

25. 08. 2008

FLUVECTOR PCT.ST25
SEQUENCE LISTING

(59)

<110> AVIR Green Hills Biotechnology Research Development Trade
AG

<120> Novel viral vector for the expression of heterologous sequences

<130> FLUVECTOR

<160> 82

<170> PatentIn version 3.3

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<400> 39

Arg Ser Leu Lys Phe Arg Pro Lys Gly Lys Pro Cys Pro Lys Glu Ile
 1 5 10 15

Pro

<210> 40
 <211> 17
 <212> PRT
 <213> Human endogenous retrovirus

<400> 40

Ser Leu Lys Phe Arg Pro Lys Gly Lys Pro Cys Pro Lys Glu Ile Pro
 1 5 10 15

Lys

<210> 41
 <211> 17
 <212> PRT
 <213> Human endogenous retrovirus

<400> 41

Leu Lys Phe Arg Pro Lys Gly Lys Pro Cys Pro Lys Glu Ile Pro Lys
 1 5 10 15

Glu

<210> 42
 <211> 17
 <212> PRT
 <213> Human endogenous retrovirus

<400> 42

Lys Phe Arg Pro Lys Gly Lys Pro Cys Pro Lys Glu Ile Pro Lys Glu
 1 5 10 15

Ser

<210> 43
 <211> 17
 <212> PRT
 <213> Human endogenous retrovirus

<400> 43

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Phe Arg Pro Lys Gly Lys Pro Cys Pro Lys Glu Ile Pro Lys Glu Ser
1 5 10 15

