

SEQUENCE LISTING

<110> Genovie AB

<120> An Engineered Multi-component System for Identification and Characterisation of T-cell receptors, T-cell antigens and their functional interaction

<130> ANO9

<160> 134

<170> BiSSAP 1.3

<210> 1

<211> 4

<212> PRT

<213> Homo sapiens

<220>

<223> HCMV Antigen

<400> 1

Asn Leu Val Pro

1

<210> 2

<211> 9

<212> PRT

<213> Cytomegalovirus

<220>

<223> Analyte Antigenic Peptide

<400> 2

Asn Leu Val Pro Met Val Ala Thr Val

1 5

<210> 3

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Analyte Antigenic Peptide

<400> 3

Val Tyr Ala Leu Pro Leu Lys Met Leu

1 5

<210> 4

<211> 6071

<212> DNA

<213> Artificial Sequence

<220>

<223> pcDNA3.1_GFP vector V1.A.4

<400> 4

```
gacggatcgg gagatctccc gatccctat ggtgcactct cagtacaatc tgctctgatg    60
ccgcatagtt aagccagtat ctgtccctg cttgtgtgtt ggaggtcgct gagtagtgcg    120
cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc    180
ttagggttag gcgttttgcg ctgcttcgcg atgtacgggc cagatatacg cgttgacatt    240
gattattgac tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata    300
tggagttccg cgttacataa ctacggtaa atggcccgcc tggctgaccg cccaacgacc    360
cccgccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc    420
attgacgtca atgggtggag tatttacggt aaactgccca ctggcagta catcaagtg    480
atcatatgcc aagtacgccc cctattgacg tcaatgacgg taaatggccc gcctggcatt    540
atgcccaagta catgacctta tgggactttc ctacttgga gtacatctac gtattagtca    600
tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg    660
actcacgggg attccaagt ctccaccca ttgacgtcaa tgggagtttg tttggcacc    720
aaaatcaacg ggactttcca aaatgtcgta acaactccgc ccattgacg caaatgggcg    780
gtaggcgtgt acggtgggag gtctatataa gcagagctct ctggctaact agagaacca    840
ctgcttactg gcttatcgaa attaatacga ctactatag ggagacccaa gctggctagc    900
gtttaaactt aagcttgga ccgccacat ggaatccgat gagtctggcc tgcccgcatt    960
ggaaatcgag tgcagaatca ccggcaccct gaacggcgtg gaatttgagc tcgtgggcgg   1020
aggcgagggc acacctgaac agggcagaat gaccaacaag atgaagtcca ccaagggggc   1080
cctgaccttc agccccacc tgctgtctca cgtgatgggc tacggcttct accacttcgg   1140
```

cacctacccc agcggctacg agaacccttt cctgcacgcc atcaacaacg gcggctacac 1200
caacacccgg atcgagaagt acgaggacgg cggcgtgctg cacgtgtcct tcagctacag 1260
atacagggcc ggcagagtga tcggcgactt caaagtgatg ggcaccggat tccccagga 1320
cagcgtgatc ttaccgaca agatcatccg gtccaacgcc accgtggaac atctgcaccc 1380
catgggcgac aacgacctgg acggcagctt caccagaacc ttctccctgc gggatggcgg 1440
ctactacagc agcgtggtgg acagccacat gcacttcaag agcgccatcc accccagcat 1500
cctccagaac ggcggaccca tgttcgcctt cagacgggtg gaagaggacc acagcaacac 1560
cgagctgggc atcgtggaat accagcacgc cttcaagacc cccgatgccg atgccggcga 1620
ggaatgagtc gagtctagag ggcccgttta aaccgctga tcagcctcga ctgtgccttc 1680
tagttgccag ccatctgttg ttgcccctc ccccgctcct tccttgacct tggaaggtgc 1740
cactccact gtccttct aataaaatga ggaaattgca tcgcattgtc tgagtaggtg 1800
tcattctatt ctggggggtg ggggtgggca ggacagcaag ggggaggatt gggaagacaa 1860
tagcaggcat gctggggatg cgggtgggctc tatggcttct gaggcggaaa gaaccagctg 1920
gggctctagg gggtatcccc acgcgccctg tagcggcgca ttaagcgcgg cgggtgtggt 1980
ggttacgcg agcgtgaccg ctacacttgc cagcgcccta gcgcccgtc ctttcgctt 2040
cttcccttc ttctcgcca cgttcgccg ctttcccgt caagctctaa atcgggggct 2100
cccttaggg ttccgattta gtgctttacg gcacctcgac ccaaaaaaac ttgattaggg 2160
tgatggttca cgtagtgggc catcgccctg atagacggtt ttgcgcctt tgacgttga 2220
gtccacgttc ttaatatg gactcttgtt ccaaactgga acaacactca accctatctc 2280
ggtctattct ttgatttat aagggattt gccgatttcg gcctattggt taaaaaatga 2340
gctgatttaa caaaaattta acgcaatta attctgtgga atgtgtgtca gtaggggtg 2400
ggaaagtccc caggctcccc agcaggcaga agtatgcaaa gcatgcatct caattagtca 2460
gcaaccaggt gtggaaagtc ccaggctcc ccagcaggca gaagtatgca aagcatgcat 2520
ctcaattagt cagcaacct agtcccgcc ctaactccgc ccatccgcc cctaactccg 2580

cccagttccg cccattctcc gccccatggc tgactaattt tttttattta tgcagaggcc 2640
gaggccgcct ctgcctctga gctattccag aagtagtgag gaggctttt tggaggccta 2700
ggcttttgca aaaagctccc gggagcttgt atatccattt tcggatctga tcaagagaca 2760
ggatgaggat cgtttcgcat gattgaacaa gatggattgc acgcaggttc tccggccgct 2820
tgggtggaga ggctattcgg ctatgactgg gcacaacaga caatcggctg ctctgatgcc 2880
gccgtgttcc ggctgtcagc gcagggggcg ccggttcttt ttgtcaagac cgacctgtcc 2940
ggtgccctga atgaactgca ggacgaggca gcgcggctat cgtggctggc cacgacgggc 3000
gttccttgcg cagctgtgct cgacctgtc actgaagcgg gaagggactg gctgctattg 3060
ggcgaagtgc cggggcagga tctcctgtca tctcaccttg ctctgccga gaaagtatcc 3120
atcatggctg atgcaatgcg gcggctgcat acgcttgatc cggctacctg cccattcgac 3180
caccaagcga aacatcgcat cgagcgagca cgtactcgga tggaagccgg tcttgtcgat 3240
caggatgatc tggacgaaga gcatcagggg ctgcgccag ccgaactgtt cgccaggctc 3300
aaggcgcgca tgcccagcg cgaggatctc gtcgtgacct atggcgatgc ctgcttgccg 3360
aatatcatgg tgaaaaatgg ccgcttttct ggattcatcg actgtggccg gctgggtgtg 3420
gcggaccgct atcaggacat agcgttggct acccgtgata ttgctgaaga gcttggcggc 3480
gaatgggctg accgcttct ctgtctttac ggtatcgccg ctcccattc gcagcgcac 3540
gccttctatc gccttctga cgagtcttc tgagcgggac tctggggttc gaaatgaccg 3600
accaagcgac gcccaacctg ccatcacgag atttcgattc caccgccgcc ttctatgaaa 3660
ggttgggctt cggaatcgtt ttccgggacg ccggctggat gatcctccag cgcggggatc 3720
tcatgctgga gttcttcgcc caccccaact tgtttattgc agcttataat ggttacaaat 3780
aaagcaatag catcacaaat ttcacaaata aagcattttt ttactgcat tctagttgtg 3840
gtttgtccaa actcatcaat gtatcttacc atgtctgtat accgtcgacc tctagctaga 3900
gcttggcgta atcatggta tagctgttcc ctgtgtgaaa ttgttatccg ctcaaatc 3960
cacacaacat acgagccgga agcataaagt gtaaagcctg ggggtgcctaa tgagtgaagct 4020

aactcacatt aattgcgttg cgctcactgc ccgctttcca gtcgggaaac ctgtcgtgcc 4080
agctgcatta atgaatcggc caacgcgcgg ggagaggcgg ttgctgtatt gggcgctctt 4140
ccgcttcctc gctcactgac tcgctgcgct cggctgttcg gctgcggcga gcggtatcag 4200
ctcactcaaa ggcggttaata cggttatcca cagaatcagg ggataacgca ggaaagaaca 4260
tgtgagcaaa aggccagcaa aaggccagga accgtaaaaa ggccgcgttg ctggcgtttt 4320
tccataggct ccgccccct gacgagcatc acaaaaatcg acgctcaagt cagaggtggc 4380
gaaacccgac aggactataa agataccagg cgtttcccc tggaagctcc ctcgtgcgct 4440
ctcctgttcc gaccctgccg cttaccggat acctgtccgc ctttctcct tcgggaagcg 4500
tggcgcttcc tcatagctca cgctgtaggt atctcagttc ggtgtaggtc gttcgtcca 4560
agctgggctg tgtgcacgaa cccccgttc agcccgaccg ctgcgcctta tccgtaact 4620
atcgtcttga gtccaacccg gtaagacacg acttatcgcc actggcagca gccactggta 4680
acaggattag cagagcgagg tatgtaggcg gtgctacaga gttctgaag tgggtgccta 4740
actacggcta cactagaaga acagtatttg gtatctgcgc tctgctgaag ccagttacct 4800
tcggaaaaag agttggtagc tcttgatccg gcaaacaac caccgctggt agcggtttt 4860
ttgtttgcaa gcagcagatt acgcgcagaa aaaaaggatc tcaagaagat ccttgatct 4920
tttctacggg gtctgacgct cagtggaacg aaaactcacg ttaagggatt ttggtcatga 4980
gattatcaaa aaggatcttc acctagatcc tttaaatta aaaatgaagt tttaatcaa 5040
tctaaagtat atatagtaa acttggtctg acagttacca atgcttaac agtgaggcac 5100
ctatctcagc gatctgtcta tttcgttcat ccatagttgc ctgactcccc gtcgtgtaga 5160
taactacgat acgggagggc ttaccatctg gcccagtc tgcaatgata ccgcgagacc 5220
cacgctcacc ggctccagat ttatcagcaa taaaccagcc agccggaagg gccgagcgca 5280
gaagtgtcc tgcaacttta tccgcctcca tccagtctat taattgttc cggaagcta 5340
gagtaagtag ttgccagtt aatagttgc gcaacgttgt tgccattgct acaggcatcg 5400
tggtgtcacg ctcgtcgttt ggtatggctt cattcagctc cggttccaa cgatcaaggc 5460

gagttacatg atcccccatg ttgtcaaaa aagcggtag ctccttcggt cctccgatcg 5520
 ttgtcagaag taagttggcc gcagtgttat cactcatggt tatggcagca ctgcataatt 5580
 ctcttactgt catgccatcc gtaagatgct tttctgtgac tggtagtac tcaaccaagt 5640
 cattctgaga atagtgtatg cggcgaccga gttgctcttg cccggcgta atacgggata 5700
 ataccgcgcc acatagcaga actttaaaag tgctcatcat tggaaaacgt tcttcggggc 5760
 gaaaactctc aaggatctta ccgctgttga gatccagttc gatgtaacct actcgtgcac 5820
 ccaactgatc ttcagcatct ttactttca ccagcgtttc tgggtgagca aaaacaggaa 5880
 ggcaaaatgc cgcaaaaaag ggaataaggg cgacacggaa atgttgaata ctcatactct 5940
 tcctttttca atattattga agcatttatc aggggtattg tctcatgagc ggatacatat 6000
 ttgaatgtat ttagaaaaat aaacaaatag gggttccgcg cacatttccc gaaaagtgc 6060
 cacctgacgt c 6071

<210> 5
 <211> 6068
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> pcDNA3.1_RFP vector V1.A.6

<400> 5
 gacggatcgg gagatctccc gatccctat ggtgcactct cagtacaatc tgctctgatg 60
 ccgcatagtt aagccagtat ctgctccctg cttgtgtgtt ggaggtcgct gagtagtgcg 120
 cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc 180
 ttagggttag gcgttttgcg ctgcttcgcg atgtacgggc cagatatagc cgttgacatt 240
 gattattgac tagttattaa tagtaatcaa ttacgggggc attagttcat agcccatata 300
 tggagttccg cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc 360
 cccgccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc 420
 attgacgtca atgggtggag tatttacggt aaactgccca cttggcagta catcaagtgt 480

atcatatgcc aagtagcccc cctattgacg tcaatgacgg taaatggccc gcctggcatt 540
atgcccagta catgacctta tgggactttc ctacttgga gtacatctac gtattagtca 600
tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg 660
actcacgggg atttccaagt ctccaccca ttgacgtcaa tgggagtttg tttggcacc 720
aaaatcaacg ggactttcca aaatgtcgta acaactccgc ccattgacg caaatgggcg 780
gtaggcgtgt acggtgggag gtctatataa gcagagctct ctggctaact agagaacca 840
ctgcttactg gcttatcgaa attaatacga ctactatag ggagaccaa gctggctagc 900
gtttaaactt aagcttgga ccgccacat gagcgagctg atcaaagaaa acatgcacat 960
gaagctgtac atggaaggca ccgtgaaca ccaccactt aagtgcacca gcgaggcgga 1020
gggcaagcct tacgagggca ccagacat gaagatcaag gtgtggaag gcggccctct 1080
gcccttcgcc ttgatatcc tggccaccag ctttatgtac ggagcaagg cttcatcaa 1140
ccacaccag ggcatcccc atttctcaa gcagagctc ccgagggt tcacctgga 1200
gcggatcacc acatacagg acggcgaggt gctgaccgcc acccaggata ccagcttcca 1260
gaacggctgc atcatctaca acgtgaagat taacggcgtg aacttccca gcaacggccc 1320
cgtgatgcag aagaaaacca gaggctggga ggccaacacc gagatgctgt accctgccga 1380
tggcggcctg agaggccatt ctcatggc cctgaaactc gtggcgag gctacctga 1440
ctgctcttc aagaccact acagaagca gaagccgcc aagaacctga agatgccgg 1500
cttcacttc gtggaccacc ggctggaac gatcaagag gccgacaag aaacctagt 1560
ggaacagcac gagatggcg tggcaagta ctgcacctg ctagcaagc tggccacag 1620
atgagtcgag tctagaggc ccgtttaa ccgctgatca gcctcgactg tgccttag 1680
ttccagcca tctgtgtt gccctccc cgtgccttc ttgacctg aagtgccac 1740
tccactgtc ctttctaataaaatgagga aattgcatc cattgtctga gtaggtgtca 1800
ttctattctg gggggtggg tgggcagga cagcaaggg gaggattggg aagacaatag 1860
caggcatgct ggggatgcg tgggtctat ggcttctgag gcggaagaa ccagctggg 1920

ctctaggggg tatccccacg cgccctgtag cggcgcatta agcgcggcgg gtgtggtggt 1980
tacgcgcagc gtgaccgcta cacttgccag cgccctagcg cccgctcctt tcgctttctt 2040
cccttccttt ctgccacgt tcgccggctt tccccgtcaa gctctaaatc gggggctccc 2100
tttaggggtc cgatttagtg ctttacggca cctcgacccc aaaaaacttg attagggtga 2160
tggttcacgt agtgggcat cgccctgata gacggtttt cgcccttga cgttgagtc 2220
cacgttcttt aatagtgac tctgttcca aactggaaca aactcaacc ctatctcgtt 2280
ctattctttt gattataag ggatttggc gatttcggcc tattggttaa aaaatgagct 2340
gattaacaa aaatttaacg cgaattaatt ctgtggaatg tgtgtcagtt aggggtgtgga 2400
aagccccag gctccccagc aggcagaagt atgcaaagca tgcatctcaa ttagtcagca 2460
accaggttg gaaagtcccc aggtcccca gcaggcagaa gtatgcaaag catgcatctc 2520
aattagtcag caaccatagt cccgccccta actccgcca tccgcccct aactccgccc 2580
agttccgccc attctccgc ccatggctga ctaattttt ttatttatgc agaggccgag 2640
gccgcctctg cctctgagct attccagaag tagtgaggag gctttttgg aggcctaggc 2700
tttgcaaaa agctcccggg agcttgata tccatttcg gatctgatca agagacagga 2760
tgaggatcgt ttgcatgat tgaacaagat ggattgcacg caggttctcc ggccgcttg 2820
gtggagaggc tattcggtc tgactgggca caacagacaa tcggctgctc tgatgccgc 2880
gtgtccggc tgtcagcga ggggcgccc gttcttttg tcaagaccga cctgtccgtt 2940
gccctgaatg aactgcagga cgaggcagc cggtatcgt ggctggccac gacgggcgtt 3000
ccttgccag ctgtgctga cgtgtcact gaagcgggaa gggactggct gctattggc 3060
gaagtccgg ggcaggatct cctgtcatct caccttgctc ctgccagaa agtatccatc 3120
atggctgatg caatcggcg gctgcatac ctgatccgg ctacctgcc attcgaccac 3180
caagcgaac atcgatcga gcgagcacgt actcgatgg aagccggtct tgtcatcag 3240
gatgatctgg acgaagagca tcaggggctc gcgccagccg aactgttcgc caggctcaag 3300
gcgcgatgc ccgacggcga ggatctctc gtgacctatg gcgatgcctg cttgccgaat 3360

atcatggtgg aaaatggccg ctttctgga ttcatcgact gtggccggct gggtgtggcg 3420
gaccgctatc aggacatagc gttggctacc cgtgatattg ctgaagagct tggcggcgaa 3480
tgggctgacc gcttctcgt gctttacggc atcgccgctc ccgattcgca gcgcacgccc 3540
ttcatcgcc ttctgacga gttcttctga gcgggactct ggggttcgaa atgaccgacc 3600
aagcgacgcc caacctgcc aacacgagatt tcgattccac cgccgccttc tatgaaaggt 3660
tgggcttcgg aatcgtttc cgggacgccg gctggatgat cctccagcgc ggggatctca 3720
tgctggagtt cttgcccac cccaactgt ttattgcagc ttataatggt taaaataaa 3780
gcaatagcat caaaaattc aaaaataag cttttttc actgcattct agttgtggtt 3840
tgtccaaact catcaatgta tcttatcatg tctgtatacc gtcgacctct agctagagct 3900
tggcgtaatc atggtcatag ctgttctcg tgtgaaattg ttatccgctc acaattccac 3960
acaacatacg agccggaagc ataaagtga aagcctgggg tgcctaata gtgagctaac 4020
tcacattaat tgcgttcgc tactgcccg cttccagtc gggaaacctg tcgtgccagc 4080
tgcattaatg aatcgccaa cgcgcgggga gaggcggtt gcgtattggg cgctcttcg 4140
cttctcgt cactgactcg ctgcgctcg tcgttcggct gcggcgagcg gtatcagctc 4200
actcaaaggc ggtaatacgg ttatccacag aatcagggga taacgcagga aagaacatgt 4260
gagcaaaagg ccagcaaaag gccaggaacc gtaaaaaggc cgcgttgctg gcgttttcc 4320
ataggctccg ccccttgac gagcatcaca aaaatcgac ctcaagtcag aggtggcgaa 4380
acccgacagg actataaaga taccaggcgt ttcccctgg aagctccctc gtgcgctctc 4440
ctgttccgac cctgccgctt accggatacc tgtccgctt tctccctcg ggaagcgtgg 4500
cgctttctca tagctcacgc ttaggtatc tcagttcggg ttaggtcgtt cgctccaagc 4560
tgggctgtgt gcacgaacc cccgttcagc ccgaccgctg cgccttatcc ggtaactatc 4620
gtcttgagtc caaccggta agacacgact tatcgccact ggcagcagcc actggtaca 4680
ggattagcag agcgaggtat gtaggcggtg ctacagagtt cttgaagtgg tggcctaact 4740
acggctacac tagaagaaca gtatttgga tctgcgctc gctgaagcca gttacctcg 4800

gaaaaagagt tggtagctct tgatccggca aacaaaccac cgctggtagc ggTTTTTTg 4860
 ttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct ttgatcttt 4920
 ctacggggtc tgacgctcag tggaacgaaa actcacgtta agggattttg gtcatgagat 4980
 tatcaaaaag gatcttcacc tagatccttt taaattaaaa atgaagtttt aaatcaatct 5040
 aaagtatata tgagtaaact tggctgaca gttaccaatg cttaatcagt gaggcaccta 5100
 tctcagcgat ctgtctattt cgttcatcca tagttgcctg actccccgtc gtgtagataa 5160
 ctacgatacg ggaggggtta ccactctggcc ccagtgtgc aatgataccg cgagaccac 5220
 gtcaccggc tccagattta tcagcaataa accagccagc cggaagggcc gagcgcagaa 5280
 gtggctctgc aactttatcc gcctcatcc agtctattaa ttgtgccgg gaagctagag 5340
 taagtagttc gccagttaat agtttgcga acgttggtgc cattgctaca ggcacgtgg 5400
 tgtcacgctc gtcgtttggt atggcttcat tcagctccgg ttccaacga tcaaggcgag 5460
 ttacatgatc cccatgttg tgcaaaaaag cggtttagctc cttcgtcct ccgatcgtg 5520
 tcagaagtaa gttggccgca gtgttatcac tcattggttat ggcagcactg cataattctc 5580
 ttactgtcat gccatccgta agatgctttt ctgtgactgg tgagtactca accaagtc 5640
 tctgagaata gtgtatcgg cgaccgagtt gctcttgccc ggcgtcaata cgggataata 5700
 ccgcgccaca tagcagaact taaaagtgc tcattcattgg aaacgttct tcggggcgaa 5760
 aactctcaag gatcttaccg ctgttgagat ccagttcgat gtaaccact cgtgcacca 5820
 actgatcttc agcatctttt actttacca gcgtttctgg gtgagcaaaa acaggaaggc 5880
 aaaatgccgc aaaaaagga ataaggcgca cacggaatg ttgaatactc atactcttc 5940
 ttttcaata ttattgaagc attatcagg gttattgtct catgagcgga tacatattg 6000
 aatgtattta gaaaaataa caaatagggg ttccgcgcac atttccccga aaagtccac 6060
 ctgacgtc 6068

<210> 6

<211> 10428

<212> DNA

<213> Artificial Sequence

<220>

<223> SpCas9-2A-GFP vector V1.A.8

<400> 6

gacggatcgg gagatctccc gatcccctat ggtgcactct cagtacaatc tgctctgatg 60
ccgcatagtt aagccagtat ctgctccctg cttgtgtgtt ggaggtcgct gagtagtgcg 120
cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc 180
ttagggtag gcgttttgcg ctgcttcgag atgtacgggc cagatatagc cgttgacatt 240
gattattgac tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata 300
tggagttccg cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc 360
ccgcccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc 420
attgacgtca atgggtggag tatttacggt aaactgccca cttggcagta catcaagtgt 480
atcatatgcc aagtacgcc cctattgacg tcaatgacgg taaatggccc gcctggcatt 540
atgcccagta catgacctta tgggactttc ctacttgga gtacatctac gtattagtca 600
tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg 660
actcacgggg atttccaagt ctccaccca ttgacgtcaa tgggagtttg tttggcacc 720
aaaatcaacg ggactttcca aatgtcgta acaactccgc ccattgacg caaatgggcg 780
gtaggcgtgt acggtgggag gtctatataa gcagagctct ctggctaact agagaacca 840
ctgcttactg gcttatcgaa attaatacga ctactatag ggagacccaa gctggctagc 900
gtttaaactt aagcttgga ccgccacat ggactataag gaccacgacg gagactacaa 960
ggatcatgat attgattaca aagacgatga cgataagatg gcccacaaaga agaagcgga 1020
ggtcggtatc cacggagtcc cagcagccga caagaagta agcatcgcc tggacatcgg 1080
caccaactct gtgggctggg ccgtgatcac cgacgagta aaggtgccca gcaagaaatt 1140
caagtgctg ggcaacaccg accggcacag catcaagaag aacctgatc gagccctgct 1200
gttcgacagc ggcgaaacag ccgagggcac ccggctgaag agaaccgcca gaagaagata 1260

caccagacgg aagaaccgga tctgctatct gcaagagatc ttcagcaacg agatggccaa 1320
ggtggacgac agcttcttcc acagactgga agagtccttc ctggtggaag aggataagaa 1380
gcacgagcgg caccctatct tcggcaacat cgtggacgag gtggcctacc acgagaagta 1440
ccccaccatc taccacctga gaaagaaact ggtggacagc accgacaagg ccgacctgcg 1500
gctgatctat ctggccctgg cccacatgat caagttccgg ggccacttcc tgatcgaggg 1560
cgacctgaac ccgacaaca gcgacgtgga caagctgttc atccagctgg tgcagaccta 1620
caaccagctg ttcgaggaaa accccatcaa cgccagcggc gtggacgcca aggccatcct 1680
gtctgccaga ctgagcaaga gcagacggct ggaaaatctg atcgcccagc tgcccggcga 1740
gaagaagaat ggctgttcg gaaacctgat tgcctgagc ctgggcctga ccccaactt 1800
caagagcaac ttcgacctgg ccgaggatgc caaactgcag ctgagcaagg acacctacga 1860
cgacgacctg gacaacctgc tggcccagat cggcgaccag tacgccgacc tgtttctggc 1920
cgccaagaac ctgtccgacg ccatcctgct gagcgacatc ctgagagtga acaccgagat 1980
caccaaggcc cccctgagcg cctctatgat caagagatac gacgagcacc accaggacct 2040
gacctgctg aaagctctcg tgcggcagca gctgcctgag aagtacaaag agattttctt 2100
cgaccagagc aagaacggct acgccggcta cattgacggc ggagccagcc aggaagagtt 2160
ctacaagttc atcaagccca tcctggaaaa gatggacggc accgaggaac tgctcgtgaa 2220
gctgaacaga gaggacctgc tgcggaagca gcggaccttc gacaacggca gcatcccca 2280
ccagatccac ctgggagagc tgcacgcat tctgcggcgg caggaagatt ttaccatt 2340
cctgaaggac aaccgggaaa agatcgagaa gatcctgacc ttccgcatcc cctactacgt 2400
gggccctctg gccaggggaa acagcagatt cgctggatg accagaaaaga gcgaggaaac 2460
catcaccccc tggaacttcg aggaagtggg ggacaagggc gttccgccc agagcttcat 2520
cgagcggatg accaacttcg ataagaacct gcccaacgag aaggtgctgc ccaagcacag 2580
cctgctgtac gagtacttca ccgtgtataa cgagctgacc aaagtgaat acgtgaccga 2640
gggaatgaga aagcccgct tcctgagcgg cgagcagaaa aaggccatcg tggacctgct 2700

gttcaagacc aaccggaaag tgaccgtgaa gcagctgaaa gaggactact tcaagaaaat 2760
cgagtgttc gactccgtgg aaatctccgg cgtggaagat cggttcaacg cctccctggg 2820
cacataccac gatctgtga aaattatcaa ggacaaggac ttctggaca atgaggaaaa 2880
cgaggacatt ctggaagata tcgtgctgac cctgacactg ttgaggaca gagagatgat 2940
cgaggaacgg ctgaaaacct atgccacct gttcgacgac aaagtgatga agcagctgaa 3000
gcggcggaga tacaccggct ggggcaggct gagccggaag ctgatcaacg gcatccggga 3060
caagcagtcc ggcaagacaa tcctggattt cctgaagtcc gacggcttcg ccaacagaaa 3120
cttcattgag ctgatccag acgacagcct gacctttaa gaggacatcc agaaagccca 3180
gggtgccggc cagggcgata gcctgcacga gcacattgcc aatctggccg gcagccccgc 3240
cattaagaag ggcatcctgc agacagtgaa ggtggtggac gagctcgtga aagtgatggg 3300
ccggcacaag cccgagaaca tcgtgatcga aatggccaga gagaaccaga ccaccagaa 3360
gggacagaag aacagccgcg agagaatgaa gcggatcga gagggcatca aagagctggg 3420
cagccagatc ctgaaagaac acccgtgga aaacaccag ctgcagaacg agaagctgta 3480
cctgtactac ctgcagaatg ggcgggatat gtacgtggac caggaactgg acatcaaccg 3540
gctgtccgac tacgatgtgg accatatcgt gcctcagagc tttctgaagg acgactccat 3600
cgacaacaag gtgctgacca gaagcgacaa gaaccggggc aagagcgaca acgtgccctc 3660
cgaagaggtc gtgaagaaga tgaagaacta ctggcggcag ctgctgaacg ccaagctgat 3720
taccagaga aagttcgaca atctgacaa ggccgagaga ggcggcctga gcgaactgga 3780
taaggccggc ttcataaga gacagctggt ggaaaccgg cagatcaca agcacgtggc 3840
acagatcctg gactcccga tgaactaa gtacgacgag aatgacaagc tgatccggga 3900
agtgaagtg atcacctga agtcaagct ggtgtccgat ttccggaagg atttcagtt 3960
ttacaaagtg cgcgagatca acaactacca ccacggccac gacgcctacc tgaacgccgt 4020
cgtgggaacc gccctgatca aaaagtaccc taagctggaa agcgagttcg tgtacggcga 4080
ctacaagtg tacgacgtgc ggaagatgat cgccaagagc gagcaggaaa tcggcaaggc 4140

taccgccaag tacttcttct acagcaacat catgaacttt ttcaagaccg agattaccct 4200

ggccaacggc gagatccgga agcggcctct gatcgagaca aacggcgaaa ccgggggagat 4260

cgtgtgggat aagggccggg attttgccac cgtgcggaaa gtgctgagca tgccccaagt 4320

gaatatctg aaaaagaccg aggtgcagac aggcggcttc agcaaagagt ctatcctgcc 4380

caagaggaac agcgataagc tgatcgccag aaagaaggac tgggacccta agaagtacgg 4440

cggcttcgac agccccaccg tggcctattc tgtgctggtg gtggccaaag tggaaaaggg 4500

caagtccaag aaactgaaga gtgtgaaaga gctgctgggg atcaccatca tggaaagaag 4560

cagcttcgag aagaatccca tcgactttct ggaagccaag ggctacaaag aagtgaaaaa 4620

ggacctgatc atcaagctgc ctaagtactc cctgttcgag ctggaaaacg gccggaagag 4680

aatgctggcc tctgccggcg aactgcagaa gggaaacgaa ctggccctgc cctccaaata 4740

tgtgaacttc ctgtacctgg ccagccacta tgagaagctg aagggtccc ccgaggataa 4800

tgagcagaaa cagctgtttg tggacagca caagcactac ctggacgaga tcatcgagca 4860

gatcagcgag ttctccaaga gagtgatcct ggccgacgct aatctggaca aagtgtctgc 4920

cgcctacaac aagcaccggg ataagcccat cagagagcag gccgagaata tcatccacct 4980

gtttaccctg accaatctgg gagcccctgc cgccttcaag tactttgaca ccaccatcga 5040

ccggaagagg tacaccagca ccaaagaggt gctggacgcc accctgatcc accagagcat 5100

caccggcctg tacgagacac ggatcgacct gtctcagctg ggaggcgaca aaaggccggc 5160

ggccacgaaa aaggccggcc aggcacaaaaa gaaaaaggaa ttcggcagtg gagagggcag 5220

aggaagtctg ctaacatgcg gtgacgtcga ggagaatcct ggcccagtga gcaagggcga 5280

ggagctgttc accgggggtg tgccatcct ggtcgagctg gacggcgacg taaacggcca 5340

caagttcagc gtgtccggcg agggcgaggg cgatgccacc tacggcaagc tgacctgaa 5400

gttcatctgc accaccggca agctgcccgt gccctggccc accctctga ccacctgac 5460

ctacggcgtg cagtgttca gccgtaccc cgaccacatg aagcagcacg acttttcaa 5520

gtccgcatg cccgaaggct acgtccagga gcgcaccatc ttcttcaagg acgacggcaa 5580

ctacaagacc cgcgccgagg tgaagttcga gggcgacacc ctggtgaacc gcatcgagct 5640
gaaggggcatc gacttcaagg aggacggcaa catcctgggg cacaagctgg agtacaacta 5700
caacagccac aacgtctata tcattggccga caagcagaag aacggcatca aggtgaactt 5760
caagatccgc cacaacatcg aggacggcag cgtgcagctc gccgaccact accagcagaa 5820
cacccccacg ggcgacggcc ccgtgctgct gcccgacaac cactacctga gcaccagtc 5880
cgccctgagc aaagacccca acgagaagcg cgatcacatg gtctgtctgg agttctgtac 5940
cgccgccggg atcactctcg gcatggacga gctgtacaag gaattctaac gctagagggc 6000
ccgtttaaac ccgtgatca gcctcgactg tgccttctag ttgccagcca tctgttgttt 6060
gcccctccc ccgtgcctcc ttgacctgg aaggtgccac tcccactgtc ctttctaata 6120
aaaatgagga aattgcatcg cattgtctga gtaggtgtca ttctattctg gggggtgggg 6180
tggggcagga cagcaagggg gaggattggg aagacaatag caggcatgct ggggatgcgg 6240
tgggtcttat ggcttctgag gcggaagaa ccagctgggg ctctaggggg tatccccacg 6300
cgccctgtag cggcgatta agcgcggcgg gtgtggtggt tacgcgcagc gtgaccgcta 6360
cactgccag cgccctagcg cccgctcctt tcgcttctt ccttctctt ctcgccacgt 6420
tcgccggctt tccccgcaa gctctaaac gggggctccc ttaggggtc cgatttagtg 6480
cttacggca cctcgacccc aaaaaactg attagggta tggttcacgt agtgggcat 6540
cgccctgata gacggtttt cgcccttga cgttgagtc cacgttctt aatagtggac 6600
tcttgtcca aactggaaca aactcaacc ctatctcgtt ctattcttt gattataag 6660
ggattttgcc gatttcggcc tattggttaa aaaatgagct gatttaaca aaattaacg 6720
cgaattaatt ctgtggaatg tgtgtcagtt aggggtgga aagtccccag gctccccagc 6780
aggcagaagt atgcaaagca tgcattcaa ttagtcagca accaggtgtg gaaagtcccc 6840
aggctccca gcaggcagaa gtatgcaaag catgcatctc aattagtcag caaccatagt 6900
ccgccccta actccgcca tccgcccct aactccgcc agttccgcc atttccgcc 6960
ccatggctga ctaattttt ttattatgc agaggccgag gccgcctcg cctctgagct 7020

