SEQUENCE LISTING

<110> Merck Sharp & Dohme Corp.
Ryan, Michael S.
Martin, Sherrie-Ann P.
Jones, Morrisa C.
Stanbro, Justin
Bhambhani, Akhilesh
Blue, Jeffrey Thomas
Pixley, Heidi Joanne
Green-Trexler, Erin, J.
Isopi, Lynne Anne

<120> FORMULATIONS OF DENGUE VIRUS VACCINE COMPOSITIONS

<130> 24547-WO-PCT

<160> 9

<170> PatentIn version 3.5

<210> 1
<211> 395
<212> PRT
<213> Dengue 1

<400> 1

Met Arg Cys Val Gly Ile Gly Ser Arg Asp Phe Val Glu Gly Leu Ser
1 5 10 15

Gly Ala Thr Trp Val Asp Val Val Leu Glu His Gly Ser Cys Val Thr
20 25 30

Thr Met Ala Lys Asp Lys Pro Thr Leu Asp Ile Glu Leu Leu Lys Thr
35 40 45

Glu Val Thr Asn Pro Ala Val Leu Arg Lys Leu Cys Ile Glu Ala Lys
50 55 60

Ile Ser Asn Thr Thr Thr Asp Ser Arg Cys Pro Thr Gln Gly Glu Ala
65 70 75 80

```
Thr Leu Val Glu Glu Gln Asp Ala Asn Phe Val Cys Arg Arg Thr Phe
                85                  90                  95

Val Asp Arg Gly Trp Gly Asn Gly Cys Gly Leu Phe Gly Lys Gly Ser
            100                 105                 110

Leu Ile Thr Cys Ala Lys Phe Lys Cys Val Thr Lys Leu Glu Gly Lys
        115                 120                 125

Ile Val Gln Tyr Glu Asn Leu Lys Tyr Ser Val Ile Val Thr Val His
    130                 135                 140

Thr Gly Asp Gln His Gln Val Gly Asn Glu Ser Thr Glu His Gly Thr
145                 150                 155                 160

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

Asp Tyr Gly Ala Leu Thr Leu Asp Cys Ser Pro Arg Thr Gly Leu Asp
            180                 185                 190

Phe Asn Glu Met Val Leu Leu Thr Met Lys Glu Lys Ser Trp Leu Val
        195                 200                 205

His Lys Gln Trp Phe Leu Asp Leu Pro Leu Pro Trp Thr Ser Gly Ala
    210                 215                 220

Ser Thr Ser Gln Glu Thr Trp Asn Arg Gln Asp Leu Leu Val Thr Phe
225                 230                 235                 240

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

Glu Gly Ala Met His Thr Ala Leu Thr Gly Ala Thr Glu Ile Gln Thr
            260                 265                 270
```

```
Ser Gly Thr Thr Thr Ile Phe Ala Gly His Leu Lys Cys Arg Leu Lys
        275                 280                 285

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

Ser Phe Lys Leu Glu Lys Glu Val Ala Glu Thr Gln His Gly Thr Val
305                 310                 315                 320

Leu Val Gln Ile Lys Tyr Glu Gly Thr Asp Ala Pro Cys Lys Ile Pro
                325                 330                 335

Phe Ser Thr Gln Asp Glu Arg Gly Val Thr Gln Asn Gly Arg Leu Ile
            340                 345                 350

Thr Ala Asn Pro Ile Val Thr Asp Lys Glu Lys Pro Val Asn Ile Glu
        355                 360                 365

Ala Glu Pro Pro Phe Gly Glu Ser Tyr Ile Val Ile Gly Ala Gly Glu
    370                 375                 380

Lys Ala Leu Lys Leu Ser Trp Phe Lys Lys Gly
385                 390                 395
```

<210> 2
<211> 395
<212> PRT
<213> Dengue 2

<400> 2

```
Met Arg Cys Ile Gly Ile Ser Asn Arg Asp Phe Val Glu Gly Val Ser
1               5                   10                  15

Gly Gly Ser Trp Val Asp Ile Val Leu Glu His Gly Ser Cys Val Thr
            20                  25                  30

Thr Met Ala Lys Asn Lys Pro Thr Leu Asp Phe Glu Leu Ile Lys Thr
        35                  40                  45
```

```
Glu Ala Lys Gln Pro Ala Thr Leu Arg Lys Tyr Cys Ile Glu Ala Lys
    50                  55                  60

Leu Thr Asn Thr Thr Thr Asp Ser Arg Cys Pro Thr Gln Gly Glu Pro
65                  70                  75                  80

Thr Leu Asn Glu Glu Gln Asp Lys Arg Phe Val Cys Lys His Ser Met
                85                  90                  95

Val Asp Arg Gly Trp Gly Asn Gly Cys Gly Leu Phe Gly Lys Gly Gly
            100                 105                 110

Ile Val Thr Cys Ala Met Phe Thr Cys Lys Lys Asn Met Glu Gly Lys
        115                 120                 125

Ile Val Gln Pro Glu Asn Leu Glu Tyr Thr Val Val Ile Thr Pro His
    130                 135                 140

Ser Gly Glu Glu His Ala Val Gly Asn Asp Thr Gly Lys His Gly Lys
145                 150                 155                 160

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

Gly Tyr Gly Thr Val Thr Met Glu Cys Ser Pro Arg Thr Gly Leu Asp
            180                 185                 190

Phe Asn Glu Met Val Leu Leu Gln Met Lys Asp Lys Ala Trp Leu Val
        195                 200                 205

His Arg Gln Trp Phe Leu Asp Leu Pro Leu Pro Trp Leu Pro Gly Ala
    210                 215                 220

Asp Thr Gln Gly Ser Asn Trp Ile Gln Lys Glu Thr Leu Val Thr Phe
225                 230                 235                 240
```

```
Lys Asn Pro His Ala Lys Lys Gln Asp Val Val Val Leu Gly Ser Gln
                245                 250                 255


Glu Gly Ala Met His Thr Ala Leu Thr Gly Ala Thr Glu Ile Gln Met
            260                 265                 270


Ser Ser Gly Asn Leu Leu Phe Thr Gly His Leu Lys Cys Arg Leu Arg
        275                 280                 285


Met Asp Lys Leu Gln Leu Lys Gly Met Ser Tyr Ser Met Cys Thr Gly
    290                 295                 300


Lys Phe Lys Val Val Lys Glu Ile Ala Glu Thr Gln His Gly Thr Ile
305                 310                 315                 320


Val Ile Arg Val Gln Tyr Glu Gly Asp Gly Ser Pro Cys Lys Ile Pro
                325                 330                 335


Phe Glu Ile Met Asp Leu Glu Lys Arg His Val Leu Gly Arg Leu Ile
            340                 345                 350


Thr Val Asn Pro Ile Val Thr Glu Lys Asp Ser Pro Val Asn Ile Glu
        355                 360                 365


Ala Glu Pro Pro Phe Gly Asp Ser Tyr Ile Ile Ile Gly Val Glu Pro
    370                 375                 380


Gly Gln Leu Lys Leu Asp Trp Phe Lys Lys Gly
385                 390                 395


<210>  3
<211>  393
<212>  PRT
<213>  Dengue 3

<400>  3

Met Arg Cys Val Gly Val Gly Asn Arg Asp Phe Val Glu Gly Leu Ser
```

```
1               5                   10                  15

Gly Ala Thr Trp Val Asp Val Val Leu Glu His Gly Gly Cys Val Thr
            20                  25                  30

Thr Met Ala Lys Asn Lys Pro Thr Leu Asp Ile Glu Leu Gln Lys Thr
        35                  40                  45

Glu Ala Thr Gln Leu Ala Thr Leu Arg Lys Leu Cys Ile Glu Gly Lys
    50                  55                  60

Ile Thr Asn Ile Thr Thr Asp Ser Arg Cys Pro Thr Gln Gly Glu Ala
65                  70                  75                  80

Ile Leu Pro Glu Glu Gln Asp Gln Asn Tyr Val Cys Lys His Thr Tyr
                85                  90                  95

Val Asp Arg Gly Trp Gly Asn Gly Cys Gly Leu Phe Gly Lys Gly Ser
            100                 105                 110

Leu Val Thr Cys Ala Lys Phe Gln Cys Leu Glu Ser Ile Glu Gly Lys
        115                 120                 125

Val Val Gln His Glu Asn Leu Lys Tyr Thr Val Ile Ile Thr Val His
    130                 135                 140

Thr Gly Asp Gln His Gln Val Gly Asn Glu Thr Gln Gly Val Thr Ala
145                 150                 155                 160

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

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

Glu Met Ile Leu Leu Thr Met Lys Asn Lys Ala Trp Met Val His Arg
        195                 200                 205
```

```
Gln Trp Phe Phe Asp Leu Pro Leu Pro Trp Thr Ser Gly Ala Thr Thr
    210                 215                 220

Glu Thr Pro Thr Trp Asn Arg Lys Glu Leu Leu Val Thr Phe Lys Asn
225                 230                 235                 240

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

Ala Met His Thr Ala Leu Thr Gly Ala Thr Glu Ile Gln Asn Ser Gly
            260                 265                 270

Gly Thr Ser Ile Phe Ala Gly His Leu Lys Cys Arg Leu Lys Met Asp
        275                 280                 285

Lys Leu Glu Leu Lys Gly Met Ser Tyr Ala Met Cys Leu Asn Thr Phe
    290                 295                 300

Val Leu Lys Lys Glu Val Ser Glu Thr Gln His Gly Thr Ile Leu Ile
305                 310                 315                 320

Lys Val Glu Tyr Lys Gly Glu Asp Ala Pro Cys Lys Ile Pro Phe Ser
                325                 330                 335

Thr Glu Asp Gly Gln Gly Lys Ala His Asn Gly Arg Leu Ile Thr Ala
            340                 345                 350

Asn Pro Val Val Thr Lys Lys Glu Glu Pro Val Asn Ile Glu Ala Glu
        355                 360                 365

Pro Pro Phe Gly Glu Ser Asn Ile Val Ile Gly Ile Gly Asp Lys Ala
    370                 375                 380

Leu Lys Ile Asn Trp Tyr Lys Lys Gly
385                 390
```

<210> 4
<211> 395
<212> PRT
<213> Dengue 4

<400> 4

```
Met Arg Cys Val Gly Val Gly Asn Arg Asp Phe Val Glu Gly Val Ser
1               5                  10                  15


Gly Gly Ala Trp Val Asp Leu Val Leu Glu His Gly Gly Cys Val Thr
            20                  25                  30


Thr Met Ala Gln Gly Lys Pro Thr Leu Asp Phe Glu Leu Ile Lys Thr
        35                  40                  45


Thr Ala Lys Glu Val Ala Leu Leu Arg Thr Tyr Cys Ile Glu Ala Ser
    50                  55                  60


Ile Ser Asn Ile Thr Thr Ala Thr Arg Cys Pro Thr Gln Gly Glu Pro
65                  70                  75                  80


Tyr Leu Lys Glu Glu Gln Asp Gln Gln Tyr Ile Cys Arg Arg Asp Val
                85                  90                  95


Val Asp Arg Gly Trp Gly Asn Gly Cys Gly Leu Phe Gly Lys Gly Gly
            100                 105                 110


Val Val Thr Cys Ala Lys Phe Ser Cys Ser Gly Lys Ile Thr Gly Asn
        115                 120                 125


Leu Val Gln Ile Glu Asn Leu Glu Tyr Thr Val Val Val Thr Val His
    130                 135                 140


Asn Gly Asp Thr His Ala Val Gly Asn Asp Thr Ser Asn His Gly Val
145                 150                 155                 160


Thr Ala Thr Ile Thr Pro Arg Ser Pro Ser Val Glu Val Lys Leu Pro
```

```
                165                 170                 175

Asp Tyr Gly Glu Leu Thr Leu Asp Cys Glu Pro Arg Ser Gly Ile Asp
            180                 185                 190

Phe Asn Glu Met Ile Leu Met Lys Met Lys Lys Lys Thr Trp Leu Val
        195                 200                 205

His Lys Gln Trp Phe Leu Asp Leu Pro Leu Pro Trp Ala Ala Gly Ala
    210                 215                 220

Asp Thr Ser Glu Val His Trp Asn Tyr Lys Glu Arg Met Val Thr Phe
225                 230                 235                 240

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

Glu Gly Ala Met His Ser Ala Leu Thr Gly Ala Thr Glu Val Asp Ser
            260                 265                 270

Gly Asp Gly Asn His Met Tyr Ala Gly His Leu Lys Cys Lys Val Arg
        275                 280                 285

Met Glu Lys Leu Arg Ile Lys Gly Met Ser Tyr Thr Met Cys Ser Gly
    290                 295                 300

Lys Phe Ser Ile Asp Lys Glu Met Ala Glu Thr Gln His Gly Thr Thr
305                 310                 315                 320

Val Val Lys Val Lys Tyr Glu Gly Ala Gly Ala Pro Cys Lys Val Pro
                325                 330                 335

Ile Glu Ile Arg Asp Val Asn Lys Glu Lys Val Val Gly Arg Ile Ile
            340                 345                 350

Ser Ser Thr Pro Phe Ala Glu Tyr Thr Asn Ser Val Thr Asn Ile Glu
        355                 360                 365
```

```
Leu Glu Pro Pro Phe Gly Asp Ser Tyr Ile Val Ile Gly Val Gly Asp
    370                 375                 380

Ser Ala Leu Thr Leu His Trp Phe Arg Lys Gly
385                 390                 395
```

