                 135                 140

Thr Thr Thr His Thr Gly Gly Glu Leu Arg Gly Arg Pro Thr Ser Gly
145                 150                 155                 160

Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu
                165                 170                 175

Val Val Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Cys
            180                 185                 190

Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser
        195                 200                 205

Pro
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<210> 157
<211> 135
<212> PRT
<213> Simian adenovirus 25.2

<400> 157

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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>  158
<211>  870
<212>  DNA
<213>  Simian adenovirus 25.2


<220>
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<222>  (6)..(573)
<223>  label=Ela

<220>
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<222>  (659)..(864)
<223>  label=Ela

<400>  158
gaaag atg agg cac ctg aga gac ctg ccc ggt aat gtt ttc ctg gct act       50
      Met Arg His Leu Arg Asp Leu Pro Gly Asn Val Phe Leu Ala Thr
      1               5                   10                  15

ggg aac gag att ctg gaa ctg gtg gtg gac gcc atg atg ggt gac gac         98
Gly Asn Glu Ile Leu Glu Leu Val Val Asp Ala Met Met Gly Asp Asp
                20                  25                  30

cct ccg gag ccc cct acc cca ttt gag gcg cct tcg ctg tac gat ttg        146
Pro Pro Glu Pro Pro Thr Pro Phe Glu Ala Pro Ser Leu Tyr Asp Leu
            35                  40                  45

tat gat ctg gag gtg gat gtg ccc gag aac gac ccc aac gag gag gcg        194
```

```
Tyr Asp Leu Glu Val Asp Val Pro Glu Asn Asp Pro Asn Glu Glu Ala
        50                  55                  60

gtg aat gat ttg ttt agc gat gcc gcg ctg ctg gct gcc gag cag gct        242
Val Asn Asp Leu Phe Ser Asp Ala Ala Leu Leu Ala Ala Glu Gln Ala
    65                  70                  75

aat acg gac tct ggc tca gac agc gat tcc tct ctc cat acc ccg aga        290
Asn Thr Asp Ser Gly Ser Asp Ser Asp Ser Ser Leu His Thr Pro Arg
80                  85                  90                  95

ccc ggc aga ggt gag aaa aag atc ccc gag ctt aaa ggg gaa gag ctc        338
Pro Gly Arg Gly Glu Lys Lys Ile Pro Glu Leu Lys Gly Glu Glu Leu
                100                 105                 110

gac ctg cgc tgc tat gag gaa tgc ttg cct ccg agc gat gat gag gag        386
Asp Leu Arg Cys Tyr Glu Glu Cys Leu Pro Pro Ser Asp Asp Glu Glu
            115                 120                 125

gac gag gag gcg att cga gct gca gcg aac cag gga gtg aaa gcg gcg        434
Asp Glu Glu Ala Ile Arg Ala Ala Ala Asn Gln Gly Val Lys Ala Ala
        130                 135                 140

ggc gag ggc ttt agc ctg gac tgt cct act ctg ccc gga cac ggc tgt        482
Gly Glu Gly Phe Ser Leu Asp Cys Pro Thr Leu Pro Gly His Gly Cys
    145                 150                 155

aag tct tgt gaa ttt cat cgc atg aat act gga gat aag aat gtg atg        530
Lys Ser Cys Glu Phe His Arg Met Asn Thr Gly Asp Lys Asn Val Met
160                 165                 170                 175

tgt gcc ctg tgc tat atg aga gct tac aac cat tgt gtt tac a             573
Cys Ala Leu Cys Tyr Met Arg Ala Tyr Asn His Cys Val Tyr
                180                 185

gtaagtgtga ttaactttag ttgggaaggc agagggtgac tgggtgctga ctggtttatt      633

tatgtatatg ttttttatg tgtag gt  ccc gtc tct gac gta gat gag acc        684
                           Ser Pro Val Ser Asp Val Asp Glu Thr
                                                195

ccc act tca gag tgc att tca tca ccc cca gaa att ggc gag gaa ccg        732
Pro Thr Ser Glu Cys Ile Ser Ser Pro Pro Glu Ile Gly Glu Glu Pro
    200                 205                 210

ccc gaa gat att att cat aga cca gtt gca gtg aga gtc acc ggg cgg        780
Pro Glu Asp Ile Ile His Arg Pro Val Ala Val Arg Val Thr Gly Arg
215                 220                 225                 230

aga gca gct gtg gag agt ttg gat gac ttg cta cag ggt ggg gat gaa        828
Arg Ala Ala Val Glu Ser Leu Asp Asp Leu Leu Gln Gly Gly Asp Glu
                235                 240                 245

cct ttg gac ttg tgt acc cgg aaa cgc ccc agg cac taagtg                 870
Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro Arg His
            250                 255
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<210> 159

<211> 258
<212> PRT
<213> Simian adenovirus 25.2

<400> 159

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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 Pro 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 Asn Gln Gly Val Lys Ala Ala Gly
    130                 135                 140

Glu Gly 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 Pro Val
            180                 185                 190

Ser Asp Val Asp Glu Thr Pro Thr Ser Glu Cys Ile Ser Ser Pro Pro
        195                 200                 205

Glu Ile Gly Glu Glu Pro Pro Glu Asp Ile Ile His Arg Pro Val Ala
```

```
    210                 215                 220

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

Leu Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro
                245                 250                 255

Arg His
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<210> 160
<211> 860
<212> DNA
<213> Simian adenovirus 25.2

<220>
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<222> (10)..(337)
<223> label=33K

<220>
<221> CDS
<222> (507)..(850)
<223> label=33K

<400> 160

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tcccccagg atg ccc cga gga agc agc aag aag ctg aaa gtg gag ctg ccg       51
          Met Pro Arg Gly Ser Ser Lys Lys Leu Lys Val Glu Leu Pro
          1               5                   10

ctg ccg ccg gag gat ttg gag gaa gac tgg gag agc agt cag gca gag         99
Leu Pro Pro Glu Asp Leu Glu Glu Asp Trp Glu Ser Ser Gln Ala Glu
15                  20                  25                  30

gag atg gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa        147
Glu Met Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln
                35                  40                  45

gac agt ctg gag gag gaa gac gag gtg gag gag gag gca gag gaa gaa        195
Asp Ser Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu
            50                  55                  60

gca gcc gcc gcc aga ccg tcg tcc tcg gcg gag aaa gca agc agc acg        243
Ala Ala Ala Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr
        65                  70                  75

gat acc atc tcc gct ccg ggt cgg ggt cgc ggc ggc cgg gcc cac agt        291
Asp Thr Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser
    80                  85                  90