attccagaag tagtgaggag gcttttttgg aggcctaggc ttttgcaaaa agtcccggg 7080
agcttgata tccatttcg gatctgatca agagacagga tgaggatcgt ttcgcatgat 7140
tgaacaagat ggattgcacg caggttctcc ggccgcttgg gtggagaggc tattcggcta 7200
tgactgggca caacagacaa tcggctgctc tgatgccgcc gtgtccggc tgcagcgca 7260
ggggcgcccg gttcttttgc tcaagaccga cctgtccgt gccctgaatg aactgcagga 7320
cgaggcagcg cggctatcgt ggctggccac gacgggctt ccttgcgcag ctgtgctcga 7380
cgttgtcact gaagcgggaa gggactggct gctattgggc gaagtgccgg ggcaggatct 7440
cctgtcatct caccttgctc ctgccagaa agtatccatc atggctgatg caatgcggcg 7500
gctgcatacg ctgatccgg ctacctgcc attcgaccac caagcgaac atcgcatcga 7560
gcgagcacgt actcgatgg aagccggtct tgcgatcag gatgatctgg acgaagagca 7620
tcaggggctc gcgccagccg aactgttcgc caggctcaag gcgcgcatgc ccgacggcga 7680
ggatctctc gtgacccatg gcgatgcctg ctgccgaat atcatggtgg aaaatggccg 7740
ctttctgga ttcacgact gtggccggt ggggtggcg gaccgctatc aggacatagc 7800
gttggtacc cgtgatattg ctgaagagct tggcggcgaa tgggctgacc gcttcctcgt 7860
gctttacgt atcgccgctc ccgattcga gcgcacgcc ttctatgcc ttcttgacga 7920
gttctctga gcgggactct ggggttcgaa atgaccgacc aagcgacgcc caacctgcca 7980
tcacgagatt tcgattccac cggcgcttc tatgaaagg tgggcttcgg aatcgtttc 8040
cgggacgcc gctggatgat cctccagcg ggggatctca tgctggagtt ctcgccac 8100
cccaactgt ttattgcagc ttataatggt tacaataaa gcaatagcat cacaatttc 8160
acaataaag catttttct actgcattct agttgtggt tgtccaaact catcaatga 8220
tcttatcatg tctgtatacc gtcgacctc agctagagct tggcgtaac atggtcatag 8280
ctgttctg tgtgaaattg ttatccgctc acaattccac acaacatacg agccggaagc 8340
ataaagtga aagcctgggg tgcctaatga gtgagctaac tcacattaat tgcgttgccg 8400
tcactgcccg cttccagtc gggaaacctg tcgtgccagc tgcattaatg aatcgccaa 8460

cgcgcgggga gaggcgggtt gcgtattggg cgctcttcg cttcctcgct cactgactcg 8520
ctgcgctcgg tcgttcggct gcggcgagcg gtatcagctc actcaaaggc ggtaatacgg 8580
ttatccacag aatcagggga taacgcagga aagaacatgt gagcaaaagg ccagcaaaag 8640
gccaggaacc gtaaaaaggc cgcggttgct gcgtttttcc ataggctccg cccccctgac 8700
gagcatcaca aaaatcgacg ctcaagtcag aggtggcgaa acccgacagg actataaaga 8760
taccaggcgt tccccctgg aagctccctc gtgcgctctc ctgttccgac cctgccgctt 8820
accggatacc tgtccgcctt tctcccttcg ggaagcgtgg cgctttctca tagctcacgc 8880
tgtaggtatc tcagttcggg ttaggtcgtt cgctccaagc tgggctgtgt gcacgaaccc 8940
cccgttcagc ccgaccgctg cgccttatcc ggtaactatc gtcttgagtc caaccggta 9000
agacacgact tatcgccact ggcagcagcc actggtaaca ggattagcag agcgaggtat 9060
gtaggcgggt ctacagagtt cttgaagtgg tggcctaact acggctacac tagaagaaca 9120
gtatttgga tctgcgctct gctgaagcca gttaccttcg gaaaaagagt tgtagctct 9180
tgatccggca aacaaaccac cgctggtagc ggttttttg ttgcaagca gcagattacg 9240
cgcagaaaaa aaggatctca agaagatcct ttgatcttt ctacggggtc tgacgctcag 9300
tggaacgaaa actcacgtta agggattttg gtcatgagat tatcaaaaag gatcttcacc 9360
tagatccttt taaattaa atgaagttt aaatcaatct aaagtatata tgagtaaact 9420
tggtctgaca gttaccaatg cttaatcagt gaggcaccta tctcagcgat ctgtctattt 9480
cgttcatcca tagttgcctg actccccgtc gtgtagataa ctacgatac ggagggctta 9540
ccatctggcc ccagtgtgc aatgataccg cgagaccac gtcaccggc tccagattta 9600
tcagcaataa accagccagc cggaagggcc gagcgagaa gtggtcctgc aactttatcc 9660
gcctccatcc agtctattaa ttgttgcgg gaagctagag taagtagttc gccagttaat 9720
agtttgcga acgttgttc cattgtaca ggcacgtgg tgtcacgctc gtcgtttgtt 9780
atggcttcat tcagctccgg tccaacga tcaaggcgag ttacatgatc cccatgttg 9840
tgcaaaaaag cggtagctc cttcggtcct ccgatgttg tcagaagtaa gttggccgca 9900

gtgttatcac tcatggttat ggcagcactg cataattctc ttactgtcat gccatccgta 9960
 agatgctttt ctgtgactgg tgagtactca accaagtcac tctgagaata gtgtatgcgg 10020
 cgaccgagtt gctcttgccc ggcgtcaata cgggataata ccgcgccaca tagcagaact 10080
 ttaaaagtgc tcatcattgg aaaacgttct tcggggcgaa aactctcaag gatcttaccg 10140
 ctgttgagat ccagttcgat gtaaccact cgtgcacca actgatcttc agcatctttt 10200
 actttacca gcgtttctgg gtgagcaaaa acaggaaggc aaaatgccgc aaaaaaggga 10260
 ataaggcgca cacggaaatg ttgaatactc atactcttc ttttcaata ttattgaagc 10320
 attatcagg gttattgtct catgagcgga tacatattg aatgtattta gaaaaataaa 10380
 caaatagggg ttccgcgcac atttccccga aaagtgccac ctgacgtc 10428

<210> 7

<211> 2508

<212> DNA

<213> Artificial Sequence

<220>

<223> pMA-SV40pA vector V1.C.2

<400> 7

ctaaattgta agcgtaata tttgttaaa attcgcgtta aattttgtt aaatcagctc 60
 atttttaac caataggccg aaatcgga aatcccttat aaatcaaaag aatagaccga 120
 gatagggttg agtggccgct acagggcgct ccattcgcc attcaggctg cgcaactgtt 180
 gggaagggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
 gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg 300
 acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
 aggccgcatg aattgttgtt gtaacttgt ttattgcagc ttataatggt taaaataaa 420
 gcaatagcat cacaatttc acaataaag cattttttc actgcattct agttgtggtt 480
 tgtccaaact catcaatgta tcttatcatg tctggatctg cggatccaat ctcgagctgg 540
 gcctcatggg cttccgctc actgccgct ttccagtcgg gaaacctgtc gtgccagctg 600

cattaacatg gtcatagctg ttctcttgcg tattgggcgc tctccgcttc ctgctcact 660
gactcgctgc gctcggctgt tcgggttaaag cctgggggtgc ctaatgagca aaaggccagc 720
aaaaggccag gaaccgtaaa aaggccgcgt tgctggcggtt ttccatagg ctccgcccc 780
ctgacgagca tcacaaaaat cgacgctcaa gtcagagggtg gcgaaacccg acaggactat 840
aaagatacca ggcgtttccc cctggaagct ccctcgtgcg ctctcctgtt ccgaccctgc 900
cgcttacggg atacctgtcc gcctttctcc ctccgggaag cgtggcgctt tctcatagct 960
cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc caagctgggc tgtgtgcacg 1020
aacccccgt tcagcccgac cgctgcgcct tatccggtaa ctatcgtctt gagtccaacc 1080
cggtaaagaca cgacttatcg ccactggcag cagccactgg taacaggatt agcagagcga 1140
ggtatgtagg cgggtctaca gaggcttga agtggtggcc taactacggc tacactagaa 1200
gaacagtatt tggatctgc gctctgtga agccagttac ctccgaaaaa agagttggta 1260
gctcttgatc cggcaaacia accaccgctg gtagcgggtg ttttttgtt tgcaagcagc 1320
agattacgcg cagaaaaaaaa ggatctcaag aagatcctt gatcttttct acgggggtctg 1380
acgctcagtg gaacgaaaac tcacgttaag ggattttggt catgagatta tcaaaaagga 1440
tcttcaccta gatcctttta aattaaat gaagttttaa atcaatctaa agtatatatg 1500
agtaaacttg gtctgacagt taccaatgct taatcagtga ggcacctatc tcagcgatct 1560
gtctatttcg ttcaccata gttgcctgac tccccgtgt gtagataact acgatacggg 1620
agggcttacc atctggcccc agtgctgcaa tgataccgagc agaaccacgc tcaccggctc 1680
cagatttatt agcaataaac cagccagccg gaagggccga gcgcagaagt ggtcctgcaa 1740
ctttatccgc ctccatccag tctattaatt gttgccggga agctagagta agtagttcgc 1800
cagttaatag ttgcgcaac gttgttgcca ttgctacagg catcgtggtg tcacgctcgt 1860
cgtttggtat ggcttcattc agtccgggtt cccaacgac aaggcgagtt acatgatccc 1920
ccatgttggt caaaaaagcg gttagctcct tcggtcctcc gatcgttgc agaagtaagt 1980
tggccgcagt gttatcactc atgggtatgg cagcactgca taattctctt actgtcatgc 2040

catccgtaag atgcttttct gtgactggtg agtactcaac caagtcattc tgagaatagt 2100
gtatgctggcg accgagttgc tcttgcccg cgtaatacgg ggataatacc gcgccacata 2160
gcagaacttt aaaagtgtc atcattggaa aacgttcttc ggggcgaaaa ctctcaagga 2220
tcttaccgct gttgagatcc agttcgatgt aaccactcg tgcaccaac tgatcttcag 2280
catcttttac tttcaccagc gttctgggt gagcaaaaac aggaaggcaa aatgccgcaa 2340
aaaagggaat aaggcgaca cggaaatgtt gaatactcat actcttcctt ttcaatatt 2400
attgaagcat ttatcagggt tattgtctca tgagcggata catatttgaa tgtattaga 2460
aaaataaaca aatagggtt ccgcgcacat tccccgaaa agtgccac 2508

<210> 8

<211> 4341

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-A 02:01 6xHis + Exon2/3-HA-L+R vector V1.C.6

<400> 8

ctaaattga agcgtaata tttgttaaa attcgcgtta aattttgtt aaatcagctc 60
atttttaac caataggcgg aaatcgga aatcccttat aaatcaaaag aatagaccga 120
gatagggttg agtggcggct acaggcgct cccattcgcc attcaggctg cgcaactgtt 180
gggaaggcg ttcggtgctg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg 300
acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
aggccgatg aattcgctac cggatatga atcaattacg gggtcattag ttcataagccc 420
atatatggag ttccgcgtta cataacttac ggtaaatggc ccgcctggct gaccgccc 480
cgacccccgc ccattgacgt caataatgac gtatgttccc atagtaacgc caatagggac 540
tttcattga cgtcaatggg tggagtattt acggtaaact gccacttgg cagtacatca 600
agtgtatcat atgccaagta cggcccctat tgacgtcaat gacggtaa atggccgcctg 660

gcattatgcc cagtacatga ctttatggga ctttctact tggcagtaca tctacgtatt 720
agtcacgcgt attacatgg tgatgcggtt ttggcagtac atcaatgggc gtggatagcg 780
gttgactca cggggatttc caagtctcca cccattgac gtcaatggga gttgttttg 840
gcacaaaat caacgggact ttcaaaaatg tcgtaacaac tccgccccat tgacgcaaat 900
gggcggtagg cgtgtacggt gggaggtcta tataagcaga gctggtttag tgaaccgtca 960
gatcaggtag catggccgtc atggcgcccc gaaccctcgt cctgtactc tcgggggctc 1020
tggccctgac ccagacctgg gcgggctctc actccatgag gtatttcttc acatccgtgt 1080
ctcgccagg acgcggagag ccacgcttca tcgcagtggg ctacgtggac gacacgcagt 1140
tcgtgcggtt cgacagcgac gccgcgagcc agaggatgga gccgcgggcg ccgtggatag 1200
agcaggaggg tccggagtat tgggacgggg agacacggaa agtgaaggcc cactcacaga 1260
ctcaccgagt ggacctgggg accctgcgcg gctactacaa ccagagcgag gccggttctc 1320
acaccgtcca gaggatgtat ggctgcgacg tggggtcgga ctggcgcttc ctccgcgat 1380
accaccagta cgcctacgac ggcaaggatt acatcgccct gaaagaggac ctgcgtctt 1440
ggaccgcggc ggacatggca gctcagacca ccaagcacia gtgggaggcg gccatgtgg 1500
cggagcagtt gagagcctac ctggagggca cgtgcgtgga gtggctccgc agatacctgg 1560
agaacgggaa ggagacgctg cagcgcacgg acgccccaa aacgcatatg actcaccag 1620
ctgtctctga ccatgaagcc accctgaggt gctgggccct gagcttctac cctgcggaga 1680
tcacactgac ctggcagcgg gatggggagg accagacca ggacacggag ctctgggaga 1740
ccaggcctgc aggggatgga acctccaga agtgggcggc tgtgtgtgtg cttctggac 1800
aggagcagag atacacctgc catgtgcagc atgagggttt gcccaagccc ctcacctga 1860
gatgggagcc gtctccag cccaccatcc ccatcgtggg catcattgct ggcctggttc 1920
tctttggagc tgtatcact ggagctgtgg tcgtgtgtg gatgtggagg aggaagagct 1980
cagatagaaa aggaggagc tactctcagg ctgcaagcag tgacagtccc cagggtctg 2040
atgtgtctc cacagctgt aaagtcccc ggcacatca ccatcaccac tgactatagt 2100

cgtctagacc tgatcataat caagccatat cacatctgta gaggtttact tgctttaaaa 2160
aacctccaca cctccccctg aacctgaaac ataaaatgaa tgcaattgtt gttgttaact 2220
tgtttattgc agcttataat ggttacaaat aaagcaatag catcacaaat ttcacaaata 2280
aagcattttt ttactgcat tctagtgtg gttgtccaa actcatcaat gtatcttatt 2340
atgtctggat ctgcggatcc aatctcgagc tgggcctcat gggccttccg ctactgccc 2400
gctttccagt cgggaaacct gtcgtgccag ctgcattaac atggtcatac ctgtttcctt 2460
gcgtattggg cgctctccgc ttctcgctc actgactcgc tgcgctcggg cgttcgggta 2520
aagcctgggg tgccaatga gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg 2580
cgttgctggc gttttccat aggctccgcc cccctgacga gcatcacaaa aatcgacgct 2640
caagtcagag gtggcgaaac ccgacaggac tataaagata ccaggcggtt cccctggaa 2700
gctccctcgt gcgctctcct gttccgacct tgccgcttac cggatacctg tccgcctttc 2760
tcccttcggg aagcgtggcg ctttctcata gctcacgctg taggtatctc agttcgggtg 2820
aggctgctc ctccaagctg ggctgtgtgc acgaaccccc cgttcagccc gaccgctcgc 2880
ccttatccgg taactatcgt cttagtcca acccgtaag acacgactta tcgccactgg 2940
cagcagccac tggtaacagg attagcagag cgaggatgt aggcggtgct acagattct 3000
tgaagtgtg gcctaactac ggctacacta gaagaacagt atttggatc tgcgctctgc 3060
tgaagccagt taccttcgga aaaagagttg gtactcttg atccggcaaa caaaccaccg 3120
ctggtagcgg tggtttttt gttgcaagc agcagattac gcgcagaaaa aaaggatctc 3180
aagaagatcc ttgatcttt tctacgggt ctgacgctca gtggaacgaa aactcacgtt 3240
aagggtttt ggtcatgaga ttatcaaaaa ggatcttcac ctatgcctt ttaaattaaa 3300
aatgaagttt taaatcaatc taaagtatat atgagtaaac ttgtctgac agttaccaat 3360
gcttaatcag ttaggcacct atctcagcga tctgtctatt tcgttcaccc atagttgcct 3420
gactccccgt cgtgtagata actacgatac gggagggtt accatctggc ccagtgctg 3480
caatgatacc gcgagaacca cgctcaccgg ctccagattt atcagcaata aaccagccag 3540

ccggaagggc cgagcgcaga agtggtcctg caactttatc cgcctccatc cagtctatta 3600
 attgttgccg ggaagctaga gtaagtagtt cgccagttaa tagtttgcgc aacgttggtg 3660
 ccattgctac aggcacgtg gtgtcacgct cgtcgtttgg tatggcttca ttcagctccg 3720
 gttcccaacg atcaaggcga gttacatgat ccccatgtt gtgcaaaaaa gcggttagct 3780
 cttcgggtcc tccgatcgtt gtcagaagta agttggccgc agtggtatca ctcattggtta 3840
 tggcagcact gcataattct ctactgtca tgccatccgt aagatgcttt tctgtgactg 3900
 gtgagtactc aaccaagtca ttctgagaat agtgtatgcg gcgaccgagt tgctcttgcc 3960
 cggcgtcaat acgggataat accgcgccac atagcagaac tttaaaagtg ctcattcattg 4020
 gaaaacgttc ttcggggcga aaactctcaa ggatcttacc gctgttgaga tccagttcga 4080
 tgtaaccac tcgtgcaccc aactgatctt cagcatcttt tactttcacc agcgtttctg 4140
 ggtgagcaaa aacaggaagg caaatgccg caaaaaaggg aataaggcg acacggaaat 4200
 gttgaatact catactcttc cttttcaat attattgaag catttatcag gggtattgtc 4260
 tcatgagcgg atacatattt gaatgtattt agaaaaataa acaaataggg gttccgcgca 4320
 catttccccg aaaagtgcc a 4341

<210> 9

<211> 4332

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-B 35:01 6xHis + Exon2/3-HA-L+R vector V1.C.9

<400> 9

ctaaattgta agcgtaata tttgttaaa attcgcgtta aatttttggt aaatcagctc 60
 atttttaac caataggccg aaatcgcaa aatcccttat aaatcaaaag aatagaccga 120
 gatagggttg agtggccgct acaggcgct cccattcgcc attcaggctg cgcaactgtt 180
 gggaagggcg ttccgtgctg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
 gctgcaaggc gattaagtg ggtaacgcc gggttttccc agtcacgacg ttgtaaacg 300

acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
 aggccgcatg aattcgctac cggtatagta atcaattacg gggtcattag ttcataagccc 420
 atatatggag ttccgcgtta cataacttac ggtaaatggc ccgcctggct gaccgccc aa 480
 cgacccccgc ccattgacgt caataatgac gtatgttccc atagtaacgc caatagggac 540
 ttccattga cgtcaatggg tggagtattt acggtaaact gccacttgg cagtacatca 600
 agtgtatcat atgccaagta cgccccctat tgacgtcaat gacggtaa at ggccccctg 660
 gcattatgcc cagtacatga cttatggga ctttctact tggcagtaca tctacgtatt 720
 agtcatcgct attaccatgg tgatgcggtt ttggcagtac atcaatgggc gtggatagcg 780
 gtttgactca cggggatttc caagtctcca cccattgac gtcaatggga gtttgtttg 840
 gcacaaaat caacgggact ttcaaaaatg tcgtaacaac tccgccccat tgacgcaa at 900
 gggcggtagg cgtgtacggt gggaggtcta tataagcaga gctggtttag tgaaccgtca 960
 gatcaggtag catgcgggtc acggcgcccc gaaccgtcct cctgctgctc tggggggcag 1020
 tggccctgac cgagacctgg gccggctccc actccatgag gtatttctac accgcatgt 1080
 cccggccagg acgcggagag ccacgcttca tcgcagtggg ctacgtggac gacaccagt 1140
 tcgtgaggtt cgacagcgac gccgcgagtc cgaggacgga gcctcgggcg ccatggatag 1200
 agcaggaggg gccggagtat tgggaccgga acacacagat cttcaagacc aacacacaga 1260
 cttaccgaga gagcctgcgg aacctgcgcg gctactacaa ccagagcgag gccgggtctc 1320
 acatcatcca gaggatgtat ggctgcgacc tggggcccga cgggcgcctc ctccgcgggc 1380
 atgaccagtc cgcctacgac ggcaaggatt acatcgccct gaacgaggac ctgagctcct 1440
 ggaccgcggc ggacaccgcg gctcagatca ccagcgcaa gtgggaggcg gcccggtgtg 1500
 cggagcagct gagagcctac ctggagggcc tgtgcgtgga gtggctccgc agatacctgg 1560
 agaacgggaa ggagactctt cagcgcgag atcctccaaa gacacacgtg acccaccacc 1620
 ccgtctctga ccatgaggcc accctgaggt gctgggcctt gggcttctac cctgcggaga 1680
 tcactgac ctggcagcgg gatggcgagg accaaactca ggacactgag cttgtggaga 1740

ccagaccagc aggagataga accttcaga agtgggcagc tgtggtggtg ctttctggag 1800
aagagcagag atacacatgc catgtacagc atgaggggct gccgaagccc ctcaccctga 1860
gatgggagcc atcttcccag tccaccatcc ccatcgtggg cattgttgct ggcctggctg 1920
tcctagcagt tgtggtcatc ggagctgtgg tcgctactgt gatgttagg aggaagagct 1980
caggtggaaa aggagggagc tactctcagg ctgcgtccag cgacagtgcc cagggtcttg 2040
atgtgtctct cacagctccc gggcatcatc accatcacca ctgactatag tcgtctagac 2100
ctgatcataa tcaagccata tcacatctgt agaggtttac ttgctttaa aaacctccac 2160
acctccccct gaacctgaaa cataaaatga atgcaattgt tgttgtaac ttgtttattg 2220
cagcttataa tggttacaaa taaagcaata gcatcacaaa tttcacaaat aaagcatttt 2280
tttactgca ttctagttgt ggtttgcca aactcatcaa tgtatcttat catgtctgga 2340
tctgcggatc caatctcgag ctgggcctca tgggccttcc gctcactgcc cgctttccag 2400
tcgggaaacc tgtctgcca gctgcattaa catggcata gctgtttcct tgcgtattgg 2460
gcgctctccg cttcctcgct cactgactcg ctgcgctcgg tcgttcgggt aaagcctggg 2520
gtgcctaata agcaaaaggc cagcaaaagg ccaggaaccg taaaaaggcc gcgttgctgg 2580
cgtttttcca taggtccgc cccctgacg agcatcaca aaatcgacgc tcaagtcaga 2640
ggtaggcgaaa cccgacagga ctataaagat accaggcgtt tcccctgga agctccctcg 2700
tgcgctctcc tgttccgacc ctgccgcta cggatacct gtccgccttt ctccctcgg 2760
gaagcgtggc gctttctcat agctcacgct gtaggtatct cagttcgggt taggtcgttc 2820
gctccaagct gggctgtgtg cacgaacccc ccgttcagcc cgaccgctgc gccttatccg 2880
gtaactatcg tcttgagtc aaccggtaa gacacgactt atcgccactg gcagcagcca 2940
ctggtaacag gattagcaga gcgaggtatg taggcggtgc tacagagttc tgaagtgt 3000
ggcctaacta cggctacact agaagaacag tatttggtat ctgcgctctg ctgaagccag 3060
ttacctcgg aaaaagagtt ggtagctctt gatccggcaa acaaaccacc gctggtagcg 3120
gtggttttt tgttgcaag cagcagatta cgcgcagaaa aaaaggatct caagaagatc 3180

ctttgatctt ttctacgggg tctgacgctc agtggaacga aaactcacgt taagggaattt 3240
 tggatcatgag attatcaaaa aggatcttca cctagatcct tttaaattaa aaatgaagtt 3300
 ttaaatcaat ctaaagtata tatgagtaaa cttggtctga cagttaccaa tgcttaatca 3360
 gtgaggcacc tatctcagcg atctgtctat ttcgttcac catagttgcc tgactccccg 3420
 tcgtgtagat aactacgata cgggagggct taccatctgg cccagtgct gcaatgatac 3480
 cgcgagaacc acgctcaccg gctccagatt tatcagcaat aaaccagcca gccggaaggg 3540
 ccgagcgag aagtggctct gcaactttat ccgcctccat ccagtcatt aattgttgc 3600
 gggagctag agtaagtagt tcgccagta atagtttgcg caacgttgtt gccattgcta 3660
 caggcatcgt ggtgtcacgc tcgtcgttg gtatggcttc attcagctcc ggttccaac 3720
 gatcaaggcg agttacatga tccccatgt tgtcaaaaa agcggttagc tccttcggtc 3780
 ctccgatcgt tgcagaagt aagtggccg cagtgttacc actcatggtt atggcagcac 3840
 tgcataattc tcttactgtc atgcatccg taagatgctt ttctgtgact ggtgagtact 3900
 caaccaagtc attctgagaa tagtgtatgc ggcgaccgag ttgctcttgc ccggcgtaaa 3960
 tacgggataa taccgcgcca catagcagaa cttaaaaagt gctcatcatt ggaaaacgtt 4020
 ctctggggcg aaaactctca aggatcttac cgctgttgag atccagttcg atgtaacca 4080
 ctctgcacc caactgatct tcagcatctt ttactttcac cagcgtttct ggtgagcaa 4140
 aaacaggaag gcaaaatgcc gcaaaaaagg gaataagggc gacacggaaa tgttgaatac 4200
 tcatactctt ccttttcaa tattattgaa gcatttatca gggttattgt ctcagagcg 4260
 gatacatatt tgaatgtatt tagaaaaata aacaaatagg ggtccgcgc acattcccc 4320
 gaaaagtgcc ac 4332

<210> 10

<211> 5733

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1-L_B07_6xH vector V1.F.10

<400> 10

ctaaattgta agcgtaata tttgttaaa attcggtta aattttgtt aaatcagctc 60
atttttaac caataggccg aaatcgga aatcccttat aaatcaaaag aatagaccga 120
gatagggttg agtggccgct acaggcgct cccattcgcc attcaggctg cgcaactgtt 180
gggaaggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa aggggatgt 240
gctgcaaggc gattaagtg ggtaaccca gggtttccc agtcacgacg ttgtaaacg 300
acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
aggccgatg aattgagctc tactggcttc tgcgccgct ctggcccact gttcccctt 420
cccaggcagg tctgcttct tctgacctgc attctctccc ctgggcctgt gccgcttct 480
gtctgcagct tgtggcctgg gtcacctta cggctggccc agatcctcc ctgccgctc 540
ctcaggctc cgtcttctc cactccctct tccccttgct ctctgctgtg ttgctgcca 600
aggatgctct tccggagca cttccttctc ggcgctgcac cacgtgatgt cctctgagcg 660
gatcctccc gtgtctgggt cctctcggg catctctct cctcaccca acccatgcc 720
gtcttcactc gctgggttcc ctttcttc tcttctggg gcctgtgcca tctctgttt 780
cttaggatgg cttctccga cggatgtctc ctttgcgtcc cgcctcccct tctttaggc 840
ctgcatcatc accgttttc tggacaacc caaagtacc cgtctcctg gctttagcca 900
cctctccatc ctctgctt ctttgcctgg acacccggt ctctgtgga ttcgggtcac 960
ctctcactcc tttcattgg gcagctccc taccctt acctctctag tctgtgtag 1020
ctctccagc cccctgtcat ggcatttcc aggggtccga gagctcagct agtcttctc 1080
ctccaaccg gggccctatg tccactttag gacagcatgt ttgctgcctc caggatcct 1140
gtgtcccga gctgggacca ctttatatt ccagggccg ttaatgtggc tctggtctg 1200
ggtagcttta tctgtcccct ccaccgtat agtaataat tacgggtca ttagttcata 1260
gccatataat ggagttccg gttacataac ttacggtaaa tggccgcct ggctgaccgc 1320
ccaacgacc ccgccattg acgtcaataa tgacgtatgt tcccatagta acgccaatag 1380

ggactttcca ttgacgtcaa tgggtggagt atttacggta aactgcccac ttggcagtac 1440
 atcaagtgtg tcatatgcca agtacgcccc ctattgacgt caatgacggg aaatggcccc 1500
 cctggcatta tgcccagtac atgaccttat gggactttcc tacttggcag tacatctacg 1560
 tattagtcac cgctattacc atggtgatgc ggttttggca gtacatcaat gggcgtggat 1620
 agcggtttga ctacgggga tttccaagtc tccaccccat tgacgtcaat gggagtttgt 1680
 ttggcacca aaatcaacgg gactttccaa aatgtcgtaa caactccgcc ccattgacgc 1740
 aaatgggcgg taggcgtgta cgggtggagg tctatataag cagagctggg ttagtgaacc 1800
 gtcagatcag gtacatgct ggtcatggcg ccccgaaaccg tcctcctgct gctctcggcg 1860
 gccctggccc tgaccgagac ctgggcccgc tccactcca tgaggatatt ctacacctcc 1920
 gtgtctcggc caggacgcgg agagccacgc ttcatctcag tgggctacgt ggacgacacc 1980
 cagttcgtga ggttcgacag cgacgcccg agtccgagag aggagcccg ggcgccgtgg 2040
 atagagcagg aggggccgga gtattgggac cggaacacac agatctacaa ggcccaggca 2100
 cagactgacc gagagagcct gcggaacctg cgcggctact acaaccagag cgaggccggg 2160
 tctcacacc tccagagcat gtacggctgc gacgtggggc cggacgggcg cctcctccgc 2220
 gggcatgacc agtacgccta cgacggcaag gattacatcg ccctgaacga ggacctgcgc 2280
 tcctggaccg ccgcggacac ggcggctcag atcaccagc gcaagtggga ggcgcccgt 2340
 gaggcggagc agcggagagc ctacctggag ggcgagtgcg tggagtggct ccgagatac 2400
 ctggagaacg ggaaggacaa acttgagcgc gcagaccctc caaagacaca cgtgaccac 2460
 caccatct ctgaccatga ggccacctg aggtgctggg ccctgggttt ctacctgcg 2520
 gagatcacac tgacctggca gcgggatggc gaggacaaa ctcaggacac tgagcttgtg 2580
 gagaccagac cagcaggaga tagaacctc cagaagtggg cagctgtggg ggtgccttct 2640
 ggagaagagc agagatacac atgcatgta cagcatgagg ggctgccgaa gccctcacc 2700
 ctgagatggg agccgtcttc ccagtcacc gtcccatcg tgggcattgt tgctggcctg 2760
 gctgtcctag cagttgtgt catcggagct gtggtcgctg ctgtgatgtg taggaggaag 2820

