2015-05-29_5658-00264_ST25

SEQUENCE LISTING

<110> THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ARKANSAS
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<120> ANTIBODY GUIDED VACCINES AND METHODS OF USE FOR GENERATION OF RAPID MATURE IMMUNE RESPONSES

<130> 5658-00264

<150> US 62/008,178
<151> 2014-06-05

<160> 83

<170> PatentIn version 3.5

<210> 1
<211> 417
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Heavy chain DNA sequence

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tgcactgtct ctggattctc attaaccacc tatgatataa actggattcg ccagccacca 180

ggaaagggtc tggagtggct tggaataata tggactggtg gaggcacaaa ttataattca 240

gctttcatgt ccagactgag catcagcaag gacaactcca agagccaagt tttcttaaaa 300

atgaacagtc tgcaaactga tgacacagcc atatattact gtgtaagaga tcggggttac 360

tacgtttact attctatgga ctactggggt caaggaacct cagtcaccgt ctcctca 417

<210> 2
<211> 139
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Heavy chain amino acid sequence

<400> 2

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Met Ala Val Leu Ala Leu Leu Leu Cys Leu Val Ala Phe Pro Ser Cys
1               5                  10                  15


Thr Leu Ser Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala
            20                  25                  30


Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu
        35                  40                  45


Thr Thr Tyr Asp Ile Asn Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu
    50                  55                  60


Glu Trp Leu Gly Ile Ile Trp Thr Gly Gly Gly Thr Asn Tyr Asn Ser
65                  70                  75                  80


Ala Phe Met Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln
                85                  90                  95


Val Phe Leu Lys Met Asn Ser Leu Gln Thr Asp Asp Thr Ala Ile Tyr
            100                 105                 110


Tyr Cys Val Arg Asp Arg Gly Tyr Tyr Val Tyr Tyr Ser Met Asp Tyr
        115                 120                 125


Trp Gly Gln Gly Thr Ser Val Thr Val Ser Ser
    130                 135
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<210> 3
<211> 381
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Light chain DNA sequence

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gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagagtcacc 120

atcagttgca gggcaagtca ggacattagc aattatttaa actggtatca gcagaaacca 180

gatggaactg ttaaactcct gatctactac acatcaagat tacactcagg agtcccatca 240

aggttcagtg gcagtgggtc tggaacagat tattctctca ccattagcaa cctggagcaa 300

gaagatattg ccacttactt ttgccaacag ggtaatatgt ttccgtggac gttcggtgga 360

ggcaccaagc tggaaatcaa a 381

<210> 4
<211> 127
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Light chain amino acids sequence

