

SEQUENCE LISTING

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<120> TRI-SEGMENTED PICHINDE VIRUSES AS VACCINE VECTORS

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<150> US 62/338,400

<151> 2016-05-18

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<170> PatentIn version 3.5

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(Genbank accession number EF529746.1) segment S, complete sequence

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tgactccctc cttcacaagt acagccttgg atatgtccag caacaaaagt gtggtggttc	2460

caaaactcaa tgaagttggt gaggtcatca ctgaatatga ttactcttcc atttgtgtctg	2520
ctgtttgttgt ggaaatgatt gaacatttca aaactaaggg taaatacaag ttagatccaa	2580
aggaggtaaa tttcaagatt ctgaagaggt tgtcatcatt gatccaaata aaaaaggagt	2640
caatagagcc tgatggagtt gaagagttac tatcagaaga tcagggtgac tgtcttaaag	2700
aaattgagac cagagttgca aaagtattgt ctaaggttga caccaatgtc aaaaccaacc	2760
ttaagacttc atgtccacta gagagattat ggcccaaadc gacaatgggt gtcataaaaa	2820
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taaaaccaag cacacattct gagcttgagg acaagggtgg catcaaccac atactttact	5160
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atgttgggat gcaaccctc attttagagg gtgggttgat caaagagggc aacagagtgg	6240
tttctagatt ggaagtgaac ttagactcaa aggtggTcat cattgcactg gaagcattag	6300
aacctgagaa aaggccaaga tttattgcca acctttttca gtacctttca agtgcacagt	6360
ctcacaacaa gggaataagt atgaacgagc aggatTTaag actcatgatt gaaaatttcc	6420
ccgaagtgtt tgaacacatg ttgcatgatg ccaaagattg gttgaattgt ggtcacttta	6480
gtataataag aagtaagact ctaggatctg ttatgattgc agacgagaca ggacccttca	6540
agatcaaggg aatcaggtgt cgaaagtgtt ttgaggacaa tgagtcagtg gagatcgagt	6600
aaacaaagag acggctagc	6619

<210> 4
 <211> 1207
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PIC-L-GFP-Bsm: Modified Representative cDNA of modified L segment
 of Pichinde virus strain Munchique CoAn4763 isolate P18
 (Genbank accession number EF529747.1)

<400> 4	
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tgttcaccgg ggtggTgcc atcctggTcg agctggacgg cgacgtaaac ggccacaagt	120
tcagcgtgtc gggcgagggc gagggcgatg ccacctacgg caagctgacc ctgaagtTca	180
tctgcaccac cggcaagctg cccgtgccct ggcccaccct cgtgaccacc ttgacctacg	240
gcgtgcagtg cttcgtccgc taccCCgacc acatgaagca gcacgacttc ttcaagtccg	300

ccatgcccga aggctacgtc caggagcgca ccatcttctt caaggacgac ggcaactaca	360
agacccgcgc cgaggtgaag ttcgagggcg acaccctggg gaaccgcatc gagctgaagg	420
gcatcgactt caaggaggac ggcaacatcc tggggcaciaa gctggagtag aactacaaca	480
gccacaaggt ctatatcacc gccgacaagc agaagaacgg catcaagggtg aacttcaaga	540
cccgccaciaa catcgaggac ggagcggtgc agctcgccga ccactaccag cagaacaccc	600
ccatcggcga cggccccgtg ctgctgcccc acaaccacta cctgagcacc cagtccgccc	660
tgagcaaaga cccaacgag aagcgcgatc acatgggtcct gctggagttc gtgaccgccc	720
ccgggatcac tctcgcatg gacgagctgt acaagtaacg tctctacaac cggccccatg	780
gggcccggggg cccccgggcg ccccccgga ggggggtgcg ccagggggcc ctggtttatg	840
gctcgtaggg tgggtcagag gggctttcta ggaactccat cttggttggc agtgagtggc	900
cgcatatctc gcagagattg cctctggagt gcattttggg taagcaccca agacacagat	960
agtggtcttt gcacctgatg agacctttgt tgacgaacca gcaagatttg cagttgaacc	1020
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cgccatgtct cttcctgacc tctttgctat atctgagtcc catcccaagt ttgaccagg	1140
acttgagctg ggttcaaatt ggacaaattt gaagcgtgac ccaaagatgc ctaggatccc	1200
cgggtgcg	1207

<210> 5
 <211> 965
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PIC-miniS-GFP: Modified Representative cDNA of a modified S segment
 cDNA of Pichinde virus strain Munchique CoAn4763 isolate P18
 (Genbank accession number: EF529746.1)