agttcaggtg gaaaaggagg gagctactct caggctgcgt gcagcgacag tgcccagggc 2880
tctgatgtgt ctctcacagc tcccgggcat catcaccatc accactgact atagtcgtct 2940
agacctgac ataatcaagc catatcacat ctgtagaggt ttacttgctt taaaaaacct 3000
ccacacctcc ccctgaacct gaaacataaa atgaatgcaa ttgttggtgt taactgttt 3060
attgcagctt ataatggta caaataaagc aatagcatca caaatcac aaataaagca 3120
ttttttcac tgattctag ttgtggttg tccaaactca tcaatgtatc ttatcatgtc 3180
tggatctgcg gatcaggatt ggtgacagaa aagccccatc cttaggcctc ctcttccta 3240
gtctctgat attgggtcta acccccacct cctgttaggc agattccta tctggtgaca 3300
cacccccatt tcttgagcc atctctctcc ttgccagaac ctctaagggt tgcttacgat 3360
ggagccagag aggatcctgg gagggagagc ttggcagggg gtgggagggga agggggggat 3420
gcgtgacctg cccggttctc agtggccacc ctgcgtacc ctctcccaga acctgagctg 3480
ctctgacgcg gctgtctggt gcgttctact gatcctggtg ctgcagctc ctacacttc 3540
ccaagaggag aagcagtttg gaaaaacaaa atcagaataa gttggtcctg agttctaact 3600
ttggctctc accttctag tcccaattt atattgttc tccgtgcgtc agtttacct 3660
gtgagataag gccagtagcc agccccgtcc tggcagggct gtggtgagga ggggggtgtc 3720
cgtgtgaaa actcccttg tgagaatggt gcgtcctcga gctgggcctc atgggccttc 3780
cgctcactgc ccgctttcca gtcgggaaac ctgctgtgcc agctgcatta acatggtcat 3840
agctgttcc ttgcgtattg ggcgtctcc gcttctcgc tactgactc gctgcgtcg 3900
gtcgttcggg taaagcctgg ggtgcctaag gagcaaaagg ccagcaaaag gccaggaacc 3960
gtaaaaaggc cgcgttgctg gcgttttcc ataggctccg cccccctgac gagcatcaca 4020
aaaatcgacg ctcaagtcag aggtggcgaa acccgacagg actataaaga taccaggcgt 4080
ttccccctgg aagctccctc gtgcgtctc ctgtccgac cctgccgctt accggatacc 4140
tgtccgcctt tctccctcg ggaagcgtgg cgctttctca tagctcacgc ttaggtatc 4200
tcagttcgtg ttaggtcgtt cgctccaagc tgggctgtgt gcacgaacct cccgttcagc 4260

ccgaccgctg cgccttatcc ggtaactatc gtcttgagtc caacccggtg agacacgact 4320
tatcgccact ggcagcagcc actggttaaca ggattagcag agcgaggatg gtaggcggtg 4380
ctacagagtt cttgaagtgg tggcctaact acggctacac tagaagaaca gtatttggtg 4440
tctcgctct gctgaagcca gttaccttcg gaaaaagagt tggtagctct tgatccggca 4500
aacaaccac cgctggtagc ggtggttttt ttgttgcaa gcagcagatt acgcgcagaa 4560
aaaaaggatc tcaagaagat cttttgatct tttctacggg gtctgacgct cagtgaacg 4620
aaaactcacg ttaagggatt ttggtcatga gattatcaaa aaggatcttc acctagatcc 4680
ttttaaatta aaaatgaagt tttaaataca tctaaagtat atatgagtaa acttggctctg 4740
acagttacca atgcttaatc agtgaggcac ctatctcagc gatctgtcta tttcgttcat 4800
ccatagttgc ctgactcccc gtcgtgtaga taactacgat acgggagggc ttaccatctg 4860
gccccagtgc tgcaatgata ccgcgagaac cacgctcacc ggctccagat ttatcagcaa 4920
taaaccagcc agccggaagg gccgagcgca gaagtgggcc tgcaacttta tccgcctcca 4980
tccagtctat taattgttgc cgggaagcta gagtaagtag ttcgccagtt aatagtttgc 5040
gcaacgttgt tgccattgct acaggcatcg tgggtgcacg ctcgtcgttt ggtatggctt 5100
cattcagctc cggttcccaa cgatcaaggc gagttacatg atccccatg ttgtgcaaaa 5160
aagcggttag ctccttcggt cctccgatcg ttgtcagaag taagttggcc gcagtgttat 5220
cactcatggt tatggcagca ctgcataatt ctcttactgt catgccatcc gtaagatgct 5280
tttctgtgac tggtagtac tcaaccaagt cattctgaga atagtgtatg cggcgaccga 5340
gttgctcttg cccggcgta atacgggata ataccgcgcc acatagcaga actttaaag 5400
tgctcatcat tggaaaacgt tcttcggggc gaaaactctc aaggatctta ccgctgttga 5460
gatccagttc gatgtaacct actcgtgcac ccaactgatc ttcagcatct ttactttca 5520
ccagcgtttc tgggtgagca aaaacaggaa ggcaaaatgc cgcaaaaaag ggaataaggg 5580
cgacacggaa atgttgaata ctcatactct tcctttttca atattattga agcattatc 5640
agggttattg tctcatgagc ggatacatat ttgaatgtat ttagaaaaat aaacaaatag 5700

gggttcgcg cacatttccc cgaaaagtgc cac

5733

<210> 11

<211> 5520

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1-S_A24_6xH vector V1.F.8

<400> 11

ctaaattgta agcgtaata tttgttaaa attcgcgta aattttgtt aatcagctc 60
atttttaac caataggccg aaatcgga aatcccttat aatcaaaag aatagaccga 120
gatagggttg agtggccgct acaggcgct cccattcgcc attcaggctg cgcaactgtt 180
gggaaggcg ttcggtgcg ggcctctcg ctattacgcc agctggcgaa agggggatgt 240
gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg 300
acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
aggccgcatg aattgctgcc caaggatgct tttccggag cacttcctc tcggcgctgc 420
accacgtgat gtcctctgag cggatcctcc ccgtgtctgg gtcctctccg ggcatctctc 480
ctcctcacc caaccccatg ccgtgtcac tcgctgggtt ccctttcct tctcctctg 540
gggcctgtgc catctctcgt ttcttaggat ggccttctcc gacggatgtc tcccttgcgt 600
cccgcctccc cttctgtag gcctgcatca tcaccgttt tctggacaac ccaaagtac 660
cccgtctccc tggcttagca cctctcatc ctcttgctt cttgcctgg acaccctgt 720
ctcctgtgga ttcgggtcac ctctactcc tttcattgg gcagctcccc taccctctt 780
acctctctag tctgtgctag ctctccagc cccctgtcat ggcatcttcc aggggtccga 840
gagctcagct agtcttctc ctccaaccg ggcctatgt ccacttcagg acagcatgtt 900
tgctgcctcc agggatcctg tgtccccgag ctgggaccac cttatatcc cagggccggt 960
taatgtggct ctggttctgg gtactttat ctgtcccctc caccgtata gtaatcaatt 1020
acggggtcat tagttcatag cccatatatg gaggcccg ttacataact tacggtaaat 1080

ggccgcctg gctgaccgcc caacgacccc cgccattga cgtcaataat gacgtatgtt 1140
cccatagtaa cgccaatagg gactttccat tgacgtcaat ggggtggagta ttacggtaa 1200
actgccact tggcagtaca tcaagtgtat catatgcca gtacgcccc tattgacgtc 1260
aatgacggta aatggccgc ctggcattat gcccagtaca tgacctatg ggactttcct 1320
acttggcagt acatctacgt attagtcac gctattacca tggatgacg gtttggcag 1380
tacatcaatg ggcgtggata gcggttgac tcacgggat ttcaagtct ccacccatt 1440
gacgtcaatg ggagttgtt ttggcaccaa aatcaacggg actttcaaa atgtcgtaac 1500
aactccgcc cattgacgca aatggcggt aggcgtgtac ggtgggaggt ctatataagc 1560
agagctggt tagtgaaccg tcagatcagg tacatggcc gtcattggcg cccgaaccct 1620
cgtcctgcta ctctggggg ccctggcct gaccagacc tgggcaggct cccactccat 1680
gaggtattc tccacatccg tgtctggcc aggacgcgga gagccacgct tcacgccgt 1740
gggctacgtg gacgacacgc agttcgtgc gttcacagc gacgccgca gccagaggat 1800
ggagccgagg gcgccgtgga tagagcagga ggggcccagg tattgggacg aggagacagg 1860
gaaagtgaag gccactcac agactgaccg agagaacctg cgatcgcg tccgtacta 1920
caaccagac gaggcgggt ctacaccct ccagatgatg ttggctgcg acgtggggtc 1980
ggacgggagc ttctccgc gataccacca gtacgctac gacggcaagg attacatgc 2040
cctgaaagag gacctgcgt ctggaccgc ggcggacatg gcggctcaga tcaccaagcg 2100
caagtgggag gcggcccatg tggcgagca gcagagagcc tacctggagg gcacgtgct 2160
ggacgggctc gcagatacc tggagaacgg gaaggagacg ctgcagcga cggaccccc 2220
caagacacat atgaccacc acccatctc tgacctgag gccactctga gatgctggg 2280
cctgggctt tacctgcgg agatcacact gacctggcag cgggatggg aggaccagac 2340
ccaggacac gagcttgg agaccaggcc tgcagggat ggaacctcc agaagtggg 2400
agctgtgtg gttcctctg gagaggagca gagatacacc tgccatgtc agcatgagg 2460
tctgccaag ccctcacc tgagatggga gccatctcc cagccaccg tcccatcgt 2520

gggcatcatt gctggcctgg ttctccttgg agctgtgatc actggagctg tggctgctgc 2580
tgtgatgtgg aggaggaaca gctcagatag aaaaggaggg agctactctc aggctgcaag 2640
cagtgcagct gccaggggct ctgatgtgtc tctcacagct tgtaaagtgc ccgggcatca 2700
tcaccatcac cactgactat agtcgtctag acctgatcat aatcaagcca tatcacatct 2760
gtagaggttt acttgcttta aaaaacctcc acacctccc ctgaacctga aacataaaat 2820
gaatgcaatt gttgttgta acttgttat tgcagcttat aatggttaca aataaagcaa 2880
tagcatcaca aatttcaaa ataaagcatt ttttcactg cattctagtt gtggtttgtc 2940
caaactcatc aatgtatctt atcatgtctg gatctgcgga tcaggattgg tgacagaaaa 3000
gccccatcc ttaggcctcc tccttctag tctctgata ttcgtctaac cccacactcc 3060
tgtaggcag attccttacc tggtagacaca ccccatctc ctggagccat ctctctcctt 3120
gccagaacct ctaaggtttg cttacgatgg agccagagag gatcctggga gggagacttg 3180
gcaggggggtg ggagggaagg gggggatgcg tgacctgcc ggttctcagt ggccaccctg 3240
cgctaccctc tcccagaacc tgagctgtc tgacgcggct gtctggtgcg ttctactgat 3300
cctggtgtcg cagcttctt acacttcca agaggagaag cagtttgaa aaacaaaatc 3360
agaataagtt ggtcctgagt tctaacttg gctcttacc tttctagccc ccaatttata 3420
ttgttctcc gtgcgtcagt ttacctgtg agataaggcc agtagccacc cccgtcctgg 3480
cagggctgtg gtgaggaggg ggggtgccgt gtggaaaact cctttgtga gaatggtgcg 3540
tcctcgagct gggcctcatg ggccttccgc tctgccccg cttccagtc gggaaacctg 3600
tcgtgccagc tgcattaaca tggcatagc tgttctctg cgtattgggc gctctccgct 3660
tcctgctca ctgactcgt gcgctcggc gttcgggtaa agcctggggg gcctaagag 3720
caaaaggcca gaaaaggcc aggaaccgta aaaaggccgc gttgctggcg ttttcata 3780
ggctccgcc cctgacgag catcacaaaa atcgacgctc aagtcagagg tggcgaaacc 3840
cgacaggact ataaagatac caggcgttcc ccctggaag ctccctcgtg cgctctcctg 3900
ttccgacct gccgcttacc ggatactgt ccgccttct ccctcggga agcgtggcgc 3960

tttctcatag ctcacgctgt aggtatctca gttcgggtga ggtcgttcgc tccaagctgg 4020
gctgtgtgca cgaaccccc gttcagcccc accgctgcgc cttatccggt aactatcgtc 4080
ttgagtccaa cccggtgaaga cagcacttat cgccactggc agcagccact ggtaacagga 4140
ttagcagagc gaggtatgta ggcggtgcta cagagttctt gaagtgggtg cctaactacg 4200
gctacactag aagaacagta ttggtatct gcgctctgct gaagccagtt accttcggaa 4260
aaagagttgg tagctcttga tccggcaaac aaaccaccgc tggtagcggg ggtttttttg 4320
tttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct ttgatctttt 4380
ctacggggtc tgacgctcag tggaaacgaaa actcacgtta agggattttg gtcagtगत 4440
tatcaaaaag gatcttcacc tagatccttt taaattaaaa atgaagtttt aaatcaatct 4500
aaagtatata tgagtaaact tggctgaca gttaccaatg cttaatcagt gaggcaccta 4560
tctcagcgat ctgtctattt cgttcatcca tagttgcctg actccccgtc gtgtagataa 4620
ctacgatacg ggagggtta ccatctggcc ccagtgtgc aatgataccg cgagaaccac 4680
gctcaccggc tccagattta tcagcaataa accagccagc cggaagggcc gagcgcagaa 4740
gtggctctgc aactttatcc gcctccatcc agtctattaa ttgttgccgg gaagctagag 4800
taagtagttc gccagttaat agtttgcca acgttggtgc cattgctaca ggcatcgtgg 4860
tgtcacgctc gtcgtttggt atggcttcat tcagctccgg ttccaacga tcaaggcgag 4920
ttacatgatc ccccatgttg tgcaaaaaag cggttagctc cttcggtcct ccgatcgttg 4980
tcagaagtaa gttggccgca gtgttatcac tcatggttat ggagcactg cataattctc 5040
ttactgtcat gccatccgta agatgctttt ctgtgactgg tgagtactca accaagtcac 5100
tctgagaata gtgtatgcgg cgaccgagtt gctcttgccc ggcgtcaata cgggataata 5160
ccgcgccaca tagcagaact taaaagtgc tcatcattgg aaaacgttct tcggggcgaa 5220
aactctcaag gatcttaccg ctgttgagat ccagttcgat gtaaccact cgtgcaccca 5280
actgatcttc agcatctttt actttacca gcgtttctgg gtgagcaaaa acaggaaggc 5340
aaaatgccgc aaaaaaggga ataagggcga cacggaaatg ttgaatactc atactcttcc 5400

ttttcaata ttattgaagc atttatcagg gttattgtct catgagcgga tacatatttg 5460

aatgtattta gaaaaataaa caaatagggg ttccgcgcac atttccccga aaagtgccac 5520

<210> 12

<211> 7062

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1-l_GFP_HCMVpp65 vector V1.G.10

<400> 12

ctaaattgta agcgtaata tttgttaaa attcgcgtta aatttttgtt aaatcagctc 60

atttttaac caataggccg aaatcgga aatcccttat aaatcaaaag aatagaccga 120

gatagggttg agtggccgct acagggcgct cccattcgcc attcaggctg cgcaactgtt 180

gggaagggcg tttcgggtcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240

gctgcaaggc gattaagttg ggtaaccca gggtttccc agtcacgacg ttgtaaaacg 300

acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360

aggccgcattg aattgagctc tactggcttc tgcgccgcct ctggcccact gttcccctt 420

cccaggcagg tctgtcttc tctgacctgc attctctccc ctgggcctgt gccgctttct 480

gtctgcagct tgtggcctgg gtcacctcta cggctggccc agatccttc ctgccgcctc 540

cttcaggctc cgtcttctc cactccctct tccccttgct ctctgctgtg ttgctgcca 600

aggatgctct ttccggagca ctctctctc ggcgctgcac cacgtgatgt cctctgagcg 660

gatcctcccc gtgtctgggt cctctccggg catctctct cctcaccga acccatgcc 720

gtcttcactc gctgggttcc ctttcttc tccttctggg gcctgtgcca tctctgttt 780

cttaggatgg cttctccga cggatgtct cttgctgc cgctcccct tctttaggc 840

ctgcatcatc accgttttc tggacaacct caaagtacct cgtctccctg gctttagcca 900

cctctccatc ctcttgctt cttgcctgg acacccggt ctctgtgga ttgggtcac 960

ctctcactcc tttcatttg gcagctcccc taccctctt acctctctag tctgtgtag 1020

ctcttcagc cccctgtcat ggcatttcc aggggtccga gagctcagct agtcttctc 1080
 ctccaacccg ggcccctatg tccacttcag gacagcatgt ttgtgcctc cagggatcct 1140
 gtgtccccga gctgggacca ccttatattc ccagggccgg ttaatgtggc tctggttctg 1200
 ggtactttta tctgtcccct ccaccggtat agtaatcaat tacggggta ttagttcata 1260
 gcccatatat ggagttccgc gttacataac ttacggtaaa tggcccgct ggctgaccgc 1320
 ccaacgacc ccgccattg acgtcaataa tgacgtatgt tcccatagta acgccaatag 1380
 ggactttcca ttgacgtcaa tgggtggagt attacggt aactgccac ttggcagtac 1440
 atcaagtga tcatatgcca agtacgcccc ctattgacgt caatgacggt aaatggcccg 1500
 cctggcatta tgcccagtac atgacctat gggactttcc tacttggcag tacatctacg 1560
 tattagtcat cgctattacc atggtgatgc ggttttggca gtacatcaat gggcgtggat 1620
 agcggttga ctacgggga ttccaagtc tccacccat tgacgtcaat ggaggtttgt 1680
 ttggcacca aaatcaacgg gactttcaa aatgtcgtaa caactccgcc ccattgacgc 1740
 aaatggcgg taggcgtga cgggtggagg tctatataag cagagctggt ttagtgaacc 1800
 gtcagatcag gtaccgccac catggaatcc gatgagtctg gcctgcccgc catggaatc 1860
 gagtgcagaa tcaccggcac cctgaacggc gtggaatttg agctcgtggg cggaggcgag 1920
 ggcacacctg aacaggcgag aatgaccaac aagatgaagt ccaccaaggg ggccctgacc 1980
 ttcagcccct acctgtgtc tcacgtgatg ggctacggct tctaccatt cggcacctac 2040
 ccagcggct acgagaacct ttctgcac gccatcaaca acggcggcta caccaacacc 2100
 cggatcgaga agtacagga cggcggcgtg ctgcacgtgt ccttcagcta cagatacgag 2160
 gccggcagag tgatggcga ctcaaagt atgggcaccg gattccccga ggacagcgtg 2220
 atcttcaccg acaagatcat ccggtccaac gccaccgtgg aacatctgca cccatgggc 2280
 gacaacgacc tggacggcag cttcaccaga accttctccc tgcgggatgg cggctactac 2340
 agcagcgtgg tggacagcca catgcattc aagagcgcca tccacccag catcctccag 2400
 aacggcgac ccatgttcgc cttcagacgg gtggaagagg accacagcaa caccgagctg 2460

ggcatcgtgg aataccagca cgccttcaag acccccgatg ccgatgccgg cgaggaaggc 2520
agtggagagg gcagaggaag tctgctaaca tgtggtgacg tcgaggagaa tcctggccca 2580
atggagtgcg gcggtcgccg ttgtcccgaa atgatatccg tactgggtcc catttcgggg 2640
cacgtgctga aagccgtgtt tagtcgcggc gatacgccgg tgctgccga cgagacgcga 2700
ctcctgcaga cgggtatcca cgtacgcgtg agccagccct cgctgatctt ggtatcgag 2760
tacagccccg actcgacgcc atgccaccgc ggcgacaatc agctgcaggt gcagcacacg 2820
tactttacgg gcagcgaggt ggagaacgtg tcggtcaacg tgcacaacc cacgggccga 2880
agcatctgcc ccagccagga gcccatgtcg atctatgtgt acgcgctgcc gctcaagatg 2940
ctgaacatcc ccagcatcaa cgtgcaccac taccgctcg cgccgagcg caaacaccga 3000
cacctgcccc tagctgacgc tgtgattcac gcgtcgggca agcagatgtg gcaggcgcgt 3060
ctcacggtct cgggactggc ctggacgcgt cagcagaacc agtggaaaga gcccgcgtc 3120
tactacacgt cagcgttcgt gtttcccacc aaggacgtgg cactgcggca cgtggtgtgc 3180
gcgcacgagc tggtttgctc catggagaac acgcgcgcaa ccaagatgca ggtgataggt 3240
gaccgtacg tcaaggtgta cctggagtcc ttctgcgagg acgtgccctc cggcaagctc 3300
tttatgcacg tcacgtggg ctctgacgtg gaagaggacc tgacgatgac ccgcaaccg 3360
caacccttca tgcgccccca cgagcgcaac ggctttacgg tgttgtgtcc caaaaatatg 3420
ataatcaaac cgggcaagat ctgcacatc atgctggatg tggcttttac ctacacgag 3480
cattttgggc tgctgtgtcc caagagcatc ccgggcctga gcatctcagg taacctgtg 3540
atgaacgggc agcagatctt cctggaggtg caagccatac gcgagaccgt ggaactgcgt 3600
cagtacgatc ccgtggctgc gctcttctt ttcgatatcg acttgctgct gcagcgcg 3660
cctcagtaca gcgagcacc caccttacc agccagtatc gcatccagg caagcttgag 3720
taccgacaca cctgggaccg gcacgacgag ggtgccgcc agggcgacga cgacgtctgg 3780
accagcggat cggactccga cgaagaactc gtaaccacc agcgcaagac gcccgcgtc 3840
accggcgcg gcgcatggc gggcgctcc acttccgcg gccgcaaacg caaatcagca 3900

tcctcggcga cggcgtgcac gtcgggcgtt atgacacgcg gccgccttaa ggccgagtc 3960
accgtcgcgc ccgaagagga caccgacgag gattccgaca acgaaatcca caatccggcc 4020
gtgttcacct ggccgccctg gcaggccggc atcctggccc gcaacctggt gcccatggtg 4080
gctacggttc agggtcagaa tctgaagtac caggagtctt tctgggacgc caacgacatc 4140
taccgatctt tcgccgaatt ggaaggcgta tggcagcccg ctgcgcaacc caaacgtcgc 4200
cgccaccggc aagacgcctt gcccgggcca tgcacgcctt cgacgccc aaagcaccga 4260
ggttgatcta gacctgatca taatcaagcc atcacatc ttagaggtt tacttgctt 4320
aaaaaacctc cacacctccc cctgaacctg aaacataaaa tgaatgcaat tgttgtgtt 4380
aactgttta ttgcagctta taatggttac aaataaagca atagcatcac aaattcaca 4440
aataaagcat tttttcact gcattctagt tgtggtttgt ccaaactcat caatgtatct 4500
tatcatgtct ggatctcgg atcaggattg gtgacagaaa agcccatcc ttaggcctcc 4560
tccttctag tctctgata ttgggtctaa ccccacctc ctgtaggca gattcctat 4620
ctggtgacac accccattt cctggagcca tctctctct tgccagaacc tctaaggtt 4680
gcttacgatg gagccagaga ggatcctggg agggagagct tggcaggggg tgggagggaa 4740
gggggggatg cgtgacctgc ccggttctca gtggccaccc tgcgctaccc tctccagaa 4800
cctgagctgc tctgacgcgg ctgtctggtg cgtttactg atcctggtgc tgcagcttc 4860
ttacacttc caagaggaga agcagtttg aaaaacaaaa tcagaataag ttgtcctga 4920
gttctaactt tggctctca ctttctagt cccaattta tattgttct ccgtgcgtca 4980
gttttacctg tgagataagg ccagtagcca gcccgtcct ggcagggtg tggtaggag 5040
gggggtgtcc gtgtggaaaa ctcccttgt gagaatggtg cgtcctcgag ctgggcctca 5100
tgggccttc gctcactgcc cgcttccag tcgggaaacc tgcgtgcc gctgcattaa 5160
catggtcata gctgttctt tgcgtattgg gcgctctccg cttcctcgct cactgactcg 5220
ctgcgctcgg tcgttcgggt aaagcctggg gtgcctaag agcaaaaggc cagcaaaagg 5280
ccaggaaccg taaaaggcc gcgttgctgg cgttttcca taggctccgc cccctgacg 5340

agcatcacia aaatcgacgc tcaagtcaga ggtggcgaaa cccgacagga ctataaagat 5400
accaggcggt tccccctgga agctccctcg tgcgctctcc tgttccgacc ctgccgctta 5460
ccggatacct gtccgccttt ctcccttcgg gaagcgtggc gctttctcat agctcacgct 5520
gtaggtatct cagttcgggt taggtcggtc gctccaagct gggctgtgtg cacgaacccc 5580
ccgttcagcc cgaccgctgc gccttatccg gtaactatcg tcttgagtcc aaccggttaa 5640
gacacgactt atcgccactg gcagcagcca ctggaacag gattagcaga gcgaggtatg 5700
taggcggtgc tacagagttc ttgaagtggg ggcctaacta cggctacact agaagaacag 5760
tatttggtat ctgcgctctg ctgaagccag ttaccttcgg aaaaagagtt ggtagctctt 5820
gatccggcaa acaaaccacc gctggtagcg gtgggttttt tgtttgcaag cagcagatta 5880
cgcgagaaa aaaaggatct caagaagatc cttgatctt ttctacgggg tctgacgctc 5940
agtggaacga aaactcacgt taagggattt tggatcatgag attatcaaaa aggatcttca 6000
cctagatcct tttaaattaa aaatgaagtt ttaaataat ctaaagtata tatgagtaaa 6060
cttggctga cagttaccaa tgcttaata gtaggcacc tatctcagcg atctgtctat 6120
ttcgttcac catagttgcc tgactccccg tcgtgtagat aactacgata cgggagggct 6180
taccatctgg cccagtgct gcaatgatac cgcgagaacc acgctaccg gctccagatt 6240
tatcagcaat aaaccagcca gccggaaggg ccgagcgag aagtggctct gcaactttat 6300
ccgcctccat ccagtctatt aattgttgc gggaagctag agtaagtagt tcgccagtta 6360
atagtttgcg caacgttgtt gccattgcta caggcatcgt ggtgtcacgc tcgtcgtttg 6420
gtatggcttc attcagctcc ggttccaac gatcaaggcg agttacatga tccccatgt 6480
tgtcaaaaa agcggtagc tccttcggtc ctccgatcgt tgcagaagt aagttggccg 6540
cagtgtatc actcatggtt atggcagcac tgcataattc tcttactgtc atgccatccg 6600
taagatgctt ttctgtgact ggtgagtact caaccaagtc attctgagaa tagtgtatgc 6660
ggcgaccgag ttgctcttgc ccggcgtaa tacgggataa taccgcgcca catagcagaa 6720
cttataaagt gctcatcatt ggaaaacgtt cttcggggcg aaaacttca aggatcttac 6780

cgctgttgag atccagttcg atgtaaccca ctctgcacc caactgatct tcagcatctt 6840
ttactttcac cagcgtttct gggtagcaaa aaacaggaag gcaaaatgcc gcaaaaaagg 6900
gaataagggc gacacggaaa tgtgaatac tcatactctt ccttttcaa tattattgaa 6960
gcatttatca gggttattgt ctcatgagcg gatacatatt tgaatgtatt tagaaaaata 7020
aacaatatagg ggttccgcgc acatttcccc gaaaagtgcc ac 7062

<210> 13

<211> 7062

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1-I_GFP_HCMVpp65 ANET vector V1.G.9

<400> 13

ctaaattgta agcgtaata tttgttaaa attcggtta aattttgtt aaatcagctc 60
atttttaac caataggccg aaatcgcaa aatcccttat aaatcaaaag aatagaccga 120
gatagggttg agtggccgct acaggcgct cccattcgcc attcaggctg cgcaactgtt 180
gggaagggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
gctgcaaggc gattaagttg ggtaacgcca gggttttccc agtcacgacg ttgtaaaacg 300
acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
aggccgcatg aattgagctc tactggcttc tgcgccgct ctggcccact gttcccctt 420
cccaggcagg tctgctttc tctgacctgc attctctccc ctgggcctgt gccgctttct 480
gtctgcagct tgtggcctgg gtcacctcta cggctggccc agatccttcc ctgccgcctc 540
cttcaggttc cgtcttcctc cactccctct tccccttgct ctctgctgtg ttgctgccca 600
aggatgctct ttccggagca cttccttctc ggcgctgcac cacgtgatgt cctctgagcg 660
gatcctcccc gtgtctgggt cctctccggg catctctcct ccctcaccca accccatgcc 720
gtcttcactc gctgggttcc ctttcttc tcttctggg gcctgtgcca tctctggtt 780
cttaggatgg cttctccga cggatgtctc ctttgcgtcc cgcctcccct tctttaggc 840

ctgcatcatc accgtttttc tggacaaccc caaagtaccc cgtctccctg gctttagcca 900
cctctccatc ctcttgcttt ctttgctgg acaccccggt ctctgtgga ttcgggtcac 960
ctctcactcc ttctattgg gcagctcccc taccctctt acctctctag tctgtgctag 1020
ctcttcagc cccctgtcat ggcatcttc aggggtccga gagctcagct agtcttctc 1080
ctccaacccg ggcccctatg tccacttcag gacagcatgt ttgctgcctc cagggatcct 1140
gtgtccccga gctgggacca ccttatattc ccagggccgg ttaatgtggc tctggttctg 1200
gggtacttta tctgtcccct ccaccggtat agtaatcaat tacggggtca ttagttcata 1260
gcccataat ggagttccgc gttacataac ttacggtaaa tggcccgct ggctgaccgc 1320
ccaacgaccc cgcgccattg acgtcaataa tgacgtatgt tcccatagta acgccaatag 1380
ggactttcca ttgacgtcaa tgggtggagt attacgga aactgccac ttggcagta 1440
atcaagtga tcatatgcca agtacgcccc ctattgacgt caatgacgt aaatggcccc 1500
cctggcatta tgcccagta atgacctat gggactttc tacttggcag tacatctacg 1560
tattagtc atgctattacc atggtgatgc ggttttggca gtacatcaat gggcgtggat 1620
agcggtttga ctacgggga ttccaagtc tccacccat tgacgtcaat gggagtttgt 1680
tttggcacca aaatcaacgg gactttcaa aatgtcgtaa caactccgcc ccattgacgc 1740
aaatgggcgg taggcgtga cgggtggagg tctatataag cagagctggt ttagtgaacc 1800
gtcagatcag gtaccgccac catggaatcc gatgagtctg gcctgcccgc catggaaatc 1860
gagtgcagaa tcaccggcac cctgaacggc gtggaattg agctcgtggg cggaggcgag 1920
ggcacacctg aacaggcgag aatgaccaac aagatgaagt ccaccaaggg ggcctgacc 1980
ttcagcccct acctgctgtc tcacgtatg ggctacggct tctaccatt cggcacctac 2040
cccagcggct acgagaaccc ttctgtcac gccatcaaca acggcggtc caccaacacc 2100
cggatcgaga agtacgagga cggcgcgctg ctgcacgtgt cttcagcta cagatacag 2160
gccggcagag tgatcgcgca ctcaaagt atgggcaccg gattccccga ggacagcgtg 2220
atcttcaccg acaagatcat ccggtccaac gccaccgtg aacatctgca cccatgggc 2280

gacaacgacc tggacggcag cttaccaga accttctccc tgcgggatgg cggctactac 2340
agcagcgtgg tggacagcca catgcacttc aagagcgcca tccaccccag catcctccag 2400
aacggcggac ccatgttcgc cttcagacgg gtggaagagg accacagcaa caccgagctg 2460
ggcatcgtgg aataccagca gccttcaag acccccgatg ccgatgccgg cgaggaaggc 2520
agtggagagg gcagaggaag tctgctaaca tgtgtgacg tcgaggagaa tcctggccca 2580
atggagtgcg gcggtcgcg ttgtccgaa atgatatccg tactgggtcc catttcgggg 2640
cacgtgctga aagccgtgtt tagtcgcggc gatacgccgg tgctgccga cgagacgcga 2700
ctcctgcaga cgggtatcca cgtacgcgtg agccagccct cgctgatctt ggtatcgag 2760
tacacgcccg actcgacgcc atgccaccgc ggcgacaatc agctgcaggt gcagcacacg 2820
tactttacgg gcagcgaggt ggagaacgtg tcggtcaacg tgcacaacc caggggccga 2880
agcatctgcc ccagccagga gccatgtcg atctatgtgt acgcgctgcc gctcaagatg 2940
ctgaacatcc ccagcgctaa cgaaaccac taccgctcgg cggccgagcg caaacaccga 3000
cacctgcccg tagctgacgc tgtgattcac gcgtcgggca agcagatgtg gcaggcgcgt 3060
ctcacggtct cgggactggc ctggacgcgt cagcagaacc agtggaaaga gcccgacgtc 3120
tactacacgt cagcgttcgt gtttcccacc aaggacgtgg cactgcggca cgtggtgtgc 3180
gcgcacgagc tggtttgctc catggagaac acgcgcgcaa ccaagatgca ggtgataggt 3240
gaccagtacg tcaagtgta cctggagtcc ttctgcagg acgtgccctc cggcaagctc 3300
tttatgcacg tcacgtggg cttgacgtg gaagaggacc tgacgatgac ccgcaaccg 3360
caaccctca tgcgccccca cgagcgcaac ggctttacgg tgttgttcc caaaaatatg 3420
ataatcaaac cgggcaagat ctcgcacatc atgctggatg tggcttttac ctacacagag 3480
cattttgggc tgctgtgtcc caagagcatc ccgggcctga gcatctcagg taacctgttg 3540
atgaacgggc agcagatctt cctggaggtg caagccatac gcgagaccgt ggaactgcgt 3600
cagtacgatc ccgtggctgc gctctcttt ttgatatcg acttgctgct gcagcgcggg 3660
cctcagtaca gcgagcacc cacttcacc agccagtatc gcatccaggg caagcttgag 3720