<210> 5
<211> 451
<212> PRT
<213> Artificial Sequence

<220>
<223> DEN4-80EZip

<400> 5

```
Met Arg Cys Val Gly Val Gly Asn Arg Asp Phe Val Glu Gly Val Ser
1               5                   10                  15

Gly Gly Ala Trp Val Asp Leu Val Leu Glu His Gly Gly Cys Val Thr
            20                  25                  30

Thr Met Ala Gln Gly Lys Pro Thr Leu Asp Phe Glu Leu Ile Lys Thr
        35                  40                  45

Thr Ala Lys Glu Val Ala Leu Leu Arg Thr Tyr Cys Ile Glu Ala Ser
    50                  55                  60

Ile Ser Asn Ile Thr Thr Ala Thr Arg Cys Pro Thr Gln Gly Glu Pro
65                  70                  75                  80

Tyr Leu Lys Glu Glu Gln Asp Gln Gln Tyr Ile Cys Arg Arg Asp Val
                85                  90                  95

Val Asp Arg Gly Trp Gly Asn Gly Cys Gly Leu Phe Gly Lys Gly Gly
            100                 105                 110

Val Val Thr Cys Ala Lys Phe Ser Cys Ser Gly Lys Ile Thr Gly Asn
```

```
        115                 120                 125

Leu Val Gln Ile Glu Asn Leu Glu Tyr Thr Val Val Val Thr Val His
    130                 135                 140

Asn Gly Asp Thr His Ala Val Gly Asn Asp Thr Ser Asn His Gly Val
145                 150                 155                 160

Thr Ala Thr Ile Thr Pro Arg Ser Pro Ser Val Glu Val Lys Leu Pro
                165                 170                 175

Asp Tyr Gly Glu Leu Thr Leu Asp Cys Glu Pro Arg Ser Gly Ile Asp
            180                 185                 190

Phe Asn Glu Met Ile Leu Met Lys Met Lys Lys Lys Thr Trp Leu Val
        195                 200                 205

His Lys Gln Trp Phe Leu Asp Leu Pro Leu Pro Trp Ala Ala Gly Ala
    210                 215                 220

Asp Thr Ser Glu Val His Trp Asn Tyr Lys Glu Arg Met Val Thr Phe
225                 230                 235                 240

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

Glu Gly Ala Met His Ser Ala Leu Thr Gly Ala Thr Glu Val Asp Ser
            260                 265                 270

Gly Asp Gly Asn His Met Tyr Ala Gly His Leu Lys Cys Lys Val Arg
        275                 280                 285

Met Glu Lys Leu Arg Ile Lys Gly Met Ser Tyr Thr Met Cys Ser Gly
    290                 295                 300

Lys Phe Ser Ile Asp Lys Glu Met Ala Glu Thr Gln His Gly Thr Thr
305                 310                 315                 320
```

```
Val Val Lys Val Lys Tyr Glu Gly Ala Gly Ala Pro Cys Lys Val Pro
                325                 330                 335

Ile Glu Ile Arg Asp Val Asn Lys Glu Lys Val Val Gly Arg Ile Ile
            340                 345                 350

Ser Ser Thr Pro Phe Ala Glu Tyr Thr Asn Ser Val Thr Asn Ile Glu
        355                 360                 365

Leu Glu Pro Pro Phe Gly Asp Ser Tyr Ile Val Ile Gly Val Gly Asp
    370                 375                 380

Ser Ala Leu Thr Leu His Trp Phe Arg Lys Gly Gly Gly Gly Ser Gly
385                 390                 395                 400

Gly Gly Gly Thr Gly Gly Gly Ser Gly Gly Gly Ser Pro Arg Met Lys
                405                 410                 415

Gln Leu Glu Asp Lys Val Glu Glu Leu Leu Ser Lys Asn Tyr His Leu
            420                 425                 430

Glu Asn Glu Val Ala Arg Leu Lys Lys Leu Val Gly Glu Arg Gly Gly
        435                 440                 445

Cys Gly Gly
    450
```