<400> 4

Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln
1 5 10 15

Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser
20 25 30

Ala Ser Leu Gly Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp
35 40 45

Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val
50 55 60

```
Lys Leu Leu Ile Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser
65                  70                  75                  80


Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser
                85                  90                  95


Asn Leu Glu Gln Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn
            100                 105                 110


Met Phe Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
        115                 120                 125
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<210> 5
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<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Heavy chain CDR1

<400> 5

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Gly Phe Ser Leu Thr Thr Tyr Asp Ile Asn
1               5                   10
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<210> 6
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Heavy chain CDR2

<400> 6

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Ile Ile Trp Thr Gly Gly Gly Thr Asn Tyr Asn Ser Ala Phe Met Ser
1               5                   10                  15
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<210> 7
<211> 12

<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Heavy chain CDR3

<400> 7

Asp Arg Gly Tyr Tyr Val Tyr Tyr Ser Met Asp Tyr
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<210> 8
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Light chain CDR1

<400> 8

Arg Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1 5 10

<210> 9
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Light chain CDR2

<400> 9

Tyr Thr Ser Arg Leu His Ser
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<210> 10
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Light chain CDR3

<400> 10

Gln Gln Gly Asn Met Phe Pro Trp Thr
1 5

<210> 11
<211> 546
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: Truncated C-terminal of CPa, ORF

<400> 11
tcaaaagaat atgcaagagg ttttgctaaa acaggaaaat caatatacta tagtcatgct 60

agcatgagtc atagttggga tgattgggac tatgcagcaa aggtaacttt agctaactct 120

caaaaaggaa cagcaggata tatttataga ttcttacacg atgtatcaga gggtaatgat 180

ccatcagttg gaaagaatgt aaaagaacta gtagcttaca tatcaactag tggtgaaaaa 240

gatgctggaa cagatgacta catgtatttt ggaatcaaaa caaaggatgg aaaaactcaa 300

gaatgggaaa tggacaaccc aggaaatgat tttatgactg gaagtaaaga tacttatact 360

ttcaaattaa aagatgaaaa tctaaaaatt gatgatatac aaaatatgtg gattagaaaa 420

agaaaatata cagcattccc agatgcttat aagccagaaa acataaaggt aatagcaaat 480

ggaaaagttg tagtggacaa ggatataaat gagtggattt caggaaattc aacttataat 540

ataaaa 546

<210> 12
<211> 182
<212> PRT
<213> Artificial Sequence

<220>
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<400> 12

Ser Lys Glu Tyr Ala Arg Gly Phe Ala Lys Thr Gly Lys Ser Ile Tyr
1 5 10 15

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Tyr Ser His Ala Ser Met Ser His Ser Trp Asp Asp Trp Asp Tyr Ala
            20                  25                  30

Ala Lys Val Thr Leu Ala Asn Ser Gln Lys Gly Thr Ala Gly Tyr Ile
        35                  40                  45

Tyr Arg Phe Leu His Asp Val Ser Glu Gly Asn Asp Pro Ser Val Gly
    50                  55                  60

Lys Asn Val Lys Glu Leu Val Ala Tyr Ile Ser Thr Ser Gly Glu Lys
65                  70                  75                  80

Asp Ala Gly Thr Asp Asp Tyr Met Tyr Phe Gly Ile Lys Thr Lys Asp
                85                  90                  95

Gly Lys Thr Gln Glu Trp Glu Met Asp Asn Pro Gly Asn Asp Phe Met
            100                 105                 110

Thr Gly Ser Lys Asp Thr Tyr Thr Phe Lys Leu Lys Asp Glu Asn Leu
        115                 120                 125

Lys Ile Asp Asp Ile Gln Asn Met Trp Ile Arg Lys Arg Lys Tyr Thr
    130                 135                 140

Ala Phe Pro Asp Ala Tyr Lys Pro Glu Asn Ile Lys Val Ile Ala Asn
145                 150                 155                 160

Gly Lys Val Val Val Asp Lys Asp Ile Asn Glu Trp Ile Ser Gly Asn
                165                 170                 175

Ser Thr Tyr Asn Ile Lys
            180
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<210> 13
<211> 792

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: DAG1, ORF

<400> 13
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aaggccagtc agaatgtggg tactaatgta gcctggtatc aacagaaacc agggcaatct 120

cctaaagcac tgatttactc ggcatcctac cggtacagtg gagtccctga tcgcttcaca 180

ggcagtggat ctgggacaga tttcactctc accattagca atgtgcagtc tgaagacttg 240

gcagattatt tctgtcagca atatagcagc tatcctctca cgttcggagg ggggaccaag 300

ctggaaataa aaggtggttc ctctagatct tccctcgagg ttcagctgca gcagtctggg 360

gctgaactgg tgaagcctgg gacttcagtg aggatatcct gcaaggcttc tggctacacc 420

ttcacaaact actatatata ctgggtgaag cagaggcctg gacagggact tgagtggatt 480

ggatggattt atcctggaaa tgttaatact aagtacaatg agaagttcaa gggcaaggcc 540

acactgactg tagacaaatc ctccagcaca gcctacatgc agctcagcag cctgacctct 600

gaggactctg cggtctattt ctgtgcaaga agggggactg ggacggtcgt ttttgactac 660

tggggccacg gcaccactct tacagtctcc tcagccaaaa caacaccccc atctgtcact 720

agtggccagg ccggccagca ccatcaccat caccatggcg catacccgta cgacgttccg 780

gactacgctt ct 792

<210> 14
<211> 264
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Translated

<400> 14

Met Thr Gln Ser Gln Lys Phe Met Ser Thr Ser Val Gly Asp Arg Val
1 5 10 15

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Ser Val Thr Cys Lys Ala Ser Gln Asn Val Gly Thr Asn Val Ala Trp
            20                  25                  30

Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Ala Leu Ile Tyr Ser Ala
        35                  40                  45

Ser Tyr Arg Tyr Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser
    50                  55                  60

Gly Thr Asp Phe Thr Leu Thr Ile Ser Asn Val Gln Ser Glu Asp Leu
65                  70                  75                  80

Ala Asp Tyr Phe Cys Gln Gln Tyr Ser Ser Tyr Pro Leu Thr Phe Gly
                85                  90                  95

Gly Gly Thr Lys Leu Glu Ile Lys Gly Gly Ser Ser Arg Ser Ser Leu
            100                 105                 110

Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Lys Pro Gly Thr
        115                 120                 125

Ser Val Arg Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn Tyr
    130                 135                 140

Tyr Ile Tyr Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
145                 150                 155                 160

Gly Trp Ile Tyr Pro Gly Asn Val Asn Thr Lys Tyr Asn Glu Lys Phe
                165                 170                 175

Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
            180                 185                 190

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
        195                 200                 205
```