taccgacaca cctgggaccg gcacgacgag ggtgccgccc agggcgacga cgacgtctgg 3780
accagcggat cggactccga cgaagaactc gtaaccaccg agcgcaagac gccccgcgtc 3840
accggcgggcg gcgcatggc gggcgctcc acttcgcgg gccgcaaacg caaatcagca 3900
tcctcggcga cggcgtgcac gtcgggcgtt atgacacgcg gccgccttaa ggccgagtcc 3960
accgtcgcgc ccgaagagga caccgacgag gattccgaca acgaaatcca caatccggcc 4020
gtgttcacct ggccgccctg gcaggccggc atcctggccc gcaacctggt gcccatggtg 4080
gctacggttc agggtcagaa tctgaagtac caggagtctt tctgggacgc caacgacatc 4140
taccgatctt tcgccgaatt ggaaggcgta tggcagcccg ctgcgcaacc caaacgtcgc 4200
cgccaccggc aagacgcctt gcccgggcca tgcctgcct cgacgccc aaagcaccga 4260
ggttgatcta gacctgatca taatcaagcc atatcacatc ttagaggtt tacttgcttt 4320
aaaaaacctc cacacctccc cctgaacctg aaacataaaa tgaatgcaat tgtgtgtgtt 4380
aactgttta ttgcagctta taatggttac aaataaagca atagcatcac aaatttcaca 4440
aataaagcat tttttcact gcattctagt tgtggtttgt ccaaactcat caatgtatct 4500
tatcatgtct ggatctcggc atcaggattg gtgacagaaa agcccatcc ttaggcctcc 4560
tccttctag tctctgata ttgggtctaa cccccacctc ctgttaggca gattccttat 4620
ctggtgacac accccattt cctggagcca tctctctct tgccagaacc tctaaggttt 4680
gcttacgatg gagccagaga ggatcctggg agggagagct tggcaggggg tgggagggaa 4740
gggggggatg cgtgacctgc ccggttctca gtggccaccc tgcgtaccc tctccagaa 4800
cctgagctgc tctgacgcg ctgtctggtg cgtttactg atcctggtgc tgcagcttcc 4860
ttacacttcc caagaggaga agcagtttgg aaaaacaaaa tcagaataag ttggtcctga 4920
gttctaactt tggctcttca ctttctagt cccaattta tattgttct ccgtgcgtca 4980
gttttacctg tgagataagg ccagtagcca gcccgtcct ggcagggtg tggtagggag 5040
gggggtgtcc gtgtggaaaa ctcccttgt gagaatggtg cgtcctcgag ctgggcctca 5100
tgggccttcc gctcactgcc cgctttccag tcgggaaacc tgcgtgcc gctgcattaa 5160

catggtcata gctgtttcct tgcgtattgg gcgctctccg cttcctcgct cactgactcg 5220
ctgcgctcgg tcgttcgggt aaagcctggg gtgcctaag agcaaaaggc cagcaaaagg 5280
ccaggaaccg taaaaaggcc gcgttgctgg cgttttcca taggctccgc cccctgacg 5340
agcatcacia aaatcgacgc tcaagtcaga ggtggcgaaa cccgacagga ctataaagat 5400
accaggcgtt tccccctgga agctccctcg tgcgctctcc tgttcgacc ctgccgtta 5460
ccggatacct gtccgccttt ctcccttcgg gaagcgtggc gctttctcat agctcacgt 5520
gtaggatatct cagttcgggt taggtcgctt gctccaagct gggctgtgtg cacgaacccc 5580
ccgttcagcc cgaccgtgc gccttatccg gtaactatcg tcttgagtc aaccggtaa 5640
gacacgactt atcgccactg gcagcagcca ctggtaacag gattagcaga gcgaggtatg 5700
taggcggtgc tacagagttc ttgaagtggg ggcctaacta cggctacact agaagaacag 5760
tatttggtat ctgcgctctg ctgaagccag ttaccttcgg aaaaagagtt ggtagctctt 5820
gatccggcaa acaaaccacc gctggtagcg gtggttttt tgttgcaag cagcagatta 5880
cgcgagaaaa aaaaggatct caagaagatc ctttgatctt ttctacgggg tctgacgctc 5940
agtgaacga aaactcacgt taagggattt tggatcatgag attatcaaaa aggatcttca 6000
cctagatcct tttaaattaa aaatgaagtt ttaaataat ctaaagtata tatgagtaaa 6060
cttggctga cagttacaa tgcttaatca gtgaggcacc tatctcagcg atctgtctat 6120
ttcgttcac catagttgcc tgactccccg tcgtgtagat aactacgata cgggagggct 6180
taccatctgg cccagtgct gcaatgatac cgcgagaacc acgctaccg gctccagatt 6240
tatcagcaat aaaccagcca gccggaaggg ccgagcgag aagtggctct gcaactttat 6300
ccgcctccat ccagtctatt aattgttgcc gggaagctag agtaagtagt tcgccagtta 6360
atagtttgcg caacgttgtt gccattgcta caggcatcgt ggtgtcacgc tcgtcgtttg 6420
gtatggcttc attcagctcc ggttccaac gatcaaggcg agttacatga tccccatgt 6480
tgtgcaaaaa agcggttagc tccttcggtc ctccgatcgt tgcagaagt aagtggccg 6540
cagtggtatc actcatggtt atggcagcac tgcataattc tcttactgtc atgccatccg 6600

taagatgctt ttctgtgact ggtgagtact caaccaagtc attctgagaa tagtgtatgc 6660
 ggcgaccgag ttgctcttgc ccggcgtaaa tacgggataa taccgcgcca catagcagaa 6720
 ctttaaaagt gctcatcatt ggaaaacgtt cttcggggcg aaaactctca aggatcttac 6780
 cgctgttgag atccagttcg atgtaacca ctcgtgcacc caactgatct tcagcatctt 6840
 ttactttcac cagcgtttct gggtagagcaa aaacaggaag gcaaaatgcc gcaaaaaagg 6900
 gaataagggc gacacggaaa tggtaatac tcatactctt ccttttcaa tattattgaa 6960
 gcatttatca ggggtattgt ctcagagcg gatacatatt tgaatgtatt tagaaaaata 7020
 aacaaatagg ggttccgcgc acatttcccc gaaaagtgcc ac 7062

<210> 14

<211> 7062

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1-l_GFP_HCMVpp65 AIN vector V1.H.1

<400> 14

ctaaattga agcgtaata tttgttaaa attcgcgtta aattttgtt aaatcagctc 60
 atttttaac caataggcgc aaatcgga aatcccttat aaatcaaaag aatagaccga 120
 gatagggttg agtggccgct acagggcgct ccattcgcc attcaggctg cgcaactgtt 180
 gggaaggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
 gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg 300
 acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
 aggccgatg aattgagctc tactggcttc tgcgccgcct ctggcccact gttcccctt 420
 cccaggcagg tctgtcttc tctgacctgc attctctccc ctgggcctgt gccgcttct 480
 gtctgcagct tgtggcctgg gtcacctta cggctggccc agatccttcc ctgccgcctc 540
 cttcaggttc cgtcttctc cactccctct tccccttgct ctctgctgtg ttgctgcca 600
 aggatgctct ttccggagca cttccttctc ggcgctgcac cacgtgatgt cctctgagcg 660

gatcctcccc gtgtctgggt cctctccggg catctctct cctcaccca accccatgcc 720
gtcttcactc gctgggttcc ctttcttc tccttctggg gcctgtgcca tctctcgttt 780
cttaggatgg ccttctccga cggatgtctc cttgctgcc cgctcccct tctttaggc 840
ctgcatcatc accgttttcc tggacaacct caaagtacct cgtctccctg gctttagcca 900
cctctccatc ctcttcttt cttgcttg acacccggt ctctgtgga ttcgggtcac 960
cttcactcc ttcatctgg gcagctccc taccctctt acctcttag tctgtctag 1020
cttccagc cccctgtcat ggcatcttc aggggtccga gagctcagct agtctcttc 1080
ctcaacctg ggcccctatg tccactcag gacagcatgt ttgctgcctc cagggatcct 1140
gtgtccccga gctgggacca ctttatctc ccagggccgg ttaatgtggc tctggtctg 1200
ggtacttta tctgtccct ccaccggtat agtaataat tacgggtca ttagtcata 1260
gcccataat ggagtccgc gttacataac ttacggtaaa tggcccgct ggctgaccgc 1320
ccaacgacct cgcccattg acgtcaataa tgacgtatgt tccatagta acgccaatag 1380
ggactttcca ttgactcaa tgggtggagt attacggta aactgccac ttggcagta 1440
atcaagtga tcatatgcca agtacgccc ctattgact caatgacgt aatggccc 1500
cctggcatta tgcccagta atgacctt gggacttcc tacttggcag tacatctac 1560
tattagcat cgctattacc atggtgatg ggttttgca gtacatcaat gggcgtgat 1620
agcggttga ctacgggga ttccaagtc tccacccat tgactcaat gggagttgt 1680
ttggcacca aatcaacgg gactttcaa aatgtcgt caactccgc ccattgacgc 1740
aatgggagg taggcgtga cgggtggagg tctatataag cagagctgt ttagtaacc 1800
gtcagatcag gtaccgccac catggaatc gatgagtctg gcctgcccgc catggaatc 1860
gagtgcagaa tcaccggcac cctgaacggc gtggaattg agctcgtggg cggaggcgag 1920
ggcacacctg aacaggcgag aatgaccaac aagatgaagt ccaccaagg ggcctgacc 1980
ttcagccct acctgctgc tcactgatg ggctacggct tctaccatt cggcacctac 2040
cccagggct acgagaacct ttctgcac gccatcaaca acggcggtc caccaacacc 2100

cggatcgaga agtacgagga cggcggcgtg ctgcacgtgt ccttcagcta cagatacgag 2160
 gccggcagag tgatggcgca cttcaaagt atgggcaccg gattccccga ggacagcgtg 2220
 atcttcaccg acaagatcat ccggtccaac gccaccgtgg aacatctgca ccccatgggc 2280
 gacaacgacc tggacggcag cttcaccaga accttctccc tgcgggatgg cggctactac 2340
 agcagcgtgg tggacagcca catgcacttc aagagcgcca tccaccccag catcctccag 2400
 aacggcggac ccatgttcgc cttcagacgg gtggaagagg accacagcaa caccgagctg 2460
 ggcatcgtgg aataccagca cgccttaag acccccgatg ccgatgccgg cgaggaaggc 2520
 agtggagagg gcagaggaag tctgctaaca tgtggtgacg tcgaggagaa tcctggccca 2580
 atggagtgcg gcggtcgccg ttgtcccga atgatatccg tactgggtcc catttcgggg 2640
 cacgtgctga aagccgtgtt tagtcgcggc gatacgccgg tgctgccgca cgagacgcga 2700
 ctctgcaga cgggtatcca cgtacgcgtg agccagccct cgctgatctt ggtatcgag 2760
 tacacgcccg actcgacgcc atgccaccgc ggcgacaatc agctgcaggt gcagcacacg 2820
 tactttacgg gcagcgaggt ggagaacgtg tcggtcaacg tgcacaacc caccggccga 2880
 agcatctgcc ccagccagga gccatgtcg atctatgtgt acgcgctgcc gctcaagatg 2940
 ctgaacatcc ccagcatcaa cgtgcaccac taccgctcgg cggccgagcg caaacaccga 3000
 cacctgcccg tagctgacgc tgtgattcac gcgtcgggca agcagatgtg gcaggcgcgt 3060
 ctacggtct cgggactggc ctggacgcgt cagcagaacc agtggaaaga gcccacgtc 3120
 tactacagt cagcgttcgt gtttcccacc aaggacgtgg cactgcggca cgtggtgtgc 3180
 gcgcacgagc tggtttctc catggagaac acgcgcgcaa ccaagatgca ggtgataggt 3240
 gaccagtacg tcaagtgta cctggagtcc ttctgcgagg acgtgccctc cggcaagctc 3300
 tttatgcacg tcacgtggg ctctgacgtg gaagaggacc tgacgatgac ccgcaaccg 3360
 caacccttca tgcgccccca cgagcgcaac ggctttacgg tgttgtgtcc caaaaatatg 3420
 ataatcaaac cgggcaagat ctgcacatc atgctggatg tggcttttac ctacacgag 3480
 cattttgggc tgctgtgtcc caagagcatc ccgggcctga gcatctcagg taacctgttg 3540

atgaacgggc agcagatctt cctggaggta caagccatac gcgagaccgt ggaactgcgt 3600
cagtacgatc ccgtggctgc gctcttctt ttcatatcg acttgctgct gcagcgcggg 3660
cctcagtaca gcgagcacc cacttcacc agccagtatc gcatccaggg caagcttgag 3720
taccgacaca cctgggaccg gcacgacgag ggtgccgccc agggcgacga cgacgtctgg 3780
accagcggat cggactccga cgaagaactc gtaaccaccg agcgcaagac gccccgcgtc 3840
accggcgcg gcgccatggc gggcgctcc acttccgcg gccgcaaacg caaatcagca 3900
tcctcgcgca cggcgtgcac gtcgggcgtt atgacacgcg gccgccttaa ggccgagtcc 3960
accgtcgcgc ccgaagagga caccgacgag gattccgaca acgaaatcca caatccggcc 4020
gtgttcacct ggccgccctg gcaggccggc atcctggccc gcaacctggt ggcaattaat 4080
gctacggttc agggtcagaa tctgaagtac caggagtct tctgggacgc caacgacatc 4140
taccgatct tcgccgaatt ggaaggcgta tggcagccc ctgcgcaacc caaacgtcgc 4200
cgccaccggc aagacgcctt gcccgggcca tgcacgcct cgacgccaa aaagcaccga 4260
ggttgatcta gacctgatca taatcaagcc atatcacatc tntagaggtt tacttgctt 4320
aaaaaacctc cacacctccc cctgaacctg aaacataaaa tgaatgcaat tgttgtgtt 4380
aacttgttta ttgcagcta taatggttac aaataaagca atagcatcac aaattcaca 4440
aataaagcat tttttcact gcattctagt tgtggttgt ccaaactcat caatgtatct 4500
tatcatgtct ggatctcgg atcaggattg gtgacagaaa agcccatcc ttaggcctcc 4560
tccttctag tctctgata ttgggtctaa cccccacctc ctgttaggca gattccttat 4620
ctggtgacac accccattt cctggagcca tctctctct tgccagaacc tctaagttt 4680
gcttacgatg gagccagaga ggatcctggg agggagagct tggcaggggg tgggagggaa 4740
gggggggatg cgtgacctgc ccggttctca gtggccacc tgcgtaccc tctccagaa 4800
cctgagctgc tctgacgcg ctgtctggtg cgtttactg atcctggtgc tgcagcttcc 4860
ttacacttcc caagaggaga agcagtttgg aaaaacaaaa tcagaataag ttgtctctga 4920
gttctaactt tggctcttca ctttctagt cccaattta tattttctt ccgtgcgtca 4980

gttttacctg tgagataagg ccagtagcca gccccgtcct ggcagggtg tggtagaggag 5040
gggggtgtcc gtgtggaaaa ctcccttgtg gagaatgggtg cgtcctcgag ctgggcctca 5100
tgggcctcc gctcactgcc cgctttccag tcgggaaacc tgcgtgccca gctgcattaa 5160
catggtcata gctgtttcct tgcgtattgg gcgctctccg ctctctcgct cactgactcg 5220
ctgcgctcgg tcgttcgggt aaagcctggg gtcctaatag agcaaaaggc cagcaaaagg 5280
ccaggaaccg taaaaaggcc gcgttgctgg cgttttcca taggctccgc cccctgacg 5340
agcatcacia aaatcgacgc tcaagtcaga ggtggcgaaa cccgacagga ctataaagat 5400
accaggcggt tccccctgga agctccctcg tgcgctctcc tgttcgacc ctgccgtta 5460
ccggatacct gtccgccttt ctcccttcgg gaagcgtggc gctttctcat agctcacgt 5520
gtaggtatct cagttcgggt taggtcgttc gtcceaagct gggctgtgtg cacgaacccc 5580
ccgttcagcc cgaccgctgc gccttatccg gtaactatcg tcttgagtc aacccggtaa 5640
gacacgactt atcgccactg gcagcagcca ctggtaacag gattagcaga gcgaggtatg 5700
taggcggtgc tacagagttc ttgaagtggg ggcctaacta cggctacact agaagaacag 5760
tatttggtat ctgcgctctg ctgaagccag ttaccttcgg aaaaagagtt ggtagctctt 5820
gatccggcaa acaaacacc gctggtagcg gtggttttt tgttgcaag cagcagatta 5880
cgcgagaaaa aaaaggatct caagaagatc cttgatctt ttctacgggg tctgacgctc 5940
agtggaacga aaactcacgt taagggattt tggcatgag attatcaaaa aggatcttca 6000
cctagatcct tttaaattaa aaatgaagtt taaatcaat ctaaagtata tatgagtaaa 6060
cttggtctga cagttaccaa tgcttaatca gtgaggcacc tatctcagcg atctgtctat 6120
ttcgttcac catagttgcc tgactccccg tcgtgtagat aactacgata cgggagggt 6180
taccatctgg cccagtgct gcaatgatac cgcgagaacc acgctaccg gctccagatt 6240
tatcagcaat aaaccagcca gccggaaggg ccgagcgag aagtggctct gcaactttat 6300
ccgcctccat ccagcttatt aattgttgcc gggaagctag agtaagtagt tcgccagtta 6360
atagtttgcg caacgttgtt gccattgcta caggcatcgt ggtgtcacgc tcgtcgtttg 6420

gtatggcttc attcagctcc ggttcccaac gatcaaggcg agttacatga tccccatgt 6480
 tgtgcaaaaa agcggttagc tccttcggtc ctccgatcgt tgcagaagt aagttggccg 6540
 cagtgtatc actcatggtt atggcagcac tgcataattc tcttactgtc atgccatccg 6600
 taagatgctt ttctgtgact ggtgagtact caaccaagtc attctgagaa tagtgtatgc 6660
 ggcgaccgag ttgctcttgc ccggcgtaa tacgggataa taccgcgcca catagcagaa 6720
 ctttaaaagt gtcacatatt ggaaaacgtt cttcgggcg aaaacttca aggatcttac 6780
 cgctgttgag atccagttcg atgtaacca ctctgcacc caactgatct tcagcatctt 6840
 ttactttcac cagcgtttct gggtagcaa aaacaggaag gcaaaatgcc gcaaaaaagg 6900
 gaataagggc gacacggaaa tgttgaatac tcatactctt ccttttcaa tattattgaa 6960
 gcatttatca gggttattgt ctcatgagcg gatacatatt tgaatgtatt tagaaaaata 7020
 aacaaatagg ggttccgcgc acatttcccc gaaaagtgcc ac 7062

<210> 15
 <211> 6348
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> AAVS1_DRA_Flag-DRB1_6xHis vector V1.l.5

<400> 15
 ctaaattga agcgtaata tttgttaaa attcgcgtta aattttgtt aaatcagctc 60
 atttttaac caataggccg aaatcgga aatcccttat aaatcaaaag aatagaccga 120
 gatagggttg agtggccgct acagggcgct ccattcgcc attcaggctg cgcaactgtt 180
 gggaaggcg tttcgtgctg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
 gctgcaaggc gattaagttg ggtaaccca gggtttccc agtcacgacg ttgtaaaacg 300
 acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
 aggccgatg aattgagctc tactggcttc tgcgccgct ctggcccact gttcccctt 420
 cccaggcagg tctgcttct tctgacctgc attctctccc ctgggcctgt gccgcttct 480

gtctgcagct tgtggcctgg gtcacctcta cggctggccc agatccttcc ctgccgcctc 540
cttcagggtc cgtcttcctc cactccctct tccccttgct ctctgctgtg ttgctgccca 600
aggatgctct ttccggagca cttccttctc ggcgctgcac cacgtgatgt cctctgagcg 660
gatcctcccc gtgtctgggt cctctccggg catctctcct cctcaccca accccatgcc 720
gtcttcactc gctgggttcc ctttcttc tccttctggg gcctgtgcca tctctgttt 780
cttaggatgg ctttctccga cggatgtctc ctttgcgtcc cgcctcccct tctttaggc 840
ctgcatcatc accgttttctc tggacaacct caaagtacct cgtctcctg gctttagcca 900
cctctccatc ctcttcttct ctttgcctgg acaccccggt ctctgtgga ttccgggtcac 960
ctctcactcc ttctatttgg gcagctcccc tacccttctt acctctctag tctgtgtag 1020
ctcttcagc cccctgtcat ggcatttcc aggggtccga gagctcagct agtcttctc 1080
ctccaacctg gggccctatg tccacttcag gacagcatgt ttgtgcctc cagggtacct 1140
gtgtccccga gctgggacca ctttatattc ccagggccgg ttaatgtggc tctggttctg 1200
gggtacttta tctgtccctt ccaccggtat agtaatcaat tacgggttca ttagttcata 1260
gcccataat ggagttccgc gttacataac ttacggtaaa tggcccgct ggctgaccgc 1320
ccaacgacct ccgcccattg acgtcaataa tgacgtatgt tcccatagta acgccaatag 1380
ggactttcca ttgacgtcaa tgggtggagt attacggtt aactgcccac ttggcagtac 1440
atcaagtgtt tcatatgcca agtagcccc ctattgacgt caatgacgtt aaatggcccg 1500
cctggcatta tgcccagtac atgaccttatt gggactttcc tacttggcag tacatctacg 1560
tattagtcat cgctattacc atggtgatgc ggttttggca gtacatcaat gggcgtggat 1620
agcggtttga ctacggggga ttccaagtc tccaccccat tgacgtcaat gggagtttgt 1680
tttggcacca aaatcaacgg gactttcaa aatgtcgtta caactccgcc ccattgacgc 1740
aaatgggccc taggcgtgta cgggtggagg tctatataag cagagctggt ttagtgaacc 1800
gtcagatcag gtacatggc cataagtga gtccctgtgc taggattttt catcatagct 1860
gtgctgatga gcgctcagga atcatgggct atcaaagaag aacatgtgat catccaggcc 1920

gagttctatc tgaatcctga ccaatcaggc gagtttatgt ttgactttga tggatgatgag 1980
attttccatg tggatatggc aaagaaggag acggtctggc ggcttgaaga atttggacga 2040
tttgccagct ttgaggctca aggtgcattg gccaacatag ctgtggacaa agccaacctg 2100
gaaatcatga caaagcgtc cactatact ccgatcacca atgtacctcc agaggtaact 2160
gtgctcacga acagccctgt ggaactgaga gagcccaacg tcctcatctg tttcatcgac 2220
aagttcacc caccagtgg caatgtcacg tggcttcgaa atggaaaacc tgtcaccaca 2280
ggagtgtcag agacagtctt tctgccagg gaagatcacc tttccgcaa gttccactat 2340
ctccccctcc tgcctcaac tgaggacgtt tacgactgca ggggtggagca ctggggcttg 2400
gatgagcctc ttctcaagca ctgggagttt gatgctcaa gccctctccc agagactaca 2460
gagaacgtgg tgtgtgccct gggcctgact gtgggtctgg tgggcatcat tattgggacc 2520
atcttcatca tcaaggaggt gcgcaaaagc aatgcagcag aacgcagagg acctctgccc 2580
gggatggact ataaggacca cgacggagac tacaaggatc atgatattga ttacaaagac 2640
gatgacgata agggatccgg agccacgaac ttctctctgt taaagcaagc aggagacgtg 2700
gaagagaacc ctggtcttat ggtgtgtctg aagctccctg gaggtcctg catgacagcg 2760
ctgacagtga cactgatgg gctgagctcc cactggctt tggctgggga caccgacca 2820
cgtttctgt ggcagctta gttcgaatgt catttctca atgggacgga gagagtgcgg 2880
ttgctggaaa gatgcatcta taaccaagag gattccgtgc gcttcgacag cgactgggg 2940
gagtaccggg ctgtgacgga gctgggaagg cctgatgcc agtactggaa cagccagaag 3000
gacctcctgg agcagaggag agccgctgtg gacacctact gcagacacaa ctacggggtt 3060
ggtgagagct tcacagtga gcggcgagtt gagcctaagg tgactgtgta tcctcaaag 3120
accagcccc tgcagacca caacctctg gtctgctctg tgagtgggtt ctatccaggc 3180
agcattgaag tcaggtggtt ccggaacggc caggaagaga aggtgggggt ggtgtccaca 3240
ggcctgatcc agaatggaga ttggacctc cagaccctgg tgatgctgga aacagttcct 3300
cggagtggag aggtttacac ctgccaagt gagcaccaa gtgtgacgag cccttcaca 3360

gtggaatgga gagcacggtc tgaatctgca cagagcaaga tgctgagtgg agtcgggggc 3420
ttcgtgctgg gcctgctctt ccttggggcc gggctgttca tctacttcag gaatcagaaa 3480
ggacactctg gacttcagcc aacaggattc ctgagccccg ggcatcatca ccatcaccac 3540
tgactatagt cgtctagacc tgatcataat caagccatat cacatctgta gaggtttact 3600
tgctttaaaa aacctccaca cctccccctg aacctgaaac ataaaatgaa tgcaattgtt 3660
gttgtaact tgtttattgc agcttataat ggttaciaat aaagcaatag catcaciaat 3720
ttcaciaata aagcattttt ttactgcat tctagttgtg gtttgtcaa actcatcaat 3780
gtatcttctc atgtctggat ctgcggatca ggattggtga cagaaaagcc ccactcttag 3840
gcctctctct tcctagtctc ctgatattgg gtctaacccc cacctctgt taggcagatt 3900
ccttatctgg tgacaccccc ccatttctg gagccatctc tctccttgcc agaacctcta 3960
aggtttgctt acgatggagc cagagaggat cctgggaggg agagcttggc agggggtggg 4020
agggaagggg gggatgcgtg acctgcccgg ttctcagtgg ccacctgcg ctacctctc 4080
ccagaacctg agctgctctg acgcggtgt ctggtgcgtt tctactgatcc tggctgtgca 4140
gcttccttac acttcccaag aggagaagca gtttgaaaa acaaatcag aataagttgg 4200
tctgagttc taactttggc tctcacctt tctagtcccc aatttatatt gttctccgt 4260
gcgtcagttt tacctgtgag ataaggccag tagccagccc cgtcctggca gggctgtggt 4320
gaggaggggg gtgtccgtgt ggaactcc cttgtgaga atggtgcgtc ctgagctgg 4380
gcctcatggg cttccgctc actgcccgtt ttccagtcgg gaaacctgtc gtgccagctg 4440
cattaacatg gtcatactg ttctctgcg tattgggcgc tctccgttc ctgctcact 4500
gactcgtgc gtcggtcgt tcgggtaaag cctggggtgc ctaatgagca aaaggccagc 4560
aaaaggccag gaaccgtaaa aaggccgctg tgctggcgtt ttccatagg ctccgcccc 4620
ctgacgagca tcacaaaaat cgacgtcaa gtcagagggt gcgaaacccg acaggactat 4680
aaagatacca ggcgtttccc cctggaagct cctcgtgcg ctctcctgtt ccgacctgc 4740
cgcttaccgg atacctgtcc gcctttctc cttcggaag cgtggcgctt tctcatagct 4800

cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc caagctgggc tgtgtgcacg 4860
aacccccctg tcagcccgcg cgtcgcgcct tatccggtaa ctatcgtctt gagtccaacc 4920
cggtaaagaca cgacttatcg ccaactggcag cagccactgg taacaggatt agcagagcga 4980
ggatatgtagg cgggtctaca gagttcttga agtgggtggc taactacggc tacactagaa 5040
gaacagtatt tggatatcgc gctctgctga agccagttac cttcggaata agagttggta 5100
gctcttgatc cggcaaacaa accaccgtg gtagcgggtg ttttttgg ttgcaagcagc 5160
agattacgcg cagaaaaaaaa ggatctcaag aagatcctt gatctttct acggggtctg 5220
acgctcagt gaacgaaaac tcacgttaag ggattttgt catgagatta tcaaaaagga 5280
tcttcaccta gatccttta aattaaaaat gaagtttaa atcaatctaa agtatatatg 5340
agtaaacttg gtctgacagt taccaatgct taatcagtga ggcacctatc tcagcgatct 5400
gtctatttcg ttcattcata gttgcctgac tccccgtcgt gtagataact acgatacggg 5460
agggcttacc atctggcccc agtgcctgca tgataccgcg agaaccacgc tcaccggctc 5520
cagatttatc agcaataaac cagccagccg gaagggccga gcgcagaagt ggtcctgcaa 5580
ctttatccgc ctccatccag tctattaatt gttgccggga agctagagta agtagttcgc 5640
cagttaatag ttgcgcaac gttgttgcca ttgctacagg catcgtggtg tcacgctcgt 5700
cgtttggtat ggcttcattc agtccgggtt cccaacgac aaggcgagtt acatgatccc 5760
ccatgttggt caaaaaagcg gtagctcct tcggtcctcc gatcgttgc agaagtaagt 5820
tggccgcagt gttatcactc atggttatgg cagcactgca taattctctt actgtcatgc 5880
catccgtaag atgctttct gtgactggtg agtactcaac caagtcattc tgagaatagt 5940
gtatgcccgc accgagttgc tcttgcccgg cgtcaatacg ggataatacc gcgccacata 6000
gcagaacttt aaaagtgtc atcattggaa aacgttctc ggggcgaaaa ctctcaagga 6060
tcttaccgt gttgagatcc agttcgtat aaccactcg tgcaccaac tgatcttcag 6120
catctttac tttcaccagc gttctgggt gagcaaaaac aggaaggcaa aatgccgcaa 6180
aaaagggaat aaggcgaca cggaatgtt gaatactcat actcttctt ttcaatatt 6240

attgaagcat ttatcagggt tattgtctca tgagcggata catatttgaa tgtatttaga 6300

aaaataaaca aataggggtt ccgcgcacat tccccgaaa agtgccac 6348

<210> 16

<211> 6342

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1_DPA1_Flag-DPB1_6xHis vector V1.I.7