<210> 6
<211> 10705
<212> RNA
<213> Artificial Sequence

<220>
<223> DENV1

<400> 6
aguuguuagu cuacguggac cgacaagaac aguuucgaau cggaagcuug cuuaacguag 60

uucuaacagu uuuuuauuag agagcagauc ucugaugaac aaccaacgga aaaagacggg 120

ucgaccgucu uucaauaugc ugaaacgcgc gagaaaccgc gugucaacug uuucacaguu 180

ggcgaagaga uucucaaaag gauugcuuuc aggccaagga cccaugaaau uggugauggc 240

uuuuauagca uuccuaagau uucuagccau accuccaaca gcaggaauuu uggcuagaug 300

gggcucauuc aagaagaaug gagcgaucaa aguguuacgg gguuucaaga aagaaaucuc 360

aaacauguug aacauaauga acaggaggaa aagaucugug accaugcucc ucaugcugcu 420

gcccacagcc cuggcguucc aucugaccac ccgaggggga gagccgcaca ugauaguuag 480

caagcaggaa agaggaaaau cacuuuuguu uaagaccucu gcagguguca acaugugcac 540

ccuuauugca auggauuugg gagaguuaug ugaggacaca augaccuaca aaugcccccg 600

gaucacugag acggaaccag augacguuga cuguuggugc aaugccacgg agacaugggu 660

gaccuaugga acauguucuc aaacugguga acaccgacga gacaaacguu ccgucgcacu 720

ggcaccacac guagggcuug gucuagaaac aagaaccgaa acguggaugu ccucugaagg 780

cgcuuggaaa caaauacaaa aaguggagac cugggcucug agacacccag gauucacggu 840

gauagcccuu uuucuagcac augccauagg aacauccauc acccagaaag ggaucauuuu 900

uauuuugcug augcugguaa cuccauccau ggccaugcgg ugcgugggaa uaggcaacag 960

agacuucgug gaaggacugu caggagcuac gugggguggau gugguacugg agcauggaag 1020

uugcgucacu accauggcaa aagacaaacc aacacuggac auugaacucu ugaagacgga 1080

ggucacaaac ccugccgucc ugcgcaaacu gugcauugaa gcuaaaauau caaacaccac 1140

caccgauucg agauguccaa cacaaggaga agccacgcug guggaagaac aggacacgaa 1200

cuuugugugu cgacgaacgu ucguggacag aggcuggggc aaugguugug ggcuauucgg 1260

aaaagguagc uuaauaacgu gugcuaaguu uaagugugug acaaaacugg aaggaaagau 1320

aguccaauau gaaaacuuaa aauauucagu gauagucacc guacacacug gagaccagca 1380

ccaaguugga aaugagacca cagaacaugg aacaacugca accauaacac cucaagcucc 1440

cacgucggaa auacagcuga cagacuacgg agcucuaaca uuggauuguu caccuagaac 1500

agggcuagac uuuaaugaga ugguguuguu gacaauggaa aaacgaucgu ggcucgucca 1560

caaacaaugg uuucuagacu uaccacugcc uuggaccucg ggggcuucaa caucccaaga 1620

gacuuggaau agacaagacu ugcuggucac auuuaagaca gcucaugcaa aaaagcagga 1680

aguagucgua cuaggaucac aagaaggagc aaugcacacu gcguugacug gagcgacaga 1740

aauccaaacg ucuggaacga caacaauuuu ugcaggacac cugaaaugca gacuaaaaau 1800

ggauaaacug acuuuaaaag ggaugucaua uguaaugugc acagggucau ucaaguuaga 1860

gaaggaagug gcugagaccc agcauggaac uguucuagug cagguuaaau acgaaggaac 1920

agaugcacca ugcaagaucc ccuucucguc ccaagaugag aagggaguaa cccagaaugg 1980

gagauugaua acagccaacc ccauagucac ugacaaagaa aaaccaguca acauugaagc 2040

ggagccaccu uuuggugaga gcuacauugu gguaggagca ggugaaaaag cuuugaaacu 2100

aagcugguuc aagaagggaa gcaguauagg gaaaauguuu gaagcaacug cccguggagc 2160

acgaaggaug gccauccugg gagacacugc augggacuuc gguucuauag gagggguguu 2220

cacgucugug ggaaaacuga uacaccagau uuuuggggacu gcguauggag uuuuguucag 2280

cgguguuucu uggaccauga agauaggaau agggauucug cugacauggc uaggauuaaa 2340

cucaaggagc acgucccuuu caaugacgug uaucgcaguu ggcaugguca cacuguaccu 2400

aggagucaug guucaggcgg acucgggaug uguaaucaac uggaaaggca gagaacucaa 2460

auguggaagc ggcauuuuug ucaccaauga aguccacacc uggacagagc aauauaaauu 2520

ccaggccgac uccccuaaga gacuaucagc ggccauuggg aaggcauggg aggagggugu 2580

guguggaauu cgaucagcca cucgucucga gaacaucaug uggaagcaaa uaucaaauga 2640

auuaaaccac aucuuacuug aaaaugacau gaaauuuaca guggucguag gagacguuag 2700

uggaaucuug gcccaaggaa agaaaaugau uaggccacaa cccauggaac acaaauacuc 2760

guggaaaagc uggggaaaag ccaaaaucau aggagcagau guacagaaua ccaccuucau 2820

caucgacggc ccaaacaccc cagaaugccc ugauaaccaa agagcaugga acauuuggga 2880

aguugaagac uauggauuug gaauuuucac gacaaacaua ugguugaaau ugcgugacuc 2940

cuacacucaa gugugugacc accggcuaau gucagcugcc aucaaggaua gcaaagcagu 3000

ccaugcugac augggguacu ggauagaaag ugaaaagaac gagacuugga aguuggcaag 3060

agccuccuuc auagaaguua agacaugcau cuggccaaaa ucccacacuc uauggagcaa 3120

uggaguccug gaaagugaga ugauaauccc aaagauauau ggaggaccaa uaucucagca 3180

caacuacaga ccaggauauu ucacacaaac agcagggccg uggcacuugg gcaaguuaga 3240

acuagauuuu gauuuaugug aagguaccac uguuguugug gaugaacauu guggaaaucg 3300

aggaccaucu cuuagaacca caacagucac aggaaagaca auccaugaau ggugcuguag 3360

aucuugcacg uuaccccccc uacguuucaa aggagaagac gggugcuggu acggcaugga 3420

aaucagacca gucaaggaga aggaagagaa ccuaguuaag ucaauggucu cugcaggguc 3480

aggagaagug gacaguuuuu cacuaggacu gcuaugcaua ucaauaauga ucgaagaggu 3540

aaugagaucc agauggagca gaaaaaugcu gaugacugga acauuggcug uguuccuccu 3600

ucucacaaug ggacaauuga cauggaauga ucugaucagg cuauguauca ugguuggagc 3660

caacgcuuca gacaagaugg ggaugggaac aacguaccua gcuuugaugg ccacuuucag 3720

aaugagacca auguucgcag ucgggcuacu guuucgcaga uuaacaucua gagaaguucu 3780

ucuucuuaca guuggauuga gucugguggc aucuguagaa cuaccaaauu ccuuagagga 3840

gcuaggggau ggacuugcaa ugggcaucau gauguugaaa uuacugacug auuuucaguc 3900

acaucagcua ugggcuaccu ugcugucuuu aacauuuguc aaaacaacuu uuucauugca 3960

cuaugcaugg aagacaaugg cuaugauacu gucaauugua ucucucuucc cuuuaugccu 4020

guccacgacu ucucaaaaaa caacauggcu uccgguguug cugggaucuc uuggaugcaa 4080

accacuaacc auguuucuua uaacagaaaa caaaaucugg ggaaggaaaa gcuggccucu 4140

caaugaagga auuauggcug uuggaauagu uagcauucuu cuaaguucac uucucaagaa 4200

ugaugugcca cuagcuggcc cacuaauagc uggaggcaug cuaauagcau guuaugucau 4260

aucuggaagc ucggccgauu uaucacugga gaaagcggcu gaggucuccu gggaagaaga 4320

agcagaacac ucuggugccu cacacaacau acuaguggag guccaagaug auggaaccau 4380

gaaaauaaag gaugaagaga gagaugacac acucaccauu cuccucaaag caacucugcu 4440

agcaaucuca gggguauacc caaugucaau accggcgacc cucuuugugu gguauuuuug 4500

gcagaaaaag aaacagagau caggagugcu augggacaca cccagcccuc cagaagugga 4560

aagagcaguc cuugaugaug gcauuuauag aauucuccaa agaggauugu ugggcagguc 4620

ucaaguagga guaggaguuu uucaagaagg cguguuccac acaauguggc acgucaccag 4680

gggagcuguc cucauguacc aagggaagag acuggaacca aguugggcca gugucaaaaa 4740

agacuugauc ucauauggag gagguuggag guuucaagga uccuggaacg cgggagaaga 4800

agugcaggug auugcuguug aaccggggaa gaaccccaaa aauguacaga cagcgccggg 4860

uaccuucaag accccugaag gcgaaguugg agccauagcu cuagacuuua aacccggcac 4920

aucuggaucu ccuaucguga acagagaggg aaaaauagua ggucuuuaug gaaauggagu 4980

ggugacaaca agugguaccu acgucagugc cauagcucaa gcuaaagcau cacaagaagg 5040

gccucuacca gagauugagg acgagguguu uaggaaaaga aacuuaacaa uaauggaccu 5100

acauccagga ucgggaaaaa caagaagaua ccuuccagcc auaguccgug aggccauaaa 5160

aagaaagcug cgcacgcuag ucuuagcucc cacaagaguu gucgcuucug aaauggcaga 5220

ggcgcucaag ggaaugccaa uaagguauca gacaacagca gugaagagug aacacacggg 5280

aaaggagaua guugaccuua ugugucacgc cacuuucacu augcgucucc ugucuccugu 5340

gagaguuccc aauuauaaua ugauuaucau ggaugaagca cauuucaccg auccagccag 5400

cauagcagcc agaggguaua ucucaacccg aguggguaug ggugaagcag cugcgauuuu 5460

caugacagcc acucccccg gaucggugga ggccuuucca cagagcaaug caguuaucca 5520

agaugaggaa agagacauuc cugaaagauc auggaacuca ggcuaugacu ggaucacuga 5580

uuucccaggu aaaacagucu gguuuguucc aagcaucaaa ucaggaaaug acauugccaa 5640

cuguuuaaga aagaauggga aacggguggu ccaauugagc agaaaaacuu uugacacuga 5700

guaccagaaa acaaaaaaua acgacuggga cuauguuguc acaacagaca uauccgaaau 5760

gggagcaaac uuccgagccg acaggguaau agacccgagg cggugccuga aaccgguaau 5820

acuaaaagau ggcccagagc gugucauucu agccggaccg augccaguga cuguggcuag 5880

cgccgcccag aggagaggaa gaauuggaag gaaccaaaau aaggaaggcg aucaguauau 5940

uuacauggga cagccucuaa aaaaugauga ggaccacgcc cauuggacag aagcaaaaau 6000

gcuccuugac aacauaaaca caccagaagg gauuauccca gcccucuuug agccggagag 6060

agaaaagagu gcagcaauag acggggaaua cagacuacgg ggugaagcga ggaaaacguu 6120

cguggagcuc augagaagag gagaucuacc ugucuggcua uccuacaaag uugccucaga 6180

aggcuuccag uacuccgaca gaagguggug cuuugauggg gaaaggaaca accagguguu 6240

ggaggagaac auggacgugg agaucuggac aaaagaagga gaaagaaaga aacuacgacc 6300

ccgcuggcug gaugccagaa cauacucuga cccacuggcu cugcgcgaau ucaaagaguu 6360

cgcagcagga agaagaagcg ucucagguga ccuaauauua gaaauaggga aacuuccaca 6420

acauuuaacg caaagggccc agaacgccuu ggacaaucug guuauguugc acaacucuga 6480

acaaggagga aaagccuaua gacacgccau ggaagaacua ccagacacca uagaaacguu 6540

aaugcuccua gcuuugauag cugugcugac ugguggagug acguuguucu uccuaucagg 6600

aaggggucua ggaaaaacau ccauuggccu acucugcgug auugccucaa gugcacuguu 6660

auggauggcc aguguggaac cccauuggau agcggccucu aucauacugg aguucuuucu 6720

gaugguguug cuuauuccag agccggacag acagcgcacu ccacaagaca accagcuagc 6780

auacguggug auaggucugu uauucaugau auugacagug gcagccaaug agaugggauu 6840

acuggaaacc acaaagaagg accuggggau uggucaugca gcugcugaaa accaccauca 6900

ugcugcaaug cuggacguag accuacaucc agcuucagcc uggacucucu augcaguggc 6960

cacaacaauu aucacuccca ugaugagaca cacaauugaa aacacaacgg caaauauuuc 7020

ccugacagcu auugcaaacc aggcagcuau auugauggga cuugacaagg gauggccaau 7080