<400> 5	
gcgcaccggg gatcctaggc ataccttga cgcgcatatt acttgatcaa agagagacga	60
ggcctcgtct ctgccctagc ctcgacatgg gcctcgacgt cactcccaa taggggagtg	120
acgtcgaggc ctctgaggac ttgagcatgt cttcttactt gtacagctcg tccatgccga	180
gagtgatccc ggcggcggtc acgaactcca gcaggaccat gtgatcgcgc ttctcgttgg	240
ggtctttgct cagggcggac tgggtgctca ggtagtggtt gtcgggcagc agcacggggc	300

cgctgccgat gggggtgttc tgctggtagt ggtcggcgag ctgcacgctg ccgtcctcga	360
tgttgtggcg ggtcttgaag ttcaccttga tgccgttctt ctgcttgctg gcggtgatat	420
agaccttgat gctgtttagt ttgtactcca gcttgtgccc caggatgttg ccgtcctcct	480
tgaagtcgat gcccttcagc tcgatgcggg tcaccagggt gtcgccctcg aacttcacct	540
cggcgcgggg cttgtagttg ccgtcgtcct tgaagaagat ggtgcgctcc tggacgtagc	600
cttcgggcat ggcggacttg aagaagtcgt gctgcttcat gtggtcgggg tagcggacga	660
agcactgcac gccgtaggtc aagggtgtca cgagggtggg ccagggcacg ggcagcttgc	720
cggtggtgca gatgaacttc agggtcagct tgccgtaggt ggcatcgccc tcgccctcgc	780
cggacacgct gaacttgtgg ccgtttacgt cgccgtccag ctcgaccagg atgggcacca	840
ccccggtgaa cagctcctcg cccttgctca ccatgaagac attttggggg tgtttgcact	900
tcctccgagt cagtgaagaa gtgaacgtac agcgtgatct agaatcgctt aggatccact	960
gtgcg	965

<210> 6
 <211> 1722
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> NP-delta-BbsI : Modified Representative cDNA of a modified NP ORF
 of Pichinde virus strain Munchique CoAn4763 isolate P18
 (Genbank accession number EF529747.1)

<400> 6	
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aggaggggtc tatccaactg gaccatcct gtgaaggctg atgtgttgtc ggacacaaga	120
gcactgttat ctgctcttga ctttcacaaa gttgctcaag ttcaaagaat gatgcgcaaa	180
gataaaagga ctgattctga tctgaccaag ttaagagaca tgaacaaaga ggttgatgct	240
ctgatgaata tgagatcaat ccagaggac aatgtgctta aggtgggagg cttagccaaa	300
gaggagctaa tggagcttgc atctgatttg gacaagttaa gaaagaaagt cactagaact	360
gagagtttgt ctcagcctgg tgtttatggg ggcaatctca caaacactca gttggaacaa	420
agagccgaaa tccttcgctc aatgggggtc gctaattgta gaccacagg caacagagat	480
ggggttgtga agatctggga catcaaggat aatacattgt tgatcaatca atttggatca	540

atgccagcct taaccatcgc ttgtatgact gagcaagggg gtgaacaact taatgatgtt	600
gtccaagcgc tgagtgcact tggtttgctc tacactgtca agttcccgaa catgacagat	660
ctagagaaac tcacacagca acacagtgcc ctaaaaatca ttagtaatga gccatcagcc	720
ataaacatct cagggtacaa tctcagtttg tctgcagcag tcaaagcagc tgcttgcatg	780
attgatgggtg gcaatatgct tgagaccatc caggtgaagc cttctatgtt tagtactctc	840
ataaagagtc tattgcaaataaagaatcgt gaaggtatgt ttgtgagcac tacaccgga	900
cagagaaatc cttatgaaaaa ttactatac aagatttgtc tttcagggga tggttggcct	960
tacattggct caaggtctca agttcaaggg agggcttggg ataacaccac tgtagattta	1020
gattcgaagc cgagtgtat ccagccacca gtaagaaacg gaggatcacc ggaccttaaa	1080
caaatcccta aggagaaaga agatactgtt gtgtcctcaa ttcagatgct tgattcaaaa	1140
gctaccacat ggattgacat tgaaggaaca ccaaagatc cggtggaaat ggccatctac	1200
cagcctgaca cgggcaacta catacattgt tacagatttc cccacgatga gaagtccttc	1260
aaagagcaaa gcaagtactc acatggcttc cttttaaagg acttggctga tgcccaacca	1320
ggcctgattt cctcaatcat cagacattta cctcaaaaca tggttttcac tgctcaaggt	1380
tcagatgata taatcagttt gttcgaaatg catgggagaa gagacttaaa agtgcttgac	1440
gtgaaactca gtgccgagca agcacgcacc tttgaggatg agatctggga gagatacaat	1500
ctactctgca ccaaacataa aggtttggtc ataaagaaga agaagaaggg ggctgcacaa	1560
accactgcga atcctcactg tgcatgtgtt gataccatca tgtttgatgc aacagtgaca	1620
ggctgggtta gggaccagaa gccgatgaga tgcttgcccta ttgacacgct gtacaggaac	1680
aacacagatc tgatcaacct ctgagctcat gtcttcgcta gc	1722