<400> 16

ctaaattgta agcgtaata tttgttaaa attcgcgtta aatttttgtt aaatcagctc 60

atttttaac caataggccg aaatcggcaa aatcccttat aaatcaaaag aatagaccga 120

gatagggttg agtggccgct acagggcgct cccattcgcc attcaggctg cgcaactgtt 180

gggaagggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240

gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaacg 300

acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360

aggccgatg aattgagctc tactggcttc tgcgccgcct ctggcccact gttcccctt 420

cccaggcagg tctgtcttc tctgacctgc attctctccc ctgggcctgt gccgtttct 480

gtctgcagct tgtggcctgg gtcacctcta cggctggccc agatccttc ctgccgcctc 540

cttcaggttc cgtcttctc cactccctct tccccttgct ctctgctgtg ttgctgcca 600

aggatgctct tccggagca ctctctctc ggcgctgcac cacgtgatgt cctctgagcg 660

gatcctccc gtgtctgggt cctctcggg catctctct cctcaccac acccatgcc 720

gtcttcactc gctgggttc ctttcttc tccttctggg gcctgtgcca tctctgttt 780

cttaggatgg cttctccga cggatgtct cttgctgc cgctcccct tctttaggc 840

ctgcatcatc accgttttc tggacaacct caaagtacct cgtctccctg gctttagcca 900

cctctcatc ctcttgctt cttgcctgg acacccggt ctctgtgga ttcgggtcac 960

ctctcactc tttcattgg gcagctccc taccctctt acctctctag tctgtgtag 1020

ctcttcagc cccctgtcat ggcatttcc aggggtccga gagctcagct agtcttctc 1080
ctcaaccgc ggcccctatg tccacttcag gacagcatgt ttgtgcctc cagggatcct 1140
gtgtcccga gctgggacca ccttatattc ccagggccgg ttaatgtggc tctggttctg 1200
ggactttta tctgtcccct ccaccggtat agtaatcaat tacgggtca ttagtcata 1260
gcccataat ggagttccg gttacataac ttacgtaaa tggccgcct ggctgaccgc 1320
ccaacgacc ccgccattg acgtcaataa tgacgtatgt tcccatagta acgccaatag 1380
ggactttca ttgacgtcaa tgggtggagt attacgga aactgccac ttggcagta 1440
atcaagtga tcatatgcca agtagcccc ctattgacgt caatgacgt aaatggccg 1500
cctggcatta tgccagta atgacctat gggacttcc tacttggcag tacatctacg 1560
tattagtc atgtattacc atggtgatgc ggttttggca gtacatcaat gggcgtggat 1620
agcggttga ctacgggga ttccaagtc tccacccat tgacgtcaat ggagtttgt 1680
ttggcacca aaatcaacgg gactttcaa aatgtcgtaa caactccgc ccattgacgc 1740
aaatggcgg taggcgtga cgtgggagg tctatataag cagagctgt ttagtaacc 1800
gtcagatcag gtacatgcg cctgaggac agaatttcc atatcagagc tgtgatctg 1860
agagccctc cttggcttt cctgctgagt ctccaggag ctggggccat caaggcggac 1920
catgtgtcaa cttatgccg gttgtacag acgcatagac caacagggga gtttatgtt 1980
gaatttgat aagatgagat gttctatgt gatctggaca agaaggagac cgtctggcat 2040
ctggaggagt ttggccaagc ctttccttt gaggctcagg gcgggctggc taacattgct 2100
atattgaaca acaactgaa tacctgatc cagcgttca accacactca ggccaccaac 2160
gatccccct aggtgaccgt gttccaag gagcctgtgg agctgggcca gcccaacacc 2220
ctcatctgc acattgaaa gttctcca ccagtgtca acgtcacgt gctgtgaac 2280
ggggagctgg tcaatgagg tgctgctgag agccttcc tgccagaac agattacagc 2340
ttccacaagt tccattacct gaccttgt ccctcagcag aggacttca tgactgcagg 2400
gtggagcact ggggcttga ccagccgct ctaagcact ggaggccca agagccaatc 2460

cagatgcctg agacaacgga gactgtgctc tgtgccctgg gcctggtgct gggcctagtc 2520
ggcatcatcg tgggcaccgt cctcatcata aagtctctgc gttctggcca tgaccctaga 2580
gcccaggga cctgcccgg gatggactat aaggaccacg acggagacta caaggatcat 2640
gatattgatt acaaagacga tgacgataag ggatccggag ccacgaactt ctctctgta 2700
aagcaagcag gagacgtgga agagaaccct ggtcctatga tggttctgca ggtttctgcg 2760
gcccccgga cagtggctct gacggcgta ctgatggtgc tgctcacatc tgtggtccag 2820
ggcagggcc ctccagagaa ttacctttc cagggacggc aggaatgcta cgcgtttaat 2880
gggacacagc gcttctgga gagatacatc tacaaccggg aggagttcgc gcgcttcgac 2940
agcgacgtgg gggagttccg ggcggtgacg gagctggggc ggctgtctgc ggagtactgg 3000
aacagccaga aggacatcct ggaggagaag cgggcagtgc cggacaggat gtgcagacac 3060
aactacgagc tgggcccccc catgaccctg cagcgccgag tccagcctag ggtgaatgtt 3120
tcccccca agaaggggcc ctgcagcac cacaacctgc ttgtctgcca cgtgacggat 3180
ttctaccag gcagattca agtccgatgg ttctgaatg gacaggagga aacagctggg 3240
gtcgtgtcca ccaacctgat ccgtaatgga gactggacct tccagatcct ggtgatgctg 3300
gaaatgacc cccagcagg agatgtctac acctgccaag tggagcacac cagcctggat 3360
agtctgtca ccgtggagtg gaaggcacag tctgattctg cccggagtaa gacattgacg 3420
ggagctgggg gcttctgct ggggctcatc atctgtggag tgggcatctt catgcacagg 3480
aggagcaaga aagttcaacg aggatctgca cccgggcatc atcaccatca cactgacta 3540
tagtctcta gacctgatca taatcaagcc ataccatc ttagaggtt tacttgctt 3600
aaaaaacctc cacacctccc cctgaacctg aaacataaaa tgaatgcaat tgtgtgtt 3660
aactgttta ttgcagctta taatggttac aaataaagca atagcatcac aaattcaca 3720
aataaagcat tttttcact gcattctagt tgtggttgt ccaaactcat caatgtatct 3780
tatcatgtct ggatctcgg atcaggattg gtgacagaaa agcccatcc ttagcctcc 3840
tccttctag tctctgata ttgggtctaa cccccacctc ctgttaggca gattccttat 3900

ctggtgacac accccattt cctggagcca tctctctct tgccagaacc tctaagttt 3960
gcttacgatg gagccagaga ggatcctggg agggagagct tggcaggggg tgggagggaa 4020
gggggggatg cgtgacctgc ccggttctca gtggccaccc tgcgtaccc tctccagaa 4080
cctgagctgc tctgacgcgg ctgtctggg cgtttactg atcctggtgc tgcagcttc 4140
ttacacttc caagaggaga agcagtttg aaaaacaaaa tcagaataag ttgtcctga 4200
gttctaactt tggctctca ctttctagt cccaattta tattgttct cgtgcgtca 4260
gtttacctg tgagataagg ccagtagcca gcccgtcct ggcagggtg tggtaggag 4320
gggggtgtcc gtgtgaaaa ctcctttgt gagaatggtg cgtcctcag ctgggcctca 4380
tgggccttc gctcactgcc cgcttcag tcgggaaacc tgcgtgcc gctgcattaa 4440
catggtcata gctgttct tgcgtattg gcgctctcc cttctcgt cactgactg 4500
ctgcgtcgg tcgttcggg aaagcctgg gtgcctaag agcaaaagg cagcaaaagg 4560
ccaggaaccg taaaaggcc gcgttgctg cgttttcca taggtccgc cccctgacg 4620
agcatcaca aaatcgacg tcaagtcaga ggtggcgaaa cccgacagga ctataaagat 4680
accaggcgtt tcccctgga agctccctg tgcgtctcc tgtccgacc ctgccgtta 4740
ccggatacct gtccgcctt ctccttcgg gaagcgtggc gtttctcat agctcacgt 4800
gtaggtatct cagttcggg taggtcgtt gctcaagct gggctgtgt cacgaaccc 4860
ccgttcagcc cgaccgtgc gccttatcc gtaactatg tctgagtcc aaccggtaa 4920
gacacgact atcgccact gcagcagcca ctggtaacag gattagcaga gcgaggtatg 4980
taggcggtg tacagagtt ttgaagtgg ggcctaact cggctacact agaagaacag 5040
tatttggtat ctgcgtctg ctgaagccag ttacctcgg aaaaagagtt gtagctctt 5100
gatccggcaa acaaccacc gctggtagc gtggttttt tgttgcaag cagcagatta 5160
cgcgagaaa aaaaggatct caagaagatc cttgatctt ttctacggg tctgacgctc 5220
agtgaacga aaactcacg taagggatt tggcatgag attatcaaaa aggatcttca 5280
cctagatcct tttaaattaa aaatgaagt taaatcaat ctaaagtata tatgagtaa 5340

cttggtctga cagttaccaa tgcttaatca gtgaggcacc tatctcagcg atctgtctat 5400
 ttctgtcatc catagttgcc tgactccccg tcgtgtagat aactacgata cgggagggct 5460
 taccatctgg cccagtgct gcaatgatac cgcgagaacc acgctcaccg gctccagatt 5520
 tatcagcaat aaaccagcca gccggaaggg ccgagcgag aagtggctct gcaactttat 5580
 ccgcctccat ccagctctatt aattgttgcc gggaagctag agtaagtagt tcgccagtta 5640
 atagtttgcg caacgttgtt gccattgcta caggcatcgt ggtgtcacgc tcgtcgtttg 5700
 gtatggcttc attcagctcc ggttccaac gatcaaggcg agttacatga tccccatgt 5760
 tgtgcaaaaa agcggttagc tccttcggtc ctccgatcgt tgcagaagt aagtggccg 5820
 cagtgttatc actcatggtt atggcagcac tgcataattc tcttactgtc atgcatccg 5880
 taagatgctt ttctgtgact ggtgagtact caaccaagtc attctgagaa tagtgtatgc 5940
 ggcgaccgag ttgctcttgc ccggcgtcaa tacgggataa taccgcgcca catagcagaa 6000
 ctttaaaagt gctcatcatt ggaaaacgtt cttcggggcg aaaactctca aggatcttac 6060
 cgctgttgag atccagttcg atgtaacca ctctgcacc caactgatct tcagcatctt 6120
 ttactttcac cagcgtttct gggtagcaaa aaacaggaag gcaaaatgcc gcaaaaaagg 6180
 gaataagggc gacacggaaa tgtgaatac tcatactctt cctttttcaa tattattgaa 6240
 gcatttatca gggttattgt ctcatgagcg gatacatatt tgaatgtatt tagaaaaata 6300
 aacaaatagg ggttccgcgc acatttcccc gaaaagtgcc ac 6342

<210> 17

<211> 2762

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-A-sg-sp-opti1 vector V2.A.1

<400> 17

ctaaattgta agcgtaata tttgttaaa attcgcgtta aatttttgtt aaatcagctc 60

atttttaac caataggccg aaatcgga aatcccttat aaatcaaaag aatagaccga 120

gataggggtg agtggccgct acagggcgct ccattcgcc attcaggctg cgcaactgtt 180
gggaagggcg ttccggtgcg ggcctcttcg ctattacgcc agctggcgaa aggggggatgt 240
gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaacg 300
acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
aggccgcatg gatcaaggt cgggcaggaa gagggcctat ttccatgat tccttcatat 420
ttgcatatac gatacaaggc tgtagagag ataattagaa ttaatttgac tgtaaacaca 480
aagatattag tacaaaatac gtgacgtaga aagtaataat ttctgggta gttgcagtt 540
ttaaattat gttttaaata ggactatcat atgcttaccg taactgaaa gtatttcgat 600
ttcttggtt tatatatctt tggaagga cgaaacaccg agggttcggg gcgcatgag 660
ttaagagct atgctgaaa cagcatagca agtttaata aggctagtc gttatcaact 720
tgaaaaagt gcaccgagtc ggtgctttt ttcacatc catagatcta gctcgagtt 780
ttttctaga ctgggcctca tgggccttc gtcactgcc cgcttcag tcgggaaacc 840
tgtcgtcca gctgattaa catggtcata gctgttctc tgcgtattgg gcgctctcc 900
cttcctcgt cactgactcg ctgcgctcg tcgttcgggt aaagcctggg gtgcctaag 960
agcaaaaggc cagcaaaagg ccaggaaccg taaaaggcc gcgttgctgg cgttttcca 1020
taggctccgc cccctgacg agcatcaca aaatcgacgc tcaagtcaga ggtggcgaaa 1080
cccacagga ctataaagat accaggcgtt tccccctgga agctccctcg tgcgctctc 1140
tgttccgacc ctgccgtta ccggatacct gtccgcctt ctccctcgg gaagcgtggc 1200
gctttctcat agctcacgct gtaggtatct cagttcggtg taggtcgtt gctccaagct 1260
gggctgtgtg cacgaacccc ccgttcagcc cgaccgctgc gccttatccg gtaactatcg 1320
tcttgagtc aaccggtaa gacacgact atcgccactg gcagcagcca ctgtaacag 1380
gattagcaga gcgaggtat taggcggtgc tacagagttc tgaagtgtt ggcctaacta 1440
cggctacact agaagaacag tatttggtat ctgcgctctg ctgaagccag ttacctcgg 1500
aaaaagagtt gtagctctt gatccggcaa acaaacacc gctggtagcg gtggttttt 1560

tgtttgcaag cagcagatta cgcgagaaa aaaaggatct caagaagatc ctttgatctt 1620
 ttctacgggg tctgacgctc agtgaacga aaactcacgt taagggattt tggcatgag 1680
 attatcaaaa aggatcttca cctagatcct tttaaattaa aaatgaagtt ttaaataat 1740
 ctaaagtata tatgagtaaa cttggtctga cagttaccaa tgcttaatca gtgaggcacc 1800
 tatctcagcg atctgtctat ttcttcatc catagttgcc tgactccccg tcgtgtagat 1860
 aactacgata cgggagggct taccatctgg cccagtgc gcaatgatac cgcgagaacc 1920
 acgctcaccg gctccagatt tatcagcaat aaaccagcca gccggaaggg ccgagcgag 1980
 aagtgtcct gcaactttat ccgcctccat ccagtctatt aattgttgc gggaagctag 2040
 agtaagtagt tcgccagtta atagtttgcg caacgttgtt gccattgcta caggcatcgt 2100
 ggtgtcacgc tcgtcgttg gtatggctc attcagctcc ggttccaac gatcaaggcg 2160
 agttacatga tccccatgt tgtgcaaaaa agcggtagc tccttcggtc ctccgatcgt 2220
 tgcagaagt aagttggccg cagtgtatc actcatggtt atggcagcac tgcataattc 2280
 tcttactgtc atgccatccg taagatgctt ttctgtgact ggtgagtact caaccaagtc 2340
 attctgagaa tagtgtatgc ggcgaccgag ttgctcttc ccggcgtcaa tacgggataa 2400
 taccgcgcca catagcagaa ctttaaaagt gctcatcatt ggaaaacgtt ctcggggcg 2460
 aaaacttca aggatcttac cgctgttgag atccagttcg atgtaacca ctctgcacc 2520
 caactgatct tcagcatctt ttactttcac cagcgttct gggtgagcaa aaacaggaag 2580
 gcaaaatgcc gcaaaaaagg gaataagggc gacacggaaa tgttgaatac tcatactctt 2640
 ccttttcaa tattattgaa gcatttatca gggttattgt ctcatgagcg gatacatatt 2700
 tgaatgtatt tagaaaaata acaaatagg ggtccgcgc acatttccc gaaaagtgcc 2760
 ac 2762

<210> 18

<211> 2762

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-B-sg-sp-3 vector V2.A.7

<400> 18

ctaaattgta agcgtaata tttgttaaa attcgcgta aattttgtt aaatcagctc 60

atttttaac caataggccg aaatcgcaa aatcccttat aaatcaaaag aatagaccga 120

gatagggttg agtggccgct acagggcgct cccattcgcc attcaggctg cgcaactgtt 180

gggaagggcg tttcgggtcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240

gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaacg 300

acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360

aggcccatg gatccaaggt cgggcaggaa gagggcctat ttcccatgat tccttcatat 420

ttgcatatac gatacaaggc tgtagagag ataattagaa ttaatttgac tgtaaacaca 480

aagatattag tacaaaatac gtgacgtaga aagtaataat ttcttgggta gtttcagtt 540

ttaaattat gttttaaata ggactatcat atgcttaccg taactgaaa gtatttcgat 600

ttcttggctt tatatatctt gtggaaagga cgaaacaccg tagaaatacc tcatggagtg 660

tttaagagct atgctggaag cagcatagca agtttaaata aggctagtcc gttatcaact 720

tgaaaaagtg gcaccgagtc ggtgctttt ttacagacatc catagatcta gctcgagttt 780

ttttctaga ctgggcctca tgggccttcc gctcactgcc cgctttccag tcgggaaacc 840

tgtcgtgcca gctgcattaa catggtcata gctgttctc tgcgtattgg gcgctctccg 900

cttcctcgct cactgactcg ctgcgctcgg tcgttcgggt aaagcctggg gtgcctaata 960

agcaaaaggc cagcaaaagg ccaggaaccg taaaaaggcc gcgttgctgg cgttttcca 1020

taggctccgc cccctgacg agcatcaca aaatcgacgc tcaagtcaga ggtggcgaaa 1080

cccacagga ctataaagat accaggcgtt tccccctgga agctccctcg tgcgctctcc 1140

tgttccgacc ctgccgtta ccggatacct gtccgccttt ctcccttcgg gaagcgtggc 1200

gctttctcat agctcacgct gtaggtatct cagttcggtg taggtcgttc gctccaagct 1260

gggctgtgtg cacgaacccc ccgttcagcc cgaccgctgc gccttatccg gtaactatcg 1320

tcttgagtcc aacccggtaa gacacgactt atcgccactg gcagcagcca ctggtaacag 1380
gattagcaga gcgaggatg taggcggtgc tacagagttc ttgaagtgtt ggcctaacta 1440
cggctacact agaagaacag tatttggtat ctgcgctctg ctgaagccag ttaccttcgg 1500
aaaaagagtt ggtagctctt gatccggcaa acaaaccacc gctggtagcg gtggtttttt 1560
tgtttgcaag cagcagatta cgcgcagaaa aaaaggatct caagaagatc ctttgatctt 1620
ttctacgggg tctgacgctc agtggaacga aaactcacgt taagggattt tggatcatgag 1680
attatcaaaa aggatcttca cctagatcct tttaaattaa aaatgaagtt ttaaatcaat 1740
ctaaagtata tatgagtaaa cttggtctga cagttacaa tgcttaatca gtgaggcacc 1800
tatctcagcg atctgtctat ttcgttcac catagttgcc tgactccccg tcgtgtagat 1860
aactacgata cgggagggtt taccatctgg cccagtgct gcaatgatac cgcgagaacc 1920
acgctcaccg gctccagatt tatcagcaat aaaccagcca gccggaaggg ccgagcgcag 1980
aagtgtcct gcaactttat ccgcctccat ccagtctatt aattgttgc gggaagctag 2040
agtaagtagt tcgccagtta atagtttgc caacgttgtt gccattgcta caggcatcgt 2100
gggtgcacgc tcgtcgtttg gtatggcttc attcagctcc ggttccaac gatcaaggcg 2160
agttacatga tccccatgt tgtgcaaaaa agcggttagc tccttcggtc ctccgatcgt 2220
tgtcagaagt aagttggccg cagtgtatc actcatggtt atggcagcac tgcataattc 2280
tcttactgtc atgcatccg taagatgctt ttctgtgact ggtgagtact caaccaagtc 2340
attctgagaa tagtgatgc ggcgaccgag ttgctcttc ccggcgtcaa tacgggataa 2400
taccgcgcca catagcagaa ctttaaaagt gctcatcatt ggaaaacgtt cttcggggcg 2460
aaaactctca aggatcttac cgctgttgag atccagttcg atgtaacca ctcgtgcacc 2520
caactgatct tcagcatctt ttactttcac cagcgttct gggtgagcaa aaacaggaag 2580
gcaaaatgcc gcaaaaaagg gaataagggc gacacggaaa tgtgaatac tcatactctt 2640
ccttttcaa tattattgaa gcatttatca gggttattgt ctcatgagcg gatacatatt 2700
tgaatgtatt tagaaaaata aacaaatagg ggtccgcgc acatttcccc gaaaagtgcc 2760

<210> 19

<211> 2762

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-C-sg-sp-4 vector V2.B.3

<400> 19

ctaaattgta agcgtaata tttgttaaa attcgcgta aattttgtt aaatcagctc 60

atttttaac caataggccg aaatcgga aatcccttat aaatcaaaag aatagaccga 120

gatagggttg agtggccgct acagggcgct cccattcgcc attcaggctg cgcaactgtt 180

gggaagggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240

gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg 300

acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360

aggccgcatg gatccaaggt cgggcaggaa gagggcctat ttcccatgat tccttcatat 420

ttgcatatac gatacaaggc tgtagagag ataattagaa ttaatttgac tgtaaacaca 480

aagatattag tacaaaatac gtgacgtaga aagtaataat ttcttgggta gtttcagtt 540

ttaaaattat gtttaaaat ggactatcat atgcttaccg taactgaaa gtatttcgat 600

ttcttggctt tatatatctt gtgaaagga cgaaacaccg gggccggagt attgggaccg 660

ttaagagct atgctggaaa cagcatagca agtttaaata aggctagtcc gttatcaact 720

tgaaaaagtg gcaccgagtc ggtgctttt ttacacatc catagatcta gctcgagttt 780

ttttctaga ctgggcctca tgggccttc gctcactgcc cgctttccag tcgggaaacc 840

tgctgtgcca gctgcattaa catggtcata gctgttcct tgcgtattgg gcgctctccg 900

cttctcgct cactgactcg ctgcgctcg tcgttcgggt aaagcctggg gtcctaatag 960

agcaaaaggc cagcaaaagg ccaggaaccg taaaaaggcc gcgttgctgg cgttttcca 1020

taggctccgc cccctgacg agcatcaca aaatcgacgc tcaagtcaga ggtggcgaaa 1080

cccgcagga ctataaagat accaggcgtt tccccctgga agctccctcg tgcgtctcc 1140
tggtccgacc ctgccgtta ccggatacct gtccgccttt ctccctcgg gaagcgtggc 1200
gctttctcat agctcacgct gtaggtatct cagttcgggt taggtcgttc gtcctaagct 1260
gggctgtgtg cacgaacccc ccgttcagcc cgaccgctgc gccttatccg gtaactatcg 1320
tcttgagtc aaccggtaa gacacgactt atcgccactg gcagcagcca ctgtaacag 1380
gattagcaga gcgaggtag taggcggtgc tacagagttc tgaagtggg ggcctaacta 1440
cggctacact agaagaacag tatttggtat ctgcgctctg ctgaagccag ttaccttcgg 1500
aaaaagagtt gtagctctt gatccggcaa acaaaccacc gctgtagcg gtggttttt 1560
tggttgcaag cagcagatta cgcgagaaa aaaaggatct caagaagatc cttgatctt 1620
ttctacgggg tctgacgctc agtgaacga aaactcacgt taagggattt tggcatgag 1680
attatcaaaa aggatcttca ctagatcct tttaaattaa aaatgaagtt taaatcaat 1740
ctaaagtata tatgagtaaa ctgggtctga cagttacaa tgcttaatca gtgaggcacc 1800
tatctcagcg atctgtctat ttcgttcac catagttgcc tgactccccg tcgtgtagat 1860
aactacgata cgggagggct taccatctgg cccagtgct gcaatgatac cgcgagaacc 1920
acgtcaccg gtcacagatt tatcagcaat aaaccagcca gccggaaggg ccgagcgag 1980
aagtgtcct gcaactttat ccgcctccat ccagtctatt aattgttgc gggaagctag 2040
agtaagtagt tcgccagta atagtttgc caacgttgt gccattgcta caggcatcgt 2100
gggtgcacgc tcgtcgttg gtatggcttc attcagctcc ggttccaac gatcaaggcg 2160
agttacatga tccccatgt tgtgcaaaaa agcggtagc tccttcggtc ctccgatcgt 2220
tgtcagaagt aagttggccg cagtgtatc actcatgggt atggcagcac tgcataattc 2280
tcttactgtc atgcatccg taagatgctt ttctgtgact ggtgagtact caaccaagtc 2340
attctgagaa tagtgatgc ggcgaccgag ttgctcttc ccggcgtcaa tacgggataa 2400
taccgcgcca catagcagaa cttaaaagt gctcatcatt ggaaaacgtt cttcggggcg 2460
aaaacttca aggatcttac cgctgttgag atccagttcg atgtaacca ctcgtgcacc 2520

caactgatct tcagcatctt ttactttcac cagcgtttct gggtagagcaa aaacaggaag 2580
gcaaaatgcc gcaaaaaagg gaataagggc gacacggaaa tgttgaatac tcatactctt 2640
cctttttcaa tattattgaa gcatttatca gggttattgt ctcatgagcg gatacatatt 2700
tgaatgtatt tagaaaaata aacaaatagg ggttcgcgc acatttcccc gaaaagtgcc 2760
ac 2762

<210> 20

<211> 2762

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-A-ex2-3_sg-sp-opti_1 vector V2.I.10

<400> 20

ctaaattgta agcgtaata tttgttaaa attcgcgta aattttgtt aaatcagctc 60
atttttaac caataggccg aaatcggcaa aatcccttat aaatcaaaag aatagaccga 120
gatagggttg agtggccgct acagggcgct cccattcgcc attcaggctg cgcaactgtt 180
gggaagggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
gctgcaaggc gattaagtg ggtaacgcca gggttttccc agtcacgacg ttgtaaaacg 300
acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
aggccgatg gatccaaggt cgggcaggaa gagggcctat ttcccatgat tccttcatat 420
ttgcatatac gatacaaggc tgtagagag ataattagaa ttaatttgac tgtaaacaca 480
aagatattag taaaaatac gtgacgtaga aagtaataat ttctgggta gtttgagtt 540
ttaaattat gttttaaata ggactatcat atgcttaccg taactgaaa gtatttcgat 600
ttctggctt tatatatctt gtggaaagga cgaaacaccg tccccaggct ctactgaag 660
ttaagagct atgctggaaa cagcatagca agtttaaata aggctagtcc gttatcaact 720
tgaaaaagtg gcaccgagtc ggtgcttttt tcagacatc catagatcta gctcgagttt 780
ttttctaga ctgggcctca tgggccttcc gctcactgcc cgctttccag tcgggaaacc 840

tgtcgtgcc a gctgcattaa catggtcata gctgtttcct tgcgtattgg gcgctctccg 900
cttcctcgct cactgactcg ctgcgctcgg tcgttcgggt aaagcctggg gtgcctaata 960
agcaaaaggc cagcaaaagg ccaggaaccg taaaaaggcc gcgttgctgg cgtttttcca 1020
taggctccgc cccctgacg agcatcaca aaatcgacgc tcaagtcaga ggtggcgaaa 1080
cccgcagga ctataaagat accaggcgtt tccccctgga agctccctcg tgcgctctcc 1140
tgttccgacc ctgccgtta ccggatacct gtccgccttt ctcccttcgg gaagcgtggc 1200
gctttctcat agctcacgct gtaggtatct cagttcgggt taggtcggtc gctccaagct 1260
gggctgtgtg cacgaacccc ccgttcagcc cgaccgctgc gccttatccg gtaactatcg 1320
tcttgagtcc aacccggtaa gacacgactt atcgccactg gcagcagcca ctgtaacag 1380
gattagcaga gcgaggtatg taggcggtgc tacagagttc ttgaagtggg ggcctaacta 1440
cggctacact agaagaacag tatttggtat ctgcgctctg ctgaagccag ttaccttcgg 1500
aaaaagagtt gtagtctctt gatccggcaa acaaaccacc gctgtagcgc gtggtttttt 1560
tgtttgcaag cagcagatta cgcgcagaaa aaaaggatct caagaagatc cttgatctt 1620
ttctacgggg tctgacgctc agtggaacga aaactcacgt taagggaattt tggcatgag 1680
attatcaaaa aggatcttca cctagatcct tttaaattaa aaatgaagtt ttaaatcaat 1740
ctaaagtata tatgagtaaa ctggtctga cagttacaa tgcttaatca gtgaggcacc 1800
tatctcagcg atctgtctat ttcgttcac catagttgcc tgactccccg tcgtgtagat 1860
aactacgata cgggagggct taccatctgg cccagtgct gcaatgatac cgcgagaacc 1920
acgctcaccg gctccagatt tatcagcaat aaaccagcca gccggaaggg ccgagcgag 1980
aagtgtcct gcaactttat ccgcctccat ccagtctatt aattgttgcc gggaagctag 2040
agtaagtagt tcgccagtta atagtttgcg caacgttggt gccattgcta caggcatcgt 2100
gggtgcacgc tcgtcgtttg gtatggcttc attcagctcc ggttccaac gatcaaggcg 2160
agttacatga tccccatgt tgtgcaaaaa agcggtagc tccttcggtc ctccgatcgt 2220
tgtcagaagt aagttggccg cagtgttatc actcatgggt atggcagcac tgcataattc 2280

tcttactgtc atgcatccg taagatgctt ttctgtgact ggtgagtact caaccaagtc 2340
attctgagaa tagtgtatgc ggcgaccgag ttgctcttgc ccggcgtaa tacgggataa 2400
taccgcgcca catagcagaa ctttaaaagt gctcatcatt ggaaaacgtt cttcggggcg 2460
aaaactctca aggatcttac cgctgttgag atccagttcg atgtaacca ctcgtgcacc 2520
caactgatct tcagcatctt ttactttcac cagcgtttct gggtagcaa aaacaggaag 2580
gcaaaatgcc gcaaaaaagg gaataagggc gacacggaaa tgtgaatac tcatactctt 2640
ccttttcaa tattattgaa gcatttatca gggttattgt ctcagagcg gatacatatt 2700
tgaatgtatt tagaaaaata aacaaatagg ggtccgcgc acatttccc gaaaagtgcc 2760
ac 2762

<210> 21

<211> 2763

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-A-ex2-3_sg-sp-opti_2 vector V2.J.1

<400> 21

ctaaattgta agcgtaata tttgttaaa attcgcgta aattttgtt aaatcagctc 60
atttttaac caataggccg aaatcgcaa aatcccttat aaatcaaaag aatagaccga 120
gatagggttg agtggccgct acaggcgct cccattcgcc attcaggctg cgcaactgtt 180
gggaagggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
gctgcaaggc gattaagtg ggtaaccca gggtttccc agtcacgacg ttgtaaacg 300
acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
aggccgatg gatcaaggt cgggcaggaa gagggcctat ttccatgat tccttcatat 420
ttgcatatac gatacaaggc tgtagagag ataattagaa ttaatttgac tgtaaacaca 480
aagatattag tacaaaatac gtgacgtaga aagtaataat ttcttgggta gtttcagtt 540
ttaaattat gttttaaat ggactatcat atgcttaccg taactgaaa gtatttcgat 600

ttcttggtt tataatctt gtgaaagga cgaaacaccg caggctctca ctgaacggga 660
gtttaagagc tatgtggaa acagcatagc aagtttaa ataggctagtc cgttatcaac 720
ttgaaaaagt ggcaccgagt cgggtctttt ttcagacat ccatagatct agctcgagtt 780
tttttctag actgggcctc atgggccttc cgctcactgc ccgctttcca gtcgggaaac 840
ctgtcgtgcc agctgcatta acatggcat agctgttcc ttgcgtattg ggcgctctcc 900
gcttctcgc tactgactc gctgcgctcg gtcgttcggg taaagcctgg ggtgccta at 960
gagcaaaagg ccagcaaaag gccaggaacc gtaaaaaggc cgcgttgctg gcgttttcc 1020
ataggctccg ccccttgac gagcatcaca aaaatcgacg ctcaagtcag aggtggcgaa 1080
acccgacagg actataaaga taccaggcgt tccccctgg aagctccctc gtgcgtctc 1140
ctgttccgac cctgccgctt accggatacc tgtccgcctt tctccctcg ggaagcgtgg 1200
cgctttctca tagctcacgc ttaggtatc tcagttcggg ttaggtcgtt cgctccaagc 1260
tggtgtgtg gcacgaacc cccgttcagc ccgaccgctg cgccttatcc ggtaactatc 1320
gtcttgagtc caaccggta agacacgact tatcgccact ggcagcagcc actggtaca 1380
ggattagcag agcgaggtat gtaggcgggtg ctacagagtt cttgaagtgg tggcctaact 1440
acggctacac tagaagaaca gtatttgga tctgcgtct gctgaagcca gttacctcg 1500
gaaaaagagt tggtagctct tgatccggca aacaaccac cgctggtagc ggtggtttt 1560
ttgttgcaa gcagcagatt acgcgcagaa aaaaaggatc tcaagaagat ccttgatct 1620
ttctacggg gtctgacgt cagtggaacg aaaactcacg ttaagggtt ttggtcatga 1680
gattatcaa aaggatcttc acctagatcc tttaaatta aaaatgaagt tttaatcaa 1740
tctaaagtat atatagtaa acttggtctg acagttacca atgcttaatc agtgaggcac 1800
ctatctcagc gatctgtcta ttcgttcat ccatagttgc ctgactcccc gtcgttaga 1860
taactacgat acgggagggc ttaccatctg gcccagtc tgcaatgata ccgcgagaac 1920
cacgctacc ggctccagat ttatcagaa taaaccagcc agccggaagg gccgagcgca 1980
gaagtgtcc tgcaacttta tccgctcca tccagtctat taattgttc cggaagcta 2040

gagtaagtag ttgccagtt aatagttgc gcaacgttgt tgccattgct acaggcatcg 2100
 tgggtgcacg ctgctgttt ggtatggctt cattagctc cggttccaa cgatcaaggc 2160
 gagttacatg atccccatg ttgtcaaaa agcgggttag ctcttcggt cctccgatcg 2220
 ttgtcagaag taagtggcc gcagtgttat cactcatggt tatggcagca ctgcataatt 2280
 ctcttactgt catgccatcc gtaagatgct ttctgtgac tggtagtac tcaaccaagt 2340
 cattctgaga atagtgtatg cggcgaccga gtgctcttg cccggcgtca atacgggata 2400
 ataccgcgcc acatagcaga actttaaag tgctcatcat tggaaaacgt tcttcggggc 2460
 gaaaactctc aaggatctta ccgctgtga gatccagttc gatgtaacc actcgtgcac 2520
 ccaactgatc tcagcatct ttactttca ccagcgttc tgggtgagca aaaacaggaa 2580
 ggcaaatgc cgcaaaaag ggaataagg cgacacggaa atgtgaata ctcatactct 2640
 tccttttca atattattga agcattatc agggttattg tctcatgagc ggatacatat 2700
 ttgaatgtat ttagaaaaat aaacaaatag gggttccgc cacatttccc cgaaaagtgc 2760
 cac 2763