aucaaagaug gacauaggag uuccacuucu cgccuugggg ugcuauucuc aggugaaccc 7140

gcugacgcug acagcggcgg uauuuaugcu aguggcucau uaugccauaa uuggacccgg 7200

acugcaagca aaagcuacua gagaagcuca aaaaaggaca gcagccggaa uaaugaaaaa 7260

cccaacuguc gacgggaucg uugcaauaga uuuggacccu gugguuuacg augcaaaauu 7320

ugaaaaacag cuaggccaaa uaauguuguu gauacuuugc acaucacaga uccuccugau 7380

gcggaccaca ugggccuugu gugaauccau cacacuagcc acuggaccuc ugaccacgcu 7440

uugggaggga ucuccaggaa aauucuggaa caccacgaua gcggugucca uggcaaacau 7500

uuuuagggga aguuaucuag caggagcagg ucuggccuuu ucauuaauga aaucucuagg 7560

aggagguagg agaggcacgg gagcccaagg ggaaacacug ggagaaaaau ggaaaagaca 7620

gcuaaaccaa uugagcaagu cagaauucaa cacuuacaaa aggaguggga uuauagaggu 7680

ggauagaucu gaagccaaag agggguuaaa aagaggagaa acgacuaaac acgcaguguc 7740

gagaggaacg gccaaacuga ggugguuugu ggagaggaac cuugugaaac cagaagggaa 7800

agucauagac cucgguugug gaagaggugg cuggucauau uauugcgcug ggcugaagaa 7860

agucacagaa gugaaaggau acacgaaagg aggaccugga caugaggaac caaucccaau 7920

ggcaaccuau ggauggaacc uaguaaagcu auacuccggg aaagauguau ucuuuacacc 7980

accugagaaa ugugacaccc ucuuguguga uauuggugag uccucuccga acccaacuau 8040

agaagaagga agaacguuac guguucuaaa gaugguggaa ccauggcuca gaggaaacca 8100

auuuugcaua aaaauucuaa aucccuauau gccgagugug guagaaacuu uggagcaaau 8160

gcaaagaaaa cauggaggaa ugcuagugcg aaauccacuc ucaagaaacu ccacucauga 8220

aauguacugg guuucaugug gaacaggaaa cauuguguca gcaguaaaca ugacaucuag 8280

aaugcugcua aaucgauuca caauggcuca caggaagcca acauaugaaa gagacgugga 8340

cuuaggcgcu ggaacaagac auguggcagu agaaccagag guggccaacc uagauaucau 8400

uggccagagg auagagaaua uaaaaaauga acacaaauca acauggcauu augaugagga 8460

caauccauac aaaacauggg ccuaucaugg aucauaugag gucaagccau caggaucagc 8520

cucauccaug gucaauggug uggugagacu gcuaaccaaa ccaugggaug ucauucccau 8580

ggucacacaa auagccauga cugacaccac acccuuugga caacagaggg uguuuaaaga 8640

gaaaguugac acgcguacac caaaagcgaa acgaggcaca gcacaaauua uggaggugac 8700

agccaggugg uuaugggguu uucucucuag aaacaaaaaa cccagaaucu gcacaagaga 8760

ggaguucaca agaaaaguca ggucaaacgc agcuauugga gcaguguucg uugaugaaaa 8820

ucaauggaac ucagcaaaag aggcagugga agaugaacgg uucugggacc uugugcacag 8880

agagagggag cuucauaaac aaggaaaaug ugccacgugu gucuacaaca ugaugggaaa 8940

gagagagaaa aaauuaggag aguucggaaa ggcaaaagga agucgcgcaa uaugguacau 9000

gugguuggga gcgcgcuuuu uagaguuuga agcccuuggu uucaugaaug aagaucacug 9060

guucagcaga gagaauucac ucaguggagu ggaaggagaa ggacuccaca aacuuggaua 9120

cauacucaga gacauaucaa agauuccagg gggaaauaug uaugcagaug acacagccgg 9180

augggacaca agaauaacag aggaugaucu ucagaaugag gccaaaauca cugacaucau 9240

ggaaccugaa caugcccuau uggccacguc aaucuuuaag cuaaccuacc aaaacaaggu 9300

aguaagggug cagagaccag cgaaaaaugg aaccgugaug gaugucauau ccagacguga 9360

ccagagagga aguggacagg uuggaaccua uggcuuaaac accuucacca acauggaggc 9420

ccaacuaaua agacaaaugg agucugaggg aaucuuuuca cccagcgaau uggaaacccc 9480

aaaucuagcc gaaagagucc ucgacugguu gaaaaaacau ggcaccgaga ggcugaaaag 9540

aauggcaauc aguggagaug acuguguggu gaaaccaauu gaugacagau uugcaacagc 9600

cuuaacagcu uugaaugaca ugggaaaggu aagaaaagac auaccgcaau gggaaccuuc 9660

aaaaggaugg aaugauuggc aacaagugcc uuucuguuca caccauuucc accagcugau 9720

uaugaaggau gggagggaga uaguggugcc augccgcaac caagaugaac uuguagguag 9780

ggccagagua ucacaaggcg ccggauggag cuugagagaa acugcaugcc uaggcaaguc 9840

auaugcacaa auguggcagc ugauguacuu ccacaggaga gacuugagau uagcggcuaa 9900

ugcuaucugu ucagccguuc caguugauug ggucccaacc agccguacca ccuggucgau 9960

ccaugcccac caucaaugga ugacaacaga agacauguug ucagugugga auaggguuug 10020

gauagaggaa aacccaugga uggaggacaa gacucaugug uccaguuggg aagacguucc 10080

auaccuagga aaaagggaag aucaauggug uggaucccua auaggcuuaa cagcacgagc 10140

caccuggggcc accaacauac aaguggccau aaaccaagug agaaggcuca uugggaauga 10200

gaauuaucua gacuucauga caucaaugaa gagauucaaa aacgagagug aucccgaagg 10260

ggcacucugg uaagccaacu cauucacaaa auaaaggaaa auaaaaaauc aaacaaggca 10320

agaagucagg ccggauuaag ccauagcacg guaagagcua ugcugccugu gagccccguc 10380

caaggacgua aaaugaaguc aggccgaaag ccacgguucg agcaagccgu gcugccugua 10440

gcuccaucgu ggggauguaa aaacccggga ggcugcaaac cauggaagcu guacgcaugg 10500

gguagcagac uagugguuag aggagacccc ucccaagaca caacgcagca gcggggccca 10560

agacuagagg uuagaggaga ccccccgcac aacaacaaac agcauauuga cgcugggaga 10620

gaccagagau ccugcugucu cuacagcauc auuccaggca cagaucggaa gaaaauggaa 10680

uggugcuguu gaaucaacag guucu 10705

<210> 7
<211> 10618
<212> RNA
<213> Artificial Sequence

<220>
<223> DENV2

<400> 7
aguuguuagu cuguguggac cgacaaggac aguuccaaau cggaagcuug cuuaacacag 60

uucuaacagu uuguuugaau agagagcaga ucucuggaaa aaugaaccaa cgaaaaaagg 120

ugguuagacc accuuucaau augcugaaac gcgagagaaa ccgcguauca accccucaag 180

ggcuggugaa gagauucuca accggacuuu uuucugggaa aggacccuua cggauggugc 240

uagcauucau cacguuuuug cgaguccuuu ccaucccacc aacagcaggg auucugaaga 300

gauggggaca guugaagaaa aauaaggcca ucaagauacu gauuggauuc aggaaggaga 360

uaggccgcau gcugaacauc uugaacggga gaaaaagguc ugcaggcaug aucauuaugc 420

ugauuccaac agugauggcg uuccauuuaa ccacacguaa cggagaacca cacaugaucg 480

ucaguagaca agagaaaggg aaaagucuuc uguuuaaaac agaggauggu gugaacaugu 540

guacccucau ggccauggac cuuggugaau ugugugaaga uacaaucacg uacaaguguc 600

cucuucucag gcagaaugaa ccagaagaca uagauuguug gugcaacucu acguccacau 660

ggguaacuua ugggacgugu accaccacag gagaacacag aagagaaaaa agaucagugg 720

cacucguucc acaugуggga augggacugg agacacgaac ugaaacaugg augucaucag 780

aaggggccug gaaacaugcc cagagaauug aaacuuggau cuugagacau ccaggcuuua 840

ccauaauggc agcaauccug gcauacacca uaggaacgac acauuuccaa agagcccuga 900

uuuucaucuu acugacagcu gucgcuccuu caaugacaau gcguugcaua ggaauaucaa 960

auagagacuu uguagaaggg guuucaggag gaagcugggu ugacauaguc uuagaacaug 1020

gaagcugugu gacgacgaug gcaaaaaaca aaccaacauu ggauuuugaa cugauaaaaa 1080

cagaagccaa acaaccugcc acucuaagga aguacuguau agaggcaaag cugaccaaca 1140

caacaacaga aucucgcugc ccaacacaag gagaaccuag ccuaaaugaa gagcaggaca 1200

aaagguucgu cugcaaacac uccauggugg acagaggaug gggaaaugga uguggauuau 1260

uuggaaaagg aggcauugug accugugcua uguucacaug caaaaagaac auggaaggaa 1320

aagucgugca accagaaaac uuggaauaca ccauugugau aacaccucac ucaggggaag 1380

agcaugcagu cggaaaugac acaggaaaac auggcaagga aaucaaaaua acaccacaga 1440

guuccaucac agaagcagag uugacaggcu auggcacugu cacgauggaa ugcuuuccga 1500

gaacgggccu cgacuucaau gagauggugu ugcugcaaau ggaaaauaaa gcuuggcugg 1560

ugcacaggca augguuccua gaccugccgu ugccauggcu gcccggagcg gacacacaag 1620

gaucaaauug gauacagaaa gagacauugg ucacuuucaa aaauccccau gcgaagaaac 1680

aggauguugu uguuuuggga ucccaagaag gggccaugca cacagcacuc acaggggcca 1740

cagaaaucca gaugucauca ggaaacuuac uguucacagg acaucucaag ugcaggcuga 1800

ggauggacaa acuacagcuc aaaggaaugu cauacucuau gugcacagga aaguuuaaag 1860

uugugaagga aauagcagaa acacaacaug gaacaauagu uaucagagua caauaugaag 1920

gggacgguuc uccauguaag aucccuuuug agauaaugga uuuggaaaaa agacauguuu 1980

uaggucgccu gauuacaguc aacccaaucg uaacagaaaa agauagccca gucaacauag 2040

aagcagaacc uccauucgga gacagcuaca ucaucauagg aguagagccg ggacaauuga 2100

agcucaacug guuuaagaaa ggaaguucua ucggccaaau guuugagaca acaaugaggg 2160

gagcgaagag aauggccauu uuaggugaca cagcuuggga uuuuggaucc cugggaggag 2220

uguuuacauc uauaggaaag gcucuccacc aaguuuucgg agcaaucuau ggggcugccu 2280

ucagugggguu cucauggacu augaaaaucc ucauaggagu cauuaucaca uggauaggaa 2340

ugaacucgag gaacacuuca auggcuauga cgugcauagc uguuggagga aucacucugu 2400

uucugggcuu cacaguucaa gcagacaugg guuguguggc gucauggagu gggaaagaau 2460

ugaagugugg aagcggaauu uuugugguug acaacgugca cacuuggaca gaacaguaca 2520

aauuucaacc agagucccca gcgagacuag cgucugcaau auuaaaugcc cacaaagaug 2580

gggucugugg aauuagauca accacgaggc uggaaaaugu cauguggaag caaauaacca 2640

acgagcuaaa cuauguucuc ugggaaggag gacaugaccu cacuguagug gcuggggaug 2700

ugaaggggguu guugaccaaa ggcaagagag cacucacacc cccagugagu gaucugaaau 2760

auucauggaa gacaugggga aaagcaaaaa ucuucacccc agaagcaaga aauagcacau 2820

uuuuaauaga cggaccagac accucugaau gccccaauga acgaagagca uggaacucuc 2880

uugaggugga agacuaugga uuuggcaugu ucacgaccaa cauauggaug aaauuccgag 2940

aaggaaguuc agaagugugu gaccacaggu uaaugucagc ugcaauuaaa gaucagaaag 3000

cugugcaugc ugacaugggu uauuggauag agagcucaaa aaaccagacc uggcagauag 3060

agaaagcauc ucuuauugaa gugaaaacau gucuguggcc caagacccac acacugugga 3120

gcaauggagu gcuggaaagc cagaugcuca uuccaaaauc auaugcgggc ccuuuuucac 3180

agcacaauua ccgccagggc uaugccacgc aaaccguggg cccauggcac uuaggcaaau 3240

uagagauaga cuuuggagaa ugccccggaa caacagucac aauucaggag gauugugacc 3300

auagaggccc aucuuugagg accaccacug caucuggaaa acuagucacg caauggugcu 3360

gccgcuccug cacgaugccu cccuuaaggu ucuugggaga agaugggugc ugguauggga 3420

uggagauuag gcccuugagu gaaaaagaag agaacauggu caaaucacag gugacggccg 3480