<210> 7
 <211> 1915
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PIC-NP-Bsm : Representative cDNA obtained when NP-delta-BbsI was digested with BbsI to insert the BbsI-mutated NP ORF into the equally digested pol-I-PIC-miniS-GFP backbone, thereby replacing the GFP ORF with the NP ORF

<400> 7	
gcgcaccggg gatcctaggc ataccttga gcgcgatatt acttgatcaa agagagacga	60

ggcctcgtct ctgccctagc ctcgacatgg gcctcgacgt cactcccca taggggagtg	120
acgtcgaggc ctctgaggac ttgagctcag aggttgatca gatctgtgtt gttcctgtac	180
agcgtgtcaa taggcaagca tctcatcggc ttctggtccc taaccagcc tgtcactgtt	240
gcatcaaaca tgatggatc aagcaatgca cagtgaggat tcgcagtggt ttgtgcagcc	300
cccttcttct tcttctttat gaccaaacct ttatgtttgg tgcagagtag attgtatctc	360
tcccagatct catcctcaaa ggtgcgtgct tgctcggcac tgagtttcac gtcaagcact	420
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gtgaaaacca tgttttgagg taaatgtctg atgattgagg aaatcaggcc tggttgggca	540
tcagccaagt cctttaaaag gagacatgt gagtacttgc tttgctctt gaaggacttc	600
tcatcgtggg gaaatctgta acaatgtatg tagttgcccg tgcaggctg gtagatggcc	660
atttccaccg gatcatttgg tgttccttca atgtcaatcc atgtggtagc ttttgaatca	720
agcatctgaa ttgaggacac aacagtatct tctttctcct tagggatttg tttaaggtcc	780
ggtgatcctc cgtttcttac tgggtggctgg atagcactcg gcttcgaatc taaatctaca	840
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tcccctgaaa gacaaatctt gtatagtaaa ttttcataag gatttctctg tccgggtgta	960
gtgctcacia acataccttc acgattcttt atttgcaata gactctttat gagagtacta	1020
aacatagaag gcttcacctg gatggcttca agcatattgc caccatcaat catgcaagca	1080
gctgctttga ctgctgcaga caaactgaga ttgtaccctg agatgtttat ggctgatggc	1140
tcattactaa tgatttttag ggcactgtgt tgctgtgtga gtttctctag atctgtcatg	1200
ttcgggaact tgacagtgtg gagcaaacca agtgcactca gcgcttggac aacatcatta	1260
agttgttcac ccccttgctc agtcatacaa gcgatgggtta aggctggcat tgatccaaat	1320
tgattgatca acaatgtatt atccttgatg tcccagatct tcacaacccc atctctgttg	1380
cctgtgggtc tagcattagc gaacccatt gagcgaagga tttcggctct ttgttccaac	1440
tgagtgtttg tgagattgcc ccataaaca ccaggctgag acaaactctc agttctagt	1500
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cctccacct taagcacatt gtccctctgg attgatctca tattcatcag agcatcaacc	1620
tctttgttca tgtctcttaa cttggtcaga tcagaatcag tccttttatc tttgcgcac	1680

attctttgaa cttgagcaac tttgtgaaag tcaagagcag ataacagtgc tcttgtgtcc	1740
gacaacacat cagccttcac aggatgggtc cagttggata gacccctcct aagggactgt	1800
accagcgga atgatgggat gttgtcagac attttggggt tgtttgact tcctccgagt	1860
cagtgaagaa gtgaacgtac agcgtgatct agaatcgctt aggatccact gtgcg	1915

<210> 8
 <211> 1756
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PIC-GP-Bsm: Representative cDNA obtained when GP-delta-BbsI was digested with BbsI to insert the BbsI-mutated GP ORF into the equally digested pol-I-PIC-miniS-GFP backbone, thereby replacing the GFP ORF with the GP ORF.