<210> 22

<211> 2762

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVSI_sg-sp-opti_3 vector V2.J.6

<400> 22

ctaaattgta agcgtaata tttgttaaa attcgcgtta aattttgtt aaatcagctc 60
 atttttaac caataggccg aaatcgcaa aatcccttat aaatcaaaag aatagaccga 120
 gatagggttg agtggccgct acaggcgct cccattcgcc attcaggctg cgcaactgtt 180
 gggaaggcg tttcgtgctg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
 gctgcaaggc gattaagttg ggtaaccca gggtttccc agtcacgacg ttgtaaaacg 300
 acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360

aggccgcatg gatccaaggt cgggcaggaa gagggcctat ttcccatgat tccttcatat 420
ttgcatatac gatacaaggc tgtagagag ataattagaa ttaatttgac tgtaaacaca 480
aagatattag tacaaaatac gtgacgtaga aagtaataat ttcttgggta gtttcagtt 540
ttaaattat gttttaaata ggactatcat atgcttaccg taactgaaa gtatttcgat 600
ttcttggtt tatatatctt gtggaagga cgaaacaccg tcaccaatcc tgtccctagg 660
ttaagagct atgctggaaa cagcatagca agtttaata aggctagtcc gttatcaact 720
tgaaaaagtg gcaccgagtc ggtgctttt ttcagacatc catagatcta gctcgagttt 780
ttttctaga ctgggcctca tgggccttc gtcactgcc cgcttccag tcgggaaacc 840
tgtcgtgcca gctgattaa catggtcata gctgttctt tgcgtattgg gcgctctccg 900
cttctcgct cactgactcg ctgcgctcg tcgttcgggt aaagcctggg gtcctaattg 960
agcaaaaggc cagcaaaagg ccaggaaccg taaaaaggcc gcgttgctgg cgttttcca 1020
taggtccgc cccctgacg agcatcaca aaatcgacgc tcaagtcaga ggtggcgaaa 1080
cccacagga ctataaagat accaggcgtt tccccctgga agctccctcg tgcgtctcc 1140
tgttccgacc ctgccgtta ccgatacct gtccgcctt ctccttcgg gaagcgtggc 1200
gcttctcat agctcacgt gtaggtatct cagttcggg taggtcgtt gtcctaagct 1260
gggctgtgtg cacgaacccc ccgttcagcc cgaccgctgc gccttatccg gtaactatcg 1320
tcttgagtc aaccggtaa gacacgactt atgccactg gcagcagcca ctgtaacag 1380
gattagcaga gcgaggtat taggcggtgc tacagagttc tgaagtggg ggcctaacta 1440
cggctacact agaagaacag tatttggtat ctgcgctctg ctgaagccag ttaccttcgg 1500
aaaaagagtt gtagctctt gatccggcaa acaaaccacc gctggtagcg gtggttttt 1560
tgttgcaag cagcagatta cgcgcagaaa aaaaggatct caagaagatc ctttgatctt 1620
ttctacgggg tctgacgctc agtggaacga aaactcacgt taagggattt tggcatgag 1680
attatcaaaa aggatcttca ctagatcct tttaaattaa aaatgaagtt ttaaatcaat 1740
ctaaagtata tatgagtaaa ctggtctga cagttaccaa tgcttaatca gtgaggcacc 1800

tatctcagcg atctgtctat ttctttcatc catagttgcc tgactccccg tcgtgtagat 1860
aactacgata cgggaggggct taccatctgg cccagtgct gcaatgatac cgcgagaacc 1920
acgctcaccg gctccagatt tatcagcaat aaaccagcca gccggaaggg ccgagcgag 1980
aagtggctct gcaactttat ccgcctccat ccagtctatt aattgttgcc gggaagctag 2040
agtaagtagt tcgccagtta atagtttgcg caacgttggt gccattgcta caggcatcgt 2100
gggtgcacgc tcgtcgtttg gtatggcttc attcagctcc ggttccaac gatcaaggcg 2160
agttacatga tccccatgt tgtgcaaaaa agcggtagc tccttcggtc ctccgatcgt 2220
tgtcagaagt aagttggccg cagtgttctc actcatggtt atggcagcac tgcataattc 2280
tcttactgtc atgccatccg taagatgctt ttctgtgact ggtgagtact caaccaagtc 2340
attctgagaa tagtgtatgc ggcgaccgag ttgctcttgc ccggcgtaa tacgggataa 2400
taccgcgcca catagcagaa ctttaaaagt gctcatcatt ggaaaacgtt cttcggggcg 2460
aaaactctca aggatcttac cgctgttgag atccagttcg atgaacca ctctgcacc 2520
caactgatct tcagcatctt ttactttcac cagcgtttct gggtagcaaa aaacaggaag 2580
gcaaaatgcc gcaaaaaagg gaataagggc gacacggaaa tgttgaatac tcatactctt 2640
ccttttcaa tattattgaa gcatttatca gggttattgt ctcatgagcg gatacatatt 2700
tgaatgtatt tagaaaaata aacaaatagg ggtccgcgc acatttccc gaaaagtgcc 2760
ac 2762

<210> 23

<211> 6275

<212> DNA

<213> Artificial Sequence

<220>

<223> pMA-CS-JG9-TCRbeta vector V3.C.5

<400> 23

gacggatcgg gagatctccc gatcccctat ggtgcactct cagtacaatc tgctctgatg 60

ccgcatagtt aagccagtat ctgctccctg cttgtgtgtt ggaggtcgct gagtagtgcg 120

cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc 180
 ttagggtag gcgttttgcg ctgcttcgcg atgtacgggc cagatatagc cgttgacatt 240
 gattattgac tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata 300
 tggagttccg cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc 360
 cccgccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc 420
 attgacgtca atgggtggag tatttacggt aaactgccca cttggcagta catcaagtg 480
 atcatatgcc aagtacgcc cctattgacg tcaatgacgg taaatggccc gcctggcatt 540
 atgccagta catgacctta tgggacttct ctactggca gtacatctac gtattagtca 600
 tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg 660
 actcacgggg atttccaagt ctccaccca ttgacgtcaa tgggagtttg tttggcacc 720
 aaaatcaacg ggactttcca aaatgtcgta acaactccgc ccattgacg caaatgggcg 780
 gtaggcgtgt acggtgggag gtctatataa gcagagctct ctggctaact agagaacca 840
 ctgcttactg gcttatcgaa attaatacga ctactatag ggagaccaa gctggctagc 900
 gtttaaactt aagcttgga cggagctcg atccaccatg gactcctgga cttctgctg 960
 tgtgtccctt tgcacctgg tagcaaagca cacagatgct ggagttatcc agtcaccccg 1020
 gcacgagggtg acagagatgg gacaagaagt gactctgaga tgtaaacca tttcaggaca 1080
 cgactacctt ttctgttaca gacagacat gatgcgggga ctggagttgc tcatttactt 1140
 taacaacaac gttccgatag atgattcagg gatgcccgag gatcgattct cagctaagat 1200
 gcctaatacga tcatttcca ctctgaagat ccagccctca gaaccaggg actcagctgt 1260
 gtacttctgt gccagcagtt cggcaaacta tggctacacc ttcggttcgg ggaccaggtt 1320
 aaccgttgta gaggacctga acaaggtgtt cccaccgag gtcgctgtgt ttgagccatc 1380
 agaagcagag atctcccaca ccaaaaggc cacactgggtg tgcctggcca caggcttctt 1440
 ccctgaccac gtggagctga gctggtgggt gaatgggaag gaggtgcaca gtggggtcag 1500
 cacggacccg cagcccctca aggagcagcc cgcctcaat gactccagat actgcctgag 1560

cagccgcctg agggctctcg ccaccttctg gcagaacccc cgcaaccact tccgctgtca 1620
agtccagttc tacgggctct cggagaatga cgagtggacc caggataggg ccaaaccgt 1680
caccagatc gtcagcgcg aggcctgggg tagagcagac tgtggcttta cctcgggtgc 1740
ctaccagcaa ggggtcctgt ctgccacat cctctatgag atcctgctag ggaaggccac 1800
cctgtatgct gtgctgtca gcgccctgt gttgatggcc atggtcaaga gaaaggattt 1860
ctgattctag acgactgtgc cttctagttg ccagccatct gttgtttgcc cctccccgt 1920
gccttccttg accctggaag gtgccactcc cactgtcctt tcctaataaa atgaggaaat 1980
tgcatcgcat tgtctgagta ggtgtcattc tattctgggg ggtgggggtg ggaggacag 2040
caagggggag gattgggaag acaatagcag gcatgctggg gatgcgggtg gctctatggc 2100
ttctaggcg gaaagaacca gctggggctc tagggggat cccacgcgc cctgtagcgg 2160
cgcattaagc gcggcgggtg tgggtgttac gcgcagcgtg accgctacac ttgccagcgc 2220
cctagcggc gtcctttcg ctttctccc ttctttctc gccacgttcg ccggtttcc 2280
ccgtcaagct ctaaatcggg ggctccctt agggttccga ttagtgctt tacggcacct 2340
cgaccccaa aaacttgatt agggatgagg ttcacgtagt gggccatgc cctgatagac 2400
ggttttcgc ccttgacgt tggagtccac gttcttaat agtggactct gttccaaac 2460
tggaacaaca ctcaacccta tctcgtctta ttctttgat ttataaggga tttgccgat 2520
ttcggcctat tggtaaaaa atgagctgat ttaacaaaa ttaacgcga attaatctg 2580
tggaatgtgt gtcagttagg gtgtggaaag tcccaggct cccagcagg cagaagtatg 2640
caaagcatgc atctcaatta gtcagcaacc aggtgtggaa agtccccagg ctccccagca 2700
ggcagaagta tgcaaagcat gcatctcaat tagtcagcaa ccatagtccc gccctaact 2760
ccgcccattc cgcccctaac tccgccagt tccgccatt ctccgccc tggtgacta 2820
attttttta ttatgcaga ggccgaggcc gcctctgcct ctgagctatt ccagaagtag 2880
tgaggaggct ttttggagg ctaggcttt tgcaaaaagc tccggggagc ttgtatatcc 2940
atttcggat ctgatcaaga gacaggatga ggcgtttc gcatgattga acaagatgga 3000

ttgcacgcag gttctccggc cgctgggtg gagaggctat tcggctatga ctgggcacaa 3060
cagacaatcg gctgctctga tgccgccgtg ttccggctgt cagcgcaggg gcgcccggtt 3120
cttttgtca agaccgacct gtccggtgcc ctgaatgaac tgcaggacga ggcagcgcgg 3180
ctatcgtggc tggccacgac gggcggttct tgcgcagctg tgctcgacgt tgtcactgaa 3240
gcgggaaggg actggctgct attgggcgaa gtgccggggc aggatctct gtcatctcac 3300
cttgctcctg ccgagaaagt atccatcatg gctgatgcaa tgcggcggct gcatacgctt 3360
gatccggcta cctgcccatt cgaccaccaa gcgaaacatc gcatcgagcg agcacgtact 3420
cggatggaag ccggtcttgt cgatcaggat gatctggacg aagagcatca ggggctcgcg 3480
ccagccgaac tgttcgccag gctcaaggcg cgcatgccc acggcgagga tctcgtcgtg 3540
acccatggcg atgcctgctt gccgaatatc atggtggaaa atggccgctt ttctggattc 3600
atcgactgtg gccggctggg tgtggcggac cgctatcagg acatagcgtt ggctacccgt 3660
gatattgctg aagagcttgg cggcgaatgg gctgaccgct tcctcgtgct ttacggtatc 3720
gccgctccc attcgcagcg catgccttc tatgccttc ttgacgagtt cttctgagcg 3780
ggactctggg gttcgaaatg accgaccaag cgacgccaa cctgccatca cgagatttcg 3840
attccaccgc cgccttctat gaaaggttgg gtttcggaat cgttttccgg gacgccggct 3900
ggatgatcct ccagcgcggg gatctcatgc tggagttctt cgcccaccc aactgttta 3960
ttgcagctta taatggttac aaataaagca atagcatcac aaatttcaca aataaagcat 4020
tttttact gcattctagt tgtggttgt ccaaactcat caatgtatct tatcatgtct 4080
gtataccgtc gaccttagc tagagcttgg cgtaatcatg gtcatagctg ttctctgtgt 4140
gaaattgta tccgctcaca attccacaca acatacgagc cggaagcata aagtgtaaag 4200
cctggggtgc ctaatgagt agctaactca cattaattgc gttgcgtca ctgcccgtt 4260
tccagtcggg aaacctgtcg tgccagctgc attaatgaat cggccaacgc gcggggagag 4320
gcggtttgcg tattgggcgc tctccgctt cctcgtcac tgactcgctg cgctcggtcg 4380
ttcggctcg gcgagcggta tcagctcact caaaggcggg aatacggtta tccacagaat 4440

caggggataa cgaggaaag aacatgtgag caaaaggcca gaaaaggcc aggaaccgta 4500
aaaaggccgc gttgctggcg ttttccata gggtccgccc ccctgacgag catcacaaaa 4560
atcgacgctc aagtcagagg tggcgaaacc cgacaggact ataaagatac caggcgtttc 4620
cccctggaag ctccctcgtg cgctctcctg ttccgaccct gccgcttacc ggatacctgt 4680
ccgcctttct cccttcggga agcgtggcg tttctcatag ctcacgctgt aggtatctca 4740
gttcggtgta ggtcgttcgc tccaagctgg gctgtgtgca cgaaccccc gttcagcccg 4800
accgtgctgc cttatccggt aactatcgtc ttgagtcaa cccgtaaga cagacttat 4860
cgccactggc agcagccact ggtaacagga ttagcagagc gaggtatgta ggcggtgcta 4920
cagagtctt gaagtggagg cctaactacg gctacactag aagaacagta ttggtatct 4980
gcgctctgct gaagccagtt accttcggaa aaagagttgg tagctctga tccggcaaac 5040
aaaccaccgc tggtagcgg tttttgtt gcaagcagca gattacgctc agaaaaaag 5100
gatctcaaga agatccttg atcttttcta cggggtctga cgctcagtgg aacgaaaact 5160
cacgttaagg gattttggtc atgagattat caaaaaggat cttcacctag atcctttta 5220
attaaaaatg aagttttaa tcaatctaaa gtatatatga gtaaactgg tctgacagtt 5280
accaatgctt aatcagtgag gcacctatct cagcgatctg tctatttctg tcatccatag 5340
ttgcctgact cccgctcgtg tagataacta cgatacggga gggcttacca tctggcccca 5400
gtgctgcaat gataccgca gaccacgct caccggctcc agatttatca gcaataaacc 5460
agccagccgg aagggccgag cgagaagtg gtcctgcaac ttatccgcc tccatccagt 5520
ctattaattg ttccgggaa gctagagtaa gtagttgcc agttaatagt ttgcgcaacg 5580
ttgttccat tgctacaggc atcgtggtgt cacgctcgtc gtttggtatg gttcattca 5640
gctccggttc ccaacgatca aggcgagta catgatccc catgttgtgc aaaaagcgg 5700
ttagtcctt cggctctcc atcgtgtca gaagtaagt ggccgagtg ttatcactca 5760
tggttatggc agcactgcat aattctcta ctgtcatgcc atccgtaaga tgctttctg 5820
tgactggtga gtactcaacc aagtcattct gagaatagt tatgcggcga ccgagttgct 5880

cttgcccggtc gtcaatacgg gataataccg cgccacatag cagaacttta aaagtgtca 5940
tcattggaaa acgttcttcg gggcgaaaac tctcaaggat cttaccgctg ttgagatcca 6000
gttcgatgta acccactcgt gcacccaact gatcttcagc atcttttact ttcaccagcg 6060
tttctgggtg agcaaaaaca ggaaggcaaa atgccgcaaa aaaggaata agggcgacac 6120
ggaaatgttg aatactcata ctcttccttt ttcaatatta tgaagcatt ttcagggtt 6180
attgtctcat gagcggatac atatttgaat gtatttagaa aaataaaca ataggggttc 6240
cgcgacatt tccccgaaaa gtgccacctg acgtc 6275

<210> 24

<211> 6125

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS_Efla-intron_F14_RFPnls_F15 vector V4.B.2

<400> 24

ctaaattgta agcgtaata tttgttaaa attcgcgta aatttttgtt aaatcagctc 60
atttttaac caataggccg aaatcgcaa aatcccttat aaatcaaaag aatagaccga 120
gatagggttg agtggccgct acaggcgct cccattcgcc attcaggctg cgcaactgtt 180
gggaaggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
gctgaaggc gattaagtg ggtaaccca gggtttccc agtcacgacg ttgtaaaacg 300
acggccagt agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
aggccgatg aattgagctc tactggcttc tgcgccgct ctggccact gttcccctt 420
cccaggcagg tctgtcttc tctgacctgc attctctccc ctgggcctgt gccgctttct 480
gtctgcagct tgtggcctgg gtcacctcta cggctggccc agatcctcc ctgccgcctc 540
cttcagggtc cgtcttctc cactccctct tccccttget ctctgctgtg ttgctgcca 600
aggatgctct tccggagca cttccttctc ggcgctgcac cacgtgatgt cctctgagcg 660
gatcctccc gtgtctgggt cctctccggg catctctct cctcaccca acccatgcc 720

gtcttcactc gctgggttcc ctttccctc tccttctggg gcctgtgcca tctctggtt 780
cttaggatgg ctttctccga cggatgtctc ctttgcgtcc cgcctcccct tctttaggc 840
ctgcatcatc accgtttttc tggacaacct caaagtacct cgtctccctg gctttagcca 900
cctctccatc ctcttgcttt ctttgcctgg acaccccggt ctctgtgga ttgggtcac 960
ctctcactcc ttctattgg gcagctcccc taccctctt acctctctag tctgtgtag 1020
ctctccagc cccctgtcat ggcatcttc aggggtccga gagctcagct agtctcttc 1080
ctccaacctg gggccctatg tccacttcag gacagcatgt ttgctgcctc cagggtatct 1140
gtgtccccga gctgggacca ctttatattc ccagggccgg ttaatgtggc tctggtctg 1200
gggtacttta tctgtcccct ccaccgggtg gctccggtgc cgtcagtgg gcagagcgca 1260
catgcccac agtccccgag aagtggggg gaggggtcgg caattgaacc ggtgcctaga 1320
gaaggtggcg cggggtaaac tgggaaagt atgtcgtga ctggctccgc cttttcccg 1380
agggtggggg agaaccgtat ataagtgcag tagtcgccgt gaacgttctt ttgcgaacg 1440
ggtttgccgc cagaacacag gtaagtccg tgtgtggtc ccgcgggcct ggcctctta 1500
cgggttatgg ccctgcgtg cctgaatta cttcactgg ctgcagtacg tgattctga 1560
tccgagctt cgggttgga gtgggtggga gattcgagg ccttgcgtt aaggagcccc 1620
ttgcctcgt gcttgagtg aggcctggc tggcgctgg ggccgcccg tgcgaatctg 1680
gtggcacctt cgcgcctgtc tcgtgcttt cgataagtct ctagccattt aaaattttg 1740
atgacctgct gcgacgctt tttctggca agatagtctt gtaaatgcgg gccaatctt 1800
gcacactggt atttcggtt ttggggccgc gggcggcgc ggggcccgtg cgtcccagcg 1860
cacatgttcg gcgaggcggg gcctgcgagc gcggccaccg agaatcggac ggggtagtc 1920
tcaagctggc cggcctgtc tgggtcctgg cctcgcgccg ccgtgtatcg ccccgccctg 1980
ggcggcaagg ctggcccgt cggcaccagt tgcgtgagcg gaaagatggc cgcttcccgg 2040
ccctgtgca gggagctcaa aatggaggac gcggcgctcg ggagagcggg cgggtgagtc 2100
accacacaa aggaaaagg ctttccgtc ctacccgtc gcttcattg actccacga 2160

gtaccgggcg cgtccaggc acctcgatta gttctcgagc ttttgagta cgtcgtcttt 2220
aggttggggg gaggggttt atgcgatgga gttcccccac actgagtggg tggagactga 2280
agttaggcca gcttggcact tgatgtaatt ctcttgga tttgccctt ttgagtttg 2340
atcttggtc atttcaagc ctgagacagt ggtcaaagt tttttctt catttcaggt 2400
gtcgtgactg gtaccggaag ttctattcc gaagttcta ttctatcaga agtataggaa 2460
cttctaccg agaccatggc cccaaagaag aagcggaagg tcggtatcca cggagtcca 2520
gcagccatga gcgagctgat caaagaaaac atgcacatga agctgtacat ggaaggcacc 2580
gtgaacaacc accacttaa gtgcaccagc gagggcgagg gcaagccta cgagggcacc 2640
cagaccatga agatcaagg ggtggaagg gccctctgc cttcgcctt tgatctctg 2700
gccaccagct ttatgtacg cagcaaggcc ttcatcaacc acaccaggg catccccgat 2760
ttctcaagc agagctccc cgagggttc acctgggagc ggatcaccac atacaggac 2820
ggcggagtgc tgaccgccac ccaggatac agcttcaga acggctgcat catctacaac 2880
gtgaagatta acggcgtgaa tttcccagc aacggccccg tgatgcagaa gaaaaccaga 2940
ggctgggagg ccaacaccga gatgctgtac cctgccgat gcggcctgag aggccattt 3000
cagatggccc tgaactcgt gggcggaggc tacctgcact gctcctcaa gaccacctac 3060
agaagcaaga agcccgcaa gaacctgaag atgccggct tccactcgt ggaccaccg 3120
ctggaacgga tcaaaggcg cgacaaagaa acctacgtg aacagcacga gatggccgtg 3180
gccaagtact gcgacctgc tagcaagctg ggccacagaa aaaggccggc ggccacgaaa 3240
aaggccggc aggcacaaaa gaaaaagtga ggtctctta ggaagttct attccgaagt 3300
tcctattct ataggagtat aggaacttct ctgacctga tcataatcaa gccatatcac 3360
atctgtagag gttacttg tttaaaaaac ctccacacct cccctgaac ctgaaacata 3420
aatgaatgc aattgtgtt gtaactgt ttattgcagc ttataatgt tacaataaa 3480
gcaatagcat cacaatttc acaataaag cttttttc actgcattct agttgtggt 3540
tgtccaaact catcaatga tctatcatg tctggatcg cgatcagga ttggtgacag 3600

aaaagcccca tccttaggcc tcttccttcc tagtctctg atattgggtc taacccccac 3660
ctcctgttag gcagattcct tatctggtga cacaccccca tttctggag ccatctctct 3720
ccttgccaga acctctaagg ttgcttacg atggagccag agaggatcct gggagggaga 3780
gcttggcagg ggggtggagg gaaggggggg atgctgacc tgcccgggtc tcagtggcca 3840
ccctgcgcta ccctctcca gaacctgagc tgctctgacg cggctgtctg gtgcgtttca 3900
ctgatcctgg tgctgcagct tccttacct tcccaagagg agaagcagtt tggaaaaaca 3960
aatcagaat aagttgggtc tgagttctaa ctttggctct tcacctttct agtccccaat 4020
ttatattgtt cctccgtgcg tcagttttac ctgtgagata aggccagtag ccagccccgt 4080
cctggcaggg ctgtggtgag gaggggggtg tccgtgtgga aaactccctt tgtgagaatg 4140
gtgcgtcttc gagctgggcc tcattggcct tccgtcact gcccgcttc cagtcgggaa 4200
acctgtcgtg ccagctgcat taacatggc atagctgtt ccttgcgtat tgggcgtct 4260
ccgcttcctc gctcactgac tcgtgcgtc cggctgttc ggtaaagcct ggggtgccta 4320
atgagcaaaa ggccagcaaa aggccaggaa ccgtaaaaag gccgcgttc tggcgtttt 4380
ccataggctc cgccccctg acgagcatca caaaaatcga cgctcaagtc agaggtggcg 4440
aaaccgaca ggactataaa gataccaggc gtttcccct ggaagctccc tcgtgcgtc 4500
tcctgttccg acctgccc ttaccggata cctgtccgc tttctccct cggaagcgt 4560
ggcgctttct catagctcac gcttaggta tctcagttc gttaggtcg ttcgtccaa 4620
gctgggctgt gtgcacgaac cccccgtca gcccgaccgc tgcgccttat ccgtaacta 4680
tcgtcttgag tccaaccgg taagacacga cttatcgcca ctggcagcag cactggtaa 4740
caggattagc agagcgagg atgtaggcgg tgctacagag ttctgaagt ggtgcctaa 4800
ctacggctac actagaagaa cagtatttg tatctgcgt ctgctgaagc cagttacct 4860
cgaaaaaaga gttgtagct ctgatccgg caaacaacc accgctggta gcggtggtt 4920
tttgtttgc aagcagcaga ttacgcgcag aaaaaagga tctcaagaag atccttgat 4980
ctttctacg gggctgacg ctcatggaa cgaaaactca cgtaaggga tttgtcat 5040

gagattatca aaaaggatct tcacctagat ccttttaaat taaaaatgaa gttttaatc 5100
aatctaaagt atatatgagt aaacttggtc tgacagttac caatgcttaa tcagtgaggc 5160
acctatctca gcgatctgtc tatttcgttc atccatagtt gcctgactcc ccgtcgtgta 5220
gataactacg atacgggagg gttaccatc tggccccagt gctgcaatga taccgcgaga 5280
accacgctca ccggctccag atttatcagc aataaaccag ccagccggaa gggccgagcg 5340
cagaagtggc cctgcaactt tatccgcctc catccagtct attaattgtt gccggaagc 5400
tagagtaagt agttcgccag ttaatagttt gcgcaacgtt gttgccattg ctacaggcat 5460
cgtgggtgca cgctcgtcgt ttggtatggc ttcattcagc tccggtccc aacgatcaag 5520
gcgagttaca tgatcccca tgttgtcaa aaaagcgggt agctccttcg gtcctccgat 5580
cgttgcaga agtaagttgg ccgcagtgtt atcactcatg gttatggcag cactgcataa 5640
ttctttact gtcatgcat ccgtaagatg cttttctgtg actggtgagt actcaaccaa 5700
gtcattctga gaatagtgtg tgcggcgacc gagggtctt tgcccgcggt caatacggga 5760
taataccgcg ccacatagca gaactttaa agtgctcatc attggaaaac gttcttcggg 5820
gcgaaaactc tcaaggatct taccgctgtt gagatccagt tcgatgtaac ccactcgtgc 5880
acccaactga tcttcagcat cttttacttt caccagcgtt tctgggtgag caaaaacagg 5940
aaggcaaaat gccgaaaaa agggaataag ggcgacacgg aaatgttgaa tactcatact 6000
cttcctttt caatattatt gaagcattta tcagggttat tgttcatga gcggatacat 6060
attgaatgt atttagaaaa ataaacaaat aggggttccg cgcacatttc cccgaaaagt 6120
gccac 6125

<210> 25

<211> 6131

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS_Efla-intron_FRT_BFPnls_F3 vector V4.B.3

<400> 25

ctaaattgta agcgtaata ttttgtaaa attcgcgta aatttttggt aaatcagctc 60
 atttttaac caataggccg aaatcgga aatcccttat aaatcaaaag aatagaccga 120
 gatagggttg agtggccgct acagggcgct cccattcgcc attcaggctg cgcaactgtt 180
 gggaagggcg tttcgggtcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
 gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg 300
 acggccagtg agcgcgacgt aatacgaact actatagggc gaattggcgg aaggccgtca 360
 aggccgatg aattgagctc tactggcttc tgcgcgcct ctggcccact gttcccctt 420
 cccaggcagg tctgtcttc tctgacctgc attctctccc ctgggcctgt gccgcttct 480
 gtctgcagct tgtggcctgg gtcacctta cggctggccc agatccttc ctgccgcctc 540
 cttcaggttc cgtcttctc cactccctct tccccttgct ctctgctgtg ttgtgcca 600
 aggatgctct ttccggagca cttccttctc ggcgctgcac cacgtgatgt cctctgagcg 660
 gatcctccc gtgtctgggt cctctccggg catctctct cctcaccca acccatgcc 720
 gtcttcaact gctgggttc ctttcttc tcttctggg gcctgtgcca tctctggtt 780
 cttaggatgg ctttctccga cggatgtct ccttgctcc cgctcccct tctttaggc 840
 ctgcatcatc accgttttc tggacaacc caaagtacc cgtctccctg gctttagcca 900
 cctctcatc ctctgtctt cttgcctgg acacccggt ctctgtgga ttcggtcac 960
 ctctactcc ttctattgg gcagctccc taccctctt acctctctag tctgtctag 1020
 ctctccagc cccctgcat ggcatttcc aggggtccga gagctcagct agtcttctc 1080
 ctcaaccg ggcccctatg tccactttag gacagcatgt ttgctgcctc caggatcct 1140
 gtgtcccga gctgggacca cttatattc ccagggccgg ttaatgtggc tctggtctg 1200
 ggtacttta tctgtcccct ccaccgggtg gctccggtgc ccgtcagtgg gcagagcgca 1260
 catgcccac agtccccgag aagtggggg gaggggtcgg caattgaacc ggtgcctaga 1320
 gaagtggtcg cggggtaaac tgggaaagt atgtcgtgta ctggctccgc cttttccg 1380
 aggggtgggg agaaccgtat ataagtgcag tagtcgccgt gaacgttctt ttgcgaacg 1440

ggtttgccgc cagaacacag gtaagtccg tgtgtggtc ccgcgggcct ggcctcttta 1500
cgggttatgg cccttgcgtg ccttgaatta cttcactgg ctgcagtacg tgattcttga 1560
tcccagactt cgggttgga gtgggtggga gagttcgagg ccttgcgtt aaggagcccc 1620
ttgcctcgt gcttgagttg aggcctggcc tggcgctgg ggccgccgcg tgcgaatctg 1680
gtggcacctt cgcgcctgtc tcgtgcttt cgataagtct ctagccattt aaaattttg 1740
atgacctgct gcgacgctt tttctggca agatagtctt gtaaagcgg gccaagatct 1800
gcacactggt atttcggtt ttggggccgc gggcgcgac ggggcccgtg cgtcccagcg 1860
cacatgttcg gcgaggcggg gcctgcgagc gcggccaccg agaatcggac ggggtagtc 1920
tcaagctggc cggcctgctc tggtcctgg cctcgcgccg ccgtgtatcg ccccgccctg 1980
ggcggcaagg ctggcccgt cggcaccagt tgcgtgagcg gaaagatggc cgcttcccgg 2040
ccctgtgca gggagctcaa aatggaggac gcggcgctcg ggagagcggg cgggtgagtc 2100
accacacaa aggaaaagg ctttccgct ctacgccgc gttcatgtg actccacgga 2160
gtaccggcg ccgtccaggc acctcgatta gttctgagc tttggagta cgtcgtctt 2220
aggttggggg gaggggttt atgcgatga gttcccccac actgagtggg tggagactga 2280
agttaggcca gcttgcaact tgatgtaatt ctcttgga tttgccctt ttgagtttg 2340
atcttggtc atttcaagc ctacagact ggtcaaagt ttttcttc catttcaggt 2400
gtcgtgactg gtaccggaag ttctattcc gaagttccta ttcttagaa agtataggaa 2460
cttcgtaccg agaccatggc ccaaagaag aagcggaagg tcggtatcca cggagtcca 2520
gcagccatga gcgagctgat taaggagaac atgcacatga agctgtacat ggagggcacc 2580
gtggacaacc atcactcaa gtgcacatcc gagggcgaag gcaagcccta cgagggcacc 2640
cagaccatga gaatcaaggt ggtcgaggc gccctctcc cttcgcctt cgacatcctg 2700
gctactagct tccttacgg cagcaagacc ttcatcaacc acaccaggg catccccgac 2760
ttcttaagc agtcttccc tgagggttc acatgggaga ggtcaccac atacaggac 2820
ggggcgctg tgaccgtac ccaggacacc agcctccagg acggctgcct catctacaac 2880