gacagggcac aucagaaacu uuuucuaugg gucuguugug ccugaccuug uuuguggaag 3540

aaugcuugag gagaagaguc acuaggaaac acaugauauu aguuguggug aucacucuuu 3600

gugcuaucau ccugggaggc cucacaugga uggacuuacu acgagcccuc aucauguugg 3660

gggacacuau gucugguaga auaggaggac agauccaccu agccaucaug gcaguguuca 3720

agaugucacc aggauacgug cugggugugu uuuuaaggaa acucacuuca agagagacag 3780

cacuaauggu aauaggaaug gccaugacaa cggugcuuuc aauuccacau gaccuuaugg 3840

aacucauuga uggaauauca cugggacuaa uuuugcuaaa aauaguaaca caguuugaca 3900

acacccaagu gggaaccuua gcucuuuccu ugacuuucau aagaucaaca augccauugg 3960

ucauggcuug gaggaccauu auggcugugu uguuuguggu cacacucauu ccuuugugca 4020

ggacaagcug ucuucaaaaa cagucucauu ggguagaaau aacagcacuc auccuaggag 4080

cccaagcucu gccaguguac cuaaugacuc uuaugaaagg agccucaaga agaucuuggc 4140

cucuuaacga gggcauaaug gcuguggguu ugguuagucu cuuaggaagc gcucuuuuaa 4200

agaaugaugu cccuuuagcu ggcccaaugg uggcaggagg cuuacuucug gcggcuuacg 4260

ugaugagugg uagcucagca gaucugucac uagagaaggc cgccaacgug cagugggaug 4320

aaauggcaga cauaacaggc ucaagcccaa ucauagaagu gaagcaggau gaagauggcu 4380

cuuucuccau acgggacguc gaggaaacca auaugauaac ccuuuuggug aaacuggcac 4440

ugauaacagu gucaggucuc uaccccuugg caauuccagu cacaaugacc uuaugguaca 4500

uguggcaagu gaaaacacaa agaucaggag cccuguggga cgucccccuca cccgcugcca 4560

cuaaaaaagc cgcacugucu gaaggagugu acaggaucau gcaaagaggg uuauucggga 4620

aaacucaggu uggaguaggg auacacaugg aagguguauu ucacacaaug uggcauguaa 4680

caagaggauc agugaucugc cacgagacug ggagauugga gccaucuugg gcugacguca 4740

ggaaugacau gauaucauac ggugggggau ggaggcuugg agacaaaugg gacaaagaag 4800

aagacguuca gguccucgcc auagaaccag gaaaaaaucc uaaacauguc caaacgaaac 4860

cuggccuuuu caagacccua acuggagaaa uuggagcagu aacauuagau uucaaacccg 4920

gaacgucugg uucucccauc aucaacagga aaggaaaagu caucggacuc uauggaaaug 4980

gaguaguuac caaaucaggu gauuacguca gugccauaac gcaagccgaa agaauuggag 5040

agccagauua ugaaguggau gaggacauuu uucgaaagaa aagauuaacu auaauggacu 5100

uacaccccgg agcuggaaag acaaaaagaa uucuuccauc aauagugaga gaagccuuaa 5160

aaaggaggcu acgaacuuug auuuuagcuc ccacgagagu gguggcggcc gagauggaag 5220

aggcccuacg uggacugcca auccguuauc agaccccagc ugugaaauca gaacacacag 5280

gaagagagau uguagaccuc augugucaug caaccuucac aacaagacuu uugucaucaa 5340

ccaggguucc aaauuacaac cuuauaguga uggaugaagc acauuucacc gauccuucua 5400

gugucgcggc uagaggauac aucucgacca ggguggaaau gggagaggca gcagccaucu 5460

ucaugaccgc aaccccuccc ggagcgacag aucccuuucc ccagagcaac agcccaauag 5520

aagacaucga gagggaaauu ccggaaaggu cauggaacac aggguucgac uggauaacag 5580

acuaccaagg gaaaacugug ugguuuguuc ccagcauaaa agcuggaaau gacauugcaa 5640

auuguuugag aaagucggga aagaaaguua uccaguugag uaggaaaacc uuugauacag 5700

aguauccaaa aacgaaacuc acggacuggg acuuuguggu cacuacagac auaucugaaa 5760

ugggggccaa uuuuagagcc gggagaguga uagacccuag aagaugccuc aagccaguua 5820

uccuaccaga ugggccagag agagucauuu uagcaggucc uauuccagug acuccagcaa 5880

gcgcugcuca gagaagaggg cgaauaggaa ggaacccagc acaagaagac gaccaauacg 5940

uuuucuccgg agacccacua aaaaaugaug aagaucaugc ccacuggaca gaagcaaaga 6000

ugcugcuuga caauaucuac accccagaag ggaucauucc aacauuguuu gguccggaaa 6060

gggaaaaaac ccaagccauu gauggagagu uucgccucag aggggaacaa aggaagacuu 6120

uuguggaauu aaugaggaga ggagaccuuc cgguguggcu gagcuauaag guagcuucug 6180

cuggcauuuc uuacaaagau cgggaauggu gcuucacagg ggaaagaaau aaccaaauuu 6240

uagaagaaaa cauggagguu gaaauuugga cuagagaggg agaaaagaaa aagcuaaggc 6300

caagaugguu agaugcacgu guauacgcug accccauggc uuugaaggau uucaaggagu 6360

uugccagugg aaggaagagu auaacucucg acauccuaac agagauugcc aguuugccaa 6420

cuuaccuuuc cucuagggcc aagcucgccc uugauaacau agucaugcuc cacacaacag 6480

aaagaggagg gagggccuau caacacgccc ugaacgaacu uccggaguca cuggaaacac 6540

ucaugcuugu agcuuuacua ggugcuauga cagcaggcau cuuccuguuu uucaugcaag 6600

ggaaaggaau agggaaauug ucaauggguu ugauaaccau ugcgguggcu aguggcuugc 6660

ucuggguagc agaaauucaa ccccagugga uagcggccuc aaucauacua gaguuuuuuc 6720

ucaugguacu guugauaccg gaaccagaaa aacaaaggac cccacaagac aaucaauuga 6780

ucuacgucau auugaccauu cucaccauca uuggucuaau agcagccaac gagauggggc 6840

ugauugaaaa aacaaaaacg gauuuugggu uuuaccaggu aaaaacagaa accaccaucc 6900

ucgaugugga cuugagacca gcuucagcau ggacgcucua ugcaguagcc accacaauuc 6960

ugacucccau gcugagacac accauagaaa acacgucggc caaccuaucu cuagcagcca 7020

uugccaacca ggcagccguc cuaauggggc uuggaaaagg auggccgcuc cacagaaugg 7080

accucggugu gccgcuguua gcaaugggau gcuauucuca agugaaccca auaaccuuga 7140

cagcauccuu agucaugcuu uucgugcacu augcaauaau aggcccagga uugcaggcaa 7200

aagccacaag agaggcccag aaaaggacag cugcugggau caugaaaaau cccacagugg 7260

acgggauaac aguaauagau cuagaaccaa uauccuauga cccaaaauuu gaaaagcaau 7320

uagggcaggu caugcuacua gucuugugug cuggacaacu acucuugaug agaacaacau 7380

gggcuuucug ugaagucuug acuuuggcca caggaccaau cuugaccuug ugggagggca 7440

acccgggaag guuuuggaac acgaccauag ccguauccac cgccaacauu uucaggggaa 7500

guuacuuggc gggagcugga cuggcuuuuu cacucauaaa gaaugcacaa accccuagga 7560

ggggaacugg gaccacagga gagacacugg gagagaagug gaagagacag cuaaacucau 7620

uagacagaaa agaguuugaa gaguauaaaa gaaguggaau acuagaagug gacaggacug 7680

aagccaaguc ugcccugaaa gaugggucua aaaucaagca ugcaguauca agagggucca 7740

guaagaucag auggauuguu gagagaggga ugguaaagcc aaaagggaaa guuguagauc 7800

uuggcugugg gagaggagga uggucuuauu acauggcgac acucaagaac gugacugaag 7860

ugaaagggua uacaaaagga gguccaggac augaagaacc gauucccaug gcuacuuaug 7920

guuggaauuu ggucaaacuc cauucagggg uugacguguu cuacaaaccc acagagcaag 7980

uggacacccu gcucugugau auuggggagu caucuucuaa uccaacaaua gaggaaggaa 8040

gaacauuaag aguuuugaag augguggagc cauggcucuc uucaaaaccu gaauucugca 8100

ucaaaguccu uaaccccuac augccaacag ucauagaaga gcuggagaaa cugcagagaa 8160

aacauggugg gaaccuuguc agaugcccgc uguccaggaa cuccacccau gagauguauu 8220

gggugucagg agcgucggga aacauuguga gcucugugaa cacaacauca aagauguugu 8280

ugaacagguu cacaacaagg cauaggaaac ccacuuauga gaaggacgua gaucuugggg 8340

caggaacgag aagugucucc acugaaacag aaaaaccaga caugacaauc auugggagaa 8400

ggcuucagcg auugcaagaa gagcacaaag aaaccuggca uuaugaucag gaaaacccau 8460

acagaaccug ggcguaucau ggaagcuaug aagcuccuuc gacaggcucu gcauccucca 8520

uggugaacgg ggugguaaaa cugcuaacaa aacccuggga ugugauucca auggugacuc 8580

aguuagccau gacagauaca accccuuuug ggcaacaaag aguguucaaa gagaaggugg 8640

auaccagaac accacaacca aaacccggua cacgaauggu uaugaccacg acagccaauu 8700

ggcugugggc ccuccuugga aagaagaaaa aucccagacu gugcacaagg gaagaguuca 8760

ucucaaaagu uagaucaaac gcagccauag gcgcagucuu ucaggaagaa cagggaugga 8820

caucagccag ugaagcugug aaugacagcc gguuuuggga acugguugac aaagaaaggg 8880

cccuacacca ggaagggaaa ugugaaucgu gugucuauaa caugauggga aaacgugaga 8940

aaaaguuagg agaguuuggc agagccaagg gaagccgagc aaucugguac auguggcugg 9000

gagcgcgguu ucuggaauuu gaagcccugg guuuuuugaa ugaagaucac ugguuuggca 9060

gagaaaauuc auggagugga guggaagggg aaggucugca cagauuggga uauauccugg 9120

aggagauaga caagaaggau ggagaccuaa uguaugcuga ugacacagca ggcugggaca 9180

caagaaucac ugaggaugac cuucaaaaug aggaacugau cacggaacag auggcucccc 9240

accacaagau ccuagccaaa gccauuuuca aacuaaccua ucaaaacaaa guggugaaag 9300

uccucagacc cacaccgcgg ggagcgguga uggauaucau auccaggaaa gaccaaagag 9360

guaguggaca aguuggaaca uaugguuuga acacauucac caacauggaa guucaacuca 9420

uccgccaaau ggaagcugaa ggagucauca cacaagauga caugcagaac ccaaaagggu 9480

ugaaagaaag aguugagaaa uggcugaaag aguguggugu cgacagguua aagaggaugg 9540

caaucagugg agacgauugc guggugaagc cccuagauga gagguuuggc acuucccucc 9600

ucuucuugaa cgacauggga aaggugagga aagacauucc gcagugggaa ccaucuaagg 9660

gauggaaaaa cuggcaagag guuccuuuuu gcucccacca cuuucacaag aucuuuauga 9720

aggauggccg cucacuaguu guuccaugua gaaaccagga ugaacugaua gggagagcca 9780

gaaucucgca gggagcugga uggagcuuaa gagaaacagc cugccugggc aaagcuuacg 9840

cccagaugug gucgcuuaug uacuuccaca gaagggaucu gcguuuagcc uccauggcca 9900

uaugcucagc aguuccaacg gaaugguuuc caacaagcag aacaacaugg ucaauccacg 9960

cucaucacca guggaugacc acugaagaua ugcucaaagu guggaacaga guguggauag 10020

aagacaaccc uaauaugacu gacaagacuc caguccauuc gugggaagau auaccuuacc 10080

uagggaaaag agaggauuug uggugguggau cccugauugg acuuucuucc agagccaccu 10140

gggcgaagaa cauucacacg gccauaaccc aggucaggaa ccugaucgga aaagaggaau 10200

acguggauua caugccagua augaaaagau acagugcucc uucagagagu gaaggaguuc 10260

uguaauuacc aacaacaaac accaaaggcu auugaaguca ggccacuugu gccacgguuu 10320

gagcaaaccg ugcugccugu agcuccgcca auaaugggag gcguaauaau ccccagggag 10380

gccaugcgcc acggaagcug uacgcguggc auauuggacu agcgguuaga ggagaccccu 10440

cccaucacug acaaaacgca gcaaaagggg gcccaagacu agagguuaga ggagaccccc 10500

ccaacacaaa aacagcauau ugacgcuggg aaagaccaga gauccugcug ucucugcaac 10560