aga tgg gac gag acc ggg cgc ttc cca aac ccc acc acc cag acc g          337
Arg Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr
95                  100                 105
```

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gtaagaagga gcggcaggga tacaagtcct ggcgggggca caaaaacgcc atcgtctcct      397

gcttgcaagc ctgcgggggc aacatctcct tcacccggcg ctacctgctc ttccaccgcg      457

gggtgaactt cccccgcaac atcttgcatt actaccgtca cctccacag cc  cct act      514
                                                        Ala Pro Thr

act gtt tcc aag aag agg cag aaa ccc agc agc agc aga aaa cca gca        562
Thr Val Ser Lys Lys Arg Gln Lys Pro Ser Ser Ser Arg Lys Pro Ala
        115                 120                 125

gca gca gca gca gca gct aga aaa tcc aca gcg gcg gcg gca ggt gga        610
Ala Ala Ala Ala Ala Ala Arg Lys Ser Thr Ala Ala Ala Ala Gly Gly
    130                 135                 140

ctg agg atc gcg gcg aac gag ccg gcg cag acc cgg gag ctg agg aac        658
Leu Arg Ile Ala Ala Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg Asn
145                 150                 155                 160

cgg atc ttt ccc acc ctc tat gcc atc ttc cag cag agt cgg ggg cag        706
Arg Ile Phe Pro Thr Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly Gln
                165                 170                 175

gag cag gaa ctg aaa gtc aag aac cgt tct ctg cgc tcg ctc acc cgc        754
Glu Gln Glu Leu Lys Val Lys Asn Arg Ser Leu Arg Ser Leu Thr Arg
            180                 185                 190

agt tgt ctg tat cac aag agc gaa gac caa ctt cag cgc act ctc gag        802
Ser Cys Leu Tyr His Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu Glu
        195                 200                 205

gac gcc gag gct ctc ttc aac aag tac tgc gcg ctc act ctt aaa gag        850
Asp Ala Glu Ala Leu Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys Glu
    210                 215                 220

tagcccgcgc                                                            860


<210>  161
<211>  224
<212>  PRT
<213>  Simian adenovirus 25.2

<400>  161

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 Met
            20                  25                  30


Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
        35                  40                  45
```

```
Leu Glu Glu Glu Asp Glu Val Glu Glu Glu Ala Glu Glu Glu Ala Ala
    50                  55                  60

Ala Ala Arg Pro Ser Ser Ser Ala Glu Lys Ala Ser Ser Thr Asp Thr
65                  70                  75                  80

Ile Ser Ala Pro Gly Arg Gly Arg Gly Gly Arg Ala His Ser Arg Trp
                85                  90                  95

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

Thr Val Ser Lys Lys Arg Gln Lys Pro Ser Ser Ser Arg Lys Pro Ala
        115                 120                 125

Ala Ala Ala Ala Ala Ala Arg Lys Ser Thr Ala Ala Ala Ala Gly Gly
    130                 135                 140

Leu Arg Ile Ala Ala Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg Asn
145                 150                 155                 160

Arg Ile Phe Pro Thr Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly Gln
                165                 170                 175

Glu Gln Glu Leu Lys Val Lys Asn Arg Ser Leu Arg Ser Leu Thr Arg
            180                 185                 190

Ser Cys Leu Tyr His Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu Glu
        195                 200                 205

Asp Ala Glu Ala Leu Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys Glu
    210                 215                 220


<210>  162
<211>  36628
<212>  DNA
<213>  Simian adenovirus 26


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<222>  (1)..(131)
<223>  label=ITR

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<221>  CDS
<222>  (1908)..(3404)
<223>  label=Elb\55K
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<220>
<221> CDS
<222> (3492)..(3917)
<223> label=pIX

<220>
<221> misc_feature
<222> (3982)..(5603)
<223> complement (3982...5312, 5591...5603) label=IVa2

<220>
<221> misc_feature
<222> (5085)..(13842)
<223> complement (5085 ...8663, 13834 ...13842) label=pol

<220>
<221> misc_feature
<222> (8465)..(13842)
<223> complement (8465...10399, 13834...13842) label=pTP

<220>
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<222> (10612)..(12003)
<223> label=52K

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<222> (12030)..(13805)
<223> label=pIIIa

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<222> (13884)..(15521)
<223> label=penton

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<221> CDS
<222> (15528)..(16106)
<223> label=pVII

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<222> (16151)..(17167)
<223> label=V

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<221> CDS
<222> (17195)..(17428)
<223> label=pX

<220>
<221> CDS
<222> (17461)..(18234)
<223> label=PVI

<220>
<221> CDS
<222> (18344)..(21154)

<223> label=hexon

<220>
<221> CDS
<222> (21176)..(21802)
<223> label=protease

<220>
<221> misc_feature
<222> (21885)..(23423)
<223> complement label=DBP

<220>
<221> CDS
<222> (23449)..(25854)
<223> label=100K

<220>
<221> CDS
<222> (26482)..(27162)
<223> label=pVIII

<220>
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<222> (27166)..(27483)
<223> label=E3\12.5K

<220>
<221> CDS
<222> (28057)..(28584)
<223> label=E3\gp19K

<220>
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<222> (28618)..(29355)
<223> label=E3\CR1-beta

<220>
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<222> (29371)..(29988)
<223> label=E3\CR1-gamma

<220>
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<222> (30011)..(30883)
<223> label=E3\CR1-delta

<220>
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<222> (30895)..(31167)
<223> label=E3\RID-alpha

<220>
<221> CDS
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<223> label=E3\RID-beta

<220>
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<222> (32264)..(33538)
<223> label=fiber

<220>
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<222> (33635)..(34779)
<223> complement (33635...33883, 34630...34779) label=E4\orf6/7

<220>
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<222> (33883)..(34779)
<223> complement label=E4\orf6

<220>
<221> misc_feature
<222> (34685)..(35050)
<223> complement label=E4\orf4

<220>
<221> misc_feature
<222> (35062)..(35412)
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                                                  Met Glu Ser
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aga aac cca ttt cag cag gga tta cca gct gga ttt ctt agc agt agc         1964
Arg Asn Pro Phe Gln Gln Gly Leu Pro Ala Gly Phe Leu Ser Ser Ser
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ttt gtg gag aac atg gaa gtg cca gcg cct gaa tgc aat ctc agg cta         2012
Phe Val Glu Asn Met Glu Val Pro Ala Pro Glu Cys Asn Leu Arg Leu
20                  25                  30                  35

ctt gcc ggt aca gcc gct aga cac tct gag gat cct gaa tct cca gga         2060
Leu Ala Gly Thr Ala Ala Arg His Ser Glu Asp Pro Glu Ser Pro Gly
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Gly Gly Ser Arg Arg Glu Pro Glu Ser Arg Pro Gly Pro Ser Gly Gly
        70                  75                  80

gga gga gta gct gac ctg ttt cct gaa ctg cgc cgg gtg ctg act agg      2204
Gly Gly Val Ala Asp Leu Phe Pro Glu Leu Arg Arg Val Leu Thr Arg
    85                  90                  95

tct tcg agt ggt cgg gag agg ggg att aag cgg gag agg cat gat gag      2252
Ser Ser Ser Gly Arg Glu Arg Gly Ile Lys Arg Glu Arg His Asp Glu
100                 105                 110                 115

act aat cac aga act gaa ctg act gtg ggt ctg atg agc cgc aag cgt      2300
Thr Asn His Arg Thr Glu Leu Thr Val Gly 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      2348
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 agg ttt tcc cta gaa caa gtc aag act tgt      2396
Val Ser Val Met His Glu Arg Phe Ser Leu Glu Gln Val Lys Thr Cys
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tgg tta gag cct gag gat gat tgg gag gta gcc atc agg aat tat gcc      2444
Trp Leu Glu Pro Glu Asp Asp Trp Glu Val Ala Ile Arg Asn Tyr Ala
    165                 170                 175

aag ctg gct ctc agg cca gac aag aag tac aag att act aag ctg ata      2492
Lys Leu Ala Leu Arg Pro Asp Lys Lys Tyr Lys Ile Thr Lys Leu Ile
180                 185                 190                 195

aat atc aga aat gcc tgc tac atc tca ggg aat ggg gct gaa gtg gag      2540
Asn Ile Arg Asn Ala Cys Tyr Ile Ser Gly Asn Gly Ala Glu Val Glu
                200                 205                 210

atc tgt ctt cag gat aga gtg gct ttc aga tgc tgt atg atg aat atg      2588
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      2636
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      2684
Phe Arg Gly Asp Gly Tyr Asn Gly Thr Val Phe Met Ala Asn Thr Lys
    245                 250                 255

ctg aca gtc cat ggc tgc tcc ttc ttt ggg ttt aat aac acc tgc att      2732
Leu Thr Val His Gly Cys Ser Phe Phe Gly Phe Asn Asn Thr Cys Ile
260                 265                 270                 275

gag gcc tgg ggc cag gtt ggt gtg agg ggc tgt agt ttt tca gcc aac      2780
Glu Ala Trp Gly Gln Val Gly Val Arg Gly Cys Ser Phe Ser Ala Asn
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Trp Met Gly Val Val Gly Arg Thr Lys Ser Met Leu Ser Val Lys Lys
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tgc ttg ttc gag agg tgc cac ctg ggg gtg atg agc gag ggc gaa gcc       2876
Cys Leu Phe Glu Arg Cys His Leu Gly Val Met Ser Glu Gly Glu Ala
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aga atc cgc cac tgc gcc tct acc gag acg ggc tgc ttt gtg ctg tgc       2924
Arg Ile Arg His Cys Ala Ser Thr Glu Thr Gly Cys Phe Val Leu Cys
    325                 330                 335

aag ggc aat gct aag atc aag cat aat atg att tgt gga gcc tcg gac       2972
Lys Gly Asn Ala Lys Ile Lys His Asn Met Ile Cys Gly Ala Ser Asp
340                 345                 350                 355

gag cgc ggc tac cag atg ctg acc tgc gcc ggg ggg aac agc cat atg       3020
Glu Arg Gly Tyr Gln Met Leu Thr Cys Ala Gly Gly Asn Ser His Met
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ctg gcc acc gtg cat gtg gct tcc cat tcc cgc aag ccc tgg ccc gag       3068
Leu Ala Thr Val His Val Ala Ser His Ser 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       3116
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       3164
Arg Gly Met Phe Met Pro Tyr Gln Cys Asn Leu Asn Tyr Val Lys Val
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ctg ctg gag cct gat gcc atg tcc aga gtg agc ctg acg ggg gtg ttt       3212
Leu Leu Glu Pro Asp Ala Met Ser Arg Val Ser Leu Thr Gly Val Phe
420                 425                 430                 435

gac atg aat gtg gag gtg tgg aag att ctg aga tat gat gaa tcc aag       3260
Asp Met Asn Val Glu Val Trp Lys Ile Leu Arg Tyr Asp Glu Ser Lys
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acc agg tgc cga gcc tgc gag tgc gga ggg aag cat gcc agg ttc cag       3308
Thr Arg Cys Arg Ala Cys Glu Cys Gly Gly Lys His Ala Arg Phe Gln
            455                 460                 465

ccc gtg tgt gtg gag gtg acg gag gac ctg cga ccc gat cat ttg gtg       3356
Pro Val Cys Val Glu Val Thr Glu Asp Leu Arg Pro Asp His Leu Val
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ttg tcc tgc acc ggg acg gag ttc ggt tcc agc ggg gaa gaa tct gac       3404
Leu Ser Cys Thr Gly Thr Glu Phe Gly Ser Ser Gly Glu Glu Ser Asp
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Val Arg Gln Asn Val Met Gly Ser Thr Val Asp Gly Arg Pro Val Gln
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ccc gcg aac tct tca acc ctg acc tat gca acc ctg agc tct tcg tcg       3662
Pro Ala Asn Ser Ser Thr Leu Thr Tyr Ala Thr Leu Ser Ser Ser Ser
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Val Asp Ala Ala Ala Ala Ala Ala Ala Ala Ser Ala Ala Ser Ala Val
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cgc gga atg gcc atg ggc gcc ggc tac tac ggc act ctg gtg gcc aac       3758
Arg Gly Met Ala Met Gly Ala Gly Tyr Tyr Gly Thr Leu Val Ala Asn
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tcg agt tcc acc aat aat ccc gcc agc ctg aac gag gag aag ctg ctg       3806
Ser Ser Ser Thr Asn Asn Pro Ala Ser Leu Asn Glu Glu Lys Leu Leu
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ctg ctg atg gcc cag ctc gag gcc ttg acc cag cgc ctg ggc gag ctg       3854
Leu Leu Met Ala Gln Leu Glu Ala Leu Thr Gln Arg Leu Gly Glu Leu
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acc cag cag gtg gct cag ctg cag gag cag acg cgg gcc gcg gtt gcc       3902
Thr Gln Gln Val Ala Gln Leu Gln Glu Gln Thr Arg Ala Ala Val Ala
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acg gtg aaa tcc aaa taaaaaatga atcaataaat aaacggagac ggttgttgat       3957
Thr Val Lys Ser Lys
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aaa cta gta agc gca gaa agc ggc cga ccg cga tgg ctc gct gcc gta       10662
Lys Leu Val Ser Ala Glu Ser Gly Arg Pro Arg Trp Leu Ala Ala Val
        645                 650                 655

gtc tgg aga aga atc gcc agg gtt gcg ttg cgg tgt gcc ccg gtt cga       10710
Val Trp Arg Arg Ile Ala Arg Val Ala Leu Arg Cys Ala Pro Val Arg
    660                 665                 670

agc cgg ccg gat tcc gcg gct aac gag ggc gtg gct gcc ccg tcg ttt       10758
Ser Arg Pro Asp Ser Ala Ala Asn Glu Gly Val Ala Ala Pro Ser Phe
675                 680                 685                 690

cca aga ccc cct agc cag ccg act tct cca gtt acg gag cga gcc cct       10806
Pro Arg Pro Pro Ser Gln Pro Thr Ser Pro Val Thr Glu Arg Ala Pro
                695                 700                 705

ctt ttg ttt ttt tgt ttt tgc cag atg cat ccc gta ctg cgg cag atg       10854
Leu Leu Phe Phe Cys Phe Cys Gln Met His Pro Val Leu Arg Gln Met
            710                 715                 720

cgc ccc cac cac cct cca ccg caa caa cag ccc cct cca cag ccg gcg       10902
Arg Pro His His Pro Pro Pro Gln Gln Gln Pro Pro Pro Gln Pro Ala
        725                 730                 735

ctt ctg ccc ccg ccc cag cag cag cag caa ctt cca gcc acg acc gcc       10950
Leu Leu Pro Pro Pro Gln Gln Gln Gln Gln Leu Pro Ala Thr Thr Ala
    740                 745                 750

gcg gcc gcc gtg agc ggg gct gga cag act tct cag tat gac ctg gcc       10998
Ala Ala Ala Val Ser Gly Ala Gly Gln Thr Ser Gln Tyr Asp Leu Ala
755                 760                 765                 770

ttg gaa gag ggc gag ggg ctg gcg cgc ctg ggg gcg tcg tcg ccg gag       11046
Leu Glu Glu Gly Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser Pro Glu
                775                 780                 785
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cgg cac ccg cgc gtg cag atg aaa agg gac gct cgc gag gcc tac gtg      11094
Arg His Pro Arg Val Gln Met Lys Arg Asp Ala Arg Glu Ala Tyr Val
            790                 795                 800

ccc aag cag aac ctg ttc aga gac agg agc ggc gag gag ccc gag gag      11142
Pro Lys Gln Asn Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro Glu Glu
        805                 810                 815

atg cgc gcg gcc cgg ttc cac gcg ggg cgg gag ctg cgg cgc ggc ctg      11190
Met Arg Ala Ala Arg Phe His Ala Gly Arg Glu Leu Arg Arg Gly Leu
    820                 825                 830

gac cga aag agg gtg ctg agg gac gag gat ttc gag gcg gac gag ctg      11238
Asp Arg Lys Arg Val Leu Arg Asp Glu Asp Phe Glu Ala Asp Glu Leu
835                 840                 845                 850

acg ggg atc agc ccc gcg cgc gcg cac gtg gcc gcg gcc aac ctg gtc      11286
Thr Gly Ile Ser Pro Ala Arg Ala His Val Ala Ala Ala Asn Leu Val
                855                 860                 865

acg gcg tac gag cag acc gtg aag gag gag agc aac ttc caa aaa tcc      11334
Thr Ala Tyr Glu Gln Thr Val Lys Glu Glu Ser Asn Phe Gln Lys Ser
            870                 875                 880

ttc aac aac cac gtg cgc acc ctg atc gcg cgc gag gag gtg acc ctg      11382
Phe Asn Asn His Val Arg Thr Leu Ile Ala Arg Glu Glu Val Thr Leu
        885                 890                 895

ggc ctg atg cac ctg tgg gac ctg ctg gag gcc atc gtg cag aac ccc      11430
Gly Leu Met His Leu Trp Asp Leu Leu Glu Ala Ile Val Gln Asn Pro
    900                 905                 910

acc agc aag ccg ctg acg gcg cag ctg ttc ctg gtg gtg cag cac agt      11478
Thr Ser Lys Pro Leu Thr Ala Gln Leu Phe Leu Val Val Gln His Ser
915                 920                 925                 930

cgg gac aac gag gcg ttc agg gag gcg ctg ctg aat atc act gag ccc      11526
Arg Asp Asn Glu Ala Phe Arg Glu Ala Leu Leu Asn Ile Thr Glu Pro
                935                 940                 945

gag ggc cgc tgg ctc ctg gac ctg gtg aac att ctg caa agc atc gtg      11574
Glu Gly Arg Trp Leu Leu Asp Leu Val Asn Ile Leu Gln Ser Ile Val
            950                 955                 960

gtg cag gag cgc ggg ctg ccg ctg tcc gag aag ctg gcg gcc atc aac      11622
Val Gln Glu Arg Gly Leu Pro Leu Ser Glu Lys Leu Ala Ala Ile Asn
        965                 970                 975

ttc tcg gtg ctg agt ctg ggc aag tac tac gct agg aag atc tac aag      11670
Phe Ser Val Leu Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile Tyr Lys
    980                 985                 990

acc ccg tac gtg ccc ata  gac aag gag gtg aag  atc gat ggg ttt        11715
Thr Pro Tyr Val Pro Ile  Asp Lys Glu Val Lys  Ile Asp Gly Phe
995                 1000                1005

tac  atg cgc atg acc ctg  aaa gtg ctg acc ctg  agc gac gat ctg      11760
Tyr  Met Arg Met Thr Leu  Lys Val Leu Thr Leu  Ser Asp Asp Leu
1010                1015                1020
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ggg  gtg tac cgc aac gac  agg atg cac cgc gcg  gtg agc gcc agc       11805
Gly  Val Tyr Arg Asn Asp  Arg Met His Arg Ala  Val Ser Ala Ser
1025                1030                1035

agg  cgg cgc gag ctg agc  gac cag gag ctg atg  cat agt ctg cag       11850
Arg  Arg Arg Glu Leu Ser  Asp Gln Glu Leu Met  His Ser Leu Gln
1040                1045                1050

cgg  gcc ctg acc ggg gcc  ggg acc gag ggg gag  agc tac ttt gac       11895
Arg  Ala Leu Thr Gly Ala  Gly Thr Glu Gly Glu  Ser Tyr Phe Asp
1055                1060                1065

atg  ggc gcg gac ctg cac  tgg cag ccc agc cgc  cgg gcc ttg gag       11940
Met  Gly Ala Asp Leu His  Trp Gln Pro Ser Arg  Arg Ala Leu Glu
1070                1075                1080

gcg  gcc ggt cct ccc tac  gta gaa gag gtg gac  gag gac gag gag       11985
Ala  Ala Gly Pro Pro Tyr  Val Glu Glu Val Asp  Glu Asp Glu Glu
1085                1090                1095

ggc  gag tac ctg gaa gac  tgatggcgcg accgtatttt tgctag atg caa       12035
Gly  Glu Tyr Leu Glu Asp                               Met Gln
1100                1105

caa cag cca  cct cct gat ccc gca  atg cgg gcg gcg ctg  cag agc       12080
Gln Gln Pro  Pro Pro Asp Pro Ala  Met Arg Ala Ala Leu  Gln Ser
       1110                1115                1120

cag ccg tcc  ggc att aac tcc tcg  gac gat tgg acc cag  gcc atg       12125
Gln Pro Ser  Gly Ile Asn Ser Ser  Asp Asp Trp Thr Gln  Ala Met
       1125                1130                1135

caa cgc atc  atg gcg ctg acg acc  cgc aac ccc gaa gcc  ttt aga       12170
Gln Arg Ile  Met Ala Leu Thr Thr  Arg Asn Pro Glu Ala  Phe Arg
       1140                1145                1150

cag cag ccc  cag gcc aac cgg ctc  tcg gcc atc ctg gag  gcc gtg       12215
Gln Gln Pro  Gln Ala Asn Arg Leu  Ser Ala Ile Leu Glu  Ala Val
       1155                1160                1165

gtg ccc tcg  cgc tcc aac ccc acg  cac gag aag gtc ctg  gcc atc       12260
Val Pro Ser  Arg Ser Asn Pro Thr  His Glu Lys Val Leu  Ala Ile
       1170                1175                1180

gtg aac gcg  ctg gtg gag aac aag  gcc atc cgc ggc gac  gag gcc       12305
Val Asn Ala  Leu Val Glu Asn Lys  Ala Ile Arg Gly Asp  Glu Ala
       1185                1190                1195

ggc ctg gtg  tac aac gcg ctg ctg  gag cgc gtg gct cgc  tac aac       12350
Gly Leu Val  Tyr Asn Ala Leu Leu  Glu Arg Val Ala Arg  Tyr Asn
       1200                1205                1210

agc acc aac  gtg cag acc aac ctg  gac cgc atg gtg acc  gac gtg       12395
Ser Thr Asn  Val Gln Thr Asn Leu  Asp Arg Met Val Thr  Asp Val
       1215                1220                1225

cgc gag gcc  gtg gcc cag cgc gag  cgg ttc cac cgc gag  tcc aac       12440
Arg Glu Ala  Val Ala Gln Arg Glu  Arg Phe His Arg Glu  Ser Asn
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        1230                1235                1240

ctg gga tcc  atg gtg gcg ctg aac  gcc ttc ctc agc acc  cag ccc       12485
Leu Gly Ser  Met Val Ala Leu Asn  Ala Phe Leu Ser Thr  Gln Pro
        1245                1250                1255

gcc aac gtg  ccc cgg ggc cag gag  gac tac acc aac ttc  atc agc       12530
Ala Asn Val  Pro Arg Gly Gln Glu  Asp Tyr Thr Asn Phe  Ile Ser
        1260                1265                1270

gcc ctg cgc  ctg atg gtg acc gag  gtg ccc cag agc gag  gtg tac       12575
Ala Leu Arg  Leu Met Val Thr Glu  Val Pro Gln Ser Glu  Val Tyr
        1275                1280                1285

cag tcc ggg  ccg gac tac ttc ttc  cag acc agt cgc cag  ggc ttg       12620
Gln Ser Gly  Pro Asp Tyr Phe Phe  Gln Thr Ser Arg Gln  Gly Leu
        1290                1295                1300

cag acc gtg  aac ctg agc cag gcg  ttc aag aac ttg cag  ggc ctg       12665
Gln Thr Val  Asn Leu Ser Gln Ala  Phe Lys Asn Leu Gln  Gly Leu
        1305                1310                1315

tgg ggc gtg  cag gcc ccg gtc ggg  gac cgc gcg acg gtg  tcg agc       12710
Trp Gly Val  Gln Ala Pro Val Gly  Asp Arg Ala Thr Val  Ser Ser
        1320                1325                1330

ctg ctg acg  ccg aac tcg cgc ctg  ctg ctg ttg ctg gtg  gcg ccc       12755
Leu Leu Thr  Pro Asn Ser Arg Leu  Leu Leu Leu Leu Val  Ala Pro
        1335                1340                1345

ttc acg gac  agc ggc agc atc aac  cgc aac tcg tac ctg  ggc tac       12800
Phe Thr Asp  Ser Gly Ser Ile Asn  Arg Asn Ser Tyr Leu  Gly Tyr
        1350                1355                1360

ctg att aac  ttg tac cgc gag gcc  atc ggc cag gcg cac  gtg gac       12845
Leu Ile Asn  Leu Tyr Arg Glu Ala  Ile Gly Gln Ala His  Val Asp
        1365                1370                1375

gag cag acc  tac cag gag atc acc  cac gtg agc cgc gcc  ctg ggc       12890
Glu Gln Thr  Tyr Gln Glu Ile Thr  His Val Ser Arg Ala  Leu Gly
        1380                1385                1390

cag gac gac  ccg ggc aat ctg gaa  gcc acc ctg aac ttt  ttg ctg       12935
Gln Asp Asp  Pro Gly Asn Leu Glu  Ala Thr Leu Asn Phe  Leu Leu
        1395                1400                1405

acc aac cgg  tcg cag aag atc ccg  ccc cag tac gcg ctc  agt gcc       12980
Thr Asn Arg  Ser Gln Lys Ile Pro  Pro Gln Tyr Ala Leu  Ser Ala
        1410                1415                1420

gag gag gag  cgc atc ctg cga tac  gtg cag cag agc gtg  ggc ctg       13025
Glu Glu Glu  Arg Ile Leu Arg Tyr  Val Gln Gln Ser Val  Gly Leu
        1425                1430                1435

ttc ctg atg  cag gag ggg gcc acc  ccc agc gcc gcg ctc  gac atg       13070
Phe Leu Met  Gln Glu Gly Ala Thr  Pro Ser Ala Ala Leu  Asp Met
        1440                1445                1450

acc gcg cgc  aac atg gag ccc agc  atg tac gcc agc aac  cgc ccg       13115
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Thr Ala Arg  Asn Met Glu Pro Ser  Met Tyr Ala Ser Asn  Arg Pro
        1455                1460                1465

ttc atc aat  aaa ctg atg gac tac  ttg cat cgg gcg gcc  gcc atg       13160
Phe Ile Asn  Lys Leu Met Asp Tyr  Leu His Arg Ala Ala  Ala Met
        1470                1475                1480

aac tct gac  tat ttc acc aac gcc  atc ctg aat ccc cac  tgg ctc       13205
Asn Ser Asp  Tyr Phe Thr Asn Ala  Ile Leu Asn Pro His  Trp Leu
        1485                1490                1495

ccg ccg ccg  ggg ttc tac acg ggc  gag tac gac atg ccc  gac ccc       13250
Pro Pro Pro  Gly Phe Tyr Thr Gly  Glu Tyr Asp Met Pro  Asp Pro
        1500                1505                1510

aat gac ggg  ttc ctg tgg gac gat  gtg gac agc agc gtg  ttc tcc       13295
Asn Asp Gly  Phe Leu Trp Asp Asp  Val Asp Ser Ser Val  Phe Ser
        1515                1520                1525

ccc cga ccg  ggt gct aac gag cgc  ccc ttg tgg aag aag  gaa ggc       13340
Pro Arg Pro  Gly Ala Asn Glu Arg  Pro Leu Trp Lys Lys  Glu Gly
        1530                1535                1540

agc gac cgg  cgc ccg tcc tcg gcg  ctg tcc ggc cgc gag  ggt gct       13385
Ser Asp Arg  Arg Pro Ser Ser Ala  Leu Ser Gly Arg Glu  Gly Ala
        1545                1550                1555

gcc gcg gcg  gtg ccc gag gcc gcc  agt cct ttc cct agc  ttg ccc       13430
Ala Ala Ala  Val Pro Glu Ala Ala  Ser Pro Phe Pro Ser  Leu Pro
        1560                1565                1570

ttc tcg ctg  aac agt atc cgc agc  agc gag ctg ggc agg  atc acg       13475
Phe Ser Leu  Asn Ser Ile Arg Ser  Ser Glu Leu Gly Arg  Ile Thr
        1575                1580                1585

cgc ccg cgc  ttg ctg ggc gag gag  gag tac ttg aat gac  tcc ttg       13520
Arg Pro Arg  Leu Leu Gly Glu Glu  Glu Tyr Leu Asn Asp  Ser Leu
        1590                1595                1600

ctg aga ccc  gag cgg gag aag aac  ttc ccc aat aac ggg  ata gag       13565
Leu Arg Pro  Glu Arg Glu Lys Asn  Phe Pro Asn Asn Gly  Ile Glu
        1605                1610                1615

agc ctg gtg  gac aag atg agc cgc  tgg aag acg tac gcg  cag gag       13610
Ser Leu Val  Asp Lys Met Ser Arg  Trp Lys Thr Tyr Ala  Gln Glu
        1620                1625                1630

cac agg gac  gat ccc cgg gcg tcg  cag ggg gcc gcg agc  cgg ggc       13655
His Arg Asp  Asp Pro Arg Ala Ser  Gln Gly Ala Ala Ser  Arg Gly
        1635                1640                1645

agc gcc gcc  cgt aaa cgc cgg tgg  cac gac agg cag cgg  gga ctg       13700
Ser Ala Ala  Arg Lys Arg Arg Trp  His Asp Arg Gln Arg  Gly Leu
        1650                1655                1660

atg tgg gac  gat gag gac tcc gcc  gac gac agc agc gtg  ttg gac       13745