gtcaagatca gaggggtgaa ttacatcc aacggcctg tgatgcagaa gaaaacactc 2940
ggctgggagg ccttcaccga gacgctgtac cccgctgacg gcggcctgga aggagaaac 3000
gacatggccc tgaagctcgt gggcgggagc catctgatcg caaacatcaa gaccacatat 3060
agatccaaga aacccgctaa gaacctcaag atgcctggcg tctactatgt ggactacaga 3120
ctggaaagaa tcaaggaggc caacaacgag acatacgtcg agcagcacga ggtggcagtg 3180
gccagatact gcgacctccc tagcaaacgt gggcacaagc ttaataaaag gccggcggcc 3240
acgaaaaagg ccggccaggc aaaaaagaaa aagtaaggtc tctctaggaa gttctattc 3300
cgaagttcct attttcaaa tagtatagga acttctctag acctgatcat aatcaagcca 3360
tatcacatct gtagaggttt acttgcttta aaaaacctcc acacctcccc ctgaacctga 3420
aacataaaat gaatgcaatt gttgtgtta acttgtttat tgcagcttat aatggttaca 3480
aataaagcaa tagcatcaca aatttcacaa ataaagcatt ttttactg cattctagtt 3540
gtggtttgtc caaactcatc aatgtatctt atcatgtctg gatctgcgga tcaggattgg 3600
tgacagaaaa gccccatcct taggcctcct cttcctagt ctctgatat tgggtctaac 3660
ccccacctcc tgttaggcag attccttacc tggtagacac ccccatctc ctggagccat 3720
ctctctcctt gccagaacct ctaaggtttg ctacgatgg agccagagag gatcctggga 3780
gggagagctt ggaggggggt ggaggggaag ggggggatgc gtgacctgcc cgttctcag 3840
tggccaccct gcgtaccct ctccagaac ctgagctgct ctgacgcggc tgtctggtgc 3900
gtttactga tctggtgct gcagcttct tacactccc aagaggagaa gcagtttga 3960
aaaacaaaat cagaataagt tggctctgag ttctaactt ggctctcac cttctagtc 4020
cccaatttat attgttctc cgtgcgtcag tttaacctgt gagataaggc cagtagccag 4080
ccccgtctg gcagggtgt ggtgaggagg ggggtgtccg tgtggaaaac tccctttgtg 4140
agaatggtgc gtctcgagc tggcctcat gggccttcg ctactgccc gtttccagt 4200
cgggaaacct gtcgtgccag ctgcattaac atggcatag ctgttctt gcgtattggg 4260
cgctctccgc ttctcgctc actgactgc tgcgtcgtt cgttcggga aagcctgggg 4320

tgccaatga gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg cgttgctggc 4380

gttttccat aggctccgcc cccctgacga gcatcacaaa aatcgacgct caagtcagag 4440

gtggcgaaac ccgacaggac tataaagata ccaggcgttt ccccttgaa gctccctcgt 4500

gcgctctcct gttccgacct tgccgcttac cggatacctg tccgccttcc tcccttcggg 4560

aagcgtggcg ctttctcata gtcacgctg taggtatctc agttcggtgt aggtcgttcg 4620

ctccaagctg ggctgtgtgc acgaaccccc cgttcagccc gaccgctgcg cttatccgg 4680

taactatcgt cttgagtcca acccggttaag acacgactta tcgccactgg cagcagccac 4740

tggtaacagg attagcagag cgaggatgt aggcggtgct acagagttct tgaagtgtg 4800

gcctaactac ggctacacta gaagaacagt atttggatc tgcgctctgc tgaagccagt 4860

taccttcgga aaaagagttg gtatgctctg atccggcaaa caaaccaccg ctggtagcgg 4920

tggtttttt gtttgaagc agcagattac gcgcagaaaa aaaggatctc aagaagatcc 4980

ttgatcttt tctacggggt ctgacgctca gtggaacgaa aactcacgtt aagggatttt 5040

ggatcatgaga ttatcaaaaa ggatcttcac ctatgctctt ttaaattaaa aatgaagttt 5100

taaatcaatc taaagtatat atgagtaaac ttgtctgac agttaccaat gcttaatcag 5160

tgaggcacct atctcagcga tctgtctatt tcgttcatcc atagttgcct gactccccgt 5220

cgtgtagata actacgatac gggagggtt accatctggc ccagtgctg caatgatacc 5280

gcgagaacca cgctaccgg ctccagattt atcagcaata aaccagccag ccggaagggc 5340

cgagcgcaga agtggctctg caacttatc cgcctccatc cagtctatta attgttgccg 5400

ggaagctaga gtaagtagt cgccagtaa tagttgctg aacgttgtg ccattgctac 5460

aggcatcgtg gtgtcacgct cgtcgtttgg tatggcttca ttcagctccg gttccaacg 5520

atcaaggcga gttacatgat ccccatgtt gtgcaaaaaa gcggttagct cttcgtgctc 5580

tccgatcgtt gtcagaagta agttggccgc agtggtatca ctcattggtta tggcagcact 5640

gcataattct ctactgtca tgccatccgt aagatgctt tctgtgactg gtgagtactc 5700

aaccaagtca ttctgagaat agtgtatgcg gcgaccgagt tgctcttgcc cggcgtcaat 5760

acgggataat accgcgccac atagcagaac tttaaaagt ctcattcattg gaaaacgttc 5820
ttcggggcga aaactctcaa ggatcttacc gctgttgaga tccagttcga tgtaaccac 5880
tcgtgcaccc aactgatctt cagcatcttt tactttcacc agcgtttctg ggtgagcaaa 5940
aacaggaagg caaaatgccg caaaaaaggg aataaggcg acacggaaat gttgaatact 6000
catactcttc cttttcaat attattgaag cattatcag ggttattgtc tcatgagcgg 6060
atacatattt gaatgtattt agaaaaataa acaaataggg gttccgcgca catttccccg 6120
aaaagtcca c 6131

<210> 26

<211> 3602

<212> DNA

<213> Artificial Sequence

<220>

<223> pMA_FRT_HLA-A*02:01-6xHis_F3 vector V4.D.2

<400> 26

ctaaattgta agcgtaata tttgttaaa attcgcgta aattttgtt aaatcagctc 60
atttttaac caataggccg aaatcgcaa aatcccttat aaatcaaaag aatagaccga 120
gatagggttg agtggccgct acaggcgct cccattcgcc attcaggctg cgcaactgtt 180
gggaaggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
gctgaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg 300
acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
aggccgatg aattcgctac cggaagtgc ctattccgaa gttcctattc tctagaaagt 420
ataggaactt caggtacat ggccgtcatg gcgccccgaa ccctcgtcct gctactctcg 480
ggggctctgg ccctgacca gacctggcg ggctctcact ccatgaggtt tttctcaca 540
tccgtgtctc ggccaggacg cgagagcca cgcttcacg cagtgggcta cgtggacgac 600
acgcagttcg tgcggttcga cagcgacgcc gcgagccaga ggatggagcc gcgggcgcg 660
tggatagagc aggagggtcc ggagtattgg gacggggaga cacggaaagt gaaggccac 720

tcacagactc accgagtgga cctggggacc ctgcgcggt actacaacca gagcgaggcc 780
ggttctcaca ccgtccagag gatgtatggc tgcgacgtgg ggtcggactg gcgcttcctc 840
cgcgatacc accagtacgc ctacgacggc aaggattaca tcgccctgaa agaggacctg 900
cgctcttga cgcggcgga catggcagct cagaccacca agcacaagtg ggaggcggcc 960
catgtggcgg agcagttgag agcctacctg gagggcacgt gcgtggagt gctccgcaga 1020
tacctggaga acgggaagga gacgtgcag cgacggacg ccccaaac gcatatgact 1080
caccacgtg tctctgacca tgaagccacc ctgagtgct gggccctgag cttctaccct 1140
gcggagatca cactgacctg gcagcgggat ggggaggacc agaccagga cacggagctc 1200
gtggagacca ggctgcagg ggatggaacc ttccagaagt ggcggctgt ggtggtgcct 1260
tctggacagg agcagagata cacctgcat gtgcagcatg agggtttgc caagcccctc 1320
accctgagat gggagccgtc ttccagccc accatccca tcgtgggcat cattgtggc 1380
ctggttctt ttgagctgt gatcactga gctgtggtc ctgctgtgat gtggaggagg 1440
aagagctcag atagaaaagg agggagctac ttcaggctg caagcagta cagtgccag 1500
ggctctgatg tgtctctcac agcttgtaa gtcccgggc atcatcaca tcaccactga 1560
ctatagctg tagacgaag ttctattcc gaagttcta ttctcaaat agtataggaa 1620
cttctcgag ctgggcctca tgggcctcc gtcactgcc cgcttccag tcgggaaacc 1680
tgtctgcca gctgcattaa catggtcata gctgttctc tgcgtattgg gcgctctccg 1740
cttctcgct cactgactc ctgcgtcgg tcgttcgggt aaagcctggg gtgcctaag 1800
agcaaaaggc cagcaaaagg ccaggaaccg taaaaggcc gcgttgctgg cgttttcca 1860
taggctccgc cccctgacg agcatcaca aaatcgacgc tcaagtcaga ggtggcgaaa 1920
cccacagga ctataaagat accaggcgtt tcccctgga agctccctc tgcgtctcc 1980
tgttccgacc ctgccgtta ccgatacct gtccgcctt ctccctcgg gaagcgtggc 2040
gctttctcat agctcacgt gtaggtatct cagttcgtg taggtcgtc gtcctaagct 2100
gggctgtgtg cacgaacccc ccgttcagc cgaccgtgc gccttatccg gtaactatcg 2160

tcttgagtcc aacccggtaa gacacgactt atcgccactg gcagcagcca ctggtaacag 2220
gattagcaga gcgaggatg taggcggtgc tacagagttc ttgaagtggg ggcctaacta 2280
cggctacact agaagaacag tatttggtat ctgcgctctg ctgaagccag ttaccttcgg 2340
aaaaagagtt ggtagctctt gatccggcaa acaaaccacc gctggtagcg gtggtttttt 2400
tgtttgaag cagcagatta cgcgcagaaa aaaaggatct caagaagatc ctttgatctt 2460
ttctacgggg tctgacgctc agtggaacga aaactcacgt taagggattt tggatcatgag 2520
attatcaaaa aggatcttca cctagatcct tttaaattaa aaatgaagtt ttaaatcaat 2580
ctaaagtata tatgagtaaa cttggtctga cagttacaa tgcttaatca gtgaggcacc 2640
tatctcagcg atctgtctat ttcttcatc catagttgcc tgactccccg tcgtgtagat 2700
aactacgata cgggagggct taccatctgg cccagtgct gcaatgatac cgcgagaacc 2760
acgctcaccg gctccagatt tatcagcaat aaaccagcca gccggaaggg ccgagcgcag 2820
aagtgtcct gcaactttat ccgcctccat ccagtctatt aattgttgc gggaagctag 2880
agtaagtagt tcgccagtta atagtttgcg caacgttgtt gccattgcta caggcatcgt 2940
gggtgcacgc tcgtcgtttg gtatggcttc attcagctcc ggttccaac gatcaaggcg 3000
agttacatga tccccatgt tgtgcaaaaa agcggtagc tccttcggtc ctccgatcgt 3060
tgtcagaagt aagttggccg cagtgtatc actcatggtt atggcagcac tgcataattc 3120
tcttactgtc atgcatccg taagatgctt ttctgtgact ggtgagtact caaccaagtc 3180
attctgagaa tagtgatgc ggcgaccgag ttgctcttcg ccggcgtcaa tacgggataa 3240
taccgcgcca catagcagaa ctttaaaagt gctcatcatt ggaaaacgtt cttcggggcg 3300
aaaactctca aggatcttac cgctgttgag atccagttcg atgtaacca ctcgtgcacc 3360
caactgatct tcagcatctt ttactttcac cagcgttct gggtgagcaa aaacaggaag 3420
gcaaaatgcc gcaaaaaagg gaataagggc gacacggaaa tgtgaatac tcatactctt 3480
ccttttcaa tattattgaa gcatttatca gggttattgt ctcatgagcg gatacatatt 3540
tgaatgtatt tagaaaaata aacaaatagg ggtccgcgc acatttcccc gaaaagtgcc 3600

<210> 27

<211> 3182

<212> DNA

<213> Artificial Sequence

<220>

<223> pMA-F14-GFP-F15 vector V4.H9

<400> 27

ctaaattgta agcgtaata tttgttaaa attcgcgtta aatttttgtt aaatcagctc 60

atttttaac caataggccg aaatcggcaa aatcccttat aaatcaaaag aatagaccga 120

gatagggttg agtggccgct acagggcgct cccattcgcc attcaggctg cgcaactgtt 180

gggaagggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240

gctgcaaggc gattaagttg ggtaacgcca gggttttccc agtcacgacg ttgtaaaacg 300

acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360

aggccgcatg aattcgctac cggaagtgc ctattccgaa gttcctattc tatcagaagt 420

ataggaactt caggtaccgc caccatggaa tccgatgagt ctggcctgcc cgccatggaa 480

atcgagtgcg gaatcaccgg caccctgaac ggcgtggaat ttgagctcgt gggcggaggc 540

gagggcacac ctgaacaggg cagaatgacc aacaagatga agtccaccaa gggggccctg 600

accttcagcc cctacctgct gtctcacgtg atgggctacg gcttctacca cttcggcacc 660

taccccagcg gctacgagaa ccctttcctg cacgcatca acaacggcgg ctacaccaac 720

acccggatcg agaagtacga ggacggcggc gtgctgcacg tgtccttcag ctacagatac 780

gaggccggca gagtgatcgg cgacttcaa gtgatgggca ccggattccc cgaggacagc 840

gtgatcttca ccgacaagat catccggtcc aacgccaccg tggaacatct gcaccccatg 900

ggcgacaacg acctggacgg cagcttcacc agaaccttct ccctgcggga tggcggctac 960

tacagcagcg tggtagacag ccacatgcac ttcaagagcg ccatccacc cagcatcctc 1020

cagaacggcg gacccatgtt cgccttcaga cgggtggaag aggaccacag caacaccgag 1080

ctgggcatcg tggaatacca gcacgccttc aagacccccg atgccgatgc cggcgaggaa 1140
tgagtcgagt ctagacgaag ttctattcc gaagttccta ttcttatagg agtataggaa 1200
cttctcgag ctgggcctca tgggcctcc gtcactgcc cgctttccag tcgggaaacc 1260
tgtcgtgcca gctgcattaa catggtcata gctgttcct tgcgtattgg gcgctctccg 1320
cttctcgct cactgactcg ctgcgctcg tgcgtcgggt aaagcctggg gtcctaata 1380
agcaaaaggc cagcaaaagg ccaggaaccg taaaaaggcc gcgttgctgg cgttttcca 1440
taggctccgc cccctgacg agcatcaca aaatcgacgc tcaagtcaga ggtggcgaaa 1500
cccacagga ctataaagat accaggcgtt tccccctgga agctccctcg tgcgtctcc 1560
tgttccgacc ctgccgtta ccgatacct gtccgccttt ctccctcgg gaagcgtggc 1620
gctttctcat agctcacgt gtaggtatct cagttcggg taggtcgtt gctccaagct 1680
gggctgtgtg cacgaacccc ccgttcagcc cgaccgctgc gccttatccg gtaactatcg 1740
tcttgagtc aaccggtaa gacacgact atcgccactg gcagcagcca ctgtaacag 1800
gattagcaga gcgaggtat taggcggtgc tacagagttc tgaagtgtt ggcctaacta 1860
cggctacact agaagaacag tatttggtat ctgcgctctg ctgaagccag ttacctcgg 1920
aaaaagagtt gtagctctt gatccggcaa acaaacacc gctggtagcg gtggttttt 1980
tgtttgaag cagcagatta cgcgcagaaa aaaaggatct caagaagatc cttgatctt 2040
ttctacgggg tctgacgctc agtggaaacg aaactcacgt taagggattt tggcatgag 2100
attatcaaaa aggatcttca ctagatcct tttaaattaa aaatgaagt tttaatcaat 2160
ctaaagtata tatgagtaaa ctgggtctga cagttaccaa tgcttaatca gtgaggcacc 2220
tatctcagcg atctgtctat ttggtcatc catagttgcc tgactccccg tcgtgtagat 2280
aactacgata cgggagggtt taccatctgg cccagtgtc gcaatgatac cgcgagaacc 2340
acgctcaccg gctccagatt tatcagcaat aaaccagcca gccggaaggg ccgagcgag 2400
aagtgtcct gcaactttat ccgcctccat ccagtctatt aattgtgcc gggaagctag 2460
agtaagtagt tcgccagtta atagtttgcg caacgttgtt gccattgcta caggcatcgt 2520

ggtgtcacgc tcgtcgtttg gtagggcttc attcagctcc ggttccaac gatcaaggcg 2580
 agttacatga tccccatgt tgtgcaaaaa agcggtagc tccttcggtc ctccgatcgt 2640
 tgtcagaagt aagttggccg cagtgtatc actcatgggt atggcagcac tgcataattc 2700
 tcttactgtc atgccatccg taagatgctt ttctgtgact ggtgagtact caaccaagtc 2760
 attctgagaa tagtgtatgc ggcgaccgag ttgctcttgc ccggcgtcaa tacgggataa 2820
 taccgcgcca catagcagaa ctttaaaagt gctcatcatt ggaaaacgtt cttcggggcg 2880
 aaaactctca aggatcttac cgctgttgag atccagttcg atgtaacca ctctgcacc 2940
 caactgatct tcagcatctt ttactttcac cagcgtttct gggtagcaa aaacaggaag 3000
 gcaaaatgcc gcaaaaaagg gaataagggc gacacggaaa tgtgaatac tcatactctt 3060
 ccttttcaa tattattgaa gcatttatca gggttattgt ctcatgagcg gatacatatt 3120
 tgaatgtatt tagaaaaata aacaaatagg ggtccgcgc acatttcccc gaaaagtgcc 3180
 ac 3182

<210> 28

<211> 4542

<212> DNA

<213> Artificial Sequence

<220>

<223> CMVpro-Flp-sv40pA-V2 vector V4.I.8

<400> 28

ctaaattgta agcgttaata tttgttaaa attcgcgtta aattttgtt aaatcagctc 60
 atttttaac caataggccg aaatcgcaa aatcccttat aaatcaaaag aatagaccga 120
 gatagggttg agtggccgct acaggcgct cccattcgcc attcaggctg cgcaactgtt 180
 gggaaggcg tttcgtgctg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
 gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg 300
 acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
 aggccgatg aattcgctac cggtatagta atcaattacg gggtcattag ttcatagccc 420

atatatggag ttccgcgtta cataacttac ggtaaatggc ccgcctggct gaccgcccaa 480
cgacccccgc ccattgacgt caataatgac gtatgttccc atagtaacgc caatagggac 540
tttcattga cgtcaatggg tggagtattt acggtaaact gccacttgg cagtacatca 600
agtgtatcat atgccaagta cgccccctat tgacgtcaat gacggtaaact ggccgcctg 660
gcattatgcc cagtacatga cttatggga ctttctact tggcagtaca tctacgtatt 720
agtcacgct attacatgg tgatcggtt ttggcagtac atcaatgggc gtggatagcg 780
gttgactca cggggatttc caagtctca cccattgac gtcaatggga gttgttttg 840
gcacaaaat caacgggact ttcaaaatg tcgtaacaac tccgccccat tgacgcaaat 900
gggcggtagg cgtgtacggt gggaggtcta tataagcaga gctggttag tgaaccgtca 960
gatcaggtac catggcccc aagaaaaagc ggaaagtggg catccacggc gtgccagctg 1020
caggcggctc tatgagccag ttgacatcc tgtgcaagac cccacctaag gtgctcgtgc 1080
ggcagttcgt ggaaagattc gagaggccta gcggcgagaa gatcgctct tgtgtgccg 1140
agtgaccta cctgtgctgg atgatcccc acaacggcac cgccatcaag cgggccacct 1200
tcatgagcta caatacatc atcagcaaca gcctgagctt cgacatcgtg aacaagagcc 1260
tgcagttcaa gtacaagacc cagaaggcca ccacctgga agccagcctg aagaaactga 1320
tccccgcctg ggagtttacc atcatccat acaatggcca gaaacatcag agcgacatta 1380
ccgatatcgt gtccagcctc cagctgcagt tcgagagtag cgaagaagcc gacaaggga 1440
acagccacag caagaagatg ctgaaggccc tgctgagcga gggcgagagc atctgggaga 1500
tcacagagaa gatcctgaac agcttcgagt acaccagccg gttaccaag accaagaccc 1560
tgtaccagt cctgttctg gccacctta tcaactgcgg ccggttctcc gacatcaaga 1620
acgtggacc caagagcttc aagctgtgc agaacaagta cctgggcgtg atcattcagt 1680
gcctcgtgac cgagacaaag accagcgtgt cccggcacat ctacttttc agcgccagag 1740
gccgatcga cccctgggtg tacctggacg agttcctgag aaacagcgag cccgtgctga 1800
agagagtga ccggaccggc aacagcagct ccaacaagca ggaataccag ctgctgaagg 1860

acaacctcgt gcggtcctac aacaaggccc tgaagaaaaa cggcccctac cccatcttcg 1920
ccattaagaa cggccccaag tcccacatcg gccggcacct gatgaccagc ttctgagca 1980
tgaaggcct gacagagctg accaacgtcg tgggcaattg gagcgacaag agggcctctg 2040
ccgtggccag aaccacctac acccaccaga tcacagccat ccccgaccac tacttcgccc 2100
tggtgtctcg gtactacgcc tacgaccca tcagcaaaga gatgatcgcc ctgaaggacg 2160
agacaaacc catcgaggaa tggcagcaca tcgagcagct gaagggcagc gccgaggga 2220
gcatcagata ccctgcctgg aacggcatca tctccagga agtgctggac tacctgagca 2280
gctacatcaa ccggcggatc tgatctagac ctgatcataa tcaagccata tcacatctgt 2340
agaggtttac ttgcttaaa aaacctccac acctccccct gaacctgaaa cataaaatga 2400
atgcaattgt tgttgtaac ttgttattg cagctataa tggttacaaa taaagcaata 2460
gcatcacaaa ttcacaaat aaagcattt ttactgca tttagttgt ggtttgtcca 2520
aactcatcaa tgtatcttat catgtctgga tctgcggatc caatctcgag ctgggcctca 2580
tgggccttc gctcactgcc cgcttccag tcgggaaacc tgcgtgccca gctgcattaa 2640
catggtcata gctgttctt tgcgtattgg gcgctctccg ctctctgct cactgactcg 2700
ctgcgctcgg tcgttcgggt aaagcctggg gtgcctaatag agcaaaaggc cagcaaaagg 2760
ccaggaaccg taaaaaggcc gcgttgctgg cgttttcca taggctccgc cccctgacg 2820
agcatcacia aaatcgacgc tcaagtcaga ggtggcgaaa cccgacagga ctataaagat 2880
accaggcgtt tccccctgga agctccctcg tgcgctctcc tgttccgacc ctgccgctta 2940
ccggatacct gtccgcctt ctccctcgg gaagcgtggc gctttctcat agctcacgct 3000
gtaggtatct cagttcgggt taggtcgttc gctccaagct gggctgtgtg cacgaacccc 3060
ccgttcagcc cgaccgtgc gccttatccg gtaactatcg tcttgagtcc aaccggtaa 3120
gacacgactt atcgccactg gcagcagcca ctggaacag gattagcaga gcgaggtatg 3180
taggcggtgc tacagagttc ttgaagtggg ggcctaacta cggctacact agaagaacag 3240
tatttggtat ctgcgctcg ctgaagccag ttacctcgg aaaaagagtt ggtagctctt 3300

gatccggcaa acaaaccacc gctggtagcg gtggttttt tgttgcaag cagcagatta 3360
cgcgagaaaa aaaaggatct caagaagatc ctttgatctt ttctacgggg tctgacgctc 3420
agtggaacga aaactcacgt taagggattt tggatcatgag attatcaaaa aggatcttca 3480
cctagatcct tttaaattaa aaatgaagtt taaatcaat ctaaagtata tatgagtaaa 3540
cttggctga cagttacaa tgcttaatca gtgaggcacc tatctcagcg atctgtctat 3600
ttcgttcac catagttgcc tgactccccg tcgtgtagat aactacgata cgggagggct 3660
taccatctgg cccagtgct gcaatgatac cgcgagaacc acgctcaccg gctccagatt 3720
tatcagcaat aaaccagcca gccggaaggc ccgagcgag aagtggctct gcaactttat 3780
ccgcctccat ccagttatt aattgttgc gggaagctag agtaagtagt tcgccagtta 3840
atagtttgcg caacgttgt gccattgcta caggcatcgt ggtgtcacgc tcgtcgttg 3900
gtatggcttc attcagctcc ggttcccaac gatcaaggcg agttacatga tccccatgt 3960
tgtcaaaaa agcggtagc tccttcggtc ctccgatcgt tgtcagaagt aagtggccg 4020
cagtggtatc actcatggt atggcagcac tgcataattc tcttactgtc atgcatccg 4080
taagatgctt ttctgtgact ggtgagtact caaccaagtc attctgagaa tagtgtatgc 4140
ggcgaccgag ttgctcttc ccggcgtaa tacgggataa taccgcgcca catagcagaa 4200
ctttaaagt gctcatcatt ggaaaacgtt ctcggggcg aaaacttca aggatcttac 4260
cgctgttgag atccagttcg atgtaacca ctctgcacc caactgatct tcagcatctt 4320
ttactttcac cagcgttct gggtgagcaa aaacaggaag gcaaaatgcc gcaaaaaagg 4380
gaataagggc gacacggaaa tgtgaatac tcatactctt ccttttcaa tattattgaa 4440
gcatttatca gggttattgt ctcatgagcg gatacatatt tgaatgtatt tagaaaaata 4500
aacaaatagg ggtccgcgc acatttccc gaaaagtgcc ac 4542

<210> 29

<211> 3291

<212> DNA

<213> Artificial Sequence

<220>

<223> pMA-F14-TCR-JG9-alpha-F15 vector V7.A.3

<400> 29

acgaagtcc tattccgaag ttctattct tataggagta taggaacttc ctcgagctgg 60
gcctcatggg ccttccgctc actgcccgtt ttccagtcgg gaaacctgtc gtgccagctg 120
cattaacatg gtcatagctg ttctctgctg tattggggcgc tctccgcttc ctcgctcact 180
gactcgctgc gctcggctgt tcgggtaaag cctgggggtgc ctaatgagca aaaggccagc 240
aaaaggccag gaaccgtaaa aaggccgcgt tgctggcggtt ttccatagg ctccgcccc 300
ctgacgagca tcacaaaaat cgacgtcaa gtcagaggtg gcgaaacccg acaggactat 360
aaagatacca ggcttttccc cctggaagct ccctcgtgcg ctctcctgtt ccgaccctgc 420
cgcttaccgg atacctgtcc gcctttctcc cttcgggaag cgtggcgctt tctcatagct 480
cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc caagctgggc tgtgtgcacg 540
aacccccgt tcagcccagc cgctgcgcct tatccggtaa ctatcgtctt gagtccaacc 600
cggtaaagaca cgacttatcg ccaactggcag cagccactgg taacaggatt agcagagcga 660
ggtatgtagg cgggtctaca gagttctga agtgggtggc taactacggc tacactagaa 720
gaacagtatt tggatatcgc gctctgctga agccagttac cttcggaaaa agagttggta 780
gctcttgatc cggcaaacia accaccgtg gtagcgggtg ttttttgtt tgcaagcagc 840
agattacgcg cagaaaaaaaa ggatctcaag aagatcctt gatcttttct acggggtctg 900
acgctcagtg gaacgaaaac tcacgttaag ggattttggt catgagatta tcaaaaagga 960
tcttcaccta gatcctttta aattaaaaat gaagttttaa atcaatctaa agtatatatg 1020
agtaaacttg gtctgacagt taccaatgct taatcagtga ggcacctatc tcagcgatct 1080
gtctatttcg ttcatccata gttgcctgac tccccgtcgt gtagataact acgatacggg 1140
agggcttacc atctggcccc agtgctgcaa tgataccgcg agaaccacgc tcaccggctc 1200
cagatttatc agcaataaac cagccagccg gaagggccga gcgcagaagt ggtcctgcaa 1260
ctttatccgc ctccatccag tctattaatt gttgccggga agctagagta agtagttcgc 1320

cagttaatag ttgcgcaac gttgttgcca ttgctacagg catcgtggtg tcacgctcgt 1380
cgtttgggtat ggcttcattc agtccgggtt cccaacgata aaggcgagtt acatgatccc 1440
ccatgttggtg caaaaaagcg gttagctcct tcggtcctcc gatcgttggtc agaagtaagt 1500
tggccgcagt gttatcactc atggttatgg cagcactgca taattctctt actgtcatgc 1560
catccgtaag atgcttttct gtgactggtg agtactcaac caagtcattc tgagaatagt 1620
gtatgccccg accgagttgc tcttgcccgg cgtcaatacg ggataatacc gcgccacata 1680
gcagaacttt aaaagtgtc atcattggaa aacgttcttc ggggcgaaaa ctctcaagga 1740
tcttaccgt gttgagatcc agttcgatgt aaccactcg tgcaccaac tgatcttcag 1800
catcttttac ttcaccagc gtttctgggt gagcaaaaac aggaaggcaa aatgccgcaa 1860
aaaagggaat aaggcgaca cggaatgtt gaatactcat actcttctt ttcaatatt 1920
attgaagcat ttatcagggt tattgtctca tgagcggata catatttgaa tgtatttaga 1980
aaaataaaca aataggggtt ccgcgcacat tccccgaaa agtgccacct aaattgtaag 2040
cgtaatat ttgtaaaa tcgcgttaaa ttttgttaa atcagctcat ttttaacca 2100
atagccgaa atcggcaaaa tcccttataa atcaaaagaa tagaccgaga tagggttgag 2160
tggccgtac agggcgctcc cattcgccat tcaggctgag caactgttg gaaggcggtt 2220
tcggtgcggg cctcttcgt attacgccag ctggcgaaag ggggatgtgc tgcaaggcga 2280
ttaagttggg taaccgagg gtttcccag tcacgacgtt gtaaacgac ggccagttag 2340
cgcgacgtaa tacgactcac tataggcgga attggcgaa ggccgtcaag gccgcatgaa 2400
ttcgtaccg ggaagttcct attccgaagt tcctattcta tcagaagtat aggaactca 2460
ggtagccac catgctcctt gaacatttat taataatctt gtggatgcag ctgacatggg 2520
tcagtgttca acagctgaat cagagtctc aatctatgtt tatccaggaa ggagaagatg 2580
tctccatgaa ctgcacttct tcaagcatat ttaacactg gctatgttac aagcaggaa 2640
ctggggaagg tcctgtctc ttgatagcct tatataaggc tggatgaattg acctcaatg 2700
gaaggctgac tgctcagttt ggtataacca gaaaggacag ctctctgaat atctcagcat 2760

ccatacctag tgatgtaggc atctacttct gcgctggacc catgaaaacc tcctacgaca 2820
 aggtgatatt tgggccaggg acaagcttat cagtcattcc aaatatccag aaccctgacc 2880
 ctgccgtgta ccagctgaga gactctaaat ccagtgacaa gtctgtctgc ctattcacg 2940
 attttgattc tcaaacaat gtgtcacaaa gtaaggattc tgatgtgtat atcacagaca 3000
 aaactgtgct agacatgagg tctatggact tcaagagcaa cagtgtgtg gcctggagca 3060
 acaaatctga ctttgcatgt gcaaacgcct tcaacaacag cattattcca gaggacacct 3120
 tttccccag ccagaaaagt tcctgtgatg tcaagctggt cgagaaaagc ttgaaacag 3180
 atacgaacct aaactttcaa aacctgtcag tgattgggtt ccgaatcctc ctctgaaag 3240
 tggccgggtt taatctgctc atgacgctgc ggctgtggtc cagctgacta g 3291