aucaauccag gcacagagcg ccgcaagaug gauugguguu guugauccaa cagguucu 10618

<210> 8
<211> 10645
<212> RNA
<213> Artificial Sequence

<220>
<223> DENV3

<400> 8
aguuguuagu cuacguggac cgacaagaac aguuucgacu cggaagcuug cuuaacguag 60

uacugacagu uuuuuauuag agagcagauc ucugaugaac aaccaacgga aaaagacggg 120

aaaaccgucu aucaauaugc ugaaacgcgu gagaaaccgu gugucaacug gaucacaguu 180

ggcgaagaga uucucaagag gacugcugaa cggccaagga ccaaugaaau ugguuauggc 240

guucauagcu uuccucagau uucuagccau uccaccgaca gcaggagucu uggcuagaug 300

gggaaccuuu aagaagucgg gggcuauuaa gguccugaga ggcuucaaga aggagaucuc 360

aaacaugcug agcauuauca acagacggaa aaagacaucg cucugucuca ugaugauguu 420

accagcaaca cuugcuuucc acuugacuuc acgagaugga gagccgcgca ugauuguggg 480

gaagaaugaa agaggaaaau cccuacuuuu uaagacagcc ucuggaauca acaugugcac 540

acucauagcc auggauuugg gagagaugug ugaugacacg gucaccuaca aaugcccccu 600

cauuacugaa guggagccug aagacauuga cugcuggugc aaccuuacau cgacaugggu 660

gaccuacgga acgugcaauc aagcuggaga gcacagacgc gacaaaagau cgguggcguu 720

agcuccccau gucggcaugg gacuggacac acgcacccaa accuggaugu cggcugaagg 780

agcuuggaga caggucgaga agguagagac augggccuuu aggcacccag gguucacaau 840

acuagcccua uuucuugccc auuacauagg cacuuccuug acccagaaag ugguuauuuu 900

cauacuacua augcugguca ccccauccau gacaaugaga ugcgugggag uaggaaacag 960

agauuuugug gaaggccuau caggagcuac gugggguugac guggugcucg agcacggugg 1020

gugugugacu accauggcua agaacaagcc cacgcuggau auagagcucc agaagaccga 1080

ggccacccaa cuggcgaccc uaaggaaacu auguauugag ggaaaaauua ccaacguaac 1140

aaccgacuca aggugcccca cccaagggga agcgauuuua ccugaggagc aggaccagaa 1200

ccacgugugc aagcacacau acguggacag aggcugggga aacgguugug guuuguuugg 1260

caagggaagc cugguaacau gcgcgaaauu ucaauguuug gaaucaauag agggaaaagu 1320

ggugcagcau gagaaccuca aauacaccgu caucaucaca gugcacacag gagaucaaca 1380

ccaggugggа aaugaaacgc agggagucac ggcugagaua acaccccagg caucaaccgu 1440

ugaagccauc uuaccugaau auggaacccu ugggcuagaa ugcucaccac ggacagguuu 1500

agauuucaau gaaaugauuu uguugacaau gaagaacaga gcauggaugg uacauagaca 1560

augguuuuuu gaccuaccuu uaccauggac aucaggagcu acaacagaaa caccaaccug 1620

gaauaagaaa gagcuucuug ugacauucaa aaacgcacau gcaaaaaagc aagaaguagu 1680

gguccuugga ucgcaagagg gagcaaugca cacagcacug acaggagcua cagagaucca 1740

aaccucagga ggcacaagua uuuuugcggg gcacuuaaaa uguagacuca agauggacaa 1800

auuggaacuc aaggggauga gcuaugcaau gugcuugaau gccuuugugu ugaagaaaga 1860

agucuccgaa acgcaacaug ggacaauacu caucaagguu gaguacaaag gggaagaugc 1920

accuugcaag auuccuuucu ccacggagga uggacaaggg aaagcccaca auggcagacu 1980

gaucacagcu aacccagugg ugaccaagaa ggaggagccu gucaauauug aggcagaacc 2040

uccuuuuggg gaaagcaaua uaguaauugg aauuggagac aaagccuuga aaauuaacug 2100

guacaagaag ggaagcucga uuggggaagau guucgaggcc acugccagag gugcaaggcg 2160

cauggccauc uuggggagaca cagccuggga cuuuggauca guagguggug uuuuaaauuc 2220

auuaggaaaa auggugcacc aaauauuugg aagugcuuac acagcccuau uuaguggagu 2280

cuccuggaua augaaaauug gaauaggugu ccuuuuaacc uggauagggu ugaauucaaa 2340

aaacacuagu augagcuuua gcugcauugu gauaggaauc auuacacucu aucugggagc 2400

cguggugcaa gcugacaugg ggugugucau aaacuggaaa ggcaaagaac ucaaaugugg 2460

aaguggaauu uucgucacua augaggucca caccuggaca gagcaauaca aauuucaagc 2520

agacucccccc aaaagacugg cgacagccau ugcaggcgcu ugggagaaug gagugugcgg 2580

aaucaggucg acaaccagaa uggagaaccu cuuguggaag caaauagcca augaacugaa 2640

cuacauauua ugggaaaaca acaucaaauu aacgguaguu gugggugaua uaauuggggu 2700

cuuagagcaa gggaaaagaa cacuaacacc acaacccaug gaacuaaaau auucauggaa 2760

aacaugggga aaggcgaaga uagugacagc ugaaacacaa aauuccucuu ucauaauaga 2820

ugggccaaac acaccagagu guccaagugc cucaagagca uggaaugugu gggaggugga 2880

agauuacggg uucggagucu ucacaacuaa cauauggcug aaacuccgag agauguacac 2940

ccaacuaugu gaccacaggc uaaugucggc agccguuaag gaugagaggg ccguacacgc 3000

cgacaugggc uauuggauag aaagccaaaa gaauggaagu uggaagcuag aaaaggcauc 3060

ccucauagag guaaaaaccu gcacauggcc aaaaucacac acucuuugga gcaauggugu 3120

gcuagagagu gacaugauca ucccaaagag ucuggcuggu cccauuucgc aacacaacua 3180

caggcccgga uaccacaccc aaacggcagg acccuggcac uuaggaaaau uggagcugga 3240

cuucaacuau ugugaaggaa caacaguugu caucacagaa aauuguggga caagaggccc 3300

aucacugaga acaacaacag ugucagggaa guugauacac gaaugguguu gccgcucgug 3360

uacacuuccu ccccugcgau acaugggaga agacggcugc ugguauggca uggaaauuag 3420

acccauuaau gagaaagaag agaacauggu aaagucuuua gucucagcag ggaguggaaa 3480

gguggauaac uucacaaugg gugucuugug uuuggcaauc cuuuuugaag aggugaugag 3540

aggaaaauuu gggaaaaagc acaugauugc agggguucuc uucacguuug uacuccuucu 3600

cucagggcaa auaacaugga gagacauggc gcacacacuc auaaugauug gguccaacgc 3660

cucugacaga augggaaugg gcgucacuua ccuagcauug auugcaacau uuaaaauuca 3720

gccauuuuug gcuuugggau ucuuccugag gaaacugaca ucuagagaaa auuuauuguu 3780

gggaguuggg uuggccaugg caacaacguu acaacugcca gaggacauug aacaaauggc 3840

gaauggaaua gcuuuagggc ucauggcucu uaaauuaaua acacaauuug aaacauacca 3900

acuauggacg gcauuagucu cccuaaugug uucaaauaca auuuucacgu ugacuguugc 3960

cuggagaaca gccacccuga uuuuggccgg aauuucucuu uugccagugu gccagucuuc 4020

gagcaugagg aaaacagauu ggcucccaau ggcuguggca gcuaugggag uuccaccccu 4080

accacuuuuu auuuucaguu ugaaagauac gcucaaaagg agaagcuggc cacugaauga 4140

gggggugaug gcuguuggac uugugaguau ucuagcuagu ucucuccuua ggaaugacgu 4200

gcccauggcu ggaccauuag uggcuggggg cuugcugaua gcgugcuacg ucauaacugg 4260

cacgucagca gaccucacug uagaaaaagc agcagaugug acaugggagg aagaggcuga 4320

gcaaacagga gugucccaca auuuaaugau cacaguugau gacgauggaa caaugagaau 4380

aaaagaugau gagacugaga acaucuuaac agugcuuuug aaaacagcau uacuaauagu 4440

gucaggcauu uuuccauacu ccauacccgc aacacuguug gucuggcaca cuuggcaaaa 4500

gcaaacccaa agauccggug uccuauggga cguucccagc cccccagaga cacagaaagc 4560

agaacuggaa gaaggggguuu auaggaucaa gcagcaagga auuuuuggga aaacccaagu 4620

gggggguugga guacaaaaag aaggaguuuu ccacaccaug uggcacguca caagaggagc 4680

aguguugaca cacaauggga aaagacugga accaaacugg gcuagcguga aaaaagaucu 4740

gauuucauac ggaggaggau ggaaauugag ugcacaaugg caaaaaggag aggaggugca 4800

gguuauugcc guagagccug ggaagaaccc aaagaacuuu caaaccaugc caggcauuuu 4860

ccagacaaca acaggggaga uaggagcgau ugcacuggac uucaagccug gaacuucagg 4920

aucucccauc auaaacagag agggaaaggu acugggauug uauggcaaug gaguggucac 4980

aaagaauggu ggcuauguca guggaauagc acaaacaaau gcagaaccag acggaccgac 5040

accagaguug gaagaagaga uguucaaaaa gcgaaaucua accauaaugg aucuccaucc 5100

cgggucagga aagacgcgga aauaucuucc agcuauuguu agagaggcaa ucaagagacg 5160

cuuaaggacu cuaauuuugg caccaacaag gguaguugca gcugagaugg aagaagcauu 5220

gaaagggcuc ccaauaaggu aucaaacaac ugcaacaaaa ucugaacaca cagggagaga 5280

gauuguugau cuaaugugcc acgcaacguu cacaaugcgu uugcugucac cagucagggu 5340

uccaaacuac aacuugauaa uaauggauga ggcucauuuc acagacccag ccaguauagc 5400

ggcuagaggg uacauaucaa cucguguagg aaugggagag gcagccgcaa uuuucaugac 5460

agccacaccc ccuggaacag cugaugccuu uccucagagc aacgcuccaa uucaagauga 5520

agaaagagac auaccagaac gcucauggaa uucaggcaau gaauggauua ccgacuuugc 5580

cgggaagacg guguggguuug ucccuagcau caaagcugga aaugacauag caaacugcuu 5640

gcggaaaaau ggaaaaaagg ucauucaacu uaguaggaag acuuuugaca cagaauauca 5700

aaagacuaaa cuaaaugauu gggacuuugu ggugacaaca gacauuucag aaaugggagc 5760

caauuucaaa gcagacagag ugaucgaccc aagaagaugu cucaagccag ugauuuugac 5820

agacggaccc gagcgcguga uccuggcggg accaaugcca gucaccguag cgagcgcugc 5880

gcaaaggaga gggagaguug gcaggaaccc acaaaaagaa aaugaccaau acauauucau 5940

gggccagccc cucaauaaug augaagacca ugcucacugg acagaagcaa aaaugcugcu 6000

agacaacauc aacacaccag aagggaucau accagcucuc uuugaaccag aaagggagaa 6060

gucagccgcc auagacggcg aauaccgccu gaagggugag uccaggaaga ccuucgugga 6120

acucaugagg aggggugacc ucccaguuug gcuagcccau aaaguagcau cagaagggau 6180

caaauauaca gauagaaagu gguguuuuga uggagaacgc aacaaucaaa uuuuagagga 6240

gaauauggau guggaaaucu ggacaaagga aggagaaaag aaaaaauuga gaccuaggug 6300

gcuugaugcc cgcacuuauu cagaucccuu agcgcucaag gaauucaagg acuuugcggc 6360

ugguagaaag ucaauugccc uugaucuugu gacagaaaua ggaagagugc cuucacacuu 6420

agcucacaga acgagaaacg cccuggacaa ucuggugaug uugcacacgu cagaacaugg 6480

cgggagggcc uacaggcaug caguggagga acuaccagaa acaauggaaa cacucuuacu 6540

ccugggacuc augauccugu uaacaggugg agcaaugcuu uucuugauau cagguaaagg 6600

gauuggaaag acuucaauag gacucauuug uguagcugcu uccagcggua uguuauggau 6660

ggcugauguc ccacuccaau ggaucgcguc ugccauaguc cuggaguuuu uuaugauggu 6720

guuacuuaua ccagaaccag aaaagcagag aacuccccaa gacaaucaac ucgcauaugu 6780

cgugauaggc auacucacac uggcugcaau aguagcagcc aaugaaaugg gacuguugga 6840

aaccacaaag agagauuuag gaauguccaa agaaccaggu guuguuucuc caaccagcua 6900

uuuggaugug gacuugcacc cagcaucagc cuggacauug uacgcugugg ccacaacagu 6960

aauaacacca auguugagac auaccauaga gaauuccaca gcaaaugugu cccuggcagc 7020

uauagccaac caggcagugg uccugauggg uuuagacaaa ggauggccga uaucgaaaau 7080