Met Trp Asp  Asp Glu Asp Ser Ala  Asp Asp Ser Ser Val  Leu Asp
        1665                1670                1675
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ttg ggt ggg  agt ggt ggt aac ccg  ttc gct cac ctg cgc  ccc cgc       13790
Leu Gly Gly  Ser Gly Gly Asn Pro  Phe Ala His Leu Arg  Pro Arg
        1680                 1685                 1690

atc ggg cgc  atg atg taagaaaccg aaaataaatg atactcacca aggccatggc     13845
Ile Gly Arg  Met Met
        1695

gaccagcgtg cgttcgtttc ttctctgttg tatctagt atg atg agg  cgt gcg       13898
                                        Met Met Arg  Arg Ala
                                                1700

tac ccg gag  ggt cct cct ccc tcg  tac gag agc gtg atg  cag cag       13943
Tyr Pro Glu  Gly Pro Pro Pro Ser  Tyr Glu Ser Val Met  Gln Gln
        1705                 1710                 1715

gcg atg gcg  gcg gcg gcg gcg atg  cag ccc ccg ctg gag  gct cct       13988
Ala Met Ala  Ala Ala Ala Ala Met  Gln Pro Pro Leu Glu  Ala Pro
        1720                 1725                 1730

tac gtg ccc  ccg cgg tac ctg gcg  cct acg gag ggg cgg  aac agc       14033
Tyr Val Pro  Pro Arg Tyr Leu Ala  Pro Thr Glu Gly Arg  Asn Ser
        1735                 1740                 1745

att cgt tac  tcg gag ctg gca ccc  ttg tac gat acc acc  cgg ttg       14078
Ile Arg Tyr  Ser Glu Leu Ala Pro  Leu Tyr Asp Thr Thr  Arg Leu
        1750                 1755                 1760

tac ctg gtg  gac aac aag tcg gcg  gac atc gcc tcg ctg  aac tac       14123
Tyr Leu Val  Asp Asn Lys Ser Ala  Asp Ile Ala Ser Leu  Asn Tyr
        1765                 1770                 1775

cag aac gac  cac agc aac ttc ctg  acc acc gtg gtg cag  aac aat       14168
Gln Asn Asp  His Ser Asn Phe Leu  Thr Thr Val Val Gln  Asn Asn
        1780                 1785                 1790

gac ttc acc  ccc acg gag gcc agc  acc cag acc atc aac  ttt gac       14213
Asp Phe Thr  Pro Thr Glu Ala Ser  Thr Gln Thr Ile Asn  Phe Asp
        1795                 1800                 1805

gag cgc tcg  cgg tgg ggc ggc cag  ctg aaa acc atc atg  cac acc       14258
Glu Arg Ser  Arg Trp Gly Gly Gln  Leu Lys Thr Ile Met  His Thr
        1810                 1815                 1820

aac atg ccc  aac gtg aac gag ttc  atg tac agc aac aag  ttc aag       14303
Asn Met Pro  Asn Val Asn Glu Phe  Met Tyr Ser Asn Lys  Phe Lys
        1825                 1830                 1835

gcg cgg gtc  atg gtc tcc cgc aag  acc ccc aac ggg gtg  aca gtg       14348
Ala Arg Val  Met Val Ser Arg Lys  Thr Pro Asn Gly Val  Thr Val
        1840                 1845                 1850

aca gat ggt  agt cag gat gag ttg  aaa tac gag tgg gtg  gag ttt       14393
Thr Asp Gly  Ser Gln Asp Glu Leu  Lys Tyr Glu Trp Val  Glu Phe
        1855                 1860                 1865

gag ctg ccc  gaa ggc aac ttc tcg  gtg acc atg acc atc  gac ctg       14438
Glu Leu Pro  Glu Gly Asn Phe Ser  Val Thr Met Thr Ile  Asp Leu
        1870                 1875                 1880
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atg aac aac  gcc atc atc gac aat  tac ttg gcg gtg ggg  cgg cag       14483
Met Asn Asn  Ala Ile Ile Asp Asn  Tyr Leu Ala Val Gly  Arg Gln
        1885                 1890                 1895

aac ggg gtc  ctg gag agc gac atc  ggc gtg aag ttc gac  act agg       14528
Asn Gly Val  Leu Glu Ser Asp Ile  Gly Val Lys Phe Asp  Thr Arg
        1900                 1905                 1910

aac ttc agg  ctg ggc tgg gac ccc  gtg acc gag ctg gtc  atg ccc       14573
Asn Phe Arg  Leu Gly Trp Asp Pro  Val Thr Glu Leu Val  Met Pro
        1915                 1920                 1925

ggg gtg tac  acc aac gag gcc ttc  cat ccc gat att gtg  ctg ctg       14618
Gly Val Tyr  Thr Asn Glu Ala Phe  His Pro Asp Ile Val  Leu Leu
        1930                 1935                 1940

ccc ggc tgc  ggg gtg gac ttt acc  gag agc cgc ctt agc  aac ctg       14663
Pro Gly Cys  Gly Val Asp Phe Thr  Glu Ser Arg Leu Ser  Asn Leu
        1945                 1950                 1955

ctg ggc att  cgc aag agg cag cct  ttc cag gag ggt ttc  cag atc       14708
Leu Gly Ile  Arg Lys Arg Gln Pro  Phe Gln Glu Gly Phe  Gln Ile
        1960                 1965                 1970

atg tac gag  gat ctg gag ggg ggc  aac atc ccc gca ctc  ctg gat       14753
Met Tyr Glu  Asp Leu Glu Gly Gly  Asn Ile Pro Ala Leu  Leu Asp
        1975                 1980                 1985

gtc gag gcc  tac gag aaa agc aag  gag gag aat gca gca  gcc gag       14798
Val Glu Ala  Tyr Glu Lys Ser Lys  Glu Glu Asn Ala Ala  Ala Glu
        1990                 1995                 2000

gcc gtg gct  acc gcc gcg acc gcc  gag gcc aag gct gtg  gta gat       14843
Ala Val Ala  Thr Ala Ala Thr Ala  Glu Ala Lys Ala Val  Val Asp
        2005                 2010                 2015

gca gac gcc  aat gtg acc agg ggc  gat aca ttc gcc act  cag gcg       14888
Ala Asp Ala  Asn Val Thr Arg Gly  Asp Thr Phe Ala Thr  Gln Ala
        2020                 2025                 2030

gag gaa gca  gcc gcc cta gcg gtc  gcc gat gat agt gaa  agt acc       14933
Glu Glu Ala  Ala Ala Leu Ala Val  Ala Asp Asp Ser Glu  Ser Thr
        2035                 2040                 2045

aag aca gtg  acc att cag cca gta  aaa gtg gat agc aag  aac agg       14978
Lys Thr Val  Thr Ile Gln Pro Val  Lys Val Asp Ser Lys  Asn Arg
        2050                 2055                 2060

agt tac aac  gtg ctg ccg gac gag  aaa aac acc gcc tac  cgc agc       15023
Ser Tyr Asn  Val Leu Pro Asp Glu  Lys Asn Thr Ala Tyr  Arg Ser
        2065                 2070                 2075

tgg tac ctg  gcc tac aac tat ggc  gac ccc gag aag ggc  gtg cgc       15068
Trp Tyr Leu  Ala Tyr Asn Tyr Gly  Asp Pro Glu Lys Gly  Val Arg
        2080                 2085                 2090

tcc tgg acg  ctg ctc acc acc tcg  gac gtc acc tgc ggc  gtg gag       15113
Ser Trp Thr  Leu Leu Thr Thr Ser  Asp Val Thr Cys Gly  Val Glu
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        2095                2100                2105

caa gtc tac  tgg tcg ctg ccc gac  atg atg caa gac ccg  gtc acc       15158
Gln Val Tyr  Trp Ser Leu Pro Asp  Met Met Gln Asp Pro  Val Thr
        2110                2115                2120

ttc cgc tcc  acg cgt caa gtt agc  aac tac ccg gtg gtg  ggc gcc       15203
Phe Arg Ser  Thr Arg Gln Val Ser  Asn Tyr Pro Val Val  Gly Ala
        2125                2130                2135

gag ctc ctg  ccc gtc tac tcc aag  agc ttc ttc aac gag  cag gcc       15248
Glu Leu Leu  Pro Val Tyr Ser Lys  Ser Phe Phe Asn Glu  Gln Ala
        2140                2145                2150

gtc tac tcg  cag cag ctg cgc gcc  ttc acc tcg ctc acg  cac gtc       15293
Val Tyr Ser  Gln Gln Leu Arg Ala  Phe Thr Ser Leu Thr  His Val
        2155                2160                2165

ttc aac cgc  ttc ccc gag aac cag  atc ctc gtc cgc ccg  ccc gcg       15338
Phe Asn Arg  Phe Pro Glu Asn Gln  Ile Leu Val Arg Pro  Pro Ala
        2170                2175                2180

ccc acc att  acc acc gtc agt gaa  aac gtt cct gct ctc  aca gat       15383
Pro Thr Ile  Thr Thr Val Ser Glu  Asn Val Pro Ala Leu  Thr Asp
        2185                2190                2195

cac ggg acc  ctg ccg ctg cgc agc  agt atc cgg gga gtc  cag cgc       15428
His Gly Thr  Leu Pro Leu Arg Ser  Ser Ile Arg Gly Val  Gln Arg
        2200                2205                2210

gtg acc gtt  act gac gcc aga cgc  cgc acc tgc ccc tac  gtc tac       15473
Val Thr Val  Thr Asp Ala Arg Arg  Arg Thr Cys Pro Tyr  Val Tyr
        2215                2220                2225

aag gcc ctg  ggc ata gtc gcg ccg  cgc gtc ctc tcg agc  cgc acc       15518
Lys Ala Leu  Gly Ile Val Ala Pro  Arg Val Leu Ser Ser  Arg Thr
        2230                2235                2240

ttc taaaaa atg tcc  att ctc atc tcg ccc  agt aat aac acc ggt  tgg    15566
Phe        Met Ser  Ile Leu Ile Ser Pro  Ser Asn Asn Thr Gly  Trp
               2245                2250                2255

ggc ctg cgc gcg  ccc agc aag atg tac  gga ggc gct cgc caa  cgc       15611
Gly Leu Arg Ala  Pro Ser Lys Met Tyr  Gly Gly Ala Arg Gln  Arg
           2260                2265                2270

tcc acg caa cac  ccc gtg cgc gtg cgc  ggg cac ttc cgc gct  ccc       15656
Ser Thr Gln His  Pro Val Arg Val Arg  Gly His Phe Arg Ala  Pro
           2275                2280                2285

tgg ggc gcc ctc  aag ggc cgc gtg cgg  tcg cgc acc acc gtc  gac       15701
Trp Gly Ala Leu  Lys Gly Arg Val Arg  Ser Arg Thr Thr Val  Asp
           2290                2295                2300

gac gtg atc gac  cag gtg gtg gcc gac  gcg cgc aac tac acc  ccc       15746
Asp Val Ile Asp  Gln Val Val Ala Asp  Ala Arg Asn Tyr Thr  Pro
           2305                2310                2315

gcc gcc gcg ccc  gtc tcc acc gtg gac  gcc gtc atc gac agc  gtg       15791
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Ala Ala Ala Pro  Val Ser Thr Val Asp  Ala Val Ile Asp Ser  Val
            2320                2325                2330

gtg gcc gac gcg  cgc cgg tac gcc cgc  gcc aag agc cgg cgg  cgg       15836
Val Ala Asp Ala  Arg Arg Tyr Ala Arg  Ala Lys Ser Arg Arg  Arg
            2335                2340                2345

cgc atc gcc cgg  cgg cac cgg agc acc  ccc gcc atg cgc gcg  gcg       15881
Arg Ile Ala Arg  Arg His Arg Ser Thr  Pro Ala Met Arg Ala  Ala
            2350                2355                2360

cga gcc ttg ctg  cgc agg gcc agg cgc  acg gga cgc agg gcc  atg       15926
Arg Ala Leu Leu  Arg Arg Ala Arg Arg  Thr Gly Arg Arg Ala  Met
            2365                2370                2375

ctc agg gcg gcc  aga cgc gcg gct tca  ggc gcc agc gcc ggc  agg       15971
Leu Arg Ala Ala  Arg Arg Ala Ala Ser  Gly Ala Ser Ala Gly  Arg
            2380                2385                2390

acc cgg aga cgc  gcg gcc acg gcg gcg  gca gcg gcc atc gcc  agc       16016
Thr Arg Arg Arg  Ala Ala Thr Ala Ala  Ala Ala Ala Ile Ala  Ser
            2395                2400                2405

atg tcc cgc ccg  cgg cga ggg aac gtg  tac tgg gtg cgc gac  gcc       16061
Met Ser Arg Pro  Arg Arg Gly Asn Val  Tyr Trp Val Arg Asp  Ala
            2410                2415                2420

gcc acc ggt gtg  cgc gtg ccc gtg cgc  acc cgc ccc cct cgc  act       16106
Ala Thr Gly Val  Arg Val Pro Val Arg  Thr Arg Pro Pro Arg  Thr
            2425                2430                2435

tgaagatgtt cacttcgcga tgttgatgtg tcccagcggc gagg atg tcc aag cgc     16162
                                                Met Ser Lys Arg
                                                            2440

aaa ttc aag gaa gag  atg ctc cag gtc atc  gcg cct gag atc tac       16207
Lys Phe Lys Glu Glu  Met Leu Gln Val Ile  Ala Pro Glu Ile Tyr
                2445                2450                2455

ggc ccc gcg gtg gtg  aag gag gaa aga aag  ccc cgc aaa atc aag       16252
Gly Pro Ala Val Val  Lys Glu Glu Arg Lys  Pro Arg Lys Ile Lys
                2460                2465                2470

cgg gtc aaa aag gac  aaa aag gaa gaa gat  gac gat ctg gtg gag       16297
Arg Val Lys Lys Asp  Lys Lys Glu Glu Asp  Asp Asp Leu Val Glu
                2475                2480                2485

ttt gtg cgc gag ttc  gcc ccc cgg cgg cgc  gtg cag tgg cgc ggg       16342
Phe Val Arg Glu Phe  Ala Pro Arg Arg Arg  Val Gln Trp Arg Gly
                2490                2495                2500

cgg aag gtg caa ccg  gtg ctg aga ccc ggc  acc acc gtg gtc ttc       16387
Arg Lys Val Gln Pro  Val Leu Arg Pro Gly  Thr Thr Val Val Phe
                2505                2510                2515

acg ccc ggc gag cgc  tca ggc acc gct tcc  aag cgc tcc tac gac       16432
Thr Pro Gly Glu Arg  Ser Gly Thr Ala Ser  Lys Arg Ser Tyr Asp
                2520                2525                2530
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gag gtg tac ggg gat  gat gat att ctg gag  cag gcg gcc gag cgc        16477
Glu Val Tyr Gly Asp  Asp Asp Ile Leu Glu  Gln Ala Ala Glu Arg
                2535                2540                2545

ctg ggc gag ttt gct  tac ggc aag cgc agc  cgc tcc gcg ccg aag        16522
Leu Gly Glu Phe Ala  Tyr Gly Lys Arg Ser  Arg Ser Ala Pro Lys
                2550                2555                2560

gaa gag gcg gtg tcc  atc ccg ctg gac cat  ggc aac ccc acg ccg        16567
Glu Glu Ala Val Ser  Ile Pro Leu Asp His  Gly Asn Pro Thr Pro
                2565                2570                2575

agc ctc aag ccc gtg  acc ctg cag cag gtg  ctg ccg agc gcg gcg        16612
Ser Leu Lys Pro Val  Thr Leu Gln Gln Val  Leu Pro Ser Ala Ala
                2580                2585                2590

ccg cgt cgg ggg ttc  aag cgc gag ggc gag  gat ctg tac ccc acc        16657
Pro Arg Arg Gly Phe  Lys Arg Glu Gly Glu  Asp Leu Tyr Pro Thr
                2595                2600                2605

atg cag ctg atg gtg  ccc aag cgc cag aag  ctg gaa gac gtg ctg        16702
Met Gln Leu Met Val  Pro Lys Arg Gln Lys  Leu Glu Asp Val Leu
                2610                2615                2620

gag acc atg aag gtg  gac ccg gac gtg cag  ccc gag gtc aag gtg        16747
Glu Thr Met Lys Val  Asp Pro Asp Val Gln  Pro Glu Val Lys Val
                2625                2630                2635

cgg ccc atc aag cag  gtg gcc ccg ggc ctg  ggc gtg cag acc gtg        16792
Arg Pro Ile Lys Gln  Val Ala Pro Gly Leu  Gly Val Gln Thr Val
                2640                2645                2650

gac atc aag atc ccc  acg gag ccc atg gaa  acg cag acc gag ccc        16837
Asp Ile Lys Ile Pro  Thr Glu Pro Met Glu  Thr Gln Thr Glu Pro
                2655                2660                2665

gtg aaa ccc agc acc  agc acc atg gag gtg  cag acg gat cct tgg        16882
Val Lys Pro Ser Thr  Ser Thr Met Glu Val  Gln Thr Asp Pro Trp
                2670                2675                2680

atg cca gcc gcc ccc  acc act cga aga ccc  cgg cgc aag tac ggc        16927
Met Pro Ala Ala Pro  Thr Thr Arg Arg Pro  Arg Arg Lys Tyr Gly
                2685                2690                2695

gcg gcc agc ctg ctg  atg ccc aac tac gcg  ctg cat cct tcc atc        16972
Ala Ala Ser Leu Leu  Met Pro Asn Tyr Ala  Leu His Pro Ser Ile
                2700                2705                2710

atc ccc acg ccg ggc  tac cgc ggc acg cgc  ttc tac cgc ggt cat        17017
Ile Pro Thr Pro Gly  Tyr Arg Gly Thr Arg  Phe Tyr Arg Gly His
                2715                2720                2725

aca agc cgc cgc cgc  aag acc acc act cgc  cgc cgc cgt cgc cgc        17062
Thr Ser Arg Arg Arg  Lys Thr Thr Thr Arg  Arg Arg Arg Arg Arg
                2730                2735                2740

acc gcc gct gca tct  acc cct gcc gcc ctg  gtg cgg aga gtg tac        17107
Thr Ala Ala Ala Ser  Thr Pro Ala Ala Leu  Val Arg Arg Val Tyr
                2745                2750                2755
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cgc cgc ggc cgc gcg  cct ctg acc ctg ccg  cgc gcg cgc tac cac        17152
Arg Arg Gly Arg Ala  Pro Leu Thr Leu Pro  Arg Ala Arg Tyr His
                2760                2765                2770

ccg agc atc gcc att  taaaactttc gcctgctttg cagatca atg gcc ctc       17203
Pro Ser Ile Ala Ile                                 Met Ala Leu
                2775

aca tgc  cgc ctc cgc gtt ccc  att acg ggc tac cga  gga aga aaa       17248
Thr Cys  Arg Leu Arg Val Pro  Ile Thr Gly Tyr Arg  Gly Arg Lys
    2780                2785                2790

ccg cgc  cgt aga agg ctg gcg  ggg aac ggg atg cgt  cgc cac cac       17293
Pro Arg  Arg Arg Arg Leu Ala  Gly Asn Gly Met Arg  Arg His His
    2795                2800                2805

cac cgg  cgg cgg cgc gcc atc  agc aag cgg ttg ggg  gga ggc ttc       17338
His Arg  Arg Arg Arg Ala Ile  Ser Lys Arg Leu Gly  Gly Gly Phe
    2810                2815                2820

ctg ccc  gcg ctg atc ccc atc  atc gcc gcg gcg atc  ggg gcg atc       17383
Leu Pro  Ala Leu Ile Pro Ile  Ile Ala Ala Ala Ile  Gly Ala Ile
    2825                2830                2835

ccc ggc  att gct tcc gtg gcg  gtg cag gcc tct cag  cgc cac tga       17428
Pro Gly  Ile Ala Ser Val Ala  Val Gln Ala Ser Gln  Arg His
    2840                2845                2850

gacacacttg gaaaacatct tgtaataaac ca atg gac tct  gac gct cct ggt     17481
                                    Met Asp Ser  Asp Ala Pro Gly
                                            2855

cct  gtg atg tgt ttt cgt  aga cag atg gaa gac  atc aat ttt tcg       17526
Pro  Val Met Cys Phe Arg  Arg Gln Met Glu Asp  Ile Asn Phe Ser
2860                2865                2870

tcc  ctg gct ccg cga cac  ggc acg cgg ccg ttc  atg ggc acc tgg       17571
Ser  Leu Ala Pro Arg His  Gly Thr Arg Pro Phe  Met Gly Thr Trp
2875                2880                2885

agc  gac atc ggc acc agc  caa ctg aac ggg ggc  gcc ttc aat tgg       17616
Ser  Asp Ile Gly Thr Ser  Gln Leu Asn Gly Gly  Ala Phe Asn Trp
2890                2895                2900

agc  agt ctc tgg agc ggg  ctt aag aat ttc ggg  tcc acg ctt aaa       17661
Ser  Ser Leu Trp Ser Gly  Leu Lys Asn Phe Gly  Ser Thr Leu Lys
2905                2910                2915

acc  tat ggc agc aag gcg  tgg aac agc acc aca  ggg cag gcg ctg       17706
Thr  Tyr Gly Ser Lys Ala  Trp Asn Ser Thr Thr  Gly Gln Ala Leu
2920                2925                2930

agg  gat aag ctg aaa gag  cag aac ttc cag cag  aag gtg gtc gat       17751
Arg  Asp Lys Leu Lys Glu  Gln Asn Phe Gln Gln  Lys Val Val Asp
2935                2940                2945

ggg  ctc gcc tcg ggc atc  aac ggg gtg gtg gac  ctg gcc aac cag       17796
Gly  Leu Ala Ser Gly Ile  Asn Gly Val Val Asp  Leu Ala Asn Gln
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2950                2955                2960

gcc  gtg cag cgg cag atc  aac agc cgc ctg gac  ccg gtg ccg ccc       17841
Ala  Val Gln Arg Gln Ile  Asn Ser Arg Leu Asp  Pro Val Pro Pro
2965                2970                2975

gcc  ggc tcc gtg gag atg  ccg cag gtg gag gag  gag ctg cct ccc       17886
Ala  Gly Ser Val Glu Met  Pro Gln Val Glu Glu  Glu Leu Pro Pro
2980                2985                2990

ctg  gac aag cgg ggc gag  aag cga ccc cgc ccc  gac gcg gag gag       17931
Leu  Asp Lys Arg Gly Glu  Lys Arg Pro Arg Pro  Asp Ala Glu Glu
2995                3000                3005

acg  ctg ctg acg cac acg  gac gag ccg ccc ccg  tac gag gag gcg       17976
Thr  Leu Leu Thr His Thr  Asp Glu Pro Pro Pro  Tyr Glu Glu Ala
3010                3015                3020

gtg  aaa ctg ggt ctg ccc  acc acg cgg ccc atc  gcg ccc ctg gcc       18021
Val  Lys Leu Gly Leu Pro  Thr Thr Arg Pro Ile  Ala Pro Leu Ala
3025                3030                3035

acc  gga gtg ctg aaa ccc  gaa act aag ccc gcg  acc ctg gac ttg       18066
Thr  Gly Val Leu Lys Pro  Glu Thr Lys Pro Ala  Thr Leu Asp Leu
3040                3045                3050

cct  cct ccc cag cct tcc  cgc ccc tcc aca gtg  gct aag ccc ctg       18111
Pro  Pro Pro Gln Pro Ser  Arg Pro Ser Thr Val  Ala Lys Pro Leu
3055                3060                3065

ccg  ccg gtg gcc gtg gcc  cgc gcg cga ccc ggg  ggc acc gcc cgc       18156
Pro  Pro Val Ala Val Ala  Arg Ala Arg Pro Gly  Gly Thr Ala Arg
3070                3075                3080

cct  cat gcg aac tgg cag  agc act ctg aac agc  atc gtg ggt ctg       18201
Pro  His Ala Asn Trp Gln  Ser Thr Leu Asn Ser  Ile Val Gly Leu
3085                3090                3095

gga  gtg cag agt gtg aag  cgc cgc cgc tgc tat  taaacctacc           18244
Gly  Val Gln Ser Val Lys  Arg Arg Arg Cys Tyr
3100                3105                3110

gtagcgctta acttgcttgt ctgtgtgtgt atgtattatg tcgccgccgc cgctgtccac   18304

cagaaggagg agtgaagagg cgcgtcgccg agttgcaag atg gcc acc cca tcg       18358
                                          Met Ala Thr Pro Ser
                                                              3115

atg ctg ccc cag tgg  gcg tac atg cac atc  gcc gga cag gac gct       18403
Met Leu Pro Gln Trp  Ala Tyr Met His Ile  Ala Gly Gln Asp Ala
               3120                3125                3130

tcg gag tac ctg agt  ccg ggt ctg gtg cag  ttc gcc cgc gcc aca       18448
Ser Glu Tyr Leu Ser  Pro Gly Leu Val Gln  Phe Ala Arg Ala Thr
               3135                3140                3145

gac acc tac ttc agt  ctg ggg aac aag ttt  agg aac ccc acg gtg       18493
Asp Thr Tyr Phe Ser  Leu Gly Asn Lys Phe  Arg Asn Pro Thr Val
               3150                3155                3160
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gcg ccc acg cac gat  gtg acc acc gac cgc  agc cag cgg ctg acg        18538
Ala Pro Thr His Asp  Val Thr Thr Asp Arg  Ser Gln Arg Leu Thr
               3165                 3170                 3175

ctg cgc ttc gtg ccc  gtg gac cgc gag gac  aac acc tac tcg tac        18583
Leu Arg Phe Val Pro  Val Asp Arg Glu Asp  Asn Thr Tyr Ser Tyr
               3180                 3185                 3190

aaa gtg cgc tac acg  ctg gcc gtg ggc gac  aac cgc gtg ctg gac        18628
Lys Val Arg Tyr Thr  Leu Ala Val Gly Asp  Asn Arg Val Leu Asp
               3195                 3200                 3205

atg gcc agc acc tac  ttt gac atc cgc ggc  gtg ctg gac cgg ggc        18673
Met Ala Ser Thr Tyr  Phe Asp Ile Arg Gly  Val Leu Asp Arg Gly
               3210                 3215                 3220

cct agc ttc aaa ccc  tac tcc ggc acc gcc  tac aac agc ctg gct        18718
Pro Ser Phe Lys Pro  Tyr Ser Gly Thr Ala  Tyr Asn Ser Leu Ala
               3225                 3230                 3235

ccc aag gga gca ccc  aac acc tca cag tgg  gta acc aaa gat aat        18763
Pro Lys Gly Ala Pro  Asn Thr Ser Gln Trp  Val Thr Lys Asp Asn
               3240                 3245                 3250

ggg act gat aaa aca  tac agc ttt ggt aat  gct cct gtc cga ggt        18808
Gly Thr Asp Lys Thr  Tyr Ser Phe Gly Asn  Ala Pro Val Arg Gly
               3255                 3260                 3265

ttg gac att aca gaa  gag ggt ctc caa att  gga act gat gac tct        18853
Leu Asp Ile Thr Glu  Glu Gly Leu Gln Ile  Gly Thr Asp Asp Ser
               3270                 3275                 3280

tca acc gaa agc aag  aaa att ttt gca gac  aaa aca tat cag cct        18898
Ser Thr Glu Ser Lys  Lys Ile Phe Ala Asp  Lys Thr Tyr Gln Pro
               3285                 3290                 3295

gaa cct cag gtt gga  gat gag gaa tgg cat  gac acc att ggg gct        18943
Glu Pro Gln Val Gly  Asp Glu Glu Trp His  Asp Thr Ile Gly Ala
               3300                 3305                 3310

gaa gac aaa tat gga  ggc aga gct ctt aaa  cct gcc acc aac atg        18988
Glu Asp Lys Tyr Gly  Gly Arg Ala Leu Lys  Pro Ala Thr Asn Met
               3315                 3320                 3325

aaa ccc tgt tat ggt  tct ttt gcc aag cca  act aat gct aag gga        19033
Lys Pro Cys Tyr Gly  Ser Phe Ala Lys Pro  Thr Asn Ala Lys Gly
               3330                 3335                 3340

ggt cag gct aaa acc  aga acc aaa gac gat  gga act acc gag cct        19078
Gly Gln Ala Lys Thr  Arg Thr Lys Asp Asp  Gly Thr Thr Glu Pro
               3345                 3350                 3355

gat att gat atg gcc  ttc ttt gac gat cgc  agt cag cag gct agt        19123
Asp Ile Asp Met Ala  Phe Phe Asp Asp Arg  Ser Gln Gln Ala Ser
               3360                 3365                 3370

ttc agt cca gaa ctt  gtt ttg tat act gag  aat gtg gat ttg gag        19168
Phe Ser Pro Glu Leu  Val Leu Tyr Thr Glu  Asn Val Asp Leu Glu
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                3375                3380                3385

acc cca gat acc cac  att att tac aaa ccc  ggt act gat gaa acc       19213
Thr Pro Asp Thr His  Ile Ile Tyr Lys Pro  Gly Thr Asp Glu Thr
                3390                3395                3400

agt tct tct ttc aac  ttg ggc cag caa tcc  atg ccc aac agg ccc       19258
Ser Ser Ser Phe Asn  Leu Gly Gln Gln Ser  Met Pro Asn Arg Pro
                3405                3410                3415

aac tac att ggt ttc  aga gac aac ttt att  ggt ctc atg tat tac       19303
Asn Tyr Ile Gly Phe  Arg Asp Asn Phe Ile  Gly Leu Met Tyr Tyr
                3420                3425                3430

aac agc act ggc aat  atg ggg gtg ctg gcc  ggt cag gct tct cag       19348
Asn Ser Thr Gly Asn  Met Gly Val Leu Ala  Gly Gln Ala Ser Gln
                3435                3440                3445

ctg aat gct gtg gtt  gac ttg caa gac aga  aac acc gag ctg tcc       19393
Leu Asn Ala Val Val  Asp Leu Gln Asp Arg  Asn Thr Glu Leu Ser
                3450                3455                3460

tac cag ctc ttg ctt  gac tct ctg ggc gac  aga acc cgg tat ttc       19438
Tyr Gln Leu Leu Leu  Asp Ser Leu Gly Asp  Arg Thr Arg Tyr Phe
                3465                3470                3475

agt atg tgg aac cag  gcg gtg gac agc tat  gat cct gat gtg cgc       19483
Ser Met Trp Asn Gln  Ala Val Asp Ser Tyr  Asp Pro Asp Val Arg
                3480                3485                3490

att att gaa aac cat  ggt gtg gag gat gaa  ttg cca aac tat tgt       19528
Ile Ile Glu Asn His  Gly Val Glu Asp Glu  Leu Pro Asn Tyr Cys
                3495                3500                3505

ttc cct ctg aac ggt  gtg ggc ttc aca gac  aca ttc cag gga att       19573
Phe Pro Leu Asn Gly  Val Gly Phe Thr Asp  Thr Phe Gln Gly Ile
                3510                3515                3520

aag gtt aaa act acc  aac aac ggt act gct  aat gct aca gag tgg       19618
Lys Val Lys Thr Thr  Asn Asn Gly Thr Ala  Asn Ala Thr Glu Trp
                3525                3530                3535

gag tct gat act tct  gtc aat aat gcc aat  gag att gcc aag ggt       19663
Glu Ser Asp Thr Ser  Val Asn Asn Ala Asn  Glu Ile Ala Lys Gly
                3540                3545                3550

aat cca ttt gcc atg  gaa atc aac att caa  gcc aac ctg tgg agg       19708
Asn Pro Phe Ala Met  Glu Ile Asn Ile Gln  Ala Asn Leu Trp Arg
                3555                3560                3565

aac ttc ctc tat gcc  aac gtg gcc ctg tac  ctg ccc gat tct tac       19753
Asn Phe Leu Tyr Ala  Asn Val Ala Leu Tyr  Leu Pro Asp Ser Tyr
                3570                3575                3580

aag tac acg ccg gcc  aac gtc acc ctg ccc  acc aac atc aac acc       19798
Lys Tyr Thr Pro Ala  Asn Val Thr Leu Pro  Thr Asn Ile Asn Thr
                3585                3590                3595