Lys

<210> 44
<211> 17
<212> PRT
<213> Human endogenous retrovirus

<400> 44

Arg Pro Lys Gly Lys Pro Cys Pro Lys Glu Ile Pro Lys Glu Ser Lys
1 5 10 15

Asn

<210> 45
<211> 17
<212> PRT
<213> Human endogenous retrovirus

<400> 45

Pro Lys Gly Lys Pro Cys Pro Lys Glu Ile Pro Lys Glu Ser Lys Asn
1 5 10 15

Thr

<210> 46
<211> 17
<212> PRT
<213> Human endogenous retrovirus

<400> 46

Lys Gly Lys Pro Cys Pro Lys Glu Ile Pro Lys Glu Ser Lys Asn Thr
1 5 10 15

Glu

<210> 47
<211> 17
<212> PRT
<213> Human endogenous retrovirus

<400> 47

Gly Lys Pro Cys Pro Lys Glu Ile Pro Lys Glu Ser Lys Asn Thr Glu
1 5 10 15

Val

FLUVECTOR PCT.ST25

<210> 48
 <211> 17
 <212> PRT
 <213> Human endogenous retrovirus

<400> 48

Lys Pro Cys Pro Lys Glu Ile Pro Lys Glu Ser Lys Asn Thr Glu Val
 1 5 10 15

Leu

<210> 49
 <211> 17
 <212> PRT
 <213> Human endogenous retrovirus

<400> 49

Pro Cys Pro Lys Glu Ile Pro Lys Glu Ser Lys Asn Thr Glu Val Leu
 1 5 10 15

Val

<210> 50
 <211> 17
 <212> PRT
 <213> Human endogenous retrovirus

<400> 50

Cys Pro Lys Glu Ile Pro Lys Glu Ser Lys Asn Thr Glu Val Leu Val
 1 5 10 15

Trp

<210> 51
 <211> 17
 <212> PRT
 <213> Human endogenous retrovirus

<400> 51

Pro Lys Glu Ile Pro Lys Glu Ser Lys Asn Thr Glu Val Leu Val Trp
 1 5 10 15

Glu

<210> 52
 <211> 20
 <212> PRT
 <213> Human endogenous retrovirus

<400> 52

Ser Tyr Gln Arg Ser Leu Lys Phe Arg Pro Lys Gly Lys Pro Cys Pro
 Seite 15

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| 1 | 5 | FLUVECTOR PCT.ST25 10 | 15 |
| Lys Glu Ile Pro | 20 | | |
| <210> | 53 | | |
| <211> | 5 | | |
| <212> | RNA | | |
| <213> | artificial sequence | | |
| <220> | | | |
| <223> | stop-start cassette | | |
| <400> | 53 | | |
| uaaug | | | 5 |
| <210> | 54 | | |
| <211> | 10 | | |
| <212> | RNA | | |
| <213> | artificial sequence | | |
| <220> | | | |
| <223> | kozak Sequence | | |
| <400> | 54 | | |
| ccrgccaugg | | | 10 |
| <210> | 55 | | |
| <211> | 11 | | |
| <212> | DNA | | |
| <213> | Influenza A virus | | |
| <400> | 55 | | |
| caggtagatt g | | | 11 |
| <210> | 56 | | |
| <211> | 11 | | |
| <212> | DNA | | |
| <213> | artificial sequence | | |
| <220> | | | |
| <223> | US snRNA complementary strand | | |
| <400> | 56 | | |
| caghtaagta t | | | 11 |
| <210> | 57 | | |
| <211> | 32 | | |
| <212> | DNA | | |
| <213> | artificial sequence | | |
| <220> | | | |
| <223> | lariat consensus sequence | | |
| <400> | 57 | | |
| tactaacctt cttctctttc ttctcctgac ag | | | 32 |
| <210> | 58 | | |
| <211> | 14 | | |
| <212> | PRT | | |
| <213> | mouse | | |

FLUVECTOR PCT.ST25

<400> 58

Leu Leu Trp Val Leu Leu Leu Trp Val Pro Gly Ser Thr Gly
1 5 10

<210> 59

<211> 21

<212> PRT

<213> Influenza A virus

<400> 59

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Ser Ile Phe Leu Trp
1 5 10 15

Arg Val Arg Lys Arg
20

<210> 60

<211> 160

<212> PRT

<213> human

<400> 60

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Ser Leu Leu Leu Trp
1 5 10 15

Val Leu Leu Leu Trp Val Pro Gly Ser Thr Gly Ala Pro Thr Ser Ser
20 25 30

Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His Leu Leu Leu Asp Leu
35 40 45

Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys Asn Pro Lys Leu Thr
50 55 60

Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys Lys Ala Thr Glu Leu
65 70 75 80

Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys Pro Leu Glu Glu Val
85 90 95

Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu Arg Pro Arg Asp Leu
100 105 110

Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu Thr
115 120 125

Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu Phe
130 135 140

Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser Ile Ile Ser Thr Leu Thr
145 150 155 160

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<210> 61
 <211> 21
 <212> PRT
 <213> Influenza A virus

<400> 61

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Asp Cys Phe Leu Trp
 1 5 10 15

Arg Val Arg Lys Arg
 20

<210> 62
 <211> 160
 <212> PRT
 <213> artificial sequence

<220>
 <223> NS1-IgKappa-IL2 construct

<400> 62

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Phe Ala Leu Leu Trp
 1 5 10 15

Val Leu Leu Leu Trp Val Pro Gly Ser Thr Gly Ala Pro Thr Ser Ser
 20 25 30

Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His Leu Leu Leu Asp Leu
 35 40 45

Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys Asn Pro Lys Leu Thr
 50 55 60

Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys Lys Ala Thr Glu Leu
 65 70 75 80

Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys Pro Leu Glu Glu Val
 85 90 95

Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu Arg Pro Arg Asp Leu
 100 105 110

Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu Thr
 115 120 125

Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu Phe
 130 135 140

Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser Ile Ile Ser Thr Leu Thr
 145 150 155 160

<210> 63
 <211> 15

FLUVECTOR PCT.ST25

<212> DNA
<213> artificial sequence

<220>
<223> Kozak Sequence

<400> 63
taagccgcca ccatg

15

<210> 64
<211> 154
<212> PRT
<213> artificial sequence

<220>
<223> NS1-GMCSF-IgKappa construct

<400> 64

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Phe Ala Leu Leu Trp
1 5 10 15