ggacuuaggc gugccacuau uggcacuggg uuguuauuca caagugaacc cacuaacucu 7140

cacagcggca guucuccugc uagccacgca uuaugcuauu auagguccag gauugcaggc 7200

aaaagccacu cgugaagcuc aaaaaaggac agcugcugga auaaugaaga auccaacggu 7260

ggaugggaua augacaauag accuagaucc uguaauauac gauccaaaau uugaaaagca 7320

acuaggacag guuaugcucc ugguucugug ugcaguucaa cuuuuguuaa ugagaacauc 7380

augggcuuuu ugugaagcuc uaacccuagc cacaggacca auaacaacac ucugggaagg 7440

aucaccuggg aaguucugga acaccacgau agcuguuucc auggcgaaca ucuuuagagg 7500

gagcuauuua gcaggagcug ggcuugcuuu uucuaucaug aaaucaguug gaacaggaaa 7560

gagagggaca gggucacagg gugaaaccuu gggagaaaag uggaaaaaga aauugaauca 7620

auuaccccgg aaagaguuug accuuuacaa gaaauccgga aucacugaag uggauagaac 7680

agaagccaaa gaaggguuga aaagaggaga aauaacacac caugccgugu ccagaggcag 7740

cgcaaaacuu caaugguucg uggagagaaa cauggucauc cccgaaggaa gagucauaga 7800

cuuaggcugu ggaagaggag gcuggucaua uuauugugca ggacugaaaa aaguuacaga 7860

agugcgagga uacacaaaag gcggcccagg acaugaagaa ccaguaccua ugucuacaua 7920

cggauggaac auagucaagu uaaugagugg aaaggaugug uuuuaucuuc caccugaaaa 7980

gugugauacu cuauugugug acauuggaga aucuucacca agcccaacag uggaagaaag 8040

cagaaccaua agagucuuga agaugguuga accauggcua agaaauaacc aguuuugcau 8100

uaaaguauug aacccuuaca ugccaacugu gauugagcac cuagaaagac uacaaaggaa 8160

acauggagga augcuuguga gaaauccacu cucacgaaac uccacgcacg aaauguacug 8220

gauaucuaau ggcacaggca auaucguuuc uucagucaac augguaucca gauugcuacu 8280

uaacagauuc acaaugacac auaggagacc caccauagag aaagaugugg auuuaggagc 8340

ggggacccga caugucaaug cggaaccaga aacacccaac auggauguca uuggggaaag 8400

aauaagaagg aucaaggagg agcauaguuc aacauggcac uaugaugaug aaaauccuua 8460

uaaaacgugg gcuuaccaug gauccuauga aguuaaggcc acaggcucag ccuccuccau 8520

gauaaaugga gucgugaaac uccucacgaa accaugggau guggugccca uggugacaca 8580

gauggcaaug acggauacaa ccccauucgg ccagcaaagg guuuuuaaag agaaagugga 8640

caccaggaca cccagaccua ugccaggaac aagaaagguu auggagauca cagcggaaug 8700

gcuuuggaga acccugggaa ggaacaaaag acccagauua uguacgagag aggaguucac 8760

aaaaaagguc agaaccaacg cagcuauggg cgccguuuuu acagaggaga accaauggga 8820

cagugcuaga gcugcuguug aggaugaaga auucuggaaa cucguggaca gagaacguga 8880

acuccacaaa uugggcaagu guggaagcug cguuuacaac augaugggca agagagagaa 8940

gaaacuugga gaguuuggca aagcaaaagg caguagagcc auaugguaca uguggguggg 9000

agccagauac cuugaguucg aagcacucgg auucuuaaau gaagaccauu gguucucgcg 9060

ugaaaacucu uacaguggag uagaaggaga aggacugcac aagcugggau acaucuuaag 9120

agacauuucc aagauacccg gaggagcuau guaugcugau gacacagcug guuggacac 9180

aagaauaaca gaagaugacc ugcacaauga ggaaaaaauc acacagcaaa uggacccuga 9240

acacaggcag uuagcaaacg cuauauucaa gcucacauac caaaacaaag uggucaaagu 9300

ucaacgacca acuccaaagg gcacgguaau ggacaucaua ucuaggaaag accaaagagg 9360

caguggacag gugggaacuu auggucugaa uacauucacc aacauggaag cccaguuaau 9420

cagacaaaug gaaggagaag guguguuguc gaaggcagac cucgagaacc cucaucugcu 9480

agagaagaaa guuacacaau gguuggaaac aaaaggagug gagagguuaa aaagaauggc 9540

caucagcggg gaugauugcg uggugaaacc aauugaugac agguucgcca augcccugcu 9600

ugcccugaau gacaugggaa aaguuaggaa ggacauaccu caauggcagc caucaaaggg 9660

auggcaugau uggcaacagg ucccuuucug cucccaccac uuucaugaau ugaucaugaa 9720

agauggaaga aaguugguag uucccugcag accucaggau gaauuaaucg ggagagcgag 9780

aaucucucaa ggagcaggau ggagccuuag agaaacugca ugccuaggga aagccuacgc 9840

ccaaaugugg acucucaugu acuuucacag aagagaucuu agacuagcau ccaacgccau 9900

auguucagca guaccagucc auuggguccc cacaagcaga acgacguggu cuauucaugc 9960

ucaccaucag uggaugacua cagaagacau gcuuacuguu uggaacaggg uguggauaga 10020

ggauaaucca uggauggaag acaaaacucc agucaaaacc ugggaagaug uuccauaucu 10080

agggaagaga gaagaccaau ggugcggauc acucauuggu cucacuucca gagcaaccug 10140

ggcccagaac auacuuacgg caauccaaca ggugagaagc cuuauaggca augaagaguu 10200

ucuggacuac augccuucga ugaagagauu caggaaggag gaggagucag agggagccau 10260

uugguaaacg uaggaaguga aaaagaggca aacugucagg ccaccuuaag ccacaguacg 10320

gaagaagcug ugcagccugu gagccccguc caaggacguu aaaagaagaa gucaggccca 10380

aaagccacgg uuugagcaaa ccgugcugcc uguggcuccg ucgugggggac guaaaaccug 10440

ggaggcugcg acuagcgguu agaggagacc ccucccguga cacaacgcag cagcggggcc 10500

caagacuaga gguuagagga gacccccccgc aaauaaaaac agcauauuga cgcugggaga 10560

gaccagagau ccugcugucu ccucagcauc auuccaggca cagaacgcca gaaaauggaa 10620

uggugcuguu gaaucaacag guucu 10645

<210> 9
<211> 10618
<212> RNA
<213> Artificial Sequence

<220>
<223> DENV4

<400> 9
aguuguuagu cuguguggac cgacaaggac aguuccaaau cggaagcuug cuuaacacag 60

uucuaacagu uuguuugaau agagagcaga ucucuggaaa aaugaaccaa cgaaaaaagg 120

ugguuagacc accuuucaau augcugaaac gcgagagaaa ccgcguauca accccucaag 180

gguuggugaa gagauucuca accggacuuu uuucugggaa aggacccuua cggauggugc 240

uagcauucau cacguuuuug cgaguccuuu ccaucccacc aacagcaggg auucugaaga 300

gaugggaca guugaagaaa aauaaggcca ucaagauacu gauuggauuc aggaaggaga 360

uaggccgcau gcugaacauc uugaacggga gaaaaagguc aacgauaaca uugcugugcu 420

ugauucccac cguaauggcg uuuucccuca gcacaagaga uggcgaaccc cucaugauag 480

uggcaaaaca ugaaaggggg agaccucucu uguuuaagac aacagagggg aucaacaaau 540

gcacucucau ugccauggac uugggugaaa ugugugagga cacugucacg uauaaaugcc 600

cccuacuggu caauaccgaa ccugaagaca uugauugcug gugcaaccuc acgucuaccu 660

gggucaugua ugggacaugc acccagagcg gagaacggag acgagagaag cgcucaguag 720

cuuuaacacc acauucagga augggauugg aaacaagagc ugagacaugg augucaucgg 780

aaggggcuug gaagcaugcu cagagaguag agagcuggau acucagaaac ccaggauucg 840

cgcucuuggc aggauuuaug gcuuauauga uugggcaaac aggaauccag cgaacugucu 900

ucuuuguccu aaugaugcug gucgccccau ccuacggaau gcgaugcgua ggaguaggaa 960

acagagacuu uguggaagga gucucaggug gagcaugggu cgaccuggug cuagaacaug 1020

gaggaugcgu cacaaccaug gcccagggaa aaccaaccuu ggauuuugaa cugacuaaga 1080

caacagccaa ggaaguggcu cuguuaagaa ccuauugcau ugaagccuca auaucaaaca 1140

uaacuacggc aacaagaugu ccaacgcaag gagagccuua ucugaaagag gaacaggacc 1200

aacaguacau uugccggaga gaugugguag acagagggug gggcaauggc uguggcuugu 1260

uuggaaaagg aggaguugug acaugugcga aguuuucaug uucggggaag auaacaggca 1320

auuuggucca aauugagaac cuugaauaca cagugguugu aacaguccac aauggagaca 1380

cccaugcagu aggaaaugac acauccaauc auggaguuac agccaugaua acucccaggu 1440

caccaucggu ggaagucaaa uugccggacu auggagaacu aacacucgau ugugaaccca 1500

ggucuggaau ugacuuuaau gagaugauuc ugaugaaaau gaaaaagaaa acauggcucg 1560

ugcauaagca augguuuuug gaucugccuc uuccauggac agcaggagca gacacaucag 1620

agguucacug gaauuacaaa gagagaaugg ugacauuuaa gguuccucau gccaagagac 1680

aggaugugac agugcuggga ucucaggaag gagccaugca uucugcccuc gcuggagcca 1740

cagaagugga cuccggugau ggaaaucaca uguuugcagg acaucuuaag ugcaaagucc 1800

guauggagaa auugagaauc aagggaaugu cauacacgau guguucagga aaguuuucaa 1860

uugacaaaga gauggcagaa acacagcaug ggacaacagu ggugaaaguc aaguaugaag 1920

gugcuggagc uccguguaaa gucccauag agauaagaga uguaaacaag gaaaaagugg 1980

uugggcguau caucucaucc accccuuugg cugagaauac caacagugua accaacauag 2040

aauuagaacc ccccuuuggg gacagcuaca uagugauagg uguuggaaac agcgcauuaa 2100

cacuccauug guucaggaaa gggaguucca uuggcaagau guuugagucc acauacagag 2160

gugcaaaacg aauggccauu cuaggugaaa cagcuuggga uuuugguucc guugguggac 2220

uguucacauc auugggaaag gcugugcacc agguuuuugg aaguguguau acaaccaugu 2280

uuggaggagu cucauggaug auuagaaucc uaauuggguu cuuaguguug uggauuggca 2340

cgaacucgag gaacacuuca auggcuauga cgugcauagc uguuggagga aucacucugu 2400

uucugggcuu cacaguucaa gcagacaugg guuguguggc gucauggagu gggaaagaau 2460

ugaagugugg aagcggaauu uuugugguug acaacgugca cacuuggaca gaacaguaca 2520

aauuucaacc agagucccca gcgagacuag cgucugcaau auuaaaugcc cacaaagaug 2580

gggucugugg aauuagauca accacgaggc uggaaaaugu cauguggaag caaauaacca 2640

acgagcuaaa cuauguucuc ugggaaggag gacaugaccu cacuguagug gcuggggaug 2700

ugaagggggu guugaccaaa ggcaagagag cacucacacc cccagugagu gaucugaaau 2760

auucauggaa gacaugggga aaagcaaaaa ucuucacccc agaagcaaga aauagcacau 2820

uuuuaauaga cggaccagac accucugaau gccccaauga acgaagagca uggaacucuc 2880

uugaggugga agacuaugga uuuggcaugu ucacgaccaa cauauggaug aaauuccgag 2940

aaggaaguuc agaagugugu gaccacaggu uaaugucagc ugcaauuaaa gaucagaaag 3000

cugugcaugc ugacaugggu uauuggauag agagcucaaa aaaccagacc uggcagauag 3060

agaaagcauc ucuuauugaa gugaaaacau gucuguggcc caagacccac acacugugga 3120

gcaauggagu gcuggaaagc cagaugcuca uuccaaaauc auaugcgggc ccuuuuucac 3180

agcacaauua ccgccagggc uaugccacgc aaaccguggg cccauggcac uuaggcaaau 3240

uagagauaga cuuuggagaa ugccccggaa caacagucac aauucaggag gauugugacc 3300

auagaggccc aucuuugagg accaccacug caucuggaaa acuagucacg caauggugcu 3360

gccgcuccug cacgaugccu cccuuaaggu ucuugggaga agaugggugc ugguauggga 3420

uggagauuag gcccuugagu gaaaaagaag agaacauggu caaaucacag gugacggccg 3480