tac gat tac atg aac  ggc cgg gtg gtg gcg  ccc tcg ctg gtg gac       19843
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Tyr Asp Tyr Met Asn  Gly Arg Val Val Ala  Pro Ser Leu Val Asp
                3600                3605                3610

tcc tac atc aac atc  ggg gcg cgc tgg tcg  ctg gac ccc atg gac      19888
Ser Tyr Ile Asn Ile  Gly Ala Arg Trp Ser  Leu Asp Pro Met Asp
                3615                3620                3625

aac gtc aat ccc ttc  aac cac cac cgc aac  gcg ggg ctg cgc tac      19933
Asn Val Asn Pro Phe  Asn His His Arg Asn  Ala Gly Leu Arg Tyr
                3630                3635                3640

cgc tcc atg ctc ctg  ggc aac ggg cgc tac  gtg ccc ttc cac atc      19978
Arg Ser Met Leu Leu  Gly Asn Gly Arg Tyr  Val Pro Phe His Ile
                3645                3650                3655

cag gtg ccc cag aaa  ttt ttc gcc atc aag  agc ctc ctg ctc ctg      20023
Gln Val Pro Gln Lys  Phe Phe Ala Ile Lys  Ser Leu Leu Leu Leu
                3660                3665                3670

ccc ggg tcc tac acc  tac gag tgg aac ttc  cgc aag gac gtc aac      20068
Pro Gly Ser Tyr Thr  Tyr Glu Trp Asn Phe  Arg Lys Asp Val Asn
                3675                3680                3685

atg atc ctg cag agc  tcc ctc ggc aac gac  ctg cgc acg gac ggg      20113
Met Ile Leu Gln Ser  Ser Leu Gly Asn Asp  Leu Arg Thr Asp Gly
                3690                3695                3700

gcc tcc atc tcc ttc  acc agc atc aac ctc  tac gcc acc ttc ttc      20158
Ala Ser Ile Ser Phe  Thr Ser Ile Asn Leu  Tyr Ala Thr Phe Phe
                3705                3710                3715

ccc atg gcg cac aac  acg gcc tcc acg ctc  gag gcc atg ctg cgc      20203
Pro Met Ala His Asn  Thr Ala Ser Thr Leu  Glu Ala Met Leu Arg
                3720                3725                3730

aac gac acc aac gac  cag tcc ttc aac gac  tac ctc tcg gcg gcc      20248
Asn Asp Thr Asn Asp  Gln Ser Phe Asn Asp  Tyr Leu Ser Ala Ala
                3735                3740                3745

aac atg ctc tac ccc  atc ccg gcc aac gcc  acc aac gtg ccc atc      20293
Asn Met Leu Tyr Pro  Ile Pro Ala Asn Ala  Thr Asn Val Pro Ile
                3750                3755                3760

tcc atc ccc tcg cgc  aac tgg gcc gcc ttc  cgc ggc tgg tcc ttc      20338
Ser Ile Pro Ser Arg  Asn Trp Ala Ala Phe  Arg Gly Trp Ser Phe
                3765                3770                3775

acg cgc ctc aag acc  aag gag acg ccc tcg  ctg ggc tcc ggg ttc      20383
Thr Arg Leu Lys Thr  Lys Glu Thr Pro Ser  Leu Gly Ser Gly Phe
                3780                3785                3790

gac ccc tac ttc gtc  tac tcg ggc tcc atc  ccc tac ctc gac ggc      20428
Asp Pro Tyr Phe Val  Tyr Ser Gly Ser Ile  Pro Tyr Leu Asp Gly
                3795                3800                3805

acc ttc tac ctc aac  cac acc ttc aag aag  gtc tcc atc acc ttc      20473
Thr Phe Tyr Leu Asn  His Thr Phe Lys Lys  Val Ser Ile Thr Phe
                3810                3815                3820
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gac tcc tcc gtc agc  tgg ccc ggc aac gac  cgg ctc ctg acg ccc        20518
Asp Ser Ser Val Ser  Trp Pro Gly Asn Asp  Arg Leu Leu Thr Pro
                3825                3830                3835

aac gag ttc gaa atc  aag cgc acc gtc gac  ggc gag gga tac aac        20563
Asn Glu Phe Glu Ile  Lys Arg Thr Val Asp  Gly Glu Gly Tyr Asn
                3840                3845                3850

gtg gcc cag tgc aac  atg acc aag gac tgg  ttc ctg gtc cag atg        20608
Val Ala Gln Cys Asn  Met Thr Lys Asp Trp  Phe Leu Val Gln Met
                3855                3860                3865

ctg gcc cac tac aac  atc ggc tac cag ggc  ttc tac gtg ccc gag        20653
Leu Ala His Tyr Asn  Ile Gly Tyr Gln Gly  Phe Tyr Val Pro Glu
                3870                3875                3880

ggc tac aag gac cgc  atg tac tcc ttc ttc  cgc aac ttc cag ccc        20698
Gly Tyr Lys Asp Arg  Met Tyr Ser Phe Phe  Arg Asn Phe Gln Pro
                3885                3890                3895

atg agc cgc cag gtg  gtg gac gag gtc aac  tac aag gac tac cag        20743
Met Ser Arg Gln Val  Val Asp Glu Val Asn  Tyr Lys Asp Tyr Gln
                3900                3905                3910

gcc gtc acc ctg gcc  tac cag cac aac aac  tcg ggc ttc gtc ggc        20788
Ala Val Thr Leu Ala  Tyr Gln His Asn Asn  Ser Gly Phe Val Gly
                3915                3920                3925

tac ctc gcg ccc acc  atg cgc cag ggc cag  ccc tac ccc gcc aac        20833
Tyr Leu Ala Pro Thr  Met Arg Gln Gly Gln  Pro Tyr Pro Ala Asn
                3930                3935                3940

tac ccc tat ccg ctc  atc ggc aag agc gcc  gtc acc agc gtc acc        20878
Tyr Pro Tyr Pro Leu  Ile Gly Lys Ser Ala  Val Thr Ser Val Thr
                3945                3950                3955

cag aaa aag ttc ctc  tgc gac agg gtc atg  tgg cgc atc ccc ttc        20923
Gln Lys Lys Phe Leu  Cys Asp Arg Val Met  Trp Arg Ile Pro Phe
                3960                3965                3970

tcc agc aac ttc atg  tcc atg ggc gcg ctc  acc gac ctc ggc cag        20968
Ser Ser Asn Phe Met  Ser Met Gly Ala Leu  Thr Asp Leu Gly Gln
                3975                3980                3985

aac atg ctc tat gcc  aac tcc gcc cac gcg  cta gac atg aat ttc        21013
Asn Met Leu Tyr Ala  Asn Ser Ala His Ala  Leu Asp Met Asn Phe
                3990                3995                4000

gaa gtc gac ccc atg  gat gag tcc acc ctt  ctc tat gtt gtc ttc        21058
Glu Val Asp Pro Met  Asp Glu Ser Thr Leu  Leu Tyr Val Val Phe
                4005                4010                4015

gaa gtc ttc gac gtc  gtc cga gtg cac cag  ccc cac cgc ggc gtc        21103
Glu Val Phe Asp Val  Val Arg Val His Gln  Pro His Arg Gly Val
                4020                4025                4030

atc gag gcc gtc tac  ctg cgc acc ccc ttc  tcg gcc ggt aac gcc        21148
Ile Glu Ala Val Tyr  Leu Arg Thr Pro Phe  Ser Ala Gly Asn Ala
                4035                4040                4045
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acc acc taagctcttg cttcttgcaa g atg gct gag  ccc acg ggc tcc ggc     21199
Thr Thr                        Met Ala Glu  Pro Thr Gly Ser Gly
                                          4050                4055

gag cag gag ctc agg  gcc atc atc cgc gac  ctg ggc tgc ggg ccc       21244
Glu Gln Glu Leu Arg  Ala Ile Ile Arg Asp  Leu Gly Cys Gly Pro
                4060                4065                4070

tac ttc ctg ggc acc  ttc gat aag cgc ttc  ccg gga ttc atg gcc       21289
Tyr Phe Leu Gly Thr  Phe Asp Lys Arg Phe  Pro Gly Phe Met Ala
                4075                4080                4085

ccg cac aag ctg gcc  tgc gcc atc gtc aac  acg gcc ggc cgc gag       21334
Pro His Lys Leu Ala  Cys Ala Ile Val Asn  Thr Ala Gly Arg Glu
                4090                4095                4100

acc ggg ggc gag cac  tgg ctg gcc ttc gcc  tgg aac ccg cgc tcg       21379
Thr Gly Gly Glu His  Trp Leu Ala Phe Ala  Trp Asn Pro Arg Ser
                4105                4110                4115

aac acc tgc tac ctc  ttc gac ccc ttc ggg  ttc tcg gac gag cga       21424
Asn Thr Cys Tyr Leu  Phe Asp Pro Phe Gly  Phe Ser Asp Glu Arg
                4120                4125                4130

ctc aag cag atc tac  cag ttc gag tac gaa  ggc ctg ctg cgc cgc       21469
Leu Lys Gln Ile Tyr  Gln Phe Glu Tyr Glu  Gly Leu Leu Arg Arg
                4135                4140                4145

agc gcc ctg gcc acc  gag gac cgc tgc gtc  acc ctg gaa aag tcc       21514
Ser Ala Leu Ala Thr  Glu Asp Arg Cys Val  Thr Leu Glu Lys Ser
                4150                4155                4160

acc cag acc gtg cag  ggt ccg cgc tcg gcc  gcc tgc ggg ctc ttc       21559
Thr Gln Thr Val Gln  Gly Pro Arg Ser Ala  Ala Cys Gly Leu Phe
                4165                4170                4175

tgc tgc atg ttc ctg  cac gcc ttc gtg cac  tgg ccc gac cgc ccc       21604
Cys Cys Met Phe Leu  His Ala Phe Val His  Trp Pro Asp Arg Pro
                4180                4185                4190

atg gac aag aac ccc  acc atg aac ttg ctg  acg ggg gtg ccc aac       21649
Met Asp Lys Asn Pro  Thr Met Asn Leu Leu  Thr Gly Val Pro Asn
                4195                4200                4205

ggc atg ctc cag tcg  ccc cag gtg gaa ccc  acc ctg cgc cgc aac       21694
Gly Met Leu Gln Ser  Pro Gln Val Glu Pro  Thr Leu Arg Arg Asn
                4210                4215                4220

cag gag gcg ctc tac  cgc ttc ctc aac tcc  cac tcc gcc tac ttt       21739
Gln Glu Ala Leu Tyr  Arg Phe Leu Asn Ser  His Ser Ala Tyr Phe
                4225                4230                4235

cgc tcc cac cgc gcg  cgc atc gag aag gcc  acc gcc ttc gac cgc       21784
Arg Ser His Arg Ala  Arg Ile Glu Lys Ala  Thr Ala Phe Asp Arg
                4240                4245                4250

atg aac aat caa gac  atg taacactgtg tgtgtatgtt aaaatatctt           21832
Met Asn Asn Gln Asp  Met
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4255

ttaataaaca gcactttcat gttacacatg catctgagat gattttattt tagaaatcga 21892

aagggttctg ccgggtctcg gcatggcccg cgggcaggga cacgttgcgg aactggtact 21952

tggccagcca cttgaactcg gggatcagca gtttcggcag cggggtgtcg ggaaaggagt 22012

cggtccacag cttccgcgtc agttgcaggg cgcccagcag gtcgggcgcg gagatcttga 22072

aatcgcagtt gggacccgcg ttctgcgcgc gagagttgcg gtacacgggg ttgcagcact 22132

ggaacaccat cagggccggg tgcttcacgc tcgccagcac cgtcgcgtcg gtgatgctct 22192

ccacgtcgag gtcctcggcg ttggccatcc cgaagggggt catcttgcag gtctgccttc 22252

ccatagtggg cacgcagccg ggcttgtggt tgcaatcgca gtgcaggggg atcagcatca 22312

tctgggcctg gtcggcgttc atccccgggt acatggcctt catgaaagcc tccaattgcc 22372

taaaagcctg ctgggccttg gctccctcgg tgaagaagac cccgcaggac ttgctagaga 22432

actggttggt ggcgcacccg gcgtcgtgca cgcagcagcg cgcgtcgttg ttggccagct 22492

gcaccacgct gcgcccccag cggttctggg tgatcttggc ccggtcgggg ttctccttca 22552

gcgcgcgctg tccgttctcg ctcgccacat ccatctcgat catgtgctcc ttctggatca 22612

tggtggtacc atgcaggcac cgcagcttgc cctcggtctc ggtgcacccg tgcagccaca 22672

gcgcgcaccc ggtgcactcc cagttcttgt gggcgatctg ggaatgcgcg tgcacgaagc 22732

cctgcaggaa gcggcccatc atggtggtta gggtcttgtt gctagtgaag gtcagcggga 22792

tgccgcggtg ctcctcattg atgtacaggt ggcagatgcg gcggtacacc tcgccctgct 22852

cgggcatcag ttggaagttg gctttcaggt cggtctccac gcggtagcgg tccatcagca 22912

tagtcatgat ttccatgccc ttctcccagg ccgagacgat gggtaggctc atggggttct 22972

tcaccatcat cttagcacta gcagccgcgg ccaggggggtc gctctcgttc agggtctcaa 23032

agctccgctt gccgtccttc tcggtgatcc gcacgggggg gtagctgaag cccacggccg 23092

ccagctcctc ctcggcctgt ctttcgtcct cgctgtcctg gctgacgtcc tgcaggacca 23152

catgcttggt cttgcggggt ttcttcttgg gcggcagcgg tggcggagat gttggagatg 23212

gtgaggggga gcgcgagttc tcgctcacca ctactatctc ttcctcttct tggtccgagg 23272

ccacgcggcg gtaggtatgt ctcttcgggg gcagaggcgg aggcgacggg ctctcgccgc 23332

cgcgacttgg cggatggctg gcagagcccc ttccgcgttc gggggtgcgc tcccggcggc 23392

gctctgactg acttcctccg cggccggcca ttgtgttctc ctagggaaca acaagc atg 23451
Met

gag act cag cca tcg cca acc tcg cca tct gcc ccc acc acc gcc 23496

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Glu Thr Gln  Pro Ser Pro Thr Ser  Pro Ser Ala Pro Thr  Thr Ala
        4260                 4265                 4270

gac gag aag  cag cag cag cag aat  gaa agc tta acc gcc  ccg ccg       23541
Asp Glu Lys  Gln Gln Gln Gln Asn  Glu Ser Leu Thr Ala  Pro Pro
        4275                 4280                 4285

ccc agc ccc  gcc tcc gac gcg gcc  gcg gtc cca gac atg  caa gag       23586
Pro Ser Pro  Ala Ser Asp Ala Ala  Ala Val Pro Asp Met  Gln Glu
        4290                 4295                 4300

atg gag gaa  tcc atc gag att gac  ctg ggc tat gtg acg  ccc gcg       23631
Met Glu Glu  Ser Ile Glu Ile Asp  Leu Gly Tyr Val Thr  Pro Ala
        4305                 4310                 4315

gag cac gag  gag gag ctg gca gtg  cgc ttt caa tcg tca  agc cag       23676
Glu His Glu  Glu Glu Leu Ala Val  Arg Phe Gln Ser Ser  Ser Gln
        4320                 4325                 4330

gaa gat aaa  gaa cag cca gag cag  gaa gca gag aac gag  cag agt       23721
Glu Asp Lys  Glu Gln Pro Glu Gln  Glu Ala Glu Asn Glu  Gln Ser
        4335                 4340                 4345

cag act ggg  ctc gag cat ggc gac  tac ctc cac ctg agc  ggg gag       23766
Gln Thr Gly  Leu Glu His Gly Asp  Tyr Leu His Leu Ser  Gly Glu
        4350                 4355                 4360

gag gac gcg  ctc atc aag cat ctg  gcc cgg cag gcc acc  atc gtc       23811
Glu Asp Ala  Leu Ile Lys His Leu  Ala Arg Gln Ala Thr  Ile Val
        4365                 4370                 4375

aag gat gcg  ctg ctc gac cgc acc  gag gtg ccc ctc agc  gtg gag       23856
Lys Asp Ala  Leu Leu Asp Arg Thr  Glu Val Pro Leu Ser  Val Glu
        4380                 4385                 4390

gag ctc agc  cgc gcc tac gag ctc  aac ctc ttc tcg ccg  cgc gtg       23901
Glu Leu Ser  Arg Ala Tyr Glu Leu  Asn Leu Phe Ser Pro  Arg Val
        4395                 4400                 4405

ccc ccc aag  cgc cag ccc aac ggc  acc tgc gag ccc aac  ccg cgc       23946
Pro Pro Lys  Arg Gln Pro Asn Gly  Thr Cys Glu Pro Asn  Pro Arg
        4410                 4415                 4420

ctc aac ttc  tac ccg gtc ttc gcg  gtg ccc gag gcc ctg  gcc acc       23991
Leu Asn Phe  Tyr Pro Val Phe Ala  Val Pro Glu Ala Leu  Ala Thr
        4425                 4430                 4435

tac cac atc  ttt ttc aag aac caa  aag atc ccc gtc tcc  tgc cgc       24036
Tyr His Ile  Phe Phe Lys Asn Gln  Lys Ile Pro Val Ser  Cys Arg
        4440                 4445                 4450

gcc aac cgc  acc cgc gcc gac gcc  ctt ttc aac ctg ggc  ccc ggc       24081
Ala Asn Arg  Thr Arg Ala Asp Ala  Leu Phe Asn Leu Gly  Pro Gly
        4455                 4460                 4465

gcc cgc cta  cct gat atc gcc tcc  ttg gaa gag gtt ccc  aag atc       24126
Ala Arg Leu  Pro Asp Ile Ala Ser  Leu Glu Glu Val Pro  Lys Ile
        4470                 4475                 4480
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ttc gag ggt  ctg ggc agc gac gag  act cgg gcc gcg aac  gct ctg       24171
Phe Glu Gly  Leu Gly Ser Asp Glu  Thr Arg Ala Ala Asn  Ala Leu
        4485                 4490                 4495

caa gga aat  gaa gag cat gag cac  cac agc gcc ctg gtc  gag ttg       24216
Gln Gly Asn  Glu Glu His Glu His  His Ser Ala Leu Val  Glu Leu
        4500                 4505                 4510

gaa ggc gac  aac gcg cgg ctg gcg  gtg ctc aaa cgc acg  gtc gag       24261
Glu Gly Asp  Asn Ala Arg Leu Ala  Val Leu Lys Arg Thr  Val Glu
        4515                 4520                 4525

ctg acc cat  ttc gcc tac ccg gct  ctg aac ctg ccc ccc  aaa gtc       24306
Leu Thr His  Phe Ala Tyr Pro Ala  Leu Asn Leu Pro Pro  Lys Val
        4530                 4535                 4540

atg agc gcg  gtc atg gac cag gtg  ctc atc aag cgc gcg  tcg ccc       24351
Met Ser Ala  Val Met Asp Gln Val  Leu Ile Lys Arg Ala  Ser Pro
        4545                 4550                 4555

atc tcc gag  gac gag ggc atg caa  gac tcc gag gag ggc  aag ccc       24396
Ile Ser Glu  Asp Glu Gly Met Gln  Asp Ser Glu Glu Gly  Lys Pro
        4560                 4565                 4570

gtg gtc agt  gac gag cag ctg gcc  cgg tgg ctg ggt cct  aat gct       24441
Val Val Ser  Asp Glu Gln Leu Ala  Arg Trp Leu Gly Pro  Asn Ala
        4575                 4580                 4585

acc cct cag  agt ttg gaa gag cgg  cgc aag ctt atg atg  gcc gtg       24486
Thr Pro Gln  Ser Leu Glu Glu Arg  Arg Lys Leu Met Met  Ala Val
        4590                 4595                 4600

gtc ctg gtg  acc gtg gag ctg gag  tgc ctg cgc cgc ttc  ttc gcc       24531
Val Leu Val  Thr Val Glu Leu Glu  Cys Leu Arg Arg Phe  Phe Ala
        4605                 4610                 4615

gac gcg gag  acc ctg cgc aag gtc  gag gag aac ctg cac  tac ctc       24576
Asp Ala Glu  Thr Leu Arg Lys Val  Glu Glu Asn Leu His  Tyr Leu
        4620                 4625                 4630

ttc agg cac  ggg ttc gtg cgc cag  gcc tgc aag atc tcc  aat gtg       24621
Phe Arg His  Gly Phe Val Arg Gln  Ala Cys Lys Ile Ser  Asn Val
        4635                 4640                 4645

gag ctg acc  aac ctg gtc tcc tac  atg ggc atc ttg cac  gag aac       24666
Glu Leu Thr  Asn Leu Val Ser Tyr  Met Gly Ile Leu His  Glu Asn
        4650                 4655                 4660

cgc ctg ggg  cag aac gtg ctg cac  acc acc ctg cgc ggg  gag gcc       24711
Arg Leu Gly  Gln Asn Val Leu His  Thr Thr Leu Arg Gly  Glu Ala
        4665                 4670                 4675

cgc cgc gac  tac atc cgc gac tgc  gtc tac ctg tac ctc  tgc cac       24756
Arg Arg Asp  Tyr Ile Arg Asp Cys  Val Tyr Leu Tyr Leu  Cys His
        4680                 4685                 4690

acc tgg cag  acg ggc atg ggc gtg  tgg cag cag tgc ctg  gag gag       24801
Thr Trp Gln  Thr Gly Met Gly Val  Trp Gln Gln Cys Leu  Glu Glu
        4695                 4700                 4705
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cag aac ctg  aaa gag cta tgc aag  ctc ctg cag aag aac  ctc aag       24846
Gln Asn Leu  Lys Glu Leu Cys Lys  Leu Leu Gln Lys Asn  Leu Lys
        4710                 4715                 4720

ggt ctg tgg  acc ggg ttc gac gag  cgg acc acc gcc tcg  gac ctg       24891
Gly Leu Trp  Thr Gly Phe Asp Glu  Arg Thr Thr Ala Ser  Asp Leu
        4725                 4730                 4735

gcc gac ctc  atc ttc ccc gag cgc  ctc agg ctg acg ctg  cgc aac       24936
Ala Asp Leu  Ile Phe Pro Glu Arg  Leu Arg Leu Thr Leu  Arg Asn
        4740                 4745                 4750

ggc ctg ccc  gac ttt atg agc caa  agc atg ttg caa aac  ttt cgc       24981
Gly Leu Pro  Asp Phe Met Ser Gln  Ser Met Leu Gln Asn  Phe Arg
        4755                 4760                 4765

tct ttc atc  ctc gaa cgc tcc gga  atc ctg ccc gcc acc  tgc tcc       25026
Ser Phe Ile  Leu Glu Arg Ser Gly  Ile Leu Pro Ala Thr  Cys Ser
        4770                 4775                 4780

gcg ctg ccc  tcg gac ttc gtg ccg  ctg acc ttc cgc gag  tgc ccc       25071
Ala Leu Pro  Ser Asp Phe Val Pro  Leu Thr Phe Arg Glu  Cys Pro
        4785                 4790                 4795

ccg ccg ctg  tgg agc cac tgc tac  ctg ctg cgt ctg gcc  aac tac       25116
Pro Pro Leu  Trp Ser His Cys Tyr  Leu Leu Arg Leu Ala  Asn Tyr
        4800                 4805                 4810

ctg gcc tac  cac tcg gac gtg atc  gag gac gtc agc ggc  gag gcc       25161
Leu Ala Tyr  His Ser Asp Val Ile  Glu Asp Val Ser Gly  Glu Ala
        4815                 4820                 4825

ctg ctc gag  tgc cac tgc cgc tgc  aac ctc tgc acg ccg  cac cgc       25206
Leu Leu Glu  Cys His Cys Arg Cys  Asn Leu Cys Thr Pro  His Arg
        4830                 4835                 4840

tcc ctg gcc  tgc aac ccc cag ctg  ctg agc gag acc cag  atc atc       25251
Ser Leu Ala  Cys Asn Pro Gln Leu  Leu Ser Glu Thr Gln  Ile Ile
        4845                 4850                 4855

ggc acc ttc  gag ttg caa ggg ccc  agc gag ggc gag ggt  tca gcc       25296
Gly Thr Phe  Glu Leu Gln Gly Pro  Ser Glu Gly Glu Gly  Ser Ala
        4860                 4865                 4870

gcc aag ggg  ggt ctg aaa ctc acc  ccg ggg ctg tgg acc  tcg gcc       25341
Ala Lys Gly  Gly Leu Lys Leu Thr  Pro Gly Leu Trp Thr  Ser Ala
        4875                 4880                 4885

tac ttg cgc  aag ttc gtg ccc gag  gac tac cat ccc ttc  gag atc       25386
Tyr Leu Arg  Lys Phe Val Pro Glu  Asp Tyr His Pro Phe  Glu Ile
        4890                 4895                 4900

agg ttc tac  gag gac caa tcc cag  ccg ccc aag gcc gag  ctg tcg       25431
Arg Phe Tyr  Glu Asp Gln Ser Gln  Pro Pro Lys Ala Glu  Leu Ser
        4905                 4910                 4915

gcc tgc gtc  atc acc cag ggg gcg  atc ctg gcc caa ttg  caa gcc       25476
Ala Cys Val  Ile Thr Gln Gly Ala  Ile Leu Ala Gln Leu  Gln Ala
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        4920                4925                4930

atc cag aaa  tcc cgc caa gaa ttc  ttg ctg aaa aag ggc  cgc ggg       25521
Ile Gln Lys  Ser Arg Gln Glu Phe  Leu Leu Lys Lys Gly  Arg Gly
        4935                4940                4945

gtc tac ctc  gac ccc cag acc ggt  gag gag ctc aac ccc  ggc ttc       25566
Val Tyr Leu  Asp Pro Gln Thr Gly  Glu Glu Leu Asn Pro  Gly Phe
        4950                4955                4960

ccc cag gat  gcc ccg agg aaa caa  gaa gct gaa agt gga  gct gcc       25611
Pro Gln Asp  Ala Pro Arg Lys Gln  Glu Ala Glu Ser Gly  Ala Ala
        4965                4970                4975

gcc cgt gga  gga ttt gga gga aga  ctg gga gaa cag cag  tca ggc       25656
Ala Arg Gly  Gly Phe Gly Gly Arg  Leu Gly Glu Gln Gln  Ser Gly
        4980                4985                4990

aga gga gat  gga gga aga ctg gga  cag cac tca ggc aga  gga gga       25701
Arg Gly Asp  Gly Gly Arg Leu Gly  Gln His Ser Gly Arg  Gly Gly
        4995                5000                5005

cag cct gca  aga cag tct gga gga  aga cga gga gga ggc  aga gga       25746
Gln Pro Ala  Arg Gln Ser Gly Gly  Arg Arg Gly Gly Gly  Arg Gly
        5010                5015                5020

gga ggt gga  aga agc agc cgc cgc  cag acc gtc gtc ctc  ggc ggg       25791
Gly Gly Gly  Arg Ser Ser Arg Arg  Gln Thr Val Val Leu  Gly Gly
        5025                5030                5035

gga gaa agc  aag cag cac gga tac  cat ctc cgc tcc ggg  tcg ggg       25836
Gly Glu Ser  Lys Gln His Gly Tyr  His Leu Arg Ser Gly  Ser Gly
        5040                5045                5050

tcc cgc tcg  gcc cca cag tagatgggac gagaccgggc gattcccgaa           25884
Ser Arg Ser  Ala Pro Gln
        5055

ccccaccacc cagaccggta agaaggagcg gcagggatac aagtcctggc gggggcacaa   25944

aaacgccatc gtctcctgct tgcaggcctg cgggggcaac atctccttca cccggcgcta   26004

cctgctcttc caccgcgggg tgaacttccc ccgcaacatc ttgcattact accgtcacct   26064

ccacagcccc tactacttcc aagaagaggc agcagcggca gaaaaagacc agcagaaaac   26124

cagcagctag aaaatccaca gcggcggcag gtggactgag gatcgcggcg aacgagccgg   26184

cgcagacccg ggagctgagg aaccggatct ttcccaccct ctatgccatc ttccagcaga   26244

gtcgggggca ggagcaggaa ctgaaagtca agaaccgttc tctgcgctcg ctcacccgca   26304

gttgtctgta tcacaagagc gaagaccaac ttcagcgcac tctcgaggac gccgaggctc   26364

tcttcaacaa gtactgcgcg ctcactctta aagagtagcc cgcgcccgcc cagtcgcaga   26424

aaaaggcggg aattacgtca cctgtgccct tcgccctagc cgcctccacc catcatc      26481

atg agc  aaa gag att ccc acg  cct tac atg tgg agc  tac cag ccc       26526
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Met Ser  Lys Glu Ile Pro Thr  Pro Tyr Met Trp Ser  Tyr Gln Pro
    5060                5065                5070

cag atg  ggc ctg gcc gcc ggc  gcc gcc cag gac tac  tcc acc cgc       26571
Gln Met  Gly Leu Ala Ala Gly  Ala Ala Gln Asp Tyr  Ser Thr Arg
    5075                5080                5085

atg aat  tgg ctc agc gcc ggg  ccc gcg atg atc tca  cgg gtg aat       26616
Met Asn  Trp Leu Ser Ala Gly  Pro Ala Met Ile Ser  Arg Val Asn
    5090                5095                5100

gac atc  cgc gcc cac cga aac  cag ata ctc cta gaa  cag tca gcg       26661
Asp Ile  Arg Ala His Arg Asn  Gln Ile Leu Leu Glu  Gln Ser Ala
    5105                5110                5115

ctc acc  gcc acg ccc cgc aat  cac ctc aat ccg cgt  aat tgg ccc       26706
Leu Thr  Ala Thr Pro Arg Asn  His Leu Asn Pro Arg  Asn Trp Pro
    5120                5125                5130

gcc gcc  ctg gtg tac cag gaa  att ccc cag ccc acg  acc gta cta       26751
Ala Ala  Leu Val Tyr Gln Glu  Ile Pro Gln Pro Thr  Thr Val Leu
    5135                5140                5145

ctt ccg  cga gac gcc cag gcc  gaa gtc cag ctg act  aac tca ggt       26796
Leu Pro  Arg Asp Ala Gln Ala  Glu Val Gln Leu Thr  Asn Ser Gly
    5150                5155                5160

gtc cag  ctg gcg ggc ggc gcc  acc ctg tgt cgt cac  cgc ccc gct       26841
Val Gln  Leu Ala Gly Gly Ala  Thr Leu Cys Arg His  Arg Pro Ala
    5165                5170                5175

cag ggt  ata aag cgg ctg gtg  atc cgg ggc aga ggc  aca cag ctc       26886
Gln Gly  Ile Lys Arg Leu Val  Ile Arg Gly Arg Gly  Thr Gln Leu
    5180                5185                5190

aac gac  gag gtg gtg agc tct  tcg ctg ggt ctg cga  cct gac gga       26931
Asn Asp  Glu Val Val Ser Ser  Ser Leu Gly Leu Arg  Pro Asp Gly
    5195                5200                5205

gtc ttc  caa ctc gcc gga tcg  ggg aga tct tcc ttc  acg cct cgt       26976
Val Phe  Gln Leu Ala Gly Ser  Gly Arg Ser Ser Phe  Thr Pro Arg
    5210                5215                5220

cag gcg  gtc ctg act ttg gaa  agt tcg tcc tcg cag  ccc cgc tcg       27021
Gln Ala  Val Leu Thr Leu Glu  Ser Ser Ser Ser Gln  Pro Arg Ser
    5225                5230                5235

ggc ggc  atc ggc act ctc cag  ttc gtg gag gag ttc  act ccc tcg       27066
Gly Gly  Ile Gly Thr Leu Gln  Phe Val Glu Glu Phe  Thr Pro Ser
    5240                5245                5250

gtc tac  ttc aac ccc ttc tcc  ggc tcc ccc ggc cac  tac ccg gac       27111
Val Tyr  Phe Asn Pro Phe Ser  Gly Ser Pro Gly His  Tyr Pro Asp
    5255                5260                5265

gag ttc  atc ccg aac ttt gac  gcc atc agc gag tcg  gtg gac ggc       27156
Glu Phe  Ile Pro Asn Phe Asp  Ala Ile Ser Glu Ser  Val Asp Gly
    5270                5275                5280
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tac gat  tga atg tcc cat ggt ggc  gcg gct gac cta gct  cgg ctt       27201
Tyr Asp      Met Ser His Gly Gly  Ala Ala Asp Leu Ala  Arg Leu
    5285                    5290                5295

cga cac ctt  gac cac tgc cgc cgc  ttt cgc tgc ttc gca  cgg gac       27246
Arg His Leu  Asp His Cys Arg Arg  Phe Arg Cys Phe Ala  Arg Asp
        5300                5305                5310

ctc gcc gag  ttc acc tac ttc gag  ctg ccc gag gag cat  cct cag       27291
Leu Ala Glu  Phe Thr Tyr Phe Glu  Leu Pro Glu Glu His  Pro Gln
        5315                5320                5325

ggc ccg gcc  cac gga gtg cgg atc  gtc gtc gaa ggg ggc  cta gac       27336
Gly Pro Ala  His Gly Val Arg Ile  Val Val Glu Gly Gly  Leu Asp
        5330                5335                5340

tcc cac ctg  ctt cgg atc ttc agc  cag cgc ccg atc ctg  gtc gag       27381
Ser His Leu  Leu Arg Ile Phe Ser  Gln Arg Pro Ile Leu  Val Glu
