

SEQUENCE LISTING

<110> TENGEN BIOMEDICAL COMPANY
<120> MAMMAL-SPECIFIC GROWTH-DEFECTIVE ARBOVIRUS
<130> 14520201
<150> US 62/556,892
<151> 2017-11-09
<160> 17
<170> PatentIn version 3.5
<210> 1
<211> 4
<212> PRT
<213> Dengue virus

<220>
<221> misc_feature
<223> DV furin cleavage site in the prM protein

<400> 1

Arg Glu Lys Arg
1

<210> 2
<211> 12
<212> PRT
<213> Zika virus

<220>
<221> misc_feature
<223> prM sequence upstream of and including the ZV furin recognition
site

<400> 2

His His Lys Lys Gly Glu Ala Arg Arg Ser Arg Arg
1 5 10

<210> 3
<211> 166
<212> PRT
<213> Dengue virus

<220>
<221> misc_feature
<223> Wild type DV2 (DENV2) prM

<400> 3

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

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

Met Cys Thr Leu Met Ala Met Asp Leu Gly Glu Leu Cys Glu Asp Thr
35 40 45

Ile Thr Tyr Asn Cys Pro Leu Leu Arg Gln Asn Glu Pro Glu Asp Ile
50 55 60

Asp Cys Trp Cys Asn Ser Thr Ser Thr Trp Val Thr Tyr Gly Thr Cys
65 70 75 80

Thr Thr Thr Gly Glu His Arg Arg Glu Lys Arg Ser Val Ala Leu Val
85 90 95

Pro His Val Gly Met Gly Leu Glu Thr Arg Thr Glu Thr Trp Met Ser
100 105 110

Ser Glu Gly Ala Trp Lys His Ala Gln Arg Ile Glu Thr Trp Ile Leu
115 120 125

Arg His Pro Gly Phe Thr Ile Met Ala Ala Ile Leu Ala Tyr Thr Ile
130 135 140

Gly Thr Thr Tyr Phe Gln Arg Val Leu Ile Phe Ile Leu Leu Thr Ala
145 150 155 160

Val Ala Pro Ser Met Thr
165

<210> 4
<211> 166
<212> PRT
<213> Dengue virus

<220>
<221> misc_feature
<223> Mutant DENV2 (D2-89R)

<400> 4

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

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

Met Cys Thr Leu Met Ala Met Asp Leu Gly Glu Leu Cys Glu Asp Thr
35 40 45

Ile Thr Tyr Asn Cys Pro Leu Leu Arg Gln Asn Glu Pro Glu Asp Ile
50 55 60

Asp Cys Trp Cys Asn Ser Thr Ser Thr Trp Val Thr Tyr Gly Thr Cys
65 70 75 80

Thr Thr Thr Gly Glu His Arg Arg Arg Lys Arg Ser Val Ala Leu Val
85 90 95

Pro His Val Gly Met Gly Leu Glu Thr Arg Thr Glu Thr Trp Met Ser
100 105 110

Ser Glu Gly Ala Trp Lys His Ala Gln Arg Ile Glu Thr Trp Ile Leu
115 120 125

Arg His Pro Gly Phe Thr Ile Met Ala Ala Ile Leu Ala Tyr Thr Ile
130 135 140

Gly Thr Thr Tyr Phe Gln Arg Val Leu Ile Phe Ile Leu Leu Thr Ala
145 150 155 160

Val Ala Pro Ser Met Thr
165

<210> 5
<211> 166

<212> PRT
<213> Dengue virus

<220>
<221> misc_feature
<223> Mutant DENV2 (D2-89V)

<400> 5

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

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

Met Cys Thr Leu Met Ala Met Asp Leu Gly Glu Leu Cys Glu Asp Thr
35 40 45

Ile Thr Tyr Asn Cys Pro Leu Leu Arg Gln Asn Glu Pro Glu Asp Ile
50 55 60

Asp Cys Trp Cys Asn Ser Thr Ser Thr Trp Val Thr Tyr Gly Thr Cys
65 70 75 80

Thr Thr Thr Gly Glu His Arg Arg Val Lys Arg Ser Val Ala Leu Val
85 90 95

Pro His Val Gly Met Gly Leu Glu Thr Arg Thr Glu Thr Trp Met Ser
100 105 110

Ser Glu Gly Ala Trp Lys His Ala Gln Arg Ile Glu Thr Trp Ile Leu
115 120 125

Arg His Pro Gly Phe Thr Ile Met Ala Ala Ile Leu Ala Tyr Thr Ile
130 135 140

Gly Thr Thr Tyr Phe Gln Arg Val Leu Ile Phe Ile Leu Leu Thr Ala
145 150 155 160

Val Ala Pro Ser Met Thr
165

<210> 6
<211> 166
<212> PRT
<213> Dengue virus

<220>
<221> misc_feature
<223> Mutant DENV2 (D2-89S)