Val Leu Leu Leu Trp Val Pro Arg Ser His Gly Ala Pro Ala Arg Ser
20 25 30

Pro Ser Pro Ser Thr Gln Pro Trp Glu His Val Asn Ala Ile Gln Glu
35 40 45

Ala Arg Arg Leu Leu Asn Leu Ser Arg Asp Thr Ala Ala Glu Met Asn
50 55 60

Glu Thr Val Glu Val Ile Ser Glu Met Phe Asp Leu Gln Glu Pro Thr
65 70 75 80

Cys Leu Gln Thr Arg Leu Glu Leu Tyr Lys Gln Gly Leu Arg Gly Ser
85 90 95

Leu Thr Lys Leu Lys Gly Pro Leu Thr Met Met Ala Ser His Tyr Lys
100 105 110

Gln His Cys Pro Pro Thr Pro Glu Thr Ser Cys Ala Thr Gln Ile Ile
115 120 125

Thr Phe Glu Ser Phe Lys Glu Asn Leu Lys Asp Phe Leu Leu Val Ile
130 135 140

Pro Phe Asp Cys Trp Glu Pro Val Gln Glu
145 150

<210> 65
<211> 97
<212> PRT
<213> artificial sequence

<220>
<223> CCL-3 NS1-IgKappa construct

FLUVECTOR PCT.ST25

<400> 65

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Phe Ala Leu Leu Trp
 1 5 10 15
 Val Leu Leu Leu Trp Val Pro Arg Ser His Gly Ala Pro Leu Ala Ala
 20 25 30
 Asp Thr Pro Thr Ala Cys Cys Phe Ser Tyr Thr Ser Arg Gln Ile Pro
 35 40 45
 Gln Asn Phe Ile Ala Asp Tyr Phe Glu Thr Ser Ser Gln Cys Ser Lys
 50 55 60
 Pro Ser Val Ile Phe Leu Thr Lys Arg Gly Arg Gln Val Cys Ala Asp
 65 70 75 80
 Pro Ser Glu Glu Trp Val Gln Lys Tyr Val Ser Asp Leu Glu Leu Ser
 85 90 95

Ala

<210> 66

<211> 97

<212> PRT

<213> artificial sequence

<220>

<223> CCL-20-NS1IgKappa construct

<400> 66

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Phe Ala Leu Leu Trp
 1 5 10 15
 Val Leu Leu Leu Trp Val Pro Arg Ser His Gly Ala Ser Asn Phe Asp
 20 25 30
 Cys Cys Leu Gly Tyr Thr Asp Arg Ile Leu His Pro Lys Phe Ile Val
 35 40 45
 Gly Phe Thr Arg Gln Leu Ala Asn Glu Gly Cys Asp Ile Asn Ala Ile
 50 55 60
 Ile Phe His Thr Lys Lys Lys Leu Ser Val Cys Ala Asn Pro Lys Gln
 65 70 75 80
 Thr Trp Val Lys Tyr Ile Val Arg Leu Leu Ser Lys Lys Val Lys Asn
 85 90 95

Met

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<210> 67
 <211> 807
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 67
 agcaaaagca ggggtgacaaa gacataatgg atccaaacac tgtgtcaagc tttcaggtat 60
 ttgccctgct ctgggtgctg ctgctgtggg tgccccgggc ccacggcatg accgagcagc 120
 agtggaactt cgccggcatc gaggccggcg ctagcgccat ccagggaac gtgaccagca 180
 tccacagcct gctggacgag ggcaagcaga gcctgaccaa gctggcagct gcctggggcg 240
 gctctggcag cgaggcctac cagggcgtgc agcagaagtg ggacgccacc gccaccgagc 300
 tgaacaacgc cctgcagaac ctggcccggg ccatcagcga ggccggacag gccatggcca 360
 gcaccgaggg caatgtgaca ggcattgttc cctgatgacc aagcagaaag tggactaac 420
 cttcttctct tttcttctct gacaggacat actgctgagg atgtcaaaaa tgcagttgga 480
 gtcctcatcg ggggacttga atggaatgat aacacagttc gagtctctga aactctacag 540
 agattcgctt ggagaagcag taatgagaat gggagacctc cactcactcc aaaacagaaa 600
 cgagaaatgg cggaacaat taggtcagaa gtttgaagaa ataagatggg tgattgaaga 660
 agtgagacac aaactgaaga taacagagaa tagttttgag caaataacat ttatgcaagc 720
 cttacatcta ttgcttgaag tggagcaaga gataagaact ttctcgtttc agcttattta 780
 ataataaaaa acacccttgt ttctact 807

