SEQUENCE LISTING

<110> Japan as Represented by The Director-General of National Institute of Infectious Diseases
The Research Foundation for Microbial Diseases of Osaka University

<120> Vaccine for West Nile virus and method of producing the same

<130> 091319

<150> JP 2007-290169
<151> 2007-11-07

<160> 22

<170> PatentIn version 3.3

<210> 1
<211> 25
<212> PRT
<213> Artificial

<220>
<223> signal peptide

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Ile Gly Leu Ile Ala Ser Val Gly Ala
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<211> 501
<212> DNA
<213> West Nile virus

<220>
<221> CDS
<222> (1)..(501)

<400> 2

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

act gac gtc aca gat gtc atc acg att cca aca gct gct gga aag aac      96
Thr Asp Val Thr Asp Val Ile Thr Ile Pro Thr Ala Ala Gly Lys Asn
            20                  25                  30

cta tgc att gtc aga gca atg gat gtg gga tac atg tgc gat gat act     144
Leu Cys Ile Val Arg Ala Met Asp Val Gly Tyr Met Cys Asp Asp Thr
        35                  40                  45

atc act tat gaa tgc cca gtg ctg tcg gct ggt aat gat cca gaa gac     192
Ile Thr Tyr Glu Cys Pro Val Leu Ser Ala Gly Asn Asp Pro Glu Asp
    50                  55                  60

atc gac tgt tgg tgc aca aag tca gca gtc tac gtc agg tat gga aga     240
Ile Asp Cys Trp Cys Thr Lys Ser Ala Val Tyr Val Arg Tyr Gly Arg
65                  70                  75                  80

tgc acc aag aca cgc cac tca aga cgc agt cgg agg tca ctg aca gtg     288
Cys Thr Lys Thr Arg His Ser Arg Arg Ser Arg Arg Ser Leu Thr Val
                85                  90                  95

cag aca cac gga gaa agc act cta gcg aac aag aag ggg gct tgg atg     336
Gln Thr His Gly Glu Ser Thr Leu Ala Asn Lys Lys Gly Ala Trp Met
            100                 105                 110
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gac agc acc aag gcc aca agg tat ttg gta aaa aca gaa tca tgg atc      384
Asp Ser Thr Lys Ala Thr Arg Tyr Leu Val Lys Thr Glu Ser Trp Ile
        115                 120                 125

ttg agg aac cct gga tat gcc ctg gtg gca gcc gtc att ggt tgg atg      432
Leu Arg Asn Pro Gly Tyr Ala Leu Val Ala Ala Val Ile Gly Trp Met
    130                 135                 140

ctt ggg agc aac acc atg cag aga gtt gtg ttt gtc gtg cta ttg ctt      480
Leu Gly Ser Asn Thr Met Gln Arg Val Val Phe Val Val Leu Leu Leu
145                 150                 155                 160

ttg gtg gcc cca gct tac agc                                         501
Leu Val Ala Pro Ala Tyr Ser
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<210> 3
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<212> PRT
<213> West Nile virus

<400> 3

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Leu Cys Ile Val Arg Ala Met Asp Val Gly Tyr Met Cys Asp Asp Thr
        35                  40                  45

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

Ile Asp Cys Trp Cys Thr Lys Ser Ala Val Tyr Val Arg Tyr Gly Arg
65                  70                  75                  80

Cys Thr Lys Thr Arg His Ser Arg Arg Ser Arg Arg Ser Leu Thr Val
                85                  90                  95

Gln Thr His Gly Glu Ser Thr Leu Ala Asn Lys Lys Gly Ala Trp Met
            100                 105                 110

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

Leu Arg Asn Pro Gly Tyr Ala Leu Val Ala Ala Val Ile Gly Trp Met
    130                 135                 140

Leu Gly Ser Asn Thr Met Gln Arg Val Val Phe Val Val Leu Leu Leu
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Leu Val Ala Pro Ala Tyr Ser
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<210> 4
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<221> CDS
<222> (1)..(1503)

<400> 4

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

gga gca aca tgg gtg gat ttg gtt ctc gaa ggc gac agc tgc gtg act      96
Gly Ala Thr Trp Val Asp Leu Val Leu Glu Gly Asp Ser Cys Val Thr
            20                  25                  30

atc atg tct aag gac aag cct acc atc gat gtg aag atg atg aat atg     144
Ile Met Ser Lys Asp Lys Pro Thr Ile Asp Val Lys Met Met Asn Met
        35                  40                  45

gag gcg gcc aac ctg gca gag gtc cgc agt tat tgc tat ttg gct acc     192
Glu Ala Ala Asn Leu Ala Glu Val Arg Ser Tyr Cys Tyr Leu Ala Thr
    50                  55                  60