<400> 8	
gcgcaccggg gatcctaggc ataccttga cgcgcatatt acttgatcaa agagagacga	60
ggcctcgtct ctgccctagc ctcgacatgg gcctcgacgt cactcccca taggggagt	120
acgtcgaggc ctctgaggac ttgagcttat ttaccagtc tcaccattt gtagggtttc	180
tttgggattt tataataccc acagctgcaa agagagtcc tagtaatcct atgtggcttc	240
ggacagccat caccaatgat gtgcctatga gtgggtattc caactaagt gagaaacact	300
gtgatgggtgt aaaacaccaa agaccagaag caaatgtctg tcaatgctag tggagtctta	360
ccttgtcttt ctcatattc ttttatcagc atttcattgt acagattctg gctctccac	420
aaccaatcat tcttaaatg cgtttcattg aggtacgagc cattgtgaac taaccaacac	480
tgcggtaaag aatgtctccc tgtgatggta tcattgatgt accaaaattt tgtatagttg	540
caataaggga ttttggcaag ctgtttgaga ctgtttctaa tcacaagtga gtcagaaata	600
agtccgttga tagtcttttt aaagagattc aacgaattct caacattaag ttgtaagggt	660
ttgatagcat tctgattgaa atcaaataac ctcatcgtat cgcaaaattc ttattgtga	720
tctttgttgc attttgccat cacagtgtta tcaaaacatt ttattccagc ccaaacaata	780
gccattgct ccaaacagta accacctggg acatgttgcc cagtagagtc actcaagtcc	840
caagtgaaaa agccaaggag tttcctgctc acagaactat aagcagtttt ttggagagcc	900
atccttattg ttgccattgg agtatatgta cagtgatatt cccatgtgggt gttctgtatg	960

atcaggaaat tgtaatgtgt cccaccttca cagtttgtta gtctgcaaga ccctccacta	1020
cagttattga aacattttcc aaccacgca atttttgggt cccaatgat ttgagcaagc	1080
gacgaataa gatgtctgcc aacctcacct cctctatccc caactgtcaa gttgtactgg	1140
atcaacaccc cagcacctc aactgttttg catctggcac ctacatgacg agtgacatgg	1200
agcacattga agtgtaactc attaagcaac cattttaatg tgtgacctgc ttcttctgtc	1260
ttatcacaat tactaatgtt accatatgca aggcttctga tgttggaata gtttccagta	1320
gtttcatttg caatggatgt gtttgtcaaa gtgagttcaa ttcccatgt tgtgttagat	1380
ggtcctttgt agtaatgatg tgtgttgttc ttgctacatg attgtggcaa gttgtcaaac	1440
attcttgtga ggttgaactc aacgtgggtg agattgtgcc tcctatcaat catcatgcca	1500
tcacaacttc tgccagccaa aatgaggaag gtgatgagtt ggaataggcc acatctcatc	1560
agattgacaa atcctttgat gatgcatagg gttgagacaa tgattaaggc gacattgaac	1620
acctcctgca ggacttcggg tatagactgg atcaaagtca caacttgtcc catTTTgggg	1680
ttgtttgcac ttctccgag tcagtgaaga agtgaacgta cagcgtgatc tagaatcgcc	1740
taggatccac tgtgcg	1756

<210> 9
 <211> 742
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> GFP-Bsm: Green fluorescent protein(GFP) synthesized with
 flanking BsmBI sites

<400> 9	
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tcgagctgga cggcgacgta aacggccaca agttcagcgt gtccggcgag ggcgagggcg	120
atgccaccta cggcaagctg accctgaagt tcatctgcac caccggcaag ctgcccgtgc	180
cctggccac cctcgtgacc accttgacct acggcgtgca gtgcttcgtc cgctaccccg	240
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gcaccatctt cttcaaggac gacggcaact acaagacccg cgccgaggtg aagttcgagg	360
gcgacaccct ggtgaaccgc atcgagctga agggcatcga cttcaaggag gacggcaaca	420
tcctggggca caagctggag tacaactaca acagccacaa ggtctatatc accgccgaca	480

agcagaagaa cggcatcaag gtgaacttca agacccgccca caacatcgag gacggcagcg	540
tgcagctcgc cgaccactac cagcagaaca ccccatcgg cgacggcccc gtgctgctgc	600
ccgacaacca ctacctgagc acccagtccg ccctgagcaa agaccccaac gagaagcgcg	660
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 <211> 1261
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<220>
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<220>

<223> PIC-GP-sP1AGM

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<220>
 <223> S-GP/GFPnat

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