<210> 68
 <211> 765
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 68
 agcaaaagca ggggtgacaaa gacataatgg atccaaacac tgtgtcaagc tttcaggtat 60
 ttgccatgac cgagcagcag tggaaacttc ccggcatcga ggccgcagcc agcgccatcc 120
 agggcaacgt gaccagcatc cacagcctgc tggacgaggg caagcagagc ctgaccaagc 180
 tggccgcagc ctggggcggc tctggcagcg aggcctacca gggcgtgcag cagaagtggg 240
 acgccaccgc caccgagctg aacaacgccc tgcagaacct ggcccggacc atcagcgagg 300
 ccggacaggg catggccagc accgagggca atgtgacagg catgttcgcc tgatgaccaa 360
 gcagaaagtg gtactaacct tcttctcttt cttctcctga caggacatac tgctgaggat 420
 gtcaaaaatg cagttggagt cctcatcggg ggacttgaat ggaatgataa cacagttcga 480
 gtctctgaaa ctctacagag attcgcttgg agaagcagta atgagaatgg gagacctcca 540
 ctactccaa aacagaaacg agaaatggcg ggaacaatta ggtcagaagt ttgaagaaat 600
 aagatggttg attgaagaag tgagacacaa actgaagata acagagaata gttttgagca 660
 aataacattt atgcaagcct tacatctatt gcttgaagtg gagcaagaga taagaacttt 720
 ctcgtttcag cttatttaat aataaaaaac acccttgttt ctact 765

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<210> 69
 <211> 141
 <212> PRT
 <213> artificial sequence

<220>
 <223> IL-15 NS1 IgKappa construct

<400> 69

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Phe Ala Leu Leu Trp
 1 5 10 15

Val Leu Leu Leu Trp Val Pro Arg Ser His Gly Asn Trp Val Asn Val
 20 25 30

Ile Ser Asp Leu Lys Lys Ile Glu Asp Leu Ile Gln Ser Met His Ile
 35 40 45

Asp Ala Thr Leu Tyr Thr Glu Ser Asp Val His Pro Ser Cys Lys Val
 50 55 60

Thr Ala Met Lys Cys Phe Leu Leu Glu Leu Gln Val Ile Ser Leu Glu
 65 70 75 80

Ser Gly Asp Ala Ser Ile His Asp Thr Val Glu Asn Leu Ile Ile Leu
 85 90 95

Ala Asn Asn Ser Leu Ser Ser Asn Gly Asn Val Thr Glu Ser Gly Cys
 100 105 110

Lys Glu Cys Glu Glu Leu Glu Glu Lys Asn Ile Lys Glu Phe Leu Gln
 115 120 125

Ser Phe Val His Ile Val Gln Met Phe Ile Asn Thr Ser
 130 135 140

<210> 70
 <211> 122
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 70

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Phe Ala Leu Leu Trp
 1 5 10 15

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

Trp Asn Phe Ala Gly Ile Glu Ala Ala Ala Ser Ala Ile Gln Gly Asn
 35 40 45

Val Thr Ser Ile His Ser Leu Leu Asp Glu Gly Lys Gln Ser Leu Thr
 50 55 60

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Lys Leu Ala Ala Ala Trp Gly Gly Ser Gly Ser Glu Ala Tyr Gln Gly
65 70 75 80

Val Gln Gln Lys Trp Asp Ala Thr Ala Thr Glu Leu Asn Asn Ala Leu
85 90 95

Gln Asn Leu Ala Arg Thr Ile Ser Glu Ala Gly Gln Ala Met Ala Ser
100 105 110

Thr Glu Gly Asn Val Thr Gly Met Phe Ala
115 120

<210> 71
<211> 108
<212> PRT
<213> artificial

<220>
<223> Fusion protein NS1 Mycobacterium tuberculosis ESAT6

<400> 71

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Phe Ala Met Thr Glu
1 5 10 15