gtc agc gat ctc tcc acc aaa gct gcg tgc ccg acc atg gga gaa gct     240
Val Ser Asp Leu Ser Thr Lys Ala Ala Cys Pro Thr Met Gly Glu Ala
65                  70                  75                  80

cac aat gac aaa cgt gct gac cca gct ttt gtg tgc aga caa gga gtg     288
His Asn Asp Lys Arg Ala Asp Pro Ala Phe Val Cys Arg Gln Gly Val
                85                  90                  95

gtg gac agg ggc tgg ggc aac ggc tgc gga cta ttt ggc aaa gga agc     336
Val Asp Arg Gly Trp Gly Asn Gly Cys Gly Leu Phe Gly Lys Gly Ser
            100                 105                 110

att gac aca tgc gcc aaa ttt gcc tgc tct acc aag gca ata gga aga     384
Ile Asp Thr Cys Ala Lys Phe Ala Cys Ser Thr Lys Ala Ile Gly Arg
        115                 120                 125

acc atc ttg aaa gag aat atc aag tac gaa gtg gcc att ttt gtc cat     432
Thr Ile Leu Lys Glu Asn Ile Lys Tyr Glu Val Ala Ile Phe Val His
    130                 135                 140

gga cca act act gtg gag tcg cac gga aac tac tcc aca cag gtt gga     480
Gly Pro Thr Thr Val Glu Ser His Gly Asn Tyr Ser Thr Gln Val Gly
145                 150                 155                 160

gcc act cag gca ggg aga ttc agc atc act cct gcg gcg cct tca tac     528
Ala Thr Gln Ala Gly Arg Phe Ser Ile Thr Pro Ala Ala Pro Ser Tyr
                165                 170                 175

aca cta aag ctt gga gaa tat gga gag gtg aca gtg gac tgt gaa cca     576
Thr Leu Lys Leu Gly Glu Tyr Gly Glu Val Thr Val Asp Cys Glu Pro
            180                 185                 190

cgg tca ggg att gac acc aat gca tac tac gtg atg act gtt gga aca     624
Arg Ser Gly Ile Asp Thr Asn Ala Tyr Tyr Val Met Thr Val Gly Thr
        195                 200                 205

aag acg ttc ttg gtc cat cgt gag tgg ttc atg gac ctc aac ctc cct     672
Lys Thr Phe Leu Val His Arg Glu Trp Phe Met Asp Leu Asn Leu Pro
    210                 215                 220

tgg agc agt gct gga agt act gtg tgg agg aac aga gag acg tta atg     720
Trp Ser Ser Ala Gly Ser Thr Val Trp Arg Asn Arg Glu Thr Leu Met
225                 230                 235                 240

gag ttt gag gaa cca cac gcc acg aag cag tct gtg ata gca ttg ggc     768
Glu Phe Glu Glu Pro His Ala Thr Lys Gln Ser Val Ile Ala Leu Gly
                245                 250                 255

tca caa gag gga gct ctg cat caa gct ttg gct gga gcc att cct gtg     816
Ser Gln Glu Gly Ala Leu His Gln Ala Leu Ala Gly Ala Ile Pro Val
            260                 265                 270

gaa ttt tca agc aac act gtc aag ttg acg tcg ggt cat ttg aag tgt     864
Glu Phe Ser Ser Asn Thr Val Lys Leu Thr Ser Gly His Leu Lys Cys
        275                 280                 285
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aga gtg aag atg gaa aaa ttg cag ttg aag gga aca acc tat ggc gtc      912
Arg Val Lys Met Glu Lys Leu Gln Leu Lys Gly Thr Thr Tyr Gly Val
    290                 295                 300

tgt tca aag gct ttc aag ttt ctt ggg act ccc gca gac aca ggt cac      960
Cys Ser Lys Ala Phe Lys Phe Leu Gly Thr Pro Ala Asp Thr Gly His
305                 310                 315                 320

ggc act gtg gtg ttg gaa ttg cag tac act ggc acg gat gga cct tgc     1008
Gly Thr Val Val Leu Glu Leu Gln Tyr Thr Gly Thr Asp Gly Pro Cys
                325                 330                 335

aaa gtt cct atc tcg tca gtg gct tca ttg aac gac cta acg cca gtg     1056
Lys Val Pro Ile Ser Ser Val Ala Ser Leu Asn Asp Leu Thr Pro Val
            340                 345                 350

ggc aga ttg gtc act gtc aac cct ttt gtt tca gtg gcc acg gcc aac     1104
Gly Arg Leu Val Thr Val Asn Pro Phe Val Ser Val Ala Thr Ala Asn
        355                 360                 365

gct aag gtc ctg att gaa ttg gaa cca ccc ttt gga gac tca tac ata     1152
Ala Lys Val Leu Ile Glu Leu Glu Pro Pro Phe Gly Asp Ser Tyr Ile
    370                 375                 380