<210> 30

<211> 3408

<212> DNA

<213> Artificial Sequence

<220>

<223> pMA-FRT-TCR-JG9-beta-F3 vector V7.A.4

<400> 30

ctaaattgta agcgtaata tttgttaaa attcgcgtta aatttttgtt aaatcagctc 60
 atttttaac caataggccg aaatcgga aatcccttat aaatcaaaag aatagaccga 120
 gatagggttg agtggccgct acaggcgct ccattcgcc attcaggctg cgcaactgtt 180
 gggaagggcg ttcggtgcg ggcctcttcg ctattacgcc agctggcgaa agggggatgt 240
 gctgcaaggc gattaagttg ggtaacgcca gggtttccc agtcacgacg ttgtaaaacg 300
 acggccagtg agcgcgacgt aatacgactc actatagggc gaattggcgg aaggccgtca 360
 aggccgatg aattcgctac cgggaagttc ctattccgaa gttcctattc tctagaaagt 420
 ataggaactt caggtagcc accatggact cctggaccct ctgctgtgtg tccctttgca 480
 tcctggtagc aaagcacaca gatgctggag ttatccagtc acccggcac gaggtgacag 540
 agatgggaca agaagtgact ctgagatgta aaccaatttc aggacacgac taccttttct 600

ggtacagaca gaccatgatg cggggactgg agttgctcat ttactttaac aacaacgttc 660
cgatagatga ttcagggatg cccgaggatc gattctcagc taagatgcct aatgcatcat 720
tctccactct gaagatccag ccctcagaac ccagggactc agctgtgtac tttgcgcca 780
gcagttccgc aaactatggc tacacctttg gttcggggac caggttaacc gttgtagagg 840
acctgaacaa ggtgttcca cccgaggtcg ctgtgtttga gccatcagaa gcagagatct 900
cccacacca aaaggccaca ctggtatgcc tggccacagg cttctacccc gaccacgttg 960
agctgagctg gtgggtgaat gggaaggagg tgcacagtgg ggtcagcaca gacccgcagc 1020
ccctcaagga gcagcccgcc ctcaatgact ccagatactg cctgagcagc cgcctgaggg 1080
tgtcgccac cttctggcag aacccccgca accacttccg ctgtcaagtc cagtctacg 1140
ggctctcgga gaatgacgag tggaccagg atagggccaa accgctcacc cagatcgtca 1200
gcgccgaggc ctggggtaga gcagactgtg gcttcacctc cgagtcttac cagcaagggg 1260
tcctgtctgc caccatcctc tatgagatct tgctagggaa ggccaccttg tatgccgtgc 1320
tggtcagtgc cctcgtctg atggccatgg tcaagagaaa ggattccaga ggctagctag 1380
acgaagtcc tattccgaag ttctattct tcaaatagta taggaacttc ctcgagctgg 1440
gcctcatggg cttccgctc actgccgct ttccagtcgg gaaacctgtc gtgccagctg 1500
cattaacatg gtcatactg tttccttgcg tattgggagc tctccgctc ctcgctcact 1560
gactcgtgc gctcgtcgt tcgggtaaag cctggggtgc ctaatgagca aaaggccagc 1620
aaaaggccag gaaccgtaa aaggccgctg tgctggcggt ttccatagg ctccgcccc 1680
ctgacgagca tcacaaaaat cgacgtcaa gtcagaggtg gcgaaacccg acaggactat 1740
aaagatacca ggcgtttccc cctggaagct ccctcgtgcg ctctcctgtt ccgaccctgc 1800
cgcttaccgg atacctgtcc gcctttctc cttcggaag cgtggcgctt tctcatagct 1860
cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc caagctgggc tgtgtgcag 1920
aacccccgt tcagcccgac cgctgcgct tatccggtaa ctatcgtctt gagtccaacc 1980
cgtaagaca cgacttatcg cactggcag cagccactgg taacaggatt agcagagcga 2040

ggtatgtagg cgggtgctaca gagttcttga agtgggtggcc taactacggc tacactagaa 2100
 gaacagtatt tggatatctgc gctctgctga agccagttac cttcggaataa agagttggta 2160
 gctcttgatc cggcaataca accaccgctg gtagcgggtg ttttttgtt tgcaagcagc 2220
 agattacgcg cagaaaaaaaa ggatctcaag aagatcctt gatcttttct acgggggtctg 2280
 acgctcagt gaacgaaaac tcacgttaag ggattttgt catgagatta tcaaaaagga 2340
 tcttcaccta gatcctttta aattaaaaat gaagttttaa atcaatctaa agtatatatg 2400
 agtaaacttg gtctgacagt taccaatgct taatcagtga ggcacctatc tcagcgatct 2460
 gtctatttcg ttcattcata gttgcctgac tccccgtct gtagataact acgatacggg 2520
 agggcttacc atctggcccc agtgcctgaa tgataccgag agaaccacgc tcaccggctc 2580
 cagatttacc agcaataaac cagccagccg gaaggggcga gcgcagaagt ggtcctgcaa 2640
 ctttatccgc ctccatccag tctattaatt gttgccggga agctagagta agtagttcgc 2700
 cagtaaatag ttgctgcaac gttgttgcca ttgctacagg catcgtggtg tcacgctcgt 2760
 cgtttggtat ggcttcattc agctccggtt cccaacgac aaggcgagtt acatgatccc 2820
 ccatgttggt caaaaaagcg gttagctcct tcggtcctcc gatcgttgct agaagtaagt 2880
 tggccgcagt gttatcactc atgggtatgg cagcactgca taattctctt actgtcatgc 2940
 catccgtaag atgcttttct gtgactgggt agtactcaac caagtcattc tgagaatagt 3000
 gtatgctggc accgagttgc tctgccccg cgtcaatacg ggataatacc gcgccacata 3060
 gcagaacttt aaaagtgtc atcattggaa aacgttctt ggggcgaaaa ctctcaagga 3120
 tcttaccgct gttgagatcc agttcgtat aaccactcg tgcaccaac tgatcttcag 3180
 catctttac tttcaccagc gtttctgggt gagcaaaaac aggaaggcaa aatgccgcaa 3240
 aaaagggaat aaggcgaca cggaatgtt gaatactcat actcttctt ttcaatatt 3300
 attgaagcat ttatcagggt tattgtctca tgagcggata catatttgaa tgtatttaga 3360
 aaaataaaca aataggggtt ccgcgcacat tccccgaaa agtgccac 3408

<211> 3291

<212> DNA

<213> Artificial Sequence

<220>

<223> F14-TCRaF15 CDR3degen.64mix vector V8.F.8

<220>

<221> variation

<222> 2803

<223> /replace="n"= "a", "g", "c", or "t"

<220>

<221> variation

<222> 2808

<223> /replace="n"= "a", "g", "c", or "t"

<220>

<221> variation

<222> 2814

<223> /replace="n"= "a", "g", "c", or "t"

<400> 31

acgaagtcc tattccgaag ttctattct tataggagta taggaacttc ctcgagctgg 60

gcctcatggg ccttccgctc actgcccgt ttccagtcgg gaaacctgtc gtgccagctg 120

cattaacatg gtcatactg ttctctgcg tattgggctc tctccgcttc ctcgtcact 180

gactcgctgc gctcggtcgt tcgggtaaag cctggggtgc ctaatgagca aaaggccagc 240

aaaaggccag gaaccgtaaa aaggccgctg tgctggcggtt ttccatagg ctccgcccc 300

ctgacgagca tcacaaaaat cgacgtcaa gtcagagggtg gcgaaacccg acaggactat 360

aaagatacca ggcgtttccc cctggaagct cctcgtgctg ctctcctgtt ccgaccctgc 420

cgcttacggg atacctgtcc gcctttctcc ctccgggaag cgtggcgctt tctcatagct 480

cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc caagctgggc tgtgtgcacg 540

aacccccgt tcagcccagc cgctgcgcct tatccggtaa ctatcgtctt gagtccaacc 600

cggtaaagaca cgacttatcg ccaactggcag cagccactgg taacaggatt agcagagcga 660

ggtatgtagg cgggtgtaca gagttctga agtgggtggc taactacggc tacactagaa 720

gaacagtatt tggatctgc gctctgctga agccagttac ctccggaaaa agagttggtg 780

gctcttgatc cggcaaacaa accaccgctg gtagcgggtg ttttttgtt tgcaagcagc 840
agattacgcg cagaaaaaaaa ggatctcaag aagatccttt gatcttttct acggggtctg 900
acgctcagtg gaacgaaaac tcacgttaag ggatttttgt catgagatta tcaaaaagga 960
tcttcaccta gatcctttta aattaaat gaagttttaa atcaatctaa agtatatatg 1020
agtaaacttg gtctgacagt taccaatgct taatcagtg ggcacctatc tcagcgatct 1080
gtctatttcg ttcattcata gttgcctgac tccccgtcgt gtagataact acgatacggg 1140
agggcttacc atctggcccc agtgcgtcaa tgataccgcg agaaccacgc tcaccggctc 1200
cagatttatc agcaataaac cagccagccg gaagggccga ggcgagaagt ggtcctgcaa 1260
ctttatccgc ctccatccag tctattaatt gttgccggga agctagagta agtagttcgc 1320
cagttaatag ttgcgcaac gttgttgcca ttgctacagg catcgtgggtg tcacgctcgt 1380
cgtttggtat ggcttcattc agtccggtt cccaacgac aaggcgagtt acatgatccc 1440
ccatgttggtg caaaaaagcg gttagctcct tcggtcctcc gatcgttgc agaagtaagt 1500
tggccgcagt gttatcactc atggttatgg cagcactgca taattctctt actgtcatgc 1560
catccgtaag atgcttttct gtgactgggt agtactcaac caagtcattc tgagaatagt 1620
gtatgccccg accgagttgc tcttgcccgg cgtcaatacg ggataatacc gcgccacata 1680
gcagaacttt aaaagtgtc atcattggaa aacgttcttc ggggcgaaaa ctctcaagga 1740
tcttaccgt gttgagatcc agttcagtg aaccactcg tgcaccaac tgatcttcag 1800
catcttttac ttcaccagc gtttctgggt gagcaaaaac aggaaggcaa aatgccgcaa 1860
aaaagggaat aaggcgaca cggaatgtt gaatactcat actcttcctt ttcaatatt 1920
attgaagcat ttatcagggt tattgtctca tgagcggata catattgaa tgtattaga 1980
aaaataaaca aatagggtt ccgcgcacat tccccgaaa agtgccacct aaattgtaag 2040
cgtaaatatt ttgttaaat tcgcgttaaa ttttgtaa atcagctcat ttttaacca 2100
ataggccgaa atcggcaaaa tccctataa atcaaaagaa tagaccgaga tagggttgag 2160
tggccgtac agggcgctcc cattcgccat tcaggctgcg caactgttg gaaggcggtt 2220

tcggtgcggg cctcttcgct attacgccag ctggcgaaag ggggatgtgc tgcaaggcga 2280
 ttaagttggg taacgccagg gttttccag tcacgacgtt gtaaaacgac ggccagttag 2340
 cgcgacgtaa tacgactcac tatagggcga attggcggaa ggccgtcaag gccgcatgaa 2400
 ttcgctaccg ggaagttcct attccgaagt tcctattcta tcagaagtat aggaacttca 2460
 ggtacgccac catgctcctt gaacatttat taataatctt gtggatgcag ctgacatggg 2520
 tcagtggcca acagctgaat cagagtcctc aatctatgtt tatccaggaa ggagaagatg 2580
 tctccatgaa ctgcacttct tcaagcatat ttaacacctg gctatggtac aagcaggaa 2640
 ctggggaagg tcctgtcctc ttgatagcct tatataaggc tggatgaattg acctcaaag 2700
 gaaggctgac tgctcagttt ggtataacca gaaaggacag cttcctgaat atctcagcat 2760
 ccatacctag tgatgtaggc atctacttct gcgctggacc cangaaancc tcnacgaca 2820
 aggtgatatt tgggccaggg acaagcttat cagtcattcc aaatatccag aacctgacc 2880
 ctgccgtgta ccagctgaga gactctaaat ccagtgacaa gtctgtctgc ctattcacg 2940
 attttgattc tcaaacaat gtgtcacaaa gtaaggattc tgatgtgtat atcacagaca 3000
 aaactgtgct agacatgagg tctatggact tcaagagcaa cagtgtgtg gcctggagca 3060
 acaaatctga ctttgcatgt gcaaacgcct tcaacaacag cattattcca gaggacacct 3120
 tcttccccag ccagaaaagt tcctgtgatg tcaagctggc cgagaaaagc ttgaaacag 3180
 atacgaacct aaactttcaa aacctgtcag tgattgggtt ccgaatcctc ctctgaaag 3240
 tggccgggtt taatctgctc atgacgctgc ggctgtggtc cagctgacta g 3291

<210> 32

<211> 4030

<212> DNA

<213> Artificial Sequence

<220>

<223> JG9-TRA CDR3 64 variants vectors backbone VP.7751.RC1-A1 to H8

<400> 32

cggggtctga cgctcagtg aacgaaaact cacgttaagg gattttggtc atgagattat 60

caaaaaggat cttcacctag atccttttaa attaaaaatg aagttttaa tcaatctaaa 120
gtatatatga gtaaacttgg tctgacagtt accaatgctt aatcagtgag gcacctatct 180
cagcgatctg tctatttcgt tcatccatag ttgcctgact ccccgctgtg tagataacta 240
cgatacggga gggcttacca tctggcccca gtgctgcaat gataccgcga gaaccacgct 300
caccggctcc agatttatca gcaataaacc agccagccgg aagggccgag cgcagaagtg 360
gtcctgcaac ttatccgcc tccatccagt ctattaattg ttgccgggaa gctagagtaa 420
gtagttcgcc agttaatagt ttgcgcaacg ttgttgccat tgctacaggc atcgtggtgt 480
cacgctcgtc gtttggtatg gttcattca gctccggttc ccaacgatca aggcgagtta 540
catgatcccc catgttggtc aaaaaagcgg ttagctcctt cggctctccg atcgttgta 600
gaagtaagtt ggccgcagtg ttatcactca tggttatggc agcactgcat aattcttta 660
ctgtcatgcc atccgtaaga tgcttttctg tgactggtga gtactcaacc aagtcattct 720
gagaatagtg tatgcggcga ccgagttgct ctgcccggc gtcaatacgg gataataccg 780
cgccacatag cagaacttta aaagtgtca tcattggaaa acgttcttcg gggcgaaaac 840
tctcaaggat cttaccgctg ttgagatcca gttcgatga acccactcgt gcaccaact 900
gatcttcagc atcttttact ttaccagcg tttctgggtg agcaaaaaca ggaaggcaaa 960
atgccgcaaa aaagggaata agggcgacac ggaaatgttg aatactcata ctcttcctt 1020
ttcaatatta ttgaagcatt tatcagggtt attgtctcat gagcggatac atatttgaat 1080
gtatttagaa aaataaaca ataggggttc gcgcacatt tccccgaaa gtgccaccta 1140
aattgtaagc gtaatatatt tgtaaaatt cgcgttaa atttgttaa tcagtcatt 1200
tttaaccaa taggccgaaa tcggcaaat ccctataaa tcaaaagaat agaccgagat 1260
agggttgagt ggccgtaca gggcgctccc attcgccatt caggctgcgc aactgtggg 1320
aaggcggtt cggtgcgggc ctctcgcta ttacgccagc tggcgaaagg gggatgtgct 1380
gcaaggcgat taagttgggt aacgccaggg tttcccagt cacgacgttg taaaacgacg 1440
gccagtgagc gcgacgta atcgactcact ataggcgaa ttggcggaag gccgtcaagg 1500

ccgcatgaat tcgctaccgg tatagtaatc aattacgggg tcattagttc atagcccata 1560
tatggagttc cgcgttacat aacttacggt aaatggcccg cctggctgac cgccaacga 1620
ccccgcca ttgacgtcaa taatgacgta tgttccata gtaacgcaa tagggacttt 1680
ccattgacgt caatgggtgg agtatttacg gtaaactgcc cacttggcag tacatcaagt 1740
gtatcatatg ccaagtacgc cccctattga cgtcaatgac ggtaaatggc ccgcctggca 1800
ttatgccag tacatgacct tatgggactt tcctacttgg cagtacatct acgtattagt 1860
catcgctatt accatggtga tgcggtttg gcagtacatc aatgggcgtg gatagcggtt 1920
tgactcacgg ggatttcaa gtctccacc cattgacgtc aatgggagtt tgttttgca 1980
ccaaaatcaa cgggactttc caaatgtcg taacaactcc gcccattga cgaaatggg 2040
cggtaggcgt gtacgggtgg aggtctatat aagcagagct ggtttagtga accgtcagat 2100
caggtagcc accatgctcc tgaacattt attaataatc ttgtggatgc agctgacatg 2160
ggtcagtggc caacagctga atcagagtcc tcaatctatg tttatccagg aaggagaaga 2220
tgtctcatg aactgcactt cttaagcat attaacacc tggctatggt acaagcagga 2280
acctggggaa ggtcctgtcc tcttgatagc cttatataag gctggtgaat tgacctcaa 2340
tggaaggctg actgctcagt ttgtataac cagaaaggac agcttctga atatctcagc 2400
atccatacct agtgatgtag gcactactt ctgcgtgga cccatgaaaa cctcctacga 2460
caagtgata ttgggccag ggacaagctt atcagtcatt ccaaataatcc agaaccctga 2520
ccctgccgtg taccagctga gagactctaa atccagtgc aagtctgtct gcctattcac 2580
cgattttgat tctcaacaa atgtgtcaca aagtaaggat tctgatgtgt atatcacaga 2640
caaaactgtg ctagacatga ggtctatgga cttaagagc aacagtgtg tggcctggag 2700
caacaaatct gactttgcat gtgcaaagc cttaacaac agcattattc cagaggacac 2760
cttctcccc agcccagaaa gttcctgtga tgtcaagctg gtcgagaaaa gctttgaaac 2820
agatacgaac ctaaactttc aaaacctgtc agtgattggg ttccgaatcc tctcctgaa 2880
agtggccggg ttaatatgtc tcatgacgtc gcggctgtgg tccagctgac tagacctgat 2940

cataatcaag ccatacacata tctgtagagg ttacttgct ttaaaaaacc tccacacctc 3000
 cccctgaacc tgaaacataa aatgaatgca attgttggtg ttaacttggt tattgcagct 3060
 tataatgggt acaataaaag caatagcatc acaaatttca caaataaagc attttttca 3120
 ctgcattcta gttgtggtt gtccaaactc atcaatgtat cttatcatgt ctggatctgc 3180
 ggatccaatc tcgagctggg cctcatgggc cttccgctca ctgcccgtt tccagtcggg 3240
 aaacctgtcg tgccagctgc attaatgg tcatagctgt ttccttgcgt attgggcgct 3300
 ctccgttcc tcgctactg actcgtcgc ctcggtcgtt cgggtaaagc ctggggtgcc 3360
 taatgagcaa aaggccagca aaaggccagg aaccgtaaaa aggccgcgtt gctggcggtt 3420
 ttccataggc tccgcccc tgacgagcat cacaaaaatc gacgctcaag tcagaggtgg 3480
 cgaaaccga caggactata aagataccag gcgtttccc ctggaagctc cctcgtgcgc 3540
 tctcctgtc cgaccctgcc gcttaccga tacctgtccg ctttctccc ttcgggaagc 3600
 gtggcgctt ccatagctc acgctgtagg tatctcagtt cgggttaggt cgttcgtcc 3660
 aagctgggct gtgtgcacga accccccgtt cagcccgacc gctgcgcctt atccggtaac 3720
 tatcgtctg agtccaacc ggtaagacac gacttatcgc cactggcagc agccactggt 3780
 aacaggatta gcagagcgag gtatgtaggc ggtgctacag agttctgaa gtggtggcct 3840
 aactacggct aactagaag aacagtattt ggtatctgcg ctctgctgaa gccagttacc 3900
 ttcgaaaaa gagttgtag ctctgatcc ggcaaaaaa ccaccgctgg tagcgggtgt 3960
 tttttgtt gcaagcagca gattacgcgc agaaaaaaag gatctcaaga agatccttg 4020
 atcttttcta 4030

<210> 33

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_A1

<400> 33
tgcgctggac ccaagaaaac ctccaacgac aaggtgatat tt 42

<210> 34
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_A2

<400> 34
tgcgctggac ccaagaaaac ctcccacgac aaggtgatat tt 42

<210> 35
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_A3

<400> 35
tgcgctggac ccaagaaaac ctccgacgac aaggtgatat tt 42

<210> 36
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_A4

<400> 36
tgcgctggac ccaagaaaac tcctacgac aaggtgatat tt 42

<210> 37
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_A5

<400> 37
tgcgctggac ccaagaaacc ctccaacgac aaggtgatat tt 42

<210> 38
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_A6

<400> 38
tgcgctggac ccaagaaacc ctcccacgac aaggtgatat tt 42

<210> 39
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_A7

<400> 39
tgcgctggac ccaagaaacc ctccgacgac aaggtgatat tt 42

<210> 40
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_A8

<400> 40
tgcgctggac ccaagaaacc ctctacgac aaggtgatat tt 42

<210> 41
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_B1

<400> 41
tgcgctggac ccaagaaagc ctccaacgac aaggtgatat tt 42

<210> 42
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_B2

<400> 42
tgcgctggac ccaagaaagc ctcccacgac aaggtgatat tt 42

<210> 43
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_B3

<400> 43
tgcgctggac ccaagaaagc ctccgacgac aaggtgatat tt 42

<210> 44
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_B4

<400> 44
tgcgctggac ccaagaaagc ctctacgac aaggtgatat tt 42

<210> 45
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_B5

<400> 45
tgcgctggac ccaagaaatc ctccaacgac aaggtgatat tt 42

<210> 46
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_B6

<400> 46
tgcgctggac ccaagaaatc ctcccacgac aaggtgatat tt 42

<210> 47
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_B7

<400> 47
tgcgctggac ccaagaaatc ctccgacgac aaggtgatat tt 42

<210> 48
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_B8

<400> 48
tgcgctggac ccaagaaatc ctctacgac aaggtgatat tt 42

<210> 49
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_C1

<400> 49
tgcgctggac ccacgaaaac ctccaacgac aaggtgatat tt 42

<210> 50
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_C2

<400> 50
tgcgctggac ccacgaaaac ctcccacgac aaggtgatat tt 42

<210> 51
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_C3

<400> 51
tgcgctggac ccacgaaaac ctccgacgac aaggtgatat tt 42

<210> 52
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_C4

<400> 52
tgcgctggac ccacgaaaac ctctacgac aaggtgatat tt 42

<210> 53
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_C5

<400> 53
tgcgctggac ccacgaaacc ctccaacgac aaggtgatat tt 42

<210> 54
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_C6

<400> 54
tgcgctggac ccacgaaacc ctcccacgac aaggtgatat tt 42

<210> 55
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_C7

<400> 55
tgcgctggac ccacgaaacc ctctacgac aaggtgatat tt 42

<210> 56
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_D1

<400> 56
tgcgctggac ccacgaaagc ctccaacgac aaggtgatat tt 42

<210> 57
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_D2

<400> 57
tgcgctggac ccacgaaagc ctcccacgac aaggtgatat tt 42

<210> 58
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_D3

<400> 58
tgcgctggac ccacgaaagc ctccgacgac aaggtgatat tt 42

<210> 59
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_D4

<400> 59
tgcgctggac ccacgaaagc ctctacgac aaggtgatat tt 42

<210> 60
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_D5

<400> 60
tgcgctggac ccacgaaatc ctccaacgac aaggtgatat tt 42

<210> 61
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_D6

<400> 61
tgcgctggac ccacgaaatc ctcccacgac aaggtgatat tt 42

<210> 62
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_D7

<400> 62
tgcgctggac ccacgaaatc ctccgacgac aaggtgatat tt 42

<210> 63
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_D8

<400> 63
tgcgctggac ccacgaaatc ctctacgac aaggtgatat tt 42

<210> 64
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_E1

<400> 64
tgcgctggac ccaggaaaac ctccaacgac aaggtgatat tt 42

<210> 65
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_E2

<400> 65
tgcgctggac ccaggaaaac ctcccacgac aaggtgatat tt 42

<210> 66
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_E3

<400> 66
tgcgctggac ccaggaaaac ctccgacgac aaggtgatat tt 42

<210> 67
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_E4

<400> 67
tgcgctggac ccaggaaaac ctctacgac aaggtgatat tt 42

<210> 68
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_E5

<400> 68
tgcgctggac ccaggaaacc ctccaacgac aaggtgatat tt 42

<210> 69
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_E6

<400> 69
tgcgctggac ccaggaaacc ctcccacgac aaggtgatat tt 42

<210> 70
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_E7

<400> 70
tgcgctggac ccaggaaacc ctcccacgac aaggtgatat tt 42

<210> 71
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_E8

<400> 71
Thr Gly Cys Gly Cys Thr Gly Gly Ala Cys Cys Cys Ala Gly Gly Ala
1 5 10 15
Ala Ala Cys Cys Cys Thr Cys Cys Thr Ala Cys Gly Ala Cys Ala Ala
20 25 30
Gly Gly Thr Gly Ala Thr Ala Thr Thr Thr
35 40

<210> 72
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_F1

<400> 72
tgcgctggac ccaggaaagc ctccaacgac aaggtgatat tt 42

<210> 73
<211> 42
<212> DNA
<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_F2

<400> 73

tgcgctggac ccaggaaagc ctcccacgac aaggtgatat tt 42

<210> 74

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_F3

<400> 74

tgcgctggac ccaggaaagc ctccgacgac aaggtgatat tt 42

<210> 75

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_F4

<400> 75

tgcgctggac ccaggaaagc ctctacgac aaggtgatat tt 42

<210> 76

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_F5

<400> 76

tgcgctggac ccaggaaatc ctccaacgac aaggtgatat tt 42

<210> 77

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_F6

<400> 77

tgcgctggac ccaggaaatc ctcccacgac aaggtgatat tt 42

<210> 78

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_F7

<400> 78

tgcgctggac ccaggaaatc ctccgacgac aaggtgatat tt 42

<210> 79

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_F8

<400> 79

tgcgctggac ccaggaaatc ctctacgac aaggtgatat tt 42

<210> 80

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_G1

<400> 80

tgcgctggac ccatgaaaac ctccaacgac aaggtgatat tt 42

<210> 81

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_G2

<400> 81

tgcgctggac ccatgaaaac ctcccacgac aaggtgatat tt 42

<210> 82

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_G3

<400> 82

tgcgctggac ccatgaaaac ctccgacgac aaggtgatat tt 42

<210> 83

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_G4

<400> 83

tgcgctggac ccatgaaaac ctctacgac aaggtgatat tt 42

<210> 84

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_G5

<400> 84

tgcgctggac ccatgaaacc ctccaacgac aaggtgatat tt 42

<210> 85

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_G6

<400> 85

tgcgctggac ccatgaaacc ctcccacgac aaggtgatat tt 42

<210> 86

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_G7

<400> 86

tgcgctggac ccatgaaacc ctccgacgac aaggtgatat tt 42

<210> 87

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_G8

<400> 87

tgcgctggac ccatgaaacc ctctacgac aaggtgatat tt 42

<210> 88

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_H1

<400> 88

tgcgctggac ccatgaaagc ctccaacgac aaggtgatat tt 42

<210> 89

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_H2

<400> 89

tgcgctggac ccatgaaagc ctcccacgac aaggtgatat tt 42

<210> 90

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_H3

<400> 90

tgcgctggac ccatgaaagc ctccgacgac aaggtgatat tt 42

<210> 91

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_H4

<400> 91

tgcgctggac ccatgaaagc ctctacgac aaggtgatat tt 42

<210> 92

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_H5

<400> 92

tgcgctggac ccatgaaatc ctccaacgac aaggtgatat tt 42

<210> 93

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_H6

<400> 93

tgcgctggac ccatgaaatc ctcccacgac aaggtgatat tt 42

<210> 94

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_H7

<400> 94

tgcgctggac ccatgaaatc ctccgacgac aaggtgatat tt 42

<210> 95

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> CDR3 sequence of a JG9-TRA 64 variant VP.7751.RC1_H8

<400> 95

tgcgctggac ccatgaaatc ctctacgac aaggtgatat tt 42

<210> 96

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> pMA-sv40_OE_F1primer 1.C.2

<400> 96

cctgatcata atcaagccat atcac 25

<210> 97

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> pMA-sv40_OE_R1 primer 1.C.3

<400> 97

gtgatatggc ttgattatga tcagg 25

<210> 98

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> pMA-CMV_OE_R1 primer 1.C.5

<400> 98

gtacctgatc tgacggttca c 21

<210> 99

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-A-GT-Rg3 primer 4.A.3

<400> 99

tcccgttctc caggtatctg 20

<210> 100

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-A-GT-Fg2 primer 4.A.4

<400> 100

gtgtcgggtt tccagagaag 20

<210> 101

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-B-GT-Fg2 primer 4.A.7

<400> 101

gggtcccagt tctaaagtcc 20

<210> 102

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-B-GT-Rg2 primer 4.B.1

<400> 102

ggggatttg gcctcaactg 20

<210> 103

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-C-GT-Fg2 primer 4.B.5

<400> 103

tcttctgaa tactcatgac g 21

<210> 104

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-A-02_GT_Rg4 primer 4.I.9

<400> 104

ggagatctac aggcatcag 20

<210> 105

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-A-Exon3_HA-RE-BglII_F1 primer 6.I.9

<400> 105

ggttgatct gggaaggaga cgctgcag

28

<210> 106

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-C-04-GT-Rg1 primer 8.A.1

<400> 106

gatcccatTT tcctccctc

20

<210> 107

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> CMV-pA-HLA-Ex3_Probe_F1 primer 8.B.2

<400> 107

atgtctggat ctgcggatca gcgcacg

27

<210> 108

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> CMV-pro_GT_R1 primer 9.C.3

<400> 108

atgggctatg aactaatgac c

21

<210> 109

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> sv40pA_GT_F1 primer 9.C.4

<400> 109

cattctagtt gtggtttgtc c 21

<210> 110

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1_GT_F1 primer 9.C.5

<400> 110

cttacctctc tagtctgtgc 20

<210> 111

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1_GT_F3 primer 9.C.7

<400> 111

ccattgtcac ttgctgctg 19

<210> 112

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1_GT_F4 primer 9.C.8

<400> 112

tcctggactt tgtctccttc 20

<210> 113

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1_GT_R2 primer 9.C.10

<400> 113

agagatggct ccaggaaatg 20

<210> 114

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1_GT_R3 primer 9.D.1

<400> 114

aagagaaagg gagtagaggc 20

<210> 115

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> AAVS1_GT_R4 primer 9.D.2

<400> 115

cccgaagagt gagtttgc 18

<210> 116

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> HLA-A-intron4_GT_R1 primer 9.D.6

<400> 116

gctaaaggctc agagaggctc 20

<210> 117

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> sv40pA-GT-F2 primer 9.D.7

<400> 117

ctgcattcta gttgtggttt gtc 23

<210> 118

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> sv40pA-AAVS1-probe-FAM-F1 primer 9.J.2

<400> 118

tgcggatcag gattggtgac agaa 24

<210> 119

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> TRAC_TCRA-ex1_R1 primer 10.A.9

<400> 119

gacttgtcac tggatttaga gtctct 26

<210> 120

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> TRAC_TCRA-promoter_F1 primer 10.A.10

<400> 120

ctgatcctct tgtccacag ata 23

<210> 121

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> TRAC_probe (HEX) primer 10.B.6

<400> 121

atccagaacc ctgaccctgc cg 22

<210> 122

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> TRAC-GT-F1 primer 1.F.7

<400> 122

atgtgcaaac gccttcaac 19

<210> 123

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> sv40pA GT-R1 primer 15.H.2

<400> 123

cctctacaga tgtgatatgg ctg 24

<210> 124

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> TRBC2-GT-F1 primer 1.F.9

<400> 124

gctgtcaagt ccagttctac g 21

<210> 125

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> tGFP-Cterm-Out_SQ_F1 primer 3.J.5

<400> 125

gaagaggacc acagcaacac 20

<210> 126

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> TRAC-GT-F1 ddPCR primer/probe

<400> 126

atgtgcaaac gccttcaac 19

<210> 127

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> TRAC-GT-R1 ddPCR primer/probe 1.F.8

<400> 127

ttcggaaccc aatcactgac 20

<210> 128

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> TRAC-probe-FAM ddPCR primer/probe

<400> 128

tttctcgacc agcttgacat cacagg 26

<210> 129

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> TRBC2-GT-F1 ddPCR primer/probe 1.F.9

<400> 129

gctgtcaagt ccagttctac g 21

<210> 130

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> TRBC2-GT-R1 ddPCR primer/probe 1.F.10

<400> 130

cttgctggta agactcggag 20

<210> 131

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> TRBC2-probe-FAM ddPCR primer/probe 1.G.2

<400> 131

caaaccgctc acccagatcg tca 23

<210> 132

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> TRAC-TCRA-ex1-F1 ddPCR primer/probe 10.A.9

<400> 132

ctgacacctt tgtccacag ata 23

<210> 133

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> TRAC-TCRA-ex1-F1 ddPCR primer/probe 10.A.10

<400> 133

gacttgtcac tggatttaga gtctct 26

<210> 134

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> TRAC-probe(HEX) ddPCR primer/probe 10.B.6

<400> 134

atccagaacc ctgaccctgc cg 22