Gln Gln Trp Asn Phe Ala Gly Ile Glu Ala Ala Ala Ser Ala Ile Gln
20 25 30

Gly Asn Val Thr Ser Ile His Ser Leu Leu Asp Glu Gly Lys Gln Ser
35 40 45

Leu Thr Lys Leu Ala Ala Ala Trp Gly Gly Ser Gly Ser Glu Ala Tyr
50 55 60

Gln Gly Val Gln Gln Lys Trp Asp Ala Thr Ala Thr Glu Leu Asn Asn
65 70 75 80

Ala Leu Gln Asn Leu Ala Arg Thr Ile Ser Glu Ala Gly Gln Ala Met
85 90 95

Ala ser Thr Glu Gly Asn Val Thr Gly Met Phe Ala
100 105

<210> 72
<211> 17
<212> PRT
<213> artificial

<220>
<223> synthetic signal peptide

<400> 72

Trp Val Leu Phe Ile Leu Leu Leu Phe Leu Phe Leu Pro Arg Ser His
1 5 10 15

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Gly

<210> 73
 <211> 163
 <212> PRT
 <213> artificial

<220>
 <223> delNS1-IL2-21 segment
 <400> 73

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Phe Ala Trp Val Leu
 1 5 10 15

Phe Ile Leu Leu Leu Phe Leu Phe Leu Pro Arg Ser His Gly Ala Pro
 20 25 30

Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His Leu Leu
 35 40 45

Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys Asn Pro
 50 55 60

Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys Lys Ala
 65 70 75 80

Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys Pro Leu
 85 90 95

Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu Arg Pro
 100 105 110

Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly
 115 120 125

Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile
 130 135 140

Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser Ile Ile Ser
 145 150 155 160

Thr Leu Thr

<210> 74
 <211> 18
 <212> PRT
 <213> human

<400> 74

Ala Gly Ala Ala Leu Leu Ala Leu Leu Ala Ala Leu Leu Pro Ala Ser
 1 5 10 15

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Arg Ala

<210> 75
 <211> 24
 <212> PRT
 <213> human

<400> 75

Met Arg Pro Ser Gly Thr Ala Gly Ala Ala Leu Leu Ala Leu Leu Ala
 1 5 10 15

Ala Leu Cys Pro Ala Ser Arg Ala
 20

<210> 76
 <211> 164
 <212> PRT
 <213> artificial

<220>
 <223> delNS1-IL2-24

<400> 76

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Phe Ala Ala Gly Ala
 1 5 10 15

Ala Leu Leu Ala Leu Leu Ala Ala Leu Leu Pro Ala Ser Arg Ala Ala
 20 25 30

Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His Leu
 35 40 45

Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys Asn
 50 55 60

Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys Lys
 65 70 75 80

Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys Pro
 85 90 95

Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu Arg
 100 105 110

Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys
 115 120 125

Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr
 130 135 140

Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser Ile Ile
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| | | | | | | |
|------------|------------|------------|------------|------------|-------------|-----|
| agatgatttt | gaatggaatt | aataattaca | agaatcccaa | actcaccagg | atgctcacat | 240 |
| ttaagtttta | catgccaag | aaggccacag | aactgaaaca | tcttcagtgt | ctagaagaag | 300 |
| aactcaaacc | tctggaggaa | gtgctaaatt | tagctcaaag | caaaaacttt | cacttaagac | 360 |
| ccagggactt | aatcagcaat | atcaacgtaa | tagttctgga | actaaaggga | tctgaaacaa | 420 |
| cattcatgtg | tgaatatgct | gatgagacag | caaccattgt | agaatttctg | aacagatgga | 480 |
| ttaccttttg | tcaaagcatc | atctcaacac | taacttgata | accaagcaga | aagtgggtact | 540 |
| aacctttctc | tctttcttct | cctgacagga | catactgctg | aggatgtcaa | aaatgcagtt | 600 |
| ggagtcctca | tcgggggact | tgaatggaat | gataacacag | ttcgagtctc | tgaaactcta | 660 |
| cagagattcg | cttgaggaga | cagtaatgag | aatgggagac | ctccactcac | tccaaaacag | 720 |
| aaacgagaaa | tggcgggaac | aattaggtca | gaagtttgaa | gaaataagat | ggttgattga | 780 |
| agaagtgaga | cacaaactga | agataacaga | gaatagtttt | gagcaaataa | catttatgca | 840 |
| agccttacat | ctattgcttg | aagtggagca | agagataaga | actttctcgt | ttcagcttat | 900 |
| ttaataataa | aaaacaccct | tgtttctact | | | | 930 |