<400> 6

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

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

Met Cys Thr Leu Met Ala Met Asp Leu Gly Glu Leu Cys Glu Asp Thr
35 40 45

Ile Thr Tyr Asn Cys Pro Leu Leu Arg Gln Asn Glu Pro Glu Asp Ile
50 55 60

Asp Cys Trp Cys Asn Ser Thr Ser Thr Trp Val Thr Tyr Gly Thr Cys
65 70 75 80

Thr Thr Thr Gly Glu His Arg Arg Ser Lys Arg Ser Val Ala Leu Val
85 90 95

Pro His Val Gly Met Gly Leu Glu Thr Arg Thr Glu Thr Trp Met Ser
100 105 110

Ser Glu Gly Ala Trp Lys His Ala Gln Arg Ile Glu Thr Trp Ile Leu
115 120 125

Arg His Pro Gly Phe Thr Ile Met Ala Ala Ile Leu Ala Tyr Thr Ile
130 135 140

Gly Thr Thr Tyr Phe Gln Arg Val Leu Ile Phe Ile Leu Leu Thr Ala
145 150 155 160

Val Ala Pro Ser Met Thr
165

<210> 7
<211> 166
<212> PRT
<213> Dengue virus

<220>
<221> misc_feature
<223> Mutant DENV2 (D2-89G)

<400> 7

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

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

Met Cys Thr Leu Met Ala Met Asp Leu Gly Glu Leu Cys Glu Asp Thr
35 40 45

Ile Thr Tyr Asn Cys Pro Leu Leu Arg Gln Asn Glu Pro Glu Asp Ile
50 55 60

Asp Cys Trp Cys Asn Ser Thr Ser Thr Trp Val Thr Tyr Gly Thr Cys
65 70 75 80

Thr Thr Thr Gly Glu His Arg Arg Gly Lys Arg Ser Val Ala Leu Val
85 90 95

Pro His Val Gly Met Gly Leu Glu Thr Arg Thr Glu Thr Trp Met Ser
100 105 110

Ser Glu Gly Ala Trp Lys His Ala Gln Arg Ile Glu Thr Trp Ile Leu
115 120 125

Arg His Pro Gly Phe Thr Ile Met Ala Ala Ile Leu Ala Tyr Thr Ile
130 135 140

Gly Thr Thr Tyr Phe Gln Arg Val Leu Ile Phe Ile Leu Leu Thr Ala
145 150 155 160

Val Ala Pro Ser Met Thr
165

<210> 8
<211> 166
<212> PRT
<213> Dengue virus

<220>
<221> misc_feature
<223> wild type prM amino acid sequence of the NGC strain of DV2