Ala Arg Arg Gly Thr Gly Thr Val Val Phe Asp Tyr Trp Gly His Gly
210 215 220

Thr Thr Leu Thr Val Ser Ser Ala Lys Thr Thr Pro Pro Ser Val Thr
225 230 235 240

Ser Gly Gln Ala Gly Gln His His His His His His Gly Ala Tyr Pro
245 250 255

Tyr Asp Val Pro Asp Tyr Ala Ser
260

<210> 15
<211> 1383
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic: DAG1-Cpa

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cctaaagcac tgatttactc ggcatcctac cggtacagtg gagtccctga tcgcttcaca 180

ggcagtggat ctgggacaga tttcactctc accattagca atgtgcagtc tgaagacttg 240

gcagattatt tctgtcagca atatagcagc tatcctctca cgttcggagg ggggaccaag 300

ctggaaataa aaggtggttc ctctagatct tccctcgagg ttcagctgca gcagtctggg 360

gctgaactgg tgaagcctgg gacttcagtg aggatatcct gcaaggcttc tggctacacc 420

ttcacaaact actatatata ctgggtgaag cagaggcctg gacagggact tgagtggatt 480

ggatggattt atcctggaaa tgttaatact aagtacaatg agaagttcaa gggcaaggcc 540

acactgactg tagacaaatc ctccagcaca gcctacatgc agctcagcag cctgacctct 600

gaggactctg cggtctattt ctgtgcaaga agggggactg ggacggtcgt ttttgactac 660

tggggccacg gcaccactct tacagtctcc tcagccaaaa caacaccccc atctgtcact 720

agtggccagg ccggccagca ccatcaccat caccatggcg catacccgta cgacgttccg 780

gactacgctt ctggtggagg cggttcaggc ggaggtggct ctggcggtgg cggatcatca 840

aaagaatatg caagaggttt tgctaaaaca ggaaaatcaa tatactatag tcatgctagc 900

atgagtcata gttgggatga ttgggactat gcagcaaagg taactttagc taactctcaa 960

aaaggaacag caggatatat ttatagattc ttacacgatg tatcagaggg taatgatcca 1020

tcagttggaa agaatgtaaa agaactagta gcttacatat caactagtgg tgaaaaagat 1080

gctggaacag atgactacat gtattttgga atcaaaacaa aggatggaaa aactcaagaa 1140

tgggaaatgg acaacccagg aaatgatttt atgactggaa gtaaagatac ttatactttc 1200

aaattaaaag atgaaaatct aaaaattgat gatatacaaa atatgtggat tagaaaaaga 1260

aaatatacag cattcccaga tgcttataag ccagaaaaca taaaggtaat agcaaatgga 1320

aaagttgtag tggacaagga tataaatgag tggatttcag gaaattcaac ttataatata 1380

aaa 1383

<210> 16
<211> 461
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Translated (461aa) -DAG1, (G4S)3, C-terminal of Cpa