        5345                5350                5355

cgc caa cag  ggc aac acc ctc ctg  acc ctc tac tgc atc  tgc gac       27426
Arg Gln Gln  Gly Asn Thr Leu Leu  Thr Leu Tyr Cys Ile  Cys Asp
        5360                5365                5370

cac ccc ggc  ctg cat gaa agt ctt  tgt tgt ctg ctg tgt  act gag       27471
His Pro Gly  Leu His Glu Ser Leu  Cys Cys Leu Leu Cys  Thr Glu
        5375                5380                5385

tat aat aaa  agc tgagatcagc gactactccg gactcaactg tggtgtttct       27523
Tyr Asn Lys  Ser
        5390

gcatccatca atcggtcact gaccttcacc gggaacgaga ccgagctcca gctccagtgt   27583

aagccccaca agaagtacct cacctggctg taccagggct ccccgatcgc cgttgttaac   27643

cactgcgacg acgacggagt cctgctgaac ggccccgcca accttacttt ttccacccgc   27703

agaagcaagc tcgagctctt ccaacccttc ctccccggga cctatcagtg catctcggga   27763

ccctgccatc acaccttcca cctgatcccg aataccacct cttccccagc gccgctcccc   27823

actaacaacc aaactaacca ccaccaacgc taccgacgcg acctcgttga atctaatacc   27883

acccacaccg gaggtgagct ccgaggtcct gaatcctctg ggatttatta cggcccctgg   27943

gaggtggtgg ggttaatagc tttaggctta gtagcgggtg ggcttttggc tctctgctac   28003

ctatacctcc cttgcttttc ctacttagtg gtgctttgtt gctggtttaa gaa atg       28059
                                                            Met

ggg aag atc  acc cta gtg tgc ggt  gtg ctg gtg acg gtg  gtg ctt       28104
Gly Lys Ile  Thr Leu Val Cys Gly  Val Leu Val Thr Val  Val Leu
        5395                5400                5405

tcg att ctg  gga ggg gga agc gcg  gct gta gtg acg gag  aag aag       28149
Ser Ile Leu  Gly Gly Gly Ser Ala  Ala Val Val Thr Glu  Lys Lys
        5410                5415                5420
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gcc gat ccc  tgc ttg act ttc aac  ccc gat aaa tgc cgg  ctg agt       28194
Ala Asp Pro  Cys Leu Thr Phe Asn  Pro Asp Lys Cys Arg  Leu Ser
        5425                 5430                 5435

ttt cag ccc  gat ggc aat cgg tgc  gcg gtg ttg atc aag  tgc gga       28239
Phe Gln Pro  Asp Gly Asn Arg Cys  Ala Val Leu Ile Lys  Cys Gly
        5440                 5445                 5450

tgg gaa tgc  gag agt gtg gcg att  cag tat aaa aac aag  acg cgg       28284
Trp Glu Cys  Glu Ser Val Ala Ile  Gln Tyr Lys Asn Lys  Thr Arg
        5455                 5460                 5465

aac aat act  ctc gcg tcc aca tgg  cag ccc ggg gac ccc  gag tgg       28329
Asn Asn Thr  Leu Ala Ser Thr Trp  Gln Pro Gly Asp Pro  Glu Trp
        5470                 5475                 5480

tac acc gtc  tct gtc cct ggt gct  gac ggc tcc ctc cgc  acg gtg       28374
Tyr Thr Val  Ser Val Pro Gly Ala  Asp Gly Ser Leu Arg  Thr Val
        5485                 5490                 5495

aac aac act  ttc att ttt gag cac  atg tgc gat acc gcc  atg ttc       28419
Asn Asn Thr  Phe Ile Phe Glu His  Met Cys Asp Thr Ala  Met Phe
        5500                 5505                 5510

atg agc aag  cag tac ggt atg tgg  ccc cca cga aaa gag  aat atc       28464
Met Ser Lys  Gln Tyr Gly Met Trp  Pro Pro Arg Lys Glu  Asn Ile
        5515                 5520                 5525

gtg gtc ttc  tcc atc gct tac agc  gcg tgc acg gtg cta  atc acc       28509
Val Val Phe  Ser Ile Ala Tyr Ser  Ala Cys Thr Val Leu  Ile Thr
        5530                 5535                 5540

gcg atc gtg  tgc ctg agc att cac  atg ctc atc gct att  cgc ccc       28554
Ala Ile Val  Cys Leu Ser Ile His  Met Leu Ile Ala Ile  Arg Pro
        5545                 5550                 5555

aga aat aat  gcc gag aaa gag aaa  cag cca taacacactt ttttcacaca      28604
Arg Asn Asn  Ala Glu Lys Glu Lys  Gln Pro
        5560                 5565

ccttttttcag acc atg gcc tct  gtt aca atc ctt att  tat ttt ttg ggc    28653
               Met Ala Ser  Val Thr Ile Leu Ile  Tyr Phe Leu Gly
                       5570                 5575

ctt  gtg ggc act atc agc  agt ttc gac cat aaa  aac gta act gct       28698
Leu  Val Gly Thr Ile Ser  Ser Phe Asp His Lys  Asn Val Thr Ala
5580                 5585                 5590

tat  gtt ggt tct aac tgt  gta cta tct ggg tac  cag tca cat cag       28743
Tyr  Val Gly Ser Asn Cys  Val Leu Ser Gly Tyr  Gln Ser His Gln
5595                 5600                 5605

cgg  gtt tca tgg tac tgg  ttt gat aaa aag aac  aca gct tat aca       28788
Arg  Val Ser Trp Tyr Trp  Phe Asp Lys Lys Asn  Thr Ala Tyr Thr
5610                 5615                 5620

ctc  tgc aaa ggc tat cag  cag ccc aca cat cgc  agt ggt ctt tat       28833
Leu  Cys Lys Gly Tyr Gln  Gln Pro Thr His Arg  Ser Gly Leu Tyr
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5625                5630                5635

tac  agc tgc acc aat aat  aat atc aca cta ctt  caa gta acc aac       28878
Tyr  Ser Cys Thr Asn Asn  Asn Ile Thr Leu Leu  Gln Val Thr Asn
5640                5645                5650

caa  tat tct ggg acc tac  tat gga acc aat ttt  aac aca aaa cag       28923
Gln  Tyr Ser Gly Thr Tyr  Tyr Gly Thr Asn Phe  Asn Thr Lys Gln
5655                5660                5665

gac  act tac tat agt gtc  aga gta ttg gat cca  act act ccc aga       28968
Asp  Thr Tyr Tyr Ser Val  Arg Val Leu Asp Pro  Thr Thr Pro Arg
5670                5675                5680

act  act act aaa cat acc  aca act aag aag ccc  act aca cct aaa       29013
Thr  Thr Thr Lys His Thr  Thr Thr Lys Lys Pro  Thr Thr Pro Lys
5685                5690                5695

aag  cct acc acg ccc aaa  acc act aag aca aca  act gct aag cag       29058
Lys  Pro Thr Thr Pro Lys  Thr Thr Lys Thr Thr  Thr Ala Lys Gln
5700                5705                5710

acc  act acc aca gag cca  acc aca acc agc acc  aca ctt gct ata       29103
Thr  Thr Thr Thr Glu Pro  Thr Thr Thr Ser Thr  Thr Leu Ala Ile
5715                5720                5725

act  aca cac act gag ctg  acc tca cag gca act  act gaa aat ggt       29148
Thr  Thr His Thr Glu Leu  Thr Ser Gln Ala Thr  Thr Glu Asn Gly
5730                5735                5740

ttt  gcc cta ttg caa aag  ggg gag aac agt agc  agc agt cct ctg       29193
Phe  Ala Leu Leu Gln Lys  Gly Glu Asn Ser Ser  Ser Ser Pro Leu
5745                5750                5755

cct  act acc ccc agt gag  gaa ata ccc aag tcc  atg gtt ggc att       29238
Pro  Thr Thr Pro Ser Glu  Glu Ile Pro Lys Ser  Met Val Gly Ile
5760                5765                5770

atc  gct gct gta gtg gtg  tgt atg gtg att atc  atc ttg tgc atg       29283
Ile  Ala Ala Val Val Val  Cys Met Val Ile Ile  Ile Leu Cys Met
5775                5780                5785

atg  tac tat gcc tgc tac  tac aga aaa cac agg  cta aac aat aag       29328
Met  Tyr Tyr Ala Cys Tyr  Tyr Arg Lys His Arg  Leu Asn Asn Lys
5790                5795                5800

ctg  gac ccc cta ctg aat  gtt gat ttt taatttttta gaacc atg aag       29376
Leu  Asp Pro Leu Leu Asn  Val Asp Phe                  Met Lys
5805                5810                                   5815

atc cta agc ctt ttt  gtt ttt tct atc att  acc tct gct att tgt       29421
Ile Leu Ser Leu Phe  Val Phe Ser Ile Ile  Thr Ser Ala Ile Cys
               5820                5825                5830

aaa tca gtg gat aag  gac gtt act gtc acc  act ggc tct aat tat       29466
Lys Ser Val Asp Lys  Asp Val Thr Val Thr  Thr Gly Ser Asn Tyr
               5835                5840                5845

aca cta aaa ggg cct  tcc tca ggt atg ctt  tcg tgg tat tgt tat       29511
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Thr Leu Lys Gly Pro  Ser Ser Gly Met Leu  Ser Trp Tyr Cys Tyr
                5850                5855                5860

ttt gga aat gat gat  aaa cag aca gag ctt  tgt aat ttc cag aac        29556
Phe Gly Asn Asp Asp  Lys Gln Thr Glu Leu  Cys Asn Phe Gln Asn
                5865                5870                5875

gga aaa acc aaa aat  tct aaa ata gat aac  tat caa tgc cat ggt        29601
Gly Lys Thr Lys Asn  Ser Lys Ile Asp Asn  Tyr Gln Cys His Gly
                5880                5885                5890

act gat tta gta ctg  atg aat atc acg aaa  gca tat gct ggc agt        29646
Thr Asp Leu Val Leu  Met Asn Ile Thr Lys  Ala Tyr Ala Gly Ser
                5895                5900                5905

tat tcc tgt cct gga  caa aac acc gaa gaa  atg att ttt tac aaa        29691
Tyr Ser Cys Pro Gly  Gln Asn Thr Glu Glu  Met Ile Phe Tyr Lys
                5910                5915                5920

ttg att gtg gtt gat  ccc act aca cct cca  ccc acc aca act acc        29736
Leu Ile Val Val Asp  Pro Thr Thr Pro Pro  Pro Thr Thr Thr Thr
                5925                5930                5935

aat gca cct acc aca  gac aca cag gaa acc  act cca gag gca gta        29781
Asn Ala Pro Thr Thr  Asp Thr Gln Glu Thr  Thr Pro Glu Ala Val
                5940                5945                5950

gca gag tta gca aag  cag att cat gaa gat  tcc ttt gtt gct aat        29826
Ala Glu Leu Ala Lys  Gln Ile His Glu Asp  Ser Phe Val Ala Asn
                5955                5960                5965

act ccc aca cac ccc  gga ccg caa tgt cca  ggg tta gta gtc agc        29871
Thr Pro Thr His Pro  Gly Pro Gln Cys Pro  Gly Leu Val Val Ser
                5970                5975                5980

ggc att gtc ggt gtg  ctt tgc ggg tta gca  gtt ata atc atc tgc        29916
Gly Ile Val Gly Val  Leu Cys Gly Leu Ala  Val Ile Ile Ile Cys
                5985                5990                5995

atg ttc att ttt gct  tgc tgc tac aga agg  ctt cac cga caa aaa        29961
Met Phe Ile Phe Ala  Cys Cys Tyr Arg Arg  Leu His Arg Gln Lys
                6000                6005                6010

tca gac cca ctg ctg  aac ctc tat gtt taatttttga ttttccagag cc        30010
Ser Asp Pro Leu Leu  Asn Leu Tyr Val
                6015

atg  aag gca ctt agc act  tta gta ttt ttg tcc  ttg att ggc att       30055
Met  Lys Ala Leu Ser Thr  Leu Val Phe Leu Ser  Leu Ile Gly Ile
6020                6025                6030

gtt  ttc agt gct ggg ttt  ttg aaa aat ctt acc  att att gaa ggc       30100
Val  Phe Ser Ala Gly Phe  Leu Lys Asn Leu Thr  Ile Ile Glu Gly
6035                6040                6045

gat  aat gca aca ctg gta  gga atc agt ggt cag  aat gtt agt tgg       30145
Asp  Asn Ala Thr Leu Val  Gly Ile Ser Gly Gln  Asn Val Ser Trp
6050                6055                6060
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cta  aaa tat cat cta gat  ggg tgg aaa cct att  tgc acc tgg aat       30190
Leu  Lys Tyr His Leu Asp  Gly Trp Lys Pro Ile  Cys Thr Trp Asn
6065                 6070                 6075

gtc  agt gtg tac aca tgt  cat ggt gtt aac ctc  acc att acc aat       30235
Val  Ser Val Tyr Thr Cys  His Gly Val Asn Leu  Thr Ile Thr Asn
6080                 6085                 6090

gcc  acc caa gat cag aat  ggc agg ttt aag ggt  cag agt ttc act       30280
Ala  Thr Gln Asp Gln Asn  Gly Arg Phe Lys Gly  Gln Ser Phe Thr
6095                 6100                 6105

agc  aac aat ggc tat gaa  acc cat aac atg ttc  atc tat gat gtc       30325
Ser  Asn Asn Gly Tyr Glu  Thr His Asn Met Phe  Ile Tyr Asp Val
6110                 6115                 6120

act  gtc ata tca aat aag  act aca cct acc acc  caa aca ccc act       30370
Thr  Val Ile Ser Asn Lys  Thr Thr Pro Thr Thr  Gln Thr Pro Thr
6125                 6130                 6135

aca  cat agc tca act cat  gcc atg cag acc act  cag acc acc act       30415
Thr  His Ser Ser Thr His  Ala Met Gln Thr Thr  Gln Thr Thr Thr
6140                 6145                 6150

tac  act aca tcc att cag  ccc acc acc act aca  gca gag gta acc       30460
Tyr  Thr Thr Ser Ile Gln  Pro Thr Thr Thr Thr  Ala Glu Val Thr
6155                 6160                 6165

agc  aca gcg cct cag ccc  caa gca ttg gct ttg  atg gct gca cag       30505
Ser  Thr Ala Pro Gln Pro  Gln Ala Leu Ala Leu  Met Ala Ala Gln
6170                 6175                 6180

cct  agc agc atg act gct  aaa acc aat gag cag  act act gaa ttt       30550
Pro  Ser Ser Met Thr Ala  Lys Thr Asn Glu Gln  Thr Thr Glu Phe
6185                 6190                 6195

ttg  tcc act act cag agc  agc acc aca gct acc  tcg agt gcc ttc       30595
Leu  Ser Thr Thr Gln Ser  Ser Thr Thr Ala Thr  Ser Ser Ala Phe
6200                 6205                 6210

tct  agc acc gcc aat ctc  acc tcg ctt tct tct  acg cca atc agt       30640
Ser  Ser Thr Ala Asn Leu  Thr Ser Leu Ser Ser  Thr Pro Ile Ser
6215                 6220                 6225

aat  gct act acc tcc ccc  gct cct ctt ccc act  cct ctg aag caa       30685
Asn  Ala Thr Thr Ser Pro  Ala Pro Leu Pro Thr  Pro Leu Lys Gln
6230                 6235                 6240

tcc  gag tct agc acg cag  ctg cag atc acc ctg  ctc att gtg atc       30730
Ser  Glu Ser Ser Thr Gln  Leu Gln Ile Thr Leu  Leu Ile Val Ile
6245                 6250                 6255

ggg  gtg gtc atc ctg gca  gtg ctg ctc tac ttt  atc ttc tgc cgc       30775
Gly  Val Val Ile Leu Ala  Val Leu Leu Tyr Phe  Ile Phe Cys Arg
6260                 6265                 6270

cgc  atc ccc aac gcg aaa  ccg gcc tac aag ccc  att gtt atc ggg       30820
Arg  Ile Pro Asn Ala Lys  Pro Ala Tyr Lys Pro  Ile Val Ile Gly
6275                 6280                 6285
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acg  ccg gaa ccg ctt cag  gtg gag gga ggt cta  agg aat ctt ctc       30865
Thr  Pro Glu Pro Leu Gln  Val Glu Gly Gly Leu  Arg Asn Leu Leu
6290                 6295                 6300

ttc  tct ttt aca gta tgg  tgatttgaac t atg att cct aga cat  ttc      30912
Phe  Ser Phe Thr Val Trp              Met Ile Pro Arg His  Phe
6305                 6310                              6315

att atc act tct  cta atc tgt gtg ctc  caa gtc tgt gcc acc  ctc      30957
Ile Ile Thr Ser  Leu Ile Cys Val Leu  Gln Val Cys Ala Thr  Leu
           6320                 6325                 6330

gct ctc gtg gct  aac gcg agt cca gac  tgc att gga gcg ttc  gcc      31002
Ala Leu Val Ala  Asn Ala Ser Pro Asp  Cys Ile Gly Ala Phe  Ala
           6335                 6340                 6345

tcc tac gtg ctc  ttt gcc ttc atc acc  tgc atc tgc tgc tgt  agc      31047
Ser Tyr Val Leu  Phe Ala Phe Ile Thr  Cys Ile Cys Cys Cys  Ser
           6350                 6355                 6360

ata gtc tgc ctg  ctt atc acc ttc ttc  cag ttc gtt gac tgg  gtc      31092
Ile Val Cys Leu  Leu Ile Thr Phe Phe  Gln Phe Val Asp Trp  Val
           6365                 6370                 6375

ttt gtg cgc atc  gcc tac ctg cgc cac  cat ccc cag tac cgc  gac      31137
Phe Val Arg Ile  Ala Tyr Leu Arg His  His Pro Gln Tyr Arg  Asp
           6380                 6385                 6390

cag aga gtg gcg  caa ctg ttg aga ctc  atc tg atg ata agc atg  cgg   31184
Gln Arg Val Ala  Gln Leu Leu Arg Leu  Ile    Met Ile Ser Met  Arg
           6395                 6400                     6405

gct ctg cta cta  ctc ctc gcg ctt ctg  cta gtt ccc ctc gcc  gcc      31229
Ala Leu Leu Leu  Leu Leu Ala Leu Leu  Leu Val Pro Leu Ala  Ala
           6410                 6415                 6420

ccc tta tcc ttc  aaa tcc ccc acc cag  tcc cct gaa gag gtt  cga      31274
Pro Leu Ser Phe  Lys Ser Pro Thr Gln  Ser Pro Glu Glu Val  Arg
           6425                 6430                 6435

aaa tgt aaa ttc  caa gaa ccc tgg aaa  ttc ctt tca tgc tac  aaa      31319
Lys Cys Lys Phe  Gln Glu Pro Trp Lys  Phe Leu Ser Cys Tyr  Lys
           6440                 6445                 6450

ctc aaa tca gaa  atg cac ccc agc tgg  atc atg atc att gga  atc      31364
Leu Lys Ser Glu  Met His Pro Ser Trp  Ile Met Ile Ile Gly  Ile
           6455                 6460                 6465

gtg aac atc ctt  gcc tgt acc ctc ttc  tcc ttt gtg att tac  ccc      31409
Val Asn Ile Leu  Ala Cys Thr Leu Phe  Ser Phe Val Ile Tyr  Pro
           6470                 6475                 6480

cgc ttt gac ttt  ggg tgg aac gca ccc  gag gcg ctc tgg ctc  ccg      31454
Arg Phe Asp Phe  Gly Trp Asn Ala Pro  Glu Ala Leu Trp Leu  Pro
           6485                 6490                 6495

cct gat ccc gac  ata cca cca cag cag  cag caa aat cag gca  cac      31499
Pro Asp Pro Asp  Ile Pro Pro Gln Gln  Gln Gln Asn Gln Ala  His
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            6500                6505                6510

gca cca cca cca  cag cct agg cca caa  tac atg ccc atc tta  gac      31544
Ala Pro Pro Pro  Gln Pro Arg Pro Gln  Tyr Met Pro Ile Leu  Asp
            6515                6520                6525

tat gag gcc gag  cca cag cga gcc atg  ctt cct gct att agt  tac      31589
Tyr Glu Ala Glu  Pro Gln Arg Ala Met  Leu Pro Ala Ile Ser  Tyr
            6530                6535                6540

ttc aac cta acc  ggc gga gat gac tgaccccatg gccaacaaca ccgtcaacga   31643
Phe Asn Leu Thr  Gly Gly Asp Asp
            6545

cctcctggac atggacggcc gcgcctcgga gcagcgactc gcccaactcc gcatccgcca   31703

gcagcaggag agagccgtca aggagctgca ggatgcggtg gctatccacc agtgcaagag   31763

aggcatcttc tgcctggtga agcaggccaa gatcaccttc gaggtgactt ccaccgacca   31823

tcgcctctcc tacgagctcc tgcagcagcg ccagaagttc acctgcctgg tcggagtcaa   31883

ccccatcgtc atcacccagc agtctggcga taccaagggg tgcatccact gctcctgcga   31943

ctccccgag tgccttcaca ccctggtcaa gaccctctgc ggcctccgcg acctcctccc   32003

catgaactaa tcaactaacc cctacccctt taccctccag taaaaaataa agattaaaaa   32063

atgattgaat tgatcaataa agaatcactt acttgaaatc tgaaaccagg tctctgtcca   32123

tgttttctgt cagcagcact tcactcccct cttcccagct ctggtactgc aggccccggc   32183

gggctgcaaa cttcctccac actctgaagg ggatgtcaaa ttcctcctgt ccctcaatct   32243

tcatttttat cttctatcag atg  tcc aaa aag cgc gcg  cgg gtg gat gat      32293
                     Met  Ser Lys Lys Arg Ala  Arg Val Asp Asp
                     6550                6555

ggc  ttc gac ccc gtg tac  ccc tac gat gca gac  aac gca ccg act      32338
Gly  Phe Asp Pro Val Tyr  Pro Tyr Asp Ala Asp  Asn Ala Pro Thr
6560                6565                6570

gtg  ccc ttc atc aac cct  ccc ttc gtc tct tca  gat gga ttc caa      32383
Val  Pro Phe Ile Asn Pro  Pro Phe Val Ser Ser  Asp Gly Phe Gln
6575                6580                6585

gaa  aag ccc ttg ggg gtg  ttg tcc ctg cgc ctg  gcc gac ccc gtc      32428
Glu  Lys Pro Leu Gly Val  Leu Ser Leu Arg Leu  Ala Asp Pro Val
6590                6595                6600

acc  acc aag aac ggg gct  gtc acc ctc aag ctg  ggg gag ggg gtg      32473
Thr  Thr Lys Asn Gly Ala  Val Thr Leu Lys Leu  Gly Glu Gly Val
6605                6610                6615

gac  ctc gac gac tcg gga  aaa ctc att gca aac  aca gtc agc aag      32518
Asp  Leu Asp Asp Ser Gly  Lys Leu Ile Ala Asn  Thr Val Ser Lys
6620                6625                6630

gcc  att gcc cct ctc agt  ttt tcc aac aac acc  att tcc ctt aac      32563
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Ala  Ile Ala Pro Leu Ser  Phe Ser Asn Asn Thr  Ile Ser Leu Asn
6635                 6640                 6645

atg  gat acc cct tta tat  acc aaa gat gga aaa  cta tcc tta caa      32608
Met  Asp Thr Pro Leu Tyr  Thr Lys Asp Gly Lys  Leu Ser Leu Gln
6650                 6655                 6660

gtt  tct cca cca tta aat  ata tta aga tca acg  att ctg aac aca      32653
Val  Ser Pro Pro Leu Asn  Ile Leu Arg Ser Thr  Ile Leu Asn Thr
6665                 6670                 6675

tta  gct cta gct ttt ggc  tca ggt tta gga ctc  agt ggc agc gcc      32698
Leu  Ala Leu Ala Phe Gly  Ser Gly Leu Gly Leu  Ser Gly Ser Ala
6680                 6685                 6690

ctg  gca gta cag tta gcc  tct cca ctt aca ttt  gat gat aaa gga      32743
Leu  Ala Val Gln Leu Ala  Ser Pro Leu Thr Phe  Asp Asp Lys Gly
6695                 6700                 6705

aat  ata aag att acc cta  gac agg gga ttg cat  gtt acg aca gga      32788
Asn  Ile Lys Ile Thr Leu  Asp Arg Gly Leu His  Val Thr Thr Gly
6710                 6715                 6720

aat  gca att gaa agc aac  ata agc tgg gct aaa  ggt ata aaa ttt      32833
Asn  Ala Ile Glu Ser Asn  Ile Ser Trp Ala Lys  Gly Ile Lys Phe
6725                 6730                 6735

gaa  gat gga gcc ata gct  gcc aac att ggt aaa  ggg cta gag ttt      32878
Glu  Asp Gly Ala Ile Ala  Ala Asn Ile Gly Lys  Gly Leu Glu Phe
6740                 6745                 6750

ggc  acc agt agt aca gta  aca ggt gtt gac gac  gct tat cca ata      32923
Gly  Thr Ser Ser Thr Val  Thr Gly Val Asp Asp  Ala Tyr Pro Ile
6755                 6760                 6765

caa  gtt aaa ctt gga tct  ggt ctt agc ttt gat  agc aca ggg gct      32968
Gln  Val Lys Leu Gly Ser  Gly Leu Ser Phe Asp  Ser Thr Gly Ala
6770                 6775                 6780

atc  atg gct ggc aat aag  gag gat gac aaa ctt  act tta tgg aca      33013
Ile  Met Ala Gly Asn Lys  Glu Asp Asp Lys Leu  Thr Leu Trp Thr
6785                 6790                 6795

aca  cct gat cca tcg cca  aat tgt caa ata ctc  gca gaa aat gat      33058
Thr  Pro Asp Pro Ser Pro  Asn Cys Gln Ile Leu  Ala Glu Asn Asp
6800                 6805                 6810

gca  aaa cta aca ctt tgc  tta aca aag tgt ggt  agt caa ata ttg      33103
Ala  Lys Leu Thr Leu Cys  Leu Thr Lys Cys Gly  Ser Gln Ile Leu
6815                 6820                 6825

gcc  act gta tca gtc tta  gtg gta gga agt gga  aag tta aac cca      33148
Ala  Thr Val Ser Val Leu  Val Val Gly Ser Gly  Lys Leu Asn Pro
6830                 6835                 6840

att  act ggg gaa gta agc  agt gct caa gtc ttt  cta cga ttt gat      33193
Ile  Thr Gly Glu Val Ser  Ser Ala Gln Val Phe  Leu Arg Phe Asp
6845                 6850                 6855
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tct  aat gga gta ctc tta  gta aac agc tcc aca  ttg aaa aag tat       33238
Ser  Asn Gly Val Leu Leu  Val Asn Ser Ser Thr  Leu Lys Lys Tyr
6860                 6865                 6870

tgg  ggg tat agg cag ggt  gac agc ata gat ggt  act cca tac acc       33283
Trp  Gly Tyr Arg Gln Gly  Asp Ser Ile Asp Gly  Thr Pro Tyr Thr
6875                 6880                 6885

aac  gcc gta ggt ttc atg  cca aat tta aaa gct  tac cca aag tcc       33328
Asn  Ala Val Gly Phe Met  Pro Asn Leu Lys Ala  Tyr Pro Lys Ser
6890                 6895                 6900

caa  agt tct act act aaa  aat aat ata gtg gga  caa gta tac atg       33373
Gln  Ser Ser Thr Thr Lys  Asn Asn Ile Val Gly  Gln Val Tyr Met
6905                 6910                 6915

aat  ggt gat aat tca aaa  cct atg ctt ctt act  ata act ctc aat       33418
Asn  Gly Asp Asn Ser Lys  Pro Met Leu Leu Thr  Ile Thr Leu Asn
6920                 6925                 6930

ggc  act gat gat acc acc  agt gca tat tca atg  tca ttt tca tac       33463
Gly  Thr Asp Asp Thr Thr  Ser Ala Tyr Ser Met  Ser Phe Ser Tyr
6935                 6940                 6945

acc  tgg act aat gga agt  tat acc gga gca aca  ttt gga gct aac       33508
Thr  Trp Thr Asn Gly Ser  Tyr Thr Gly Ala Thr  Phe Gly Ala Asn
6950                 6955                 6960

tca  tac aca ttt tcc tac  att gcc caa gaa taatcccacc ctgcatgcca      33558
Ser  Tyr Thr Phe Ser Tyr  Ile Ala Gln Glu
6965                 6970

acccctttc ccactctata aatggaactg aaacaaaaat aaagttcaag tgtttttatt    33618

gattcaacag ttttcacagg attcgagtag ttattttccc tcctccctcc caactcatgg    33678

aatacaccac cctctcccca cgcacagcct taaacatctg aatgccattg gtaatggaca    33738

tggttttggt ctccacattc cacacagttt cagagcgagc cagtctcggg tcggtcaggg    33798

agatgaaacc ctccgggcac tcctgcatct gcacctcaaa gttcagtagc tgagggctgt    33858

cctcggtggt cgggatcaca gttatctgga agaagagcga tgagagtcat aatccgcgaa    33918

cgggatcggg cggttgtggc gcatcaggcc ccgcagcagt cgctgtctgc gccgctccgt    33978

caagctgctg cttaaggggt ccgggtccag ggactccctg cgcatgatgc caatggccct    34038

gagcatcagt cgcctggtgc ggcgggcgca gcagcggatg cggatctcac tcaggtcgga    34098

gcagtacgtg cagcacagca ctaccaagtt gttcaacagt ccatagttca acgtgctcca    34158

gccaaaactc atctgtggaa ctatgctgcc cacatgtcca tcgtaccaga tcctgatgta    34218

aatcaggtgg cgccccctcc agaacacact gcccatgtac atgatctcct tgggcatatg    34278

caggttcacc acctcccggt accacatcac ccgctggttg aacatgcagc cctggataat    34338

cctgcggaac cagatggcca gtaccgcccc gcccgccatg cagcgaaggg accccgggtc    34398
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ctgacagtgg cagtggatga tccaccgctc gcggccgtgg atcaactggg aactgaacaa 34458

gtctatgttg gcacagcaca ggcacacgct catgcatgtc ttcagcactc tcagctcctc 34518

gggggtcagg accatgtccc agggcacggg gaactcttgc aggacagtga acccggcaga 34578

acaaggcaac cctcgcacac aacttacatt gtgcatggac agggtatcgc aatcaggcag 34638

caccggatga tcctccacca gagaagcgcg ggtctcggtc tcctcacagc gaggtaaggg 34698

ggccgggggt tggtacggat gatggcggga tgacgctaat cgtgttctgg atcgtgtcat 34758

gatggagctg tttcctgaca ttttcgtact tcacgaagca gaacctggta cgggcactgc 34818

acaccgctcg tcggcgacgg tctcggcgct tcgagcgctc ggtgttgaag ttatagaaca 34878

gccactccct cagagcatgc agtatctcct gagcctcttg ggtgatgaaa atcccatccg 34938

ccctgatggc tctgatcaca tcgaccacgg tggaatgggc cagacccagc cagatgatgc 34998

aattttgttg ggtttcggtg acggcggggg agggaagaac aggaagaacc atgattaact 35058

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cccactgtgt tggtggaaaa taacagccag gtcaaaggtg acacggttct cgagatgttc 35178

cacggtggct tccagtaaag cctccacgcg cacatccaga aacaagagga cagcgaaagc 35238

gggagcgttt tctaattcct caatcatcat attacactcc tgcaccatcc ccagataatt 35298

ttcatttttc cagccttgaa tgattcgtat tagttcctgg ggtaaatcca agccagccat 35358

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aagagattct gctcctggtt cacctgcagc agattaacaa tgggaatatc aaaatctctg 35478

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aaatttttag ccatagggcc gccaggaata agagaagggc aagccacatt acagataaag 35598

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ccggtgatat cctccagata actggacaga aaatcaggca agcaattttt aagaaaatca 35718

acaaaagaaa agtcgtccag gtgcacgttt agagcctcgg gaacaacgat ggaataagtg 35778

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catgcaatat taaaccatgc tagcctggcg aacaggtggg taaatcactc tttccagcac 35898

caggcaggct acggggtctc cggcgcgacc ctcgtagaaa ctgtcgccat gattgaaaag 35958

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gtaaaaaatg taattactcc cctcctgcac aggcagcaaa gcccccgctc cctccagaaa 36198

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<210> 163
<211> 499
<212> PRT
<213> Simian adenovirus 26

<400> 163

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 Val Ala Asp Leu Phe Pro Glu Leu Arg Arg Val
85 90 95

Leu Thr Arg Ser Ser Ser Gly Arg Glu Arg Gly Ile Lys Arg Glu Arg
100 105 110

His Asp Glu Thr Asn His Arg Thr Glu Leu Thr Val Gly Leu Met Ser
115 120 125

Arg Lys Arg Pro Glu Thr Val Trp Trp His Glu Val Gln Ser Thr Gly