<400> 8

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

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

Met Cys Thr Leu Met Ala Met Asp Leu Gly Glu Leu Cys Glu Asp Thr
35 40 45

Ile Thr Tyr Asn Cys Pro Leu Leu Arg Gln Asn Glu Pro Glu Asp Ile
50 55 60

Asp Cys Trp Cys Asn Ser Thr Ser Thr Trp Val Thr Tyr Gly Thr Cys
65 70 75 80

Thr Thr Thr Gly Glu His Arg Arg Glu Lys Arg Ser Val Ala Leu Val
85 90 95

Pro His Val Gly Met Gly Leu Glu Thr Arg Thr Glu Thr Trp Met Ser
100 105 110

Ser Glu Gly Ala Trp Lys His Ala Gln Arg Ile Glu Thr Trp Ile Leu
115 120 125

Arg His Pro Gly Phe Thr Ile Met Ala Ala Ile Leu Ala Tyr Thr Ile
130 135 140

Gly Thr Thr Tyr Phe Gln Arg Val Leu Ile Phe Ile Leu Leu Thr Ala
145 150 155 160

Val Ala Pro Ser Met Thr
165

<210> 9
<211> 168
<212> PRT
<213> Zika virus

<220>
<221> misc_feature
<223> wild type prM amino acid sequence

<400> 9

Ala Glu Ile Thr Arg Arg Gly Ser Ala Tyr Tyr Met Tyr Leu Asp Arg
1 5 10 15

Ser Asp Ala Gly Lys Ala Ile Ser Phe Ala Thr Thr Leu Gly Val Asn
20 25 30

Lys Cys His Val Gln Ile Met Asp Leu Gly His Met Cys Asp Ala Thr
35 40 45

Met Ser Tyr Glu Cys Pro Met Leu Asp Glu Gly Val Glu Pro Asp Asp
50 55 60

Val Asp Cys Trp Cys Asn Thr Thr Ser Thr Trp Val Val Tyr Gly Thr
65 70 75 80

Cys His His Lys Lys Gly Glu Ala Arg Arg Ser Arg Arg Ala Val Thr
85 90 95

Leu Pro Ser His Ser Thr Arg Lys Leu Gln Thr Arg Ser Gln Thr Trp
100 105 110

Leu Glu Ser Arg Glu Tyr Thr Lys His Leu Ile Lys Val Glu Asn Trp
115 120 125

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

Leu Leu Gly Ser Ser Thr Ser Gln Lys Val Ile Tyr Leu Val Met Ile
145 150 155 160

Leu Leu Ile Ala Pro Ala Tyr Ser
165

<210> 10
<211> 4
<212> PRT
<213> Zika virus

<220>
<221> misc_feature
<223> tetrapeptide site

<400> 10

Arg Ser Arg Arg
1

<210> 11
<211> 50
<212> PRT
<213> Zika virus

<220>
<221> misc_feature
<223> Wild-type

<400> 11

His His Lys Lys Gly Glu Ala Arg Arg Ser Arg Arg Ala Val Thr Leu
1 5 10 15

Pro Ser His Ser Thr Arg Lys Leu Gln Thr Arg Ser Gln Thr Trp Leu
20 25 30

Glu Ser Arg Glu Tyr Thr Lys His Ile Lys Val Glu Asn Trp Ile Phe
35 40 45

Arg Asn
50

<210> 12
<211> 50

<212> PRT
<213> Zika virus

<220>
<221> misc_feature
<223> Mutant

<400> 12

His His Lys Lys Gly Glu Ala Arg Arg Arg Arg Arg Ala Val Thr Leu
1 5 10 15

Pro Ser His Ser Thr Arg Lys Leu Gln Thr Arg Ser Gln Thr Trp Leu
20 25 30

Glu Ser Arg Glu Tyr Thr Lys His Ile Lys Val Glu Asn Trp Ile Phe
35 40 45

Arg Asn
50

<210> 13
<211> 12
<212> PRT
<213> Zika virus

<220>
<221> misc_feature
<223> Mutant

<400> 13

Thr Thr Thr Gly Glu His Arg Arg Arg Lys Arg Ser
1 5 10

<210> 14
<211> 22
<212> PRT
<213> Zika virus

<220>
<221> misc_feature
<223> Mutant

<400> 14

Thr Thr Thr Gly Glu His Arg Arg Arg Lys Arg Ser Val Ala Leu Val
1 5 10 15

Pro His Val Gly Met Gly
20

<210> 15
<211> 37
<212> PRT
<213> Zika virus

<220>
<221> misc_feature
<223> ZV M2 Mutant

<400> 15

Thr Thr Thr Gly Glu His Arg Arg Arg Lys Arg Ser Val Ala Leu Val
1 5 10 15

Pro His Val Gly Met Gly Leu Glu Thr Arg Thr Glu Thr Trp Met Ser
20 25 30

Ser Glu Gly Ala Trp
35

<210> 16
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: consensus tetrapeptide

<220>
<221> misc_feature
<222> (2)..(2)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> misc_feature
<222> (3)..(3)
<223> X is K or R

<400> 16

Arg Xaa Xaa Arg

1

<210> 17
<211> 51
<212> PRT
<213> Dengue virus

<220>
<221> misc_feature
<223> DV1 mutant

<400> 17

Cys Ser Gln Thr Gly Glu His Arg Arg Arg Lys Arg Ser Val Ala Leu
1 5 10 15

Ala Pro His Val Gly Leu Gly Leu Glu Thr Arg Thr Glu Thr Trp Met
20 25 30

Ser Ser Glu Gly Ala Trp Lys His Ala Gln Arg Ile Glu Thr Trp Ile
35 40 45

Leu Arg His
50