gacagggcac aucagaaacu uuuucuaugg gucuguugug ccugaccuug uuuguggaag 3540

aaugcuugag gagaagaguc acuaggaaac acaugauauu aguuguggug aucacucuuu 3600

gugcuaucau ccugggaggc cucacaugga uggacuuacu acgagcccuc aucauguugg 3660

gggacacuau gucugguaga auaggaggac agauccaccu agccaucaug gcaguguuca 3720

agaugucacc aggauacgug cugggugugu uuuuaaggaa acucacuuca agagagacag 3780

cacuaauggu aauaggaaug gccaugacaa cggugcuuuc aauuccacau gaccuuaugg 3840

aacucauuga uggaauauca cugggacuaa uuuugcuaaa aauaguaaca caguuugaca 3900

acacccaagu gggaaccuua gcucuuuccu ugacuuucau aagaucaaca augccauugg 3960

ucauggcuug gaggaccauu auggcugugu uguuuguggu cacacucauu ccuuugugca 4020

ggacaagcug ucuucaaaaa cagucucauu ggguagaaau aacagcacuc auccuaggag 4080

cccaagcucu gccaguguac cuaaugacuc uuaugaaagg agccucaaga agaucuuggc 4140

cucuuaacga gggcauaaug gcuguggguu ugguuagucu cuuaggaagc gcucuuuuaa 4200

agaaugaugu cccuuuagcu ggcccaaugg uggcaggagg cuuacuucug gcggcuuacg 4260

ugaugagugg uagcucagca gaucugucac uagagaaggc cgccaacgug caguggggaug 4320

aaauggcaga cauaacaggc ucaagcccaa ucauagaagu gaagcaggau gaagauggcu 4380

cuuucuccau acgggacguc gaggaaacca auaugauaac ccuuuuggug aaacuggcac 4440

ugauaacagu gucaggucuc uaccccuugg caauuccagu cacaaugacc uuaugguaca 4500

uguggcaagu gaaaacacaa agaucaggag cccuguggga cgucccccuca cccgcugcca 4560

cuaaaaaagc cgcacugucu gaaggagugu acaggaucau gcaaagaggg uuauucggga 4620

aaacucaggu uggaguaggg auacacaugg aagguguauu ucacacaaug uggcauguaa 4680

caagaggauc agugaucugc cacgagacug ggagauugga gccaucuugg gcugacguca 4740

ggaaugacau gauaucauac ggugggggau ggaggcuugg agacaaaugg gacaaagaag 4800

aagacguuca gguccucgcc auagaaccag gaaaaaaucc uaaacauguc caaacgaaac 4860

cuggccuuuu caagacccua acuggagaaa uuggagcagu aacauuagau uucaaacccg 4920

gaacgucugg uucucccauc aucaacagga aaggaaaagu caucggacuc uauggaaaug 4980

gaguaguuac caaaucaggu gauuacguca gugccauaac gcaagccgaa agaauuggag 5040

agccagauua ugaaguggau gaggacauuu uucgaaagaa aagauuaacu auaauggacu 5100

uacaccccgg agcuggaaag acaaaaagaa uucuuccauc aauagugaga gaagccuuaa 5160

aaaggaggcu acgaacuuug auuuuagcuc ccacgagagu gguggcggcc gagauggaag 5220

aggcccuacg uggacugcca auccguuauc agaccccagc ugugaaauca gaacacacag 5280

gaagagagau uguagaccuc augugucaug caaccuucac aacaagacuu uugucaucaa 5340

ccaggguucc aaauuacaac cuuauaguga uggaugaagc acauuucacc gauccuucua 5400

gugucgcggc uagaggauac aucucgacca ggguggaaau gggagaggca gcagccaucu 5460

ucaugaccgc aaccccuccc ggagcgacag aucccuuucc ccagagcaac agcccaauag 5520

aagacaucga gagggaaauu ccggaaaggu cauggaacac aggguucgac uggauaacag 5580

acuaccaagg gaaaacugug ugguuuguuc ccagcauaaa agcuggaaau gacauugcaa 5640

auuguuugag aaagucggga aagaaaguua uccaguugag uaggaaaacc uuugauacag 5700

aguauccaaa aacgaaacuc acggacuggg acuuuguggu cacuacagac auaucugaaa 5760

ugggggccaa uuuuagagcc gggagaguga uagacccuag aagaugccuc aagccaguua 5820

uccuaccaga ugggccagag agagucauuu uagcaggucc uauuccagug acuccagcaa 5880

gcgcugcuca gagaagaggg cgaauaggaa ggaacccagc acaagaagac gaccaauacg 5940

uuuucuccgg agacccacua aaaaaugaug aagaucaugc ccacuggaca gaagcaaaga 6000

ugcugcuuga caauaucuac accccagaag ggaucauucc aacauuguuu gguccggaaa 6060

gggaaaaaac ccaagccauu gauggagagu uucgccucag aggggaacaa aggaagacuu 6120

uuguggaauu aaugaggaga ggagaccuuc cgguguggcu gagcuauaag guagcuucug 6180

cuggcauuuc uuacaaagau cgggaauggu gcuucacagg ggaaagaaau aaccaaauuu 6240

uagaagaaaa cauggagguu gaaauuugga cuagagaggg agaaaagaaa aagcuaaggc 6300

caagaugguu agaugcacgu guauacgcug accccauggc uuugaaggau uucaaggagu 6360

uugccagugg aaggaagagu auaacucucg acauccuaac agagauugcc aguuugccaa 6420

cuuaccuuuc cucuagggcc aagcucgccc uugauaacau agucaugcuc cacacaacag 6480

aaagaggagg gagggccuau caacacgccc ugaacgaacu uccggaguca cuggaaacac 6540

ucaugcuugu agcuuuacua ggugcuauga cagcaggcau cuuccuguuu uucaugcaag 6600

ggaaaggaau agggaaauug ucaauggguu ugauaaccau ugcgguggcu aguggcuugc 6660

ucuggguagc agaaauucaa ccccagugga uagcggccuc aaucauacua gaguuuuuuc 6720

ucaugguacu guugauaccg gaaccagaaa aacaaaggac cccacaagac aaucaauuga 6780

ucuacgucau auugaccauu cucaccauca uuggucuaau agcagccaac gagauggggc 6840

ugauugaaaa aacaaaaacg gauuuugggu uuuaccaggu aaaaacagaa accaccaucc 6900

ucgaugugga cuugagacca gcuucagcau ggacgcucua ugcaguagcc accacaauuc 6960

ugacucccau gcugagacac accauagaaa acacgucggc caaccuaucu cuagcagcca 7020

uugccaacca ggcagccguc cuaauggggc uuggaaaagg auggccgcuc cacagaaugg 7080

accucggugu gccgcuguua gcaaugggau gcuauucuca agugaaccca auaaccuuga 7140

cagcauccuu agucaugcuu uucguccauu augcaauaau aggcccagga uugcaggcaa 7200

aagccacaag agaggcccag aaaaggacag cugcugggau caugaaaaau cccacagugg 7260

acgggauaac aguaauagau cuagaaccaa uauccuauga cccaaaauuu gaaaagcaau 7320

uagggcaggu caugcuacua gucuugugug cuggacaacu acucuugaug agaacaacau 7380

gggcuuucug ugaagucuug acuuuggcca caggaccaau cuugaccuug ugggagggca 7440

acccgggaag guuuuggaac acgaccauag ccguauccac cgccaacauu uucaggggaa 7500

guuacuuggc gggagcugga cuggcuuuuu cacucauaaa gaaugcacaa accccuagga 7560

ggggaacugg gaccacagga gagacacugg gagagaagug gaagagacag cuaaacucau 7620

uagacagaaa agaguuugaa gaguauaaaa gaaguggaau acuagaagug gacaggacug 7680

aagccaaguc ugcccugaaa gaugggucua aaaucaagca ugcaguauca agagggucca 7740

guaagaucag auggauuguu gagagaggga ugguaaagcc aaaagggaaa guuguagauc 7800

uuggcugugg gagaggagga uggucuuauu acauggcgac acucaagaac gugacugaag 7860

ugaaagggua uacaaaagga gguccaggac augaagaacc gauucccaug gcuacuuaug 7920

guuggaauuu ggucaaacuc cauucagggg uugacguguu cuacaaaccc acagagcaag 7980

uggacacccu gcucugugau auuggggagu caucuucuaa uccaacaaua gaggaaggaa 8040

gaacauuaag aguuuugaag augguggagc cauggcucuc uucaaaaccu gaauucugca 8100

ucaaaguccu uaaccccuac augccaacag ucauagaaga gcuggagaaa cugcagagaa 8160

aacauggugg gaaccuuguc agaugcccgc uguccaggaa cuccacccau gagauguauu 8220

gggugucagg agcgucggga aacauuguga gcucugugaa cacaacauca aagauguugu 8280

ugaacagguu cacaacaagg cauaggagac ccacuuauga gaaggacgua gaucuugggg 8340

caggaacgag aagugucucc acugaaacag aaaaaccaga caugacaauc auugggagaa 8400

ggcuucagcg auugcaagaa gagcacaaag aaaccuggca uuaugaucag gaaaacccau 8460

acagaaccug ggcguaucau ggaagcuaug aagcuccuuc gacaggcucu gcauccucca 8520

uggugaacgg ggugguaaaa cugcuaacaa aacccuggga ugugauucca auggugacuc 8580

aguuagccau gacagauaca accccuuuug ggcaacaaag aguguucaaa gagaaggugg 8640

auaccagaac accacaacca aaacccggua cacgaauggu uaugaccacg acagccaauu 8700

ggcuguggggc ccuccuugga aagaagaaaa aucccagacu gugcacaagg gaagaguuca 8760

ucucaaaagu uagaucaaac gcagccauag gcgcagucuu ucaggaagaa cagggaugga 8820

caucagccag ugaagcugug aaugacagcc gguuuuggga acugguugac aaagaaaggg 8880

cccuacacca ggaagggaaa ugugaaucgu gugucuauaa caugauggga aaacgugaga 8940

aaaaguuagg agaguuuggc agagccaagg gaagccgagc aaucugguac auguggcugg 9000

gagcgcgguu ucuggaauuu gaagcccugg guuuuuugaa ugaagaucac ugguuuggca 9060

gagaaaauuc auggagugga guggaagggg aaggucugca cagauuggga uauauccugg 9120

aggagauaga caagaaggau ggagaccuaa uguaugcuga ugacacagca ggcugggaca 9180

caagaaucac ugaggaugac cuucaaaaug aggaacugau cacggaacag auggcucccc 9240

accacaagau ccuagccaaa gccauuuuca aacuaaccua ucaaaacaaa guggugaaag 9300

uccucagacc cacaccgcgg ggagcgguga uggauaucau auccaggaaa gaccaaagag 9360

guaguggaca aguuggaaca uaugguuuga acacauucac caacauggaa guucaacuca 9420

uccgccaaau ggaagcugaa ggagucauca cacaagauga caugcagaac ccaaaagggu 9480

ugaaagaaag aguugagaaa uggcugaaag aguguggugu cgacagguua aagaggaugg 9540

caaucagugg agacgauugc guggugaagc cccuagauga gagguuuggc acuucccucc 9600

ucuucuugaa cgacauggga aaggugagga aagacauucc gcagugggaa ccaucuaagg 9660

gauggaaaaa cuggcaagag guuccuuuuu gcucccacca cuuucacaag aucuuuauga 9720

aggauggccg cucacuaguu guuccaugua gaaaccagga ugaacugaua gggagagcca 9780

gaaucucgca gggagcugga uggagcuuaa gagaaacagc cugccugggc aaagcuuacg 9840

cccagaugug gucgcuuaug uacuuccaca gaagggaucu gcguuuagcc uccauggcca 9900

uaugcucagc aguuccaacg gaaugguuuc caacaagcag aacaacaugg ucaauccacg 9960

cucaucacca guggaugacc acugaagaua ugcucaaagu guggaacaga guguggauag 10020

aagacaaccc uaauaugacu gacaagacuc caguccauuc gugggaagau auaccuuacc 10080

uagggaaaag agaggauuug uggugguggau cccugauugg acuuucuucc agagccaccu 10140

gggcgaagaa cauucacacg gccauaaccc aggucaggaa ccugaucgga aaagaggaau 10200

acguggauua caugccagua augaaaagau acagugcucc uucagagagu gaaggaguuc 10260

uguaauuacc aacaacaaac accaaaggcu auugaaguca ggccacuugu gccacgguuu 10320

gagcaaaccg ugcugccugu agcuccgcca auaaugggag gcguaauaau ccccagggag 10380

gccaugcgcc acggaagcug uacgcguggc auauuggacu agcgguuaga ggagaccccu 10440

cccaucacug acaaaacgca gcaaaagggg gcccaagacu agagguuaga ggagaccccc 10500

ccaacacaaa aacagcauau ugacgcuggg aaagaccaga gauccugcug ucucugcaac 10560

aucaauccag gcacagagcg ccgcaagaug gauugguguu guugauccaa cagguucu 10618