```
    130                 135                 140

Thr Asp Glu Val Ser Val Met His Glu Arg Phe Ser Leu Glu Gln Val
145                 150                 155                 160

Lys Thr Cys Trp Leu Glu Pro Glu Asp Asp Trp Glu Val Ala Ile Arg
                165                 170                 175

Asn Tyr Ala Lys Leu Ala Leu Arg Pro Asp Lys Lys Tyr Lys Ile Thr
            180                 185                 190

Lys Leu Ile Asn Ile Arg Asn Ala Cys Tyr Ile Ser Gly Asn Gly Ala
        195                 200                 205

Glu Val Glu Ile Cys Leu Gln Asp Arg Val Ala Phe Arg Cys Cys Met
    210                 215                 220

Met Asn Met Tyr Pro Gly Val Val Gly Met Asp Gly Val Thr Phe Met
225                 230                 235                 240

Asn Met Arg Phe Arg Gly Asp Gly Tyr Asn Gly Thr Val Phe Met Ala
                245                 250                 255

Asn Thr Lys Leu Thr Val His Gly Cys Ser Phe Phe Gly Phe Asn Asn
            260                 265                 270

Thr Cys Ile Glu Ala Trp Gly Gln Val Gly Val Arg Gly Cys Ser Phe
        275                 280                 285

Ser Ala Asn Trp Met Gly Val Val Gly Arg Thr Lys Ser Met Leu Ser
    290                 295                 300

Val Lys Lys Cys Leu Phe Glu Arg Cys His Leu Gly Val Met Ser Glu
305                 310                 315                 320

Gly Glu Ala Arg Ile Arg His Cys Ala Ser Thr Glu Thr Gly Cys Phe
                325                 330                 335

Val Leu Cys Lys Gly Asn Ala Lys Ile Lys His Asn Met Ile Cys Gly
            340                 345                 350

Ala Ser Asp Glu Arg Gly Tyr Gln Met Leu Thr Cys Ala Gly Gly Asn
        355                 360                 365
```

```
Ser His Met Leu Ala Thr Val His Val Ala Ser His Ser Arg Lys Pro
    370                 375                 380

Trp Pro Glu Phe Glu His Asn Val Met Thr Arg Cys Asn Met His Leu
385                 390                 395                 400

Gly Ser Arg Arg Gly Met Phe Met Pro Tyr Gln Cys Asn Leu Asn Tyr
                405                 410                 415

Val Lys Val Leu Leu Glu Pro Asp Ala Met Ser Arg Val Ser Leu Thr
            420                 425                 430

Gly Val Phe Asp Met Asn Val Glu Val Trp Lys Ile Leu Arg Tyr Asp
        435                 440                 445

Glu Ser Lys Thr Arg Cys Arg Ala Cys Glu Cys Gly Gly Lys His Ala
    450                 455                 460

Arg Phe Gln Pro Val Cys Val Glu Val Thr Glu Asp Leu Arg Pro Asp
465                 470                 475                 480

His Leu Val Leu Ser Cys Thr Gly Thr Glu Phe Gly Ser Ser Gly Glu
                485                 490                 495

Glu Ser Asp
```

<210> 164
<211> 142
<212> PRT
<213> Simian adenovirus 26

<400> 164

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

Thr Gly Arg Leu Pro Ser Trp Ala Gly Val Arg Gln Asn Val Met Gly
            20                  25                  30

Ser Thr Val Asp Gly Arg Pro Val Gln Pro Ala Asn Ser Ser Thr Leu
        35                  40                  45

Thr Tyr Ala Thr Leu Ser Ser Ser Ser Val Asp Ala Ala Ala Ala Ala
    50                  55                  60
```

```
Ala Ala Ala Ser Ala Ala Ser Ala Val Arg Gly Met Ala Met Gly Ala
65                  70                  75                  80

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

Ala Ser Leu Asn Glu Glu Lys Leu Leu Leu Leu Met Ala Gln Leu Glu
            100                 105                 110

Ala Leu Thr Gln Arg Leu Gly Glu Leu Thr Gln Gln Val Ala Gln Leu
        115                 120                 125

Gln Glu Gln Thr Arg Ala Ala Val Ala Thr Val Lys Ser Lys
    130                 135                 140
```

<210> 165
<211> 464
<212> PRT
<213> Simian adenovirus 26

<400> 165

```
Met Lys Leu Val Ser Ala Glu Ser Gly Arg Pro Arg Trp Leu Ala Ala
1               5                   10                  15

Val Val Trp Arg Arg Ile Ala Arg Val Ala Leu Arg Cys Ala Pro Val
            20                  25                  30

Arg Ser Arg Pro Asp Ser Ala Ala Asn Glu Gly Val Ala Ala Pro Ser
        35                  40                  45

Phe Pro Arg Pro Pro Ser Gln Pro Thr Ser Pro Val Thr Glu Arg Ala
    50                  55                  60

Pro Leu Leu Phe Phe Cys Phe Cys Gln Met His Pro Val Leu Arg Gln
65                  70                  75                  80

Met Arg Pro His His Pro Pro Pro Gln Gln Gln Pro Pro Pro Gln Pro
                85                  90                  95

Ala Leu Leu Pro Pro Pro Gln Gln Gln Gln Gln Leu Pro Ala Thr Thr
            100                 105                 110

Ala Ala Ala Ala Val Ser Gly Ala Gly Gln Thr Ser Gln Tyr Asp Leu
        115                 120                 125
```

```
Ala Leu Glu Glu Gly Glu Gly Leu Ala Arg Leu Gly Ala Ser Ser Pro
    130                 135                 140

Glu Arg His Pro Arg Val Gln Met Lys Arg Asp Ala Arg Glu Ala Tyr
145                 150                 155                 160

Val Pro Lys Gln Asn Leu Phe Arg Asp Arg Ser Gly Glu Glu Pro Glu
                165                 170                 175

Glu Met Arg Ala Ala Arg Phe His Ala Gly Arg Glu Leu Arg Arg Gly
            180                 185                 190

Leu Asp Arg Lys Arg Val Leu Arg Asp Glu Asp Phe Glu Ala Asp Glu
        195                 200                 205

Leu Thr Gly Ile Ser Pro Ala Arg Ala His Val Ala Ala Ala Asn Leu
    210                 215                 220

Val Thr Ala Tyr Glu Gln Thr Val Lys Glu Glu Ser Asn Phe Gln Lys
225                 230                 235                 240

Ser Phe Asn Asn His Val Arg Thr Leu Ile Ala Arg Glu Glu Val Thr
                245                 250                 255

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

Pro Thr Ser Lys Pro Leu Thr Ala Gln Leu Phe Leu Val Val Gln His
        275                 280                 285

Ser Arg Asp Asn Glu Ala Phe Arg Glu Ala Leu Leu Asn Ile Thr Glu
    290                 295                 300

Pro Glu Gly Arg Trp Leu Leu Asp Leu Val Asn Ile Leu Gln Ser Ile
305                 310                 315                 320

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

Asn Phe Ser Val Leu Ser Leu Gly Lys Tyr Tyr Ala Arg Lys Ile Tyr
            340                 345                 350

Lys Thr Pro Tyr Val Pro Ile Asp Lys Glu Val Lys Ile Asp Gly Phe
        355                 360                 365
```

```
Tyr Met Arg Met Thr Leu Lys Val Leu Thr Leu Ser Asp Asp Leu Gly
    370                 375                 380

Val Tyr Arg Asn Asp Arg Met His Arg Ala Val Ser Ala Ser Arg Arg
385                 390                 395                 400

Arg Glu Leu Ser Asp Gln Glu Leu Met His Ser Leu Gln Arg Ala Leu
                405                 410                 415

Thr Gly Ala Gly Thr Glu Gly Glu Ser Tyr Phe Asp Met Gly Ala Asp
            420                 425                 430

Leu His Trp Gln Pro Ser Arg Arg Ala Leu Glu Ala Ala Gly Pro Pro
        435                 440                 445

Tyr Val Glu Glu Val Asp Glu Asp Glu Glu Gly Glu Tyr Leu Glu Asp
    450                 455                 460
```

<210> 166
<211> 592
<212> PRT
<213> Simian adenovirus 26

<400> 166

```
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 Ala 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 Arg Ala Ser Gln Gly Ala Ala Ser Arg Gly Ser Ala
    530                 535                 540

Ala Arg Lys Arg Arg Trp His Asp Arg Gln Arg Gly Leu Met Trp Asp
545                 550                 555                 560

Asp Glu Asp Ser Ala Asp Asp Ser Ser Val Leu Asp Leu Gly Gly Ser
                565                 570                 575

Gly Gly Asn Pro Phe Ala His Leu Arg Pro Arg Ile Gly Arg Met Met
```

580 585 590

<210> 167
<211> 546
<212> PRT
<213> Simian adenovirus 26

<400> 167

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 Glu Leu Lys 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 Glu Ala Tyr Glu Lys Ser Lys Glu Glu Asn Ala Ala Ala
    290                 295                 300

Glu Ala Val Ala Thr Ala Ala Thr Ala Glu Ala Lys Ala Val Val Asp
305                 310                 315                 320

Ala Asp Ala Asn Val Thr Arg Gly Asp Thr Phe Ala Thr Gln Ala Glu
                325                 330                 335

Glu Ala Ala Ala Leu Ala Val Ala Asp Asp Ser Glu Ser Thr Lys Thr
            340                 345                 350

Val Thr Ile Gln Pro Val Lys Val Asp Ser Lys Asn Arg Ser Tyr Asn
        355                 360                 365

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

Tyr Asn Tyr Gly Asp Pro Glu Lys Gly Val Arg Ser Trp Thr Leu Leu
385                 390                 395                 400

Thr Thr Ser Asp Val Thr Cys Gly Val Glu Gln Val Tyr Trp Ser Leu
                405                 410                 415

Pro Asp Met Met Gln Asp Pro Val Thr Phe Arg Ser Thr Arg Gln Val
            420                 425                 430
```

```
Ser Asn Tyr Pro Val Val Gly Ala Glu Leu Leu Pro Val Tyr Ser Lys
        435                 440                 445

Ser Phe Phe Asn Glu Gln Ala Val Tyr Ser Gln Gln Leu Arg Ala Phe
    450                 455                 460

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

Val Arg Pro Pro Ala Pro Thr Ile Thr Thr Val Ser Glu Asn Val Pro
                485                 490                 495

Ala Leu Thr Asp His Gly Thr Leu Pro Leu Arg Ser Ser Ile Arg Gly
            500                 505                 510

Val Gln Arg Val Thr Val Thr Asp Ala Arg Arg Arg Thr Cys Pro Tyr
        515                 520                 525

Val Tyr Lys Ala Leu Gly Ile Val Ala Pro Arg Val Leu Ser Ser Arg
    530                 535                 540