gtg gtg ggc aga gga gaa caa cag atc aat cac cat tgg cac aag tct     1200
Val Val Gly Arg Gly Glu Gln Gln Ile Asn His His Trp His Lys Ser
385                 390                 395                 400

gga agc agc att ggc aaa gcc ttt aca acc acc ctc aaa gga gcg cag     1248
Gly Ser Ser Ile Gly Lys Ala Phe Thr Thr Thr Leu Lys Gly Ala Gln
                405                 410                 415

aga cta gcc gct cta gga gac aca gct tgg gac ttt gga tca gtt gga     1296
Arg Leu Ala Ala Leu Gly Asp Thr Ala Trp Asp Phe Gly Ser Val Gly
            420                 425                 430

ggg gtg ttc acc tca gtt ggg aag gct gtc cat caa gtg ttc gga gga     1344
Gly Val Phe Thr Ser Val Gly Lys Ala Val His Gln Val Phe Gly Gly
        435                 440                 445

gca ttc cgc tca ctg ttc gga ggc atg tcc tgg ata acg caa gga ttg     1392
Ala Phe Arg Ser Leu Phe Gly Gly Met Ser Trp Ile Thr Gln Gly Leu
    450                 455                 460

ctg ggg gct ctc ctg ttg tgg atg ggc atc aat gct cgt gat agg tcc     1440
Leu Gly Ala Leu Leu Leu Trp Met Gly Ile Asn Ala Arg Asp Arg Ser
465                 470                 475                 480

ata gct ctc acg ttt ctc gca gtt gga gga gtt ctg ctc ttc ctc tcc     1488
Ile Ala Leu Thr Phe Leu Ala Val Gly Gly Val Leu Leu Phe Leu Ser
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gtg aac gtg cac gct                                                1503
Val Asn Val His Ala
            500
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<210> 5
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<212> PRT
<213> West Nile virus

<400> 5

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Phe Asn Cys Leu Gly Met Ser Asn Arg Asp Phe Leu Glu Gly Val Ser
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Gly Ala Thr Trp Val Asp Leu Val Leu Glu Gly Asp Ser Cys Val Thr
            20                  25                  30

Ile Met Ser Lys Asp Lys Pro Thr Ile Asp Val Lys Met Met Asn Met
        35                  40                  45
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Glu Ala Ala Asn Leu Ala Glu Val Arg Ser Tyr Cys Tyr Leu Ala Thr
50 55 60

Val Ser Asp Leu Ser Thr Lys Ala Ala Cys Pro Thr Met Gly Glu Ala
65 70 75 80

His Asn Asp Lys Arg Ala Asp Pro Ala Phe Val Cys Arg Gln Gly Val
85 90 95

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

Ile Asp Thr Cys Ala Lys Phe Ala Cys Ser Thr Lys Ala Ile Gly Arg
115 120 125

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

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

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

Thr Leu Lys Leu Gly Glu Tyr Gly Glu Val Thr Val Asp Cys Glu Pro
180 185 190

Arg Ser Gly Ile Asp Thr Asn Ala Tyr Tyr Val Met Thr Val Gly Thr
195 200 205

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

Trp Ser Ser Ala Gly Ser Thr Val Trp Arg Asn Arg Glu Thr Leu Met
225 230 235 240

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

Ser Gln Glu Gly Ala Leu His Gln Ala Leu Ala Gly Ala Ile Pro Val
260 265 270

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

Arg Val Lys Met Glu Lys Leu Gln Leu Lys Gly Thr Thr Tyr Gly Val
290 295 300

Cys Ser Lys Ala Phe Lys Phe Leu Gly Thr Pro Ala Asp Thr Gly His
305 310 315 320

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

Lys Val Pro Ile Ser Ser Val Ala Ser Leu Asn Asp Leu Thr Pro Val

340 345 350

Gly Arg Leu Val Thr Val Asn Pro Phe Val Ser Val Ala Thr Ala Asn
355 360 365

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

Val Val Gly Arg Gly Glu Gln Gln Ile Asn His His Trp His Lys Ser
385 390 395 400

Gly Ser Ser Ile Gly Lys Ala Phe Thr Thr Thr Leu Lys Gly Ala Gln
405 410 415

Arg Leu Ala Ala Leu Gly Asp Thr Ala Trp Asp Phe Gly Ser Val Gly
420 425 430

Gly Val Phe Thr Ser Val Gly Lys Ala Val His Gln Val Phe Gly Gly
435 440 445

Ala Phe Arg Ser Leu Phe Gly Gly Met Ser Trp Ile Thr Gln Gly Leu
450 455 460

Leu Gly Ala Leu Leu Leu Trp Met Gly Ile Asn Ala Arg Asp Arg Ser
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485 490 495

Val Asn Val His Ala
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<213> Artificial

<220>
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<211> 37
<212> DNA
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<212> DNA
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