<210> 79
 <211> 933
 <212> DNA
 <213> artificial

<220>
 <223> delNS1-IL2-24 sequence

| | |
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| <400> 79 | |
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| ttgccgcagg | agctgcactt ttggcacttc ttgctgcact tcttcctgct tcaagagctg 120 |
| cacctacttc | ttcgtcgaca aagaaaacac agctacaact ggagcattta ctgctggatt 180 |
| tacagatgat | tttgaatgga attaataatt acaagaatcc caaactcacc aggatgctca 240 |
| catttaagtt | ttacatgccc aagaaggcca cagaactgaa acatcttcag tgtctagaag 300 |
| aagaactcaa | acctctggag gaagtgtctaa atttagctca aagcaaaaac tttcacttaa 360 |
| gacccagggg | cttaatcagc aatatcaacg taatagttct ggaactaaag ggatctgaaa 420 |
| caacattcat | gtgtgaatat gctgatgaga cagcaaccat tgtagaattt ctgaacagat 480 |
| ggattacctt | ttgtcaaagc atcatctcaa cactaacttg ataaccaagc agaaagtgggt 540 |
| actaaccttc | ttctctttct tctcctgaca ggacatactg ctgaggatgt caaaaatgca 600 |
| gttggaagtcc | tcacgggggg acttgaatgg aatgataaca cagttcgagt ctctgaaact 660 |
| ctacagagat | tcgcttgagg aagcagtaat gagaatggga gacctccact cactccaaaa 720 |
| cagaaacgag | aatggcgagg aacaattagg tcagaagttt gaagaaataa gatggttgat 780 |
| tgaagaagtg | agacacaaac tgaagataac agagaatagt tttgagcaaa taacatttat 840 |
| gcaagcctta | catctattgc ttgaagtgga gcaagagata agaactttct cgtttcagct 900 |
| tatttaataa | taaaaaacac cttgttttct act 933 |

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<210> 80
 <211> 230
 <212> PRT
 <213> Influenza A virus

<400> 80

Met Asp Pro Asn Thr Val Ser Ser Phe Gln Val Asp Cys Phe Leu Trp
 1 5 10 15

His Val Arg Lys Arg Val Ala Asp Gln Glu Leu Gly Asp Ala Pro Phe
 20 25 30

Leu Asp Arg Leu Arg Arg Asp Gln Lys Ser Leu Arg Gly Arg Gly Ser
 35 40 45

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

Val Glu Arg Ile Leu Lys Glu Glu Ser Asp Glu Ala Leu Lys Met Thr
 65 70 75 80

Met Ala Ser Val Pro Ala Ser Arg Tyr Leu Thr Asp Met Thr Leu Glu
 85 90 95

Glu Met Ser Arg Asp Trp Ser Met Leu Ile Pro Lys Gln Lys Val Ala
 100 105 110

Gly Pro Leu Cys Ile Arg Met Asp Gln Ala Ile Met Asp Lys Asn Ile
 115 120 125

Ile Leu Lys Ala Asn Phe Ser Val Ile Phe Asp Arg Leu Glu Thr Leu
 130 135 140

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

Ser Pro Leu Pro Ser Leu Pro Gly His Thr Ala Glu Asp Val Lys Asn
 165 170 175

Ala Val Gly Val Leu Ile Gly Gly Leu Glu Trp Asn Asp Asn Thr Val
 180 185 190

Arg Val Ser Glu Thr Leu Gln Arg Phe Ala Trp Arg Ser Ser Asn Glu
 195 200 205

Asn Gly Arg Pro Pro Leu Thr Pro Lys Gln Lys Arg Glu Met Ala Gly
 210 215 220

Thr Ile Arg Ser Glu Val
 225 230

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<210> 81
 <211> 5
 <212> DNA
 <213> artificial

<220>
 <223> stop/start codon

<400> 81
 taatg

5

<210> 82
 <211> 20
 <212> PRT
 <213> artificial

<220>
 <223> modified Ig Kappa signal sequence

<400> 82

Met Glu Thr Asp Thr Leu Leu Leu Trp Val Leu Leu Leu Trp Val Pro
 1 5 10 15

Arg Ser His Gly
 20