Thr Phe
545
```

<210> 168
<211> 193
<212> PRT
<213> Simian adenovirus 26

<400> 168

```
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> 169
<211> 339
<212> PRT
<213> Simian adenovirus 26

<400> 169

```
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 Asp Asp Asp Leu Val
        35                  40                  45

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

Arg Lys Val Gln Pro Val Leu Arg Pro Gly Thr Thr Val Val Phe Thr
65                  70                  75                  80
```

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

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

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

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

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

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

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

Val Gln Pro Glu Val Lys Val Arg Pro Ile Lys Gln Val Ala Pro Gly
        195                 200                 205

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

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

Thr Asp Pro Trp Met Pro Ala Ala Pro Thr Thr Arg Arg Pro Arg Arg
                245                 250                 255

Lys Tyr Gly Ala Ala Ser Leu Leu Met Pro Asn Tyr Ala Leu His Pro
            260                 265                 270

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

His Thr Ser Arg Arg Arg Lys Thr Thr Thr Arg Arg Arg Arg Arg Arg
    290                 295                 300

Thr Ala Ala Ala Ser Thr Pro Ala Ala Leu Val Arg Arg Val Tyr Arg
305                 310                 315                 320
```

```
Arg Gly Arg Ala Pro Leu Thr Leu Pro Arg Ala Arg Tyr His Pro Ser
                325                 330                 335


Ile Ala Ile
```

<210> 170
<211> 77
<212> PRT
<213> Simian adenovirus 26

<400> 170

```
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> 171
<211> 258
<212> PRT
<213> Simian adenovirus 26

<400> 171

```
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 Thr Lys Pro Ala Thr Leu Asp Leu Pro Pro Pro Gln Pro Ser
        195                 200                 205

Arg Pro Ser Thr Val Ala Lys Pro Leu Pro Pro Val Ala Val Ala Arg
    210                 215                 220

Ala Arg Pro Gly Gly Thr Ala Arg Pro His Ala Asn Trp Gln Ser Thr
225                 230                 235                 240

Leu Asn Ser Ile Val Gly Leu Gly Val Gln Ser Val Lys Arg Arg Arg
                245                 250                 255

Cys Tyr
```

<210> 172
<211> 937
<212> PRT
<213> Simian adenovirus 26

<400> 172

```
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 Thr Ser Gln Trp Val Thr Lys Asp Asn Gly Thr Asp Lys
    130                 135                 140

Thr Tyr Ser Phe Gly Asn Ala Pro Val Arg Gly Leu Asp Ile Thr Glu
145                 150                 155                 160

Glu Gly Leu Gln Ile Gly Thr Asp Asp Ser Ser Thr Glu Ser Lys Lys
                165                 170                 175

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

Glu Trp His Asp Thr Ile Gly Ala Glu Asp Lys Tyr Gly Gly Arg Ala
        195                 200                 205

Leu Lys Pro Ala Thr Asn Met Lys Pro Cys Tyr Gly Ser Phe Ala Lys
    210                 215                 220

Pro Thr Asn Ala Lys Gly Gly Gln Ala Lys Thr Arg Thr Lys Asp Asp
225                 230                 235                 240
```

```
Gly Thr Thr Glu Pro Asp Ile Asp Met Ala Phe Phe Asp Asp Arg Ser
                245                 250                 255

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

Asp Leu Glu Thr Pro Asp Thr His Ile Ile Tyr Lys Pro Gly Thr Asp
        275                 280                 285

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

Pro Asn Tyr Ile Gly Phe Arg Asp Asn Phe Ile Gly Leu Met Tyr Tyr
305                 310                 315                 320

Asn Ser Thr Gly Asn Met Gly Val Leu Ala Gly Gln Ala Ser Gln Leu
                325                 330                 335

Asn Ala Val Val Asp Leu Gln Asp Arg Asn Thr Glu Leu Ser Tyr Gln
            340                 345                 350

Leu Leu Leu Asp Ser Leu Gly Asp Arg Thr Arg Tyr Phe Ser Met Trp
        355                 360                 365

Asn Gln Ala Val Asp Ser Tyr Asp Pro Asp Val Arg Ile Ile Glu Asn
    370                 375                 380

His Gly Val Glu Asp Glu Leu Pro Asn Tyr Cys Phe Pro Leu Asn Gly
385                 390                 395                 400

Val Gly Phe Thr Asp Thr Phe Gln Gly Ile Lys Val Lys Thr Thr Asn
                405                 410                 415

Asn Gly Thr Ala Asn Ala Thr Glu Trp Glu Ser Asp Thr Ser Val Asn
            420                 425                 430

Asn Ala Asn Glu Ile Ala Lys Gly Asn Pro Phe Ala Met Glu Ile Asn
        435                 440                 445

Ile Gln Ala Asn Leu Trp Arg Asn Phe Leu Tyr Ala Asn Val Ala Leu
    450                 455                 460

Tyr Leu Pro Asp Ser Tyr Lys Tyr Thr Pro Ala Asn Val Thr Leu Pro
465                 470                 475                 480
```

```
Thr Asn Ile Asn Thr Tyr Asp Tyr Met Asn Gly Arg Val Val Ala Pro
                485                 490                 495

Ser Leu Val Asp Ser Tyr Ile Asn Ile Gly Ala Arg Trp Ser Leu Asp
            500                 505                 510

Pro Met Asp Asn Val Asn Pro Phe Asn His His Arg Asn Ala Gly Leu
        515                 520                 525

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

Ile Gln Val Pro Gln Lys Phe Phe Ala Ile Lys Ser Leu Leu Leu Leu
545                 550                 555                 560

Pro Gly Ser Tyr Thr Tyr Glu Trp Asn Phe Arg Lys Asp Val Asn Met
                565                 570                 575

Ile Leu Gln Ser Ser Leu Gly Asn Asp Leu Arg Thr Asp Gly Ala Ser
            580                 585                 590

Ile Ser Phe Thr Ser Ile Asn Leu Tyr Ala Thr Phe Phe Pro Met Ala
        595                 600                 605

His Asn Thr Ala Ser Thr Leu Glu Ala Met Leu Arg Asn Asp Thr Asn
    610                 615                 620

Asp Gln Ser Phe Asn Asp Tyr Leu Ser Ala Ala Asn Met Leu Tyr Pro
625                 630                 635                 640

Ile Pro Ala Asn Ala Thr Asn Val Pro Ile Ser Ile Pro Ser Arg Asn
                645                 650                 655

Trp Ala Ala Phe Arg Gly Trp Ser Phe Thr Arg Leu Lys Thr Lys Glu
            660                 665                 670

Thr Pro Ser Leu Gly Ser Gly Phe Asp Pro Tyr Phe Val Tyr Ser Gly
        675                 680                 685

Ser Ile Pro Tyr Leu Asp Gly Thr Phe Tyr Leu Asn His Thr Phe Lys
    690                 695                 700

Lys Val Ser Ile Thr Phe Asp Ser Ser Val Ser Trp Pro Gly Asn Asp
```

```
705                 710                 715                 720

Arg Leu Leu Thr Pro Asn Glu Phe Glu Ile Lys Arg Thr Val Asp Gly
                725                 730                 735

Glu Gly Tyr Asn Val Ala Gln Cys Asn Met Thr Lys Asp Trp Phe Leu
            740                 745                 750

Val Gln Met Leu Ala His Tyr Asn Ile Gly Tyr Gln Gly Phe Tyr Val
        755                 760                 765

Pro Glu Gly Tyr Lys Asp Arg Met Tyr Ser Phe Phe Arg Asn Phe Gln
    770                 775                 780

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

Ala Val Thr Leu Ala Tyr Gln His Asn Asn Ser Gly Phe Val Gly Tyr
                805                 810                 815

Leu Ala Pro Thr Met Arg Gln Gly Gln Pro Tyr Pro Ala Asn Tyr Pro
            820                 825                 830

Tyr Pro Leu Ile Gly Lys Ser Ala Val Thr Ser Val Thr Gln Lys Lys
        835                 840                 845

Phe Leu Cys Asp Arg Val Met Trp Arg Ile Pro Phe Ser Ser Asn Phe
    850                 855                 860

Met Ser Met Gly Ala Leu Thr Asp Leu Gly Gln Asn Met Leu Tyr Ala
865                 870                 875                 880

Asn Ser Ala His Ala Leu Asp Met Asn Phe Glu Val Asp Pro Met Asp
                885                 890                 895

Glu Ser Thr Leu Leu Tyr Val Val Phe Glu Val Phe Asp Val Val Arg
            900                 905                 910

Val His Gln Pro His Arg Gly Val Ile Glu Ala Val Tyr Leu Arg Thr
        915                 920                 925

Pro Phe Ser Ala Gly Asn Ala Thr Thr
    930                 935
```

<210> 173
<211> 209
<212> PRT
<213> Simian adenovirus 26

<400> 173

```
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 Ser 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 Asn Gln Asp
        195                 200                 205
```

Met

<210> 174
<211> 802
<212> PRT
<213> Simian adenovirus 26

<400> 174

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

Ser Pro Ala Ser Asp Ala Ala Ala Val 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 Val Arg Phe Gln Ser Ser Ser Gln Glu Asp Lys Glu
65 70 75 80

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

His Gly Asp Tyr Leu His Leu Ser Gly Glu Glu Asp Ala Leu Ile Lys
100 105 110

His Leu Ala Arg Gln Ala Thr 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 Asn 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 Ile Ser Glu
    290                 295                 300

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

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

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

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

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

Ala Cys Lys Ile Ser Asn Val Glu Leu Thr Asn Leu Val Ser Tyr Met
385                 390                 395                 400

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

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

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

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

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

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

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

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

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

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

Ser Asp Val Ile Glu Asp Val Ser Gly Glu Ala Leu Leu Glu Cys His
                565                 570                 575

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

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

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

Pro Ala Arg Gln Ser Gly Gly Arg Arg Gly Gly Gly Arg Gly Gly Gly
        755                 760                 765

Gly Arg Ser Ser Arg Arg Gln Thr Val Val Leu Gly Gly Gly Glu Ser
    770                 775                 780

Lys Gln His Gly Tyr His Leu Arg Ser Gly Ser Gly Ser Arg Ser Ala
785                 790                 795                 800

Pro Gln
```

<210> 175
<211> 227
<212> PRT
<213> Simian adenovirus 26

<400> 175

```
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 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> 176
<211> 106
<212> PRT
<213> Simian adenovirus 26

<400> 176

```
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> 177
<211> 176
<212> PRT
<213> Simian adenovirus 26

<400> 177

```
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 Ala 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 Arg Thr Val Asn Asn Thr Phe Ile Phe
            100                 105                 110

Glu His Met Cys Asp 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> 178
<211> 246
<212> PRT
<213> Simian adenovirus 26

<400> 178

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

Ile Ser Ser Phe Asp His Lys Asn Val Thr Ala Tyr Val Gly Ser Asn
            20                  25                  30

Cys Val Leu Ser Gly Tyr Gln Ser His Gln Arg Val Ser Trp Tyr Trp
        35                  40                  45

Phe Asp Lys Lys Asn Thr Ala Tyr Thr Leu Cys Lys Gly Tyr Gln Gln
    50                  55                  60

Pro Thr His Arg Ser Gly Leu Tyr Tyr Ser Cys Thr Asn Asn Asn Ile
65                  70                  75                  80

Thr Leu Leu Gln Val Thr Asn Gln Tyr Ser Gly Thr Tyr Tyr Gly Thr
                85                  90                  95

Asn Phe Asn Thr Lys Gln Asp Thr Tyr Tyr Ser Val Arg Val Leu Asp
            100                 105                 110

Pro Thr Thr Pro Arg Thr Thr Thr Lys His Thr Thr Thr Lys Lys Pro
        115                 120                 125

Thr Thr Pro Lys Lys Pro Thr Thr Pro Lys Thr Thr Lys Thr Thr Thr
    130                 135                 140

Ala Lys Gln Thr Thr Thr Thr Glu Pro Thr Thr Thr Ser Thr Thr Leu
145                 150                 155                 160
```

```
Ala Ile Thr Thr His Thr Glu Leu Thr Ser Gln Ala Thr Thr Glu Asn
                165                 170                 175

Gly Phe Ala Leu Leu Gln Lys Gly Glu Asn Ser Ser Ser Ser Pro Leu
            180                 185                 190

Pro Thr Thr Pro Ser Glu Glu Ile Pro Lys Ser Met Val Gly Ile Ile
        195                 200                 205

Ala Ala Val Val Val Cys Met Val Ile Ile Ile Leu Cys Met Met Tyr
    210                 215                 220

Tyr Ala Cys Tyr Tyr Arg Lys His Arg Leu Asn Asn Lys Leu Asp Pro
225                 230                 235                 240

Leu Leu Asn Val Asp Phe
                245
```

<210> 179
<211> 206
<212> PRT
<213> Simian adenovirus 26

<400> 179

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

Cys Lys Ser Val Asp Lys Asp Val Thr Val Thr Thr Gly Ser Asn Tyr
            20                  25                  30

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

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

Thr Lys Asn Ser Lys Ile Asp Asn Tyr Gln Cys His Gly Thr Asp Leu
65                  70                  75                  80

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

Gly Gln Asn Thr Glu Glu Met Ile Phe Tyr Lys Leu Ile Val Val Asp
            100                 105                 110
```

```
Pro Thr Thr Pro Pro Pro Thr Thr Thr Thr Asn Ala Pro Thr Thr Asp
        115                 120                 125

Thr Gln Glu Thr Thr Pro Glu Ala Val Ala Glu Leu Ala Lys Gln Ile
    130                 135                 140

His Glu Asp Ser Phe Val Ala Asn Thr Pro Thr His Pro Gly Pro Gln
145                 150                 155                 160

Cys Pro Gly Leu Val Val Ser Gly Ile Val Gly Val Leu Cys Gly Leu
                165                 170                 175

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

Leu His Arg Gln Lys Ser Asp Pro Leu Leu Asn Leu Tyr Val
        195                 200                 205
```

<210> 180
<211> 291
<212> PRT
<213> Simian adenovirus 26

<400> 180

```
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 Ile Gln Pro Thr Thr
    130                 135                 140

Thr Thr Ala Glu Val Thr Ser Thr Ala Pro Gln Pro Gln Ala Leu Ala
145                 150                 155                 160

Leu Met Ala Ala Gln Pro Ser Ser Met Thr Ala Lys Thr Asn Glu Gln
                165                 170                 175

Thr Thr Glu Phe Leu Ser Thr Thr 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> 181
<211> 91
<212> PRT
<213> Simian adenovirus 26

<400> 181

```
Met Ile Pro Arg His Phe Ile Ile Thr Ser Leu Ile Cys Val Leu Gln
1               5                   10                  15
```

```
Val Cys Ala Thr Leu Ala Leu Val Ala Asn Ala Ser Pro Asp Cys Ile
            20                  25                  30

Gly Ala Phe Ala Ser Tyr Val Leu Phe Ala Phe Ile Thr Cys Ile Cys
        35                  40                  45

Cys Cys Ser Ile Val Cys Leu Leu Ile Thr Phe Phe Gln Phe Val Asp
    50                  55                  60

Trp Val Phe Val Arg Ile Ala Tyr Leu Arg His His Pro Gln Tyr Arg
65                  70                  75                  80

Asp Gln Arg Val Ala Gln Leu Leu Arg Leu Ile
                85                  90
```

<210> 182
<211> 148
<212> PRT
<213> Simian adenovirus 26

<400> 182

```
Met Ile Ser Met Arg Ala Leu Leu Leu Leu Leu Ala Leu Leu Leu Val
1               5                   10                  15

Pro Leu Ala Ala Pro Leu Ser Phe 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 Ile 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 Ile Pro Pro Gln Gln Gln Gln Asn Gln Ala His Ala Pro
            100                 105                 110

Pro Pro Gln Pro Arg Pro Gln Tyr Met Pro Ile Leu Asp Tyr Glu Ala
        115                 120                 125
```

```
Glu Pro Gln Arg Ala Met Leu Pro Ala Ile Ser Tyr Phe Asn Leu Thr
    130                 135                 140

Gly Gly Asp Asp
145
```

<210> 183
<211> 425
<212> PRT
<213> Simian adenovirus 26

<400> 183

```
Met Ser Lys Lys Arg Ala Arg Val Asp Asp Gly 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 Ala Val Thr Leu
    50                  55                  60

Lys Leu Gly Glu Gly Val Asp Leu Asp Asp Ser Gly Lys Leu Ile Ala
65                  70                  75                  80

Asn Thr Val Ser Lys Ala Ile Ala Pro Leu Ser Phe Ser Asn Asn Thr
                85                  90                  95

Ile Ser Leu Asn Met Asp Thr Pro Leu Tyr Thr Lys Asp Gly Lys Leu
            100                 105                 110

Ser Leu Gln Val Ser Pro Pro Leu Asn Ile Leu Arg Ser Thr Ile Leu
        115                 120                 125

Asn Thr Leu Ala Leu Ala Phe Gly Ser Gly Leu Gly Leu Ser Gly Ser
    130                 135                 140

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

Asn Ile Lys Ile Thr Leu Asp Arg Gly Leu His Val Thr Thr Gly Asn
                165                 170                 175
```

```
Ala Ile Glu Ser Asn Ile Ser Trp Ala Lys Gly Ile Lys Phe Glu Asp
            180                 185                 190

Gly Ala Ile Ala Ala Asn Ile Gly Lys Gly Leu Glu Phe Gly Thr Ser
        195                 200                 205

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

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

Lys Glu Asp Asp Lys Leu Thr Leu Trp Thr Thr Pro Asp Pro Ser Pro
                245                 250                 255

Asn Cys Gln Ile Leu Ala Glu Asn Asp Ala Lys Leu Thr Leu Cys Leu
            260                 265                 270

Thr Lys Cys Gly Ser Gln Ile Leu Ala Thr Val Ser Val Leu Val Val
        275                 280                 285

Gly Ser Gly Lys Leu Asn Pro Ile Thr Gly Glu Val Ser Ser Ala Gln
    290                 295                 300

Val Phe Leu Arg Phe Asp Ser Asn Gly Val Leu Leu Val Asn Ser Ser
305                 310                 315                 320

Thr Leu Lys Lys Tyr Trp Gly Tyr Arg Gln Gly Asp Ser Ile Asp Gly
                325                 330                 335

Thr Pro Tyr Thr Asn Ala Val Gly Phe Met Pro Asn Leu Lys Ala Tyr
            340                 345                 350

Pro Lys Ser Gln Ser Ser Thr Thr Lys Asn Asn Ile Val Gly Gln Val
        355                 360                 365

Tyr Met Asn Gly Asp Asn Ser Lys Pro Met Leu Leu Thr Ile Thr Leu
    370                 375                 380

Asn Gly Thr Asp Asp Thr Thr Ser Ala Tyr Ser Met Ser Phe Ser Tyr
385                 390                 395                 400

Thr Trp Thr Asn Gly Ser Tyr Thr Gly Ala Thr Phe Gly Ala Asn Ser
```

```
                405                 410                 415

Tyr Thr Phe Ser Tyr Ile Ala Gln Glu
            420                 425


<210>  184
<211>  570
<212>  DNA
<213>  Simian adenovirus 26


<220>
<221>  CDS
<222>  (3)..(563)
<223>  label=Elb\19K

<400>  184
gc atg gag att tgg acg gtc ttg gaa gac ttt cac aag act aga cag          47
   Met Glu Ile Trp Thr Val Leu Glu Asp Phe His Lys Thr Arg Gln
   1               5                  10                  15

ctg cta gag aac gcc tcg aac gga gtc tct tac ctg tgg aga ttc tgc         95
Leu Leu Glu Asn Ala Ser Asn Gly Val Ser Tyr Leu Trp Arg Phe Cys
                20                  25                  30

ttc ggt ggc gac cta gct agg cta gtc tat agg gcc aaa cag gat tat        143
Phe Gly Gly Asp Leu Ala Arg Leu Val Tyr Arg Ala Lys Gln Asp Tyr
            35                  40                  45

agt gaa caa ttt gag gtt att ttg aga gag tgt tct ggt ctt ttt gac        191
Ser Glu Gln Phe Glu Val Ile Leu Arg Glu Cys Ser Gly Leu Phe Asp
        50                  55                  60

gct ctt aac ttg ggc cat cag tct cac ttt aac cag agg att tcg aga        239
Ala Leu Asn Leu Gly His Gln Ser His Phe Asn Gln Arg Ile Ser Arg
    65                  70                  75

gcc ctt gac ttt act act cct ggc aga acc act gcg gca gta gcc ttt        287
Ala Leu Asp Phe Thr Thr Pro Gly Arg Thr Thr Ala Ala Val Ala Phe
80                  85                  90                  95

ttt gct ttt ctt ctt gac aaa tgg agt caa gaa acc cat ttc agc agg        335
Phe Ala Phe Leu Leu Asp Lys Trp Ser Gln Glu Thr His Phe Ser Arg
                100                 105                 110

gat tac cag ctg gat ttc tta gca gta gct ttg tgg aga aca tgg aag        383
Asp Tyr Gln Leu Asp Phe Leu Ala Val Ala Leu Trp Arg Thr Trp Lys
            115                 120                 125

tgc cag cgc ctg aat gca atc tca ggc tac ttg ccg gta cag ccg cta        431
Cys Gln Arg Leu Asn Ala Ile Ser Gly Tyr Leu Pro Val Gln Pro Leu
        130                 135                 140

gac act ctg agg atc ctg aat ctc cag gag agt ccc agg gca cac caa        479
Asp Thr Leu Arg Ile Leu Asn Leu Gln Glu Ser Pro Arg Ala His Gln
    145                 150                 155
```

```
cgt cgc cag cag cag cag cgg cag cag gag gag gat caa gaa gag aac        527
Arg Arg Gln Gln Gln Gln Arg Gln Gln Glu Glu Asp Gln Glu Glu Asn
160                 165                 170                 175

ccg aga gcc ggc ctg gac cct ccg gag gag gag gag tagctga             570
Pro Arg Ala Gly Leu Asp Pro Pro Glu Glu Glu Glu
                180                 185
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<210> 185
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<213> Simian adenovirus 26

<400> 185

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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 Ser 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 Leu 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 His 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
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Arg Ala Gly Leu Asp Pro Pro Glu Glu Glu Glu
            180                 185


<210>  186
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agg atg ccc cga gga aac aag aag ctg aaa gtg gag ctg ccg ccc gtg          48
    Met Pro Arg Gly Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val
    1               5                   10                  15

gag gat ttg gag gaa gac tgg gag aac agc agt cag gca gag gag atg          96
Glu Asp Leu Glu Glu Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Met
                20                  25                  30

gag gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa gac         144
Glu Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp
            35                  40                  45

agt ctg gag gaa gac gag gag gag gca gag gag gag gtg gaa gaa gca         192
Ser Leu Glu Glu Asp Glu Glu Glu Ala Glu Glu Glu Val Glu Glu Ala
        50                  55                  60

gcc gcc gcc aga ccg tcg tcc tcg gcg ggg gag aaa gca agc agc acg         240
Ala Ala Ala Arg Pro Ser Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr
    65                  70                  75

gat acc atc tcc gct ccg ggt cgg ggt ccc gct cgg ccc cac agt aga         288
Asp Thr Ile Ser Ala Pro Gly Arg Gly Pro Ala Arg Pro His Ser Arg
80                  85                  90                  95

tgg gac gag acc ggg cga ttc ccg aac ccc acc acc cag acc ggt aag         336
Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr Gly Lys
                100                 105                 110

aag gag cgg cag gga tac aag tcc tgg cgg ggg cac aaa aac gcc atc         384
Lys Glu Arg Gln Gly Tyr Lys Ser Trp Arg Gly His Lys Asn Ala Ile
            115                 120                 125
```

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gtc tcc tgc ttg cag gcc tgc ggg ggc aac atc tcc ttc acc cgg cgc        432
Val Ser Cys Leu Gln Ala Cys Gly Gly Asn Ile Ser Phe Thr Arg Arg
        130                 135                 140

tac ctg ctc ttc cac cgc ggg gtg aac ttc ccc cgc aac atc ttg cat        480
Tyr Leu Leu Phe His Arg Gly Val Asn Phe Pro Arg Asn Ile Leu His
    145                 150                 155

tac tac cgt cac ctc cac agc ccc tac tac ttc caa gaa gag gca gca        528
Tyr Tyr Arg His Leu His Ser Pro Tyr Tyr Phe Gln Glu Glu Ala Ala
160                 165                 170                 175

gcg gca gaa aaa gac cag cag aaa acc agc agc tag aaaatccaca             574
Ala Ala Glu Lys Asp Gln Gln Lys Thr Ser Ser
                180                 185

gcggcggcag gtggactgag gatcgcggcg aacgagccgg cgcagacccg ggagctgagg      634

aaccggatct ttcccaccct ctatgccatc ttccagcaga gtcgggggca ggagcaggaa      694

ctgaaagtca agaaccgttc tctgcgctcg ctcacccgca gttgtctgta tcacaagagc      754

gaagaccaac ttcagcgcac tctcgaggac gccgaggctc tcttcaacaa gtactgcgcg      814

ctcactctta aagagtagcc cgcgcccgcc cagtcgcaga aaaaggcggg aattacgtca      874

cctgtgccct tcgccctagc cgcctccacc catcatcatg agcaaagaga ttcccacgcc      934

ttacatgtgg agctaccagc cccagatggg cctggccgcc ggcgccgccc aggactactc      994

cacccgcatg aattggctca gcgccgggcc cgcgatgatc tcacgggtga atgacatccg     1054

cgcccaccga aaccagatac tcctagaaca gtcagcgctc accgccacgc cccgcaatca     1114

cctcaatccg cgtaattggc ccgccgccct ggtgtaccag gaaattcccc agcccacgac     1174

cgtactactt ccgcgagacg cccaggccga agtccagctg actaactcag gtgtccagct     1234

ggcgggcggc gccaccctgt gtcgtcaccg ccccgctcag ggtataaagc ggctggtgat     1294

ccggggcaga ggcacacagc tcaacgacga ggtggtgagc tcttcgctgg gtctgcgacc     1354

tgacggagtc ttccaactcg ccggatcggg gagatcttcc ttcacgcctc gtcaggcggt     1414

cctgactttg gaaagttcgt cctcgcagcc ccgctcgggc ggcatcggca ctctccagtt     1474

cgtggaggag ttcactccct cggtctactt caacccccttc tccggctccc ccggccacta     1534

cccggacgag ttcatcccga actttgacgc catcagcgag tcggtggacg gctacgattg     1594

aatgtcccat ggtggcgcgg ctgacctagc tcggcttcga caccttgacc actgccgccg     1654

ctttcgctgc ttcgcacggg acctcgccga gttcacctac ttcgagctgc ccgaggagca     1714

tcctcagggc ccggcccacg gagtgcggat cgtcgtcgaa gggggcctag actcccacct     1774

gcttcggatc ttcagccagc gcccgatcct ggtcgagcgc caacagggca acaccctcct     1834

gaccctctac tgcatctgcg accaccccgg cctgc atg aaa gtc ttt gtt gtc        1887
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                                        Met Lys Val Phe Val Val
                                                    190

tgc tgt gta ctg agt ata ata aaa gct gag atc agc gac tac tcc gga       1935
Cys Cys Val Leu Ser Ile Ile Lys Ala Glu Ile Ser Asp Tyr Ser Gly
        195                 200                 205

ctc aac tgt ggt gtt tct gca tcc atc aat cgg tca ctg acc ttc acc       1983
Leu Asn Cys Gly Val Ser Ala Ser Ile Asn Arg Ser Leu Thr Phe Thr
    210                 215                 220

ggg aac gag acc gag ctc cag ctc cag tgt aag ccc cac aag aag tac       2031
Gly Asn Glu Thr Glu Leu Gln Leu Gln Cys Lys Pro His Lys Lys Tyr
225                 230                 235                 240

ctc acc tgg ctg tac cag ggc tcc ccg atc gcc gtt gtt aac cac tgc       2079
Leu Thr Trp Leu Tyr Gln Gly Ser Pro Ile Ala Val Val Asn His Cys
                245                 250                 255

gac gac gac gga gtc ctg ctg aac ggc ccc gcc aac ctt act ttt tcc       2127
Asp Asp Asp Gly Val Leu Leu Asn Gly Pro Ala Asn Leu Thr Phe Ser
            260                 265                 270

acc cgc aga agc aag ctc gag ctc ttc caa ccc ttc ctc ccc ggg acc       2175
Thr Arg Arg Ser Lys Leu Glu Leu Phe Gln Pro Phe Leu Pro Gly Thr
        275                 280                 285

tat cag tgc atc tcg gga ccc tgc cat cac acc ttc cac ctg atc ccg       2223
Tyr Gln Cys Ile Ser Gly Pro Cys His His Thr Phe His Leu Ile Pro
    290                 295                 300

aat acc acc tct tcc cca gcg ccg ctc ccc act aac aac caa act aac       2271
Asn Thr Thr Ser Ser Pro Ala Pro Leu Pro Thr Asn Asn Gln Thr Asn
305                 310                 315                 320

cac cac caa cgc tac cga cgc gac ctc gtt gaa tct aat acc acc cac       2319
His His Gln Arg Tyr Arg Arg Asp Leu Val Glu Ser Asn Thr Thr His
                325                 330                 335

acc gga ggt gag ctc cga ggt cct gaa tcc tct ggg att tat tac ggc       2367
Thr Gly Gly Glu Leu Arg Gly Pro Glu Ser Ser Gly Ile Tyr Tyr Gly
            340                 345                 350

ccc tgg gag gtg gtg ggg tta ata gct tta ggc tta gta gcg ggt ggg       2415
Pro Trp Glu Val Val Gly Leu Ile Ala Leu Gly Leu Val Ala Gly Gly
        355                 360                 365

ctt ttg gct ctc tgc tac cta tac ctc cct tgc ttt tcc tac tta gtg       2463
Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro Cys Phe Ser Tyr Leu Val
    370                 375                 380

gtg ctt tgt tgc tgg ttt aag aaa tgg gga aga tca ccc tagtgtgcgg        2512
Val Leu Cys Cys Trp Phe Lys Lys Trp Gly Arg Ser Pro
385                 390                 395

tgtgctggtg acggtggtgc tttcgattct gggaggggga agcgcggctg tagtgacgga     2572

gaagaaggcc gatccctgct tgactttcaa ccccgataaa tgccggctga gttttcagcc     2632
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cgatggcaat cggtgcgcgg tgttgatcaa gtgcggatgg gaatgcgaga gtgtggcgat 2692

tcagtataaa aacaagacgc ggaacaatac tctcgcgtcc acatggcagc ccggggaccc 2752

cgagtggtac accgtctctg tccctggtgc tgacggctcc ctccgcacgg tgaacaacac 2812

tttcattttt gagcacatgt gcgataccgc catgttcatg agcaagcagt acggtatgtg 2872

gcccccacga aaagagaata tcgtggtctt ctccatcgct tacagcgcgt gcacggtgct 2932

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ggacacttac tatagtgtca gagtattgga tccaactact cccagaacta ctactaaaca 3412

taccacaact aagaagccca ctacacctaa aaagcctacc acgcccaaaa ccactaagac 3472

aacaactgct aagcagacca ctaccacaga gccaaccaca accagcacca cacttgctat 3532

aactacacac actgagctga cctcacaggc aactactgaa aatggttttg ccctattgca 3592

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gatgtactat gcctgctact acagaaaaca caggctaaac aataagctgg acccccctact 3772

gaatgttgat ttttaatttt ttagaaccat gaagatccta agccttttttg ttttttctat 3832

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tgataaacag acagagcttt gtaatttcca gaacggaaaa accaaaaatt ctaaaataga 4012

taactatcaa tgccatggta ctgatttagt actgatgaat atcacgaaag catatgctgg 4072

cagttattcc tgtcctggac aaaacaccga agaaatgatt ttttacaaat tgattgtggt 4132

tgatcccact acacctccac ccaccacaac taccaatgca cctaccacag acacacagga 4192

aaccactcca gaggcagtag cagagttagc aaagcagatt catgaagatt cctttgttgc 4252

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tgtgctttgc gggttagcag ttataatcat ctgcatgttc atttttgctt gctgctacag 4372

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cctggaatgt cagtgtgtac acatgtcatg gtgttaacct caccattacc aatgccaccc 4672

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ataacatgtt catctatgat gtcactgtca tatcaaataa gactacacct accacccaaa 4792

cacccactac acatagctca actcatgcca tgcagaccac tcagaccacc acttacacta 4852

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ccaccaccac agcctaggcc acaatacatg cccatcttag actatgaggc cgagccacag 5992

cgagccatgc ttcctgctat tagttacttc aacctaaccg gcggag atg act gac 6047
Met Thr Asp
400

ccc atg gcc aac aac acc gtc aac gac ctc ctg gac atg gac ggc cgc 6095
Pro Met Ala Asn Asn Thr Val Asn Asp Leu Leu Asp Met Asp Gly Arg

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                405                 410                 415

gcc tcg gag cag cga ctc gcc caa ctc cgc atc cgc cag cag cag gag       6143
Ala Ser Glu Gln Arg Leu Ala Gln Leu Arg Ile Arg Gln Gln Gln Glu
            420                 425                 430

aga gcc gtc aag gag ctg cag gat gcg gtg gct atc cac cag tgc aag       6191
Arg Ala Val Lys Glu Leu Gln Asp Ala Val Ala Ile His Gln Cys Lys
        435                 440                 445

aga ggc atc ttc tgc ctg gtg aag cag gcc aag atc acc ttc gag gtg       6239
Arg Gly Ile Phe Cys Leu Val Lys Gln Ala Lys Ile Thr Phe Glu Val
    450                 455                 460

act tcc acc gac cat cgc ctc tcc tac gag ctc ctg cag cag cgc cag       6287
Thr Ser Thr Asp His Arg Leu Ser Tyr Glu Leu Leu Gln Gln Arg Gln
465                 470                 475                 480

aag ttc acc tgc ctg gtc gga gtc aac ccc atc gtc atc acc cag cag       6335
Lys Phe Thr Cys Leu Val Gly Val Asn Pro Ile Val Ile Thr Gln Gln
                485                 490                 495

tct ggc gat acc aag ggg tgc atc cac tgc tcc tgc gac tcc ccc gag       6383
Ser Gly Asp Thr Lys Gly Cys Ile His Cys Ser Cys Asp Ser Pro Glu
            500                 505                 510

tgc ctt cac acc ctg gtc aag acc ctc tgc ggc ctc cgc gac ctc ctc       6431
Cys Leu His Thr Leu Val Lys Thr Leu Cys Gly Leu Arg Asp Leu Leu
        515                 520                 525

ccc atg aac taatcaacta                                                6450
Pro Met Asn
    530
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<210> 187
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<212> PRT
<213> Simian adenovirus 26

<400> 187

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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 Met Glu
            20                  25                  30

Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
        35                  40                  45

Leu Glu Glu Asp Glu Glu Glu Ala Glu Glu 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
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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 Ala
165 170 175

Ala Glu Lys Asp Gln Gln Lys Thr Ser Ser
180 185

<210> 188
<211> 211
<212> PRT
<213> Simian adenovirus 26

<400> 188

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

Arg 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 Glu Leu Phe Gln

```
                85                  90                  95

Pro Phe Leu Pro Gly Thr 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 His Gln Arg Tyr Arg Arg Asp Leu Val
    130                 135                 140

Glu Ser Asn Thr Thr His Thr Gly Gly Glu Leu Arg Gly Pro Glu Ser
145                 150                 155                 160

Ser Gly Ile Tyr Tyr Gly Pro Trp Glu Val Val Gly Leu Ile Ala Leu
                165                 170                 175

Gly Leu Val Ala Gly Gly Leu Leu Ala Leu Cys Tyr Leu Tyr Leu Pro
            180                 185                 190

Cys Phe Ser Tyr Leu Val Val Leu Cys Cys Trp Phe Lys Lys Trp Gly
        195                 200                 205

Arg Ser Pro
    210


<210>  189
<211>  134
<212>  PRT
<213>  Simian adenovirus 26

<400>  189

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 Thr
    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 Leu His Thr Leu Val Lys Thr Leu Cys Gly Leu Arg
        115                 120                 125

Asp Leu Leu Pro Met Asn
    130


<210>  190
<211>  880
<212>  DNA
<213>  Simian adenovirus 26


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<223>  label=Ela

<220>
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<222>  (666)..(871)
<223>  label=Ela

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gaaag atg agg cac ctg aga gac ctg ccc gat gag aaa atc atc atc gct       50
      Met Arg His Leu Arg Asp Leu Pro Asp Glu Lys Ile Ile Ile Ala
      1               5                  10                  15

tcc ggg aac gag att ctg gaa ctg gtg gta aat gcc atg atg ggc gac         98
Ser Gly Asn Glu Ile Leu Glu Leu Val Val Asn Ala Met Met Gly Asp
                20                  25                  30

gac cct ccg gag ccc ccc acc cca ttt gag gca cct tcg ctg cac gat        146
Asp Pro Pro Glu Pro Pro Thr Pro Phe Glu Ala Pro Ser Leu His Asp
            35                  40                  45

ttg tat gat ctg gag gtg gat gtg ccc gat gac gac ccc aac gag gag        194
Leu Tyr Asp Leu Glu Val Asp Val Pro Asp Asp Asp Pro Asn Glu Glu
        50                  55                  60

gcg gta aat gat tta ttt agc gat gcc gcg ctg cta gct gcc gag gag        242
Ala Val Asn Asp Leu Phe Ser Asp Ala Ala Leu Leu Ala Ala Glu Glu
    65                  70                  75

gct tcg agc cct agc tca gac agc gac tct tca ctg cat acc cct aga        290
Ala Ser Ser Pro Ser Ser Asp Ser Asp Ser Ser Leu His Thr Pro Arg
80                  85                  90                  95
```

```
cct ggc aga ggt gag aaa aag atc ccc gag ctt aaa ggg gaa gag atg        338
Pro Gly Arg Gly Glu Lys Lys Ile Pro Glu Leu Lys Gly Glu Glu Met
                100                 105                 110

gac ttg cgc tgc tat gag gaa tgc ttg ccc ccg agc gat gat gag gac        386
Asp Leu Arg Cys Tyr Glu Glu Cys Leu Pro Pro Ser Asp Asp Glu Asp
            115                 120                 125

gag cag gcg atc cag aac gca gcg agc cag gga gtg caa gcc gcc agc        434
Glu Gln Ala Ile Gln Asn Ala Ala Ser Gln Gly Val Gln Ala Ala Ser
        130                 135                 140

gag agc ttt gcg ctg gac tgc ccg cct ctg ccc gga cac ggc tgt aag        482
Glu Ser Phe Ala Leu Asp Cys Pro Pro Leu Pro Gly His Gly Cys Lys
    145                 150                 155

tct tgt gaa ttt cat cgc atg aat act gga gat aaa gct gtg ttg tgt        530
Ser Cys Glu Phe His Arg Met Asn Thr Gly Asp Lys Ala Val Leu Cys
160                 165                 170                 175

gca ctt tgc tat atg aga gct tac aac cat tgt gtt tac a gtaagtgtga       580
Ala Leu Cys Tyr Met Arg Ala Tyr Asn His Cys Val Tyr
                180                 185

ttaagttgaa ctttagaggg aggcagagag cagggtgact gggcgatgac tggtttattt      640

atgtatatat atgttcttta tatag gt  ccc gtc tct gac gca gat gat gag        691
                            Ser Pro Val Ser Asp Ala Asp Asp Glu
                                190                 195

acc ccc act aca gag tcc act tcg tca ccc cca gaa att ggc aca tct        739
Thr Pro Thr Thr Glu Ser Thr Ser Ser Pro Pro Glu Ile Gly Thr Ser
        200                 205                 210

cca cct gag aat att gtt aga cca gtt cct gtt aga gcc act ggg agg        787
Pro Pro Glu Asn Ile Val Arg Pro Val Pro Val Arg Ala Thr Gly Arg
    215                 220                 225

aga gca gct gtg gaa tgt ttg gat gac ttg cta cag ggt ggg gat gaa        835
Arg Ala Ala Val Glu Cys Leu Asp Asp Leu Leu Gln Gly Gly Asp Glu
230                 235                 240                 245

cct ttg gac ttg tgt acc cgg aaa cgc ccc agg cac taagtgcca             880
Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro Arg His
                250                 255
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<210> 191
<211> 257
<212> PRT
<213> Simian adenovirus 26

<400> 191

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Met Arg His Leu Arg Asp Leu Pro Asp Glu Lys Ile Ile Ile Ala Ser
1               5                   10                  15
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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 Ala Pro Ser Leu His Asp Leu
        35                  40                  45

Tyr Asp Leu Glu Val Asp Val Pro Asp 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 Pro Val Ser
            180                 185                 190

Asp Ala Asp Asp Glu Thr Pro Thr Thr Glu Ser Thr Ser Ser Pro Pro
        195                 200                 205

Glu Ile Gly Thr Ser Pro Pro Glu Asn Ile Val Arg Pro Val Pro Val
    210                 215                 220

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

Gln Gly Gly Asp Glu Pro Leu Asp Leu Cys Thr Arg Lys Arg Pro Arg
                245                 250                 255
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His

<210> 192
<211> 830
<212> DNA
<213> Simian adenovirus 26

<220>
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<222> (4)..(331)
<223> label=33K

<220>
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<222> (501)..(829)
<223> label=33K

<400> 192

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    Met Pro Arg Gly Asn Lys Lys Leu Lys Val Glu Leu Pro Pro Val
    1               5                   10                  15

gag gat ttg gag gaa gac tgg gag aac agc agt cag gca gag gag atg          96
Glu Asp Leu Glu Glu Asp Trp Glu Asn Ser Ser Gln Ala Glu Glu Met
                20                  25                  30

gag gaa gac tgg gac agc act cag gca gag gag gac agc ctg caa gac         144
Glu Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp
            35                  40                  45

agt ctg gag gaa gac gag gag gag gca gag gag gag gtg gaa gaa gca         192
Ser Leu Glu Glu Asp Glu Glu Glu Ala Glu Glu Glu Val Glu Glu Ala
        50                  55                  60

gcc gcc gcc aga ccg tcg tcc tcg gcg ggg gag aaa gca agc agc acg         240
Ala Ala Ala Arg Pro Ser Ser Ser Ala Gly Glu Lys Ala Ser Ser Thr
    65                  70                  75

gat acc atc tcc gct ccg ggt cgg ggt ccc gct cgg ccc cac agt aga         288
Asp Thr Ile Ser Ala Pro Gly Arg Gly Pro Ala Arg Pro His Ser Arg
80                  85                  90                  95

tgg gac gag acc ggg cga ttc ccg aac ccc acc acc cag acc g               331
Trp Asp Glu Thr Gly Arg Phe Pro Asn Pro Thr Thr Gln Thr
                100                 105

gtaagaagga gcggcaggga tacaagtcct ggcgggggca caaaaacgcc atcgtctcct       391

gcttgcaggc ctgcgggggc aacatctcct tcacccggcg ctacctgctc ttccaccgcg       451

gggtgaactt cccccgcaac atcttgcatt actaccgtca cctccacag cc  cct act       508
                                                      Ala Pro Thr

act tcc aag aag agg cag cag cgg cag aaa aag acc agc aga aaa cca         556
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```
Thr Ser Lys Lys Arg Gln Gln Arg Gln Lys Lys Thr Ser Arg Lys Pro
        115                 120                 125

gca gct aga aaa tcc aca gcg gcg gca ggt gga ctg agg atc gcg gcg        604
Ala Ala Arg Lys Ser Thr Ala Ala Ala Gly Gly Leu Arg Ile Ala Ala
    130                 135                 140

aac gag ccg gcg cag acc cgg gag ctg agg aac cgg atc ttt ccc acc        652
Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg Asn Arg Ile Phe Pro Thr
145                 150                 155                 160

ctc tat gcc atc ttc cag cag agt cgg ggg cag gag cag gaa ctg aaa        700
Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly Gln Glu Gln Glu Leu Lys
                165                 170                 175

gtc aag aac cgt tct ctg cgc tcg ctc acc cgc agt tgt ctg tat cac        748
Val Lys Asn Arg Ser Leu Arg Ser Leu Thr Arg Ser Cys Leu Tyr His
            180                 185                 190

aag agc gaa gac caa ctt cag cgc act ctc gag gac gcc gag gct ctc        796
Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu Glu Asp Ala Glu Ala Leu
        195                 200                 205

ttc aac aag tac tgc gcg ctc act ctt aaa gag t                        830
Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys Glu
    210                 215
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<210> 193
<211> 219
<212> PRT
<213> Simian adenovirus 26

<400> 193

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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 Met Glu
            20                  25                  30

Glu Asp Trp Asp Ser Thr Gln Ala Glu Glu Asp Ser Leu Gln Asp Ser
        35                  40                  45

Leu Glu Glu Asp Glu Glu Glu Ala Glu Glu 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 Ala Pro Thr
            100                 105                 110

Thr Ser Lys Lys Arg Gln Gln Arg Gln Lys Lys Thr Ser Arg Lys Pro
        115                 120                 125

Ala Ala Arg Lys Ser Thr Ala Ala Ala Gly Gly Leu Arg Ile Ala Ala
    130                 135                 140

Asn Glu Pro Ala Gln Thr Arg Glu Leu Arg Asn Arg Ile Phe Pro Thr
145                 150                 155                 160

Leu Tyr Ala Ile Phe Gln Gln Ser Arg Gly Gln Glu Gln Glu Leu Lys
                165                 170                 175

Val Lys Asn Arg Ser Leu Arg Ser Leu Thr Arg Ser Cys Leu Tyr His
            180                 185                 190

Lys Ser Glu Asp Gln Leu Gln Arg Thr Leu Glu Asp Ala Glu Ala Leu
        195                 200                 205

Phe Asn Lys Tyr Cys Ala Leu Thr Leu Lys Glu
    210                 215
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<210> 194
<211> 65
<212> DNA
<213> Artificial

<220>
<223> oligonucleotide SV39T

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ttaaa 65

<210> 195
<211> 63
<212> DNA
<213> Artificial

<220>
<223> oligonucleotide SV39B

<400> 195
tatttaaatg atatcctaga ctagtgatct ctagagatca tcgatgatcc ccgggattta 60

aat 63

<210> 196
<211> 46
<212> DNA
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<220>
<223> oligomer SV25 Top

<400> 196
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<210> 197
<211> 44
<212> DNA
<213> Artificial

<220>
<223> oligomer SV25 Bot

<400> 197
taatttaaat gatatctatc aagcttgata cccgggattt aaat 44

<210> 198
<211> 58
<212> DNA
<213> Artificial

<220>
<223> oligomer pSR6 top

<400> 198
aattttaatt aacccgggta tcggcgcgcc ttaacctagg gatagatatc ttaattaa 58

<210> 199
<211> 56
<212> DNA
<213> Artificial

<220>
<223> oligomer pSR6 bot

<400> 199
tattaattaa gatatctatc cctaggttaa ggcgcgccga tacccgggtt aattaa 56

<210> 200
<211> 660
<212> DNA
<213> Unknown

<220>
<223> Plasmid sequence

<400> 200
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gctcagatct cccgatcccc tatggtgcac tctcagtaca atctgctctg atgccgcata 120

gttaagccag tatctgctcc ctgcttgtgt gttggaggtc gctgagtagt gcgcgagcaa 180

aatttaagct acaacaaggc aaggcttgac cgacaattgc atgaagaatc tgcttagggt 240

taggcgtttt gcgctgcttc gcgatgtacg ggccagatat acgcggtacg aaaccgctga 300

tcagcctcga ctgtgccttc tagttgccag ccatctgttg tttgcccctc ccccgtgcct 360

tccttgaccc tggaaggtgc cactcccact gtcctttcct aataaaatga ggaaattgca 420

tcgcattgtc tgagtaggtg tcattctatt ctgggggggtg gggtggggca ggacagcaag 480

ggggaggatt gggaagacaa tagcaggcat gctggggatg cggtgggctc tatggcttct 540

gaggcggaaa gaaccagcag atctgcagat ctgaattcat ctatgtcggg tgcggagaaa 600

gaggtaatga aatggcatta tgggtattat gggtctgcat taatgaatcg gccagatatc 660