<400> 16

Met Thr Gln Ser Gln Lys Phe Met Ser Thr Ser Val Gly Asp Arg Val
1 5 10 15

Ser Val Thr Cys Lys Ala Ser Gln Asn Val Gly Thr Asn Val Ala Trp
20 25 30

Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Ala Leu Ile Tyr Ser Ala
35 40 45

```
Ser Tyr Arg Tyr Ser Gly Val Pro Asp Arg Phe Thr Gly Ser Gly Ser
    50                  55                  60

Gly Thr Asp Phe Thr Leu Thr Ile Ser Asn Val Gln Ser Glu Asp Leu
65                  70                  75                  80

Ala Asp Tyr Phe Cys Gln Gln Tyr Ser Ser Tyr Pro Leu Thr Phe Gly
                85                  90                  95

Gly Gly Thr Lys Leu Glu Ile Lys Gly Gly Ser Ser Arg Ser Ser Leu
            100                 105                 110

Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Lys Pro Gly Thr
        115                 120                 125

Ser Val Arg Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn Tyr
    130                 135                 140

Tyr Ile Tyr Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
145                 150                 155                 160

Gly Trp Ile Tyr Pro Gly Asn Val Asn Thr Lys Tyr Asn Glu Lys Phe
                165                 170                 175

Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
            180                 185                 190

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
        195                 200                 205

Ala Arg Arg Gly Thr Gly Thr Val Val Phe Asp Tyr Trp Gly His Gly
    210                 215                 220

Thr Thr Leu Thr Val Ser Ser Ala Lys Thr Thr Pro Pro Ser Val Thr
225                 230                 235                 240
```

```
Ser Gly Gln Ala Gly Gln His His His His His His Gly Ala Tyr Pro
                245                 250                 255

Tyr Asp Val Pro Asp Tyr Ala Ser Gly Gly Gly Gly Ser Gly Gly Gly
            260                 265                 270

Gly Ser Gly Gly Gly Gly Ser Ser Lys Glu Tyr Ala Arg Gly Phe Ala
        275                 280                 285

Lys Thr Gly Lys Ser Ile Tyr Tyr Ser His Ala Ser Met Ser His Ser
    290                 295                 300

Trp Asp Asp Trp Asp Tyr Ala Ala Lys Val Thr Leu Ala Asn Ser Gln
305                 310                 315                 320

Lys Gly Thr Ala Gly Tyr Ile Tyr Arg Phe Leu His Asp Val Ser Glu
                325                 330                 335

Gly Asn Asp Pro Ser Val Gly Lys Asn Val Lys Glu Leu Val Ala Tyr
            340                 345                 350

Ile Ser Thr Ser Gly Glu Lys Asp Ala Gly Thr Asp Asp Tyr Met Tyr
        355                 360                 365

Phe Gly Ile Lys Thr Lys Asp Gly Lys Thr Gln Glu Trp Glu Met Asp
    370                 375                 380

Asn Pro Gly Asn Asp Phe Met Thr Gly Ser Lys Asp Thr Tyr Thr Phe
385                 390                 395                 400

Lys Leu Lys Asp Glu Asn Leu Lys Ile Asp Asp Ile Gln Asn Met Trp
                405                 410                 415

Ile Arg Lys Arg Lys Tyr Thr Ala Phe Pro Asp Ala Tyr Lys Pro Glu
            420                 425                 430
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Asn Ile Lys Val Ile Ala Asn Gly Lys Val Val Val Asp Lys Asp Ile
        435   440   445

Asn Glu Trp Ile Ser Gly Asn Ser Thr Tyr Asn Ile Lys
    450   455   460

<210> 17
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<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: VL CDR1

<400> 17

Lys Ala Ser Gln Asn Val Gly Thr Asn Val Ala
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<210> 18
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: VL CDR2

<400> 18

Ser Ala Ser Tyr Arg Tyr Ser
1   5

<210> 19
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: VL CDR3

<400> 19

Gln Gln Tyr Ser Ser Tyr Pro Leu Thr
1 5

<210> 20
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: VH CDR1

<400> 20

Asn Tyr Tyr Ile Tyr
1 5

<210> 21
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: VH CDR2

<400> 21

Trp Ile Tyr Pro Gly Asn Val Asn Thr Lys Tyr Asn Glu Lys Phe Lys
1 5 10 15

Gly

<210> 22
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: VH CDR3

<400> 22

Arg Gly Thr Gly Thr Val Val Phe Asp Tyr Trp
1 5 10

<210> 23
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: His Tag

<400> 23

His His His His His His
1 5

<210> 24
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: HA Tag

<400> 24

Gly Ala Tyr Pro Tyr Asp Val Pro Asp Tyr Ala Ser
1 5 10

<210> 25
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: protective epitope of CPa

<400> 25

Ala Arg Gly Phe Ala Lys
1 5

<210> 26
<211> 8
<212> PRT
<213> Avian Influenza virus

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<221> misc_feature
<222> (1)..(8)
<223> m2e

<400> 26

Glu Val Glu Thr Pro Ile Arg Asn
1 5

<210> 27
<211> 8
<212> PRT
<213> Avian Influenza virus

<220>
<221> misc_feature
<222> (1)..(8)
<223> m2e

<400> 27

Glu Val Glu Thr Pro Thr Arg Asn
1 5

<210> 28
<211> 12
<212> PRT
<213> Avian Influenza virus

<220>
<221> misc_feature
<222> (1)..(12)
<223> HA5 UA

<400> 28

Leu Leu Ser Arg Ile Asn His Phe Glu Lys Ile Gln
1 5 10

<210> 29

<211> 19
<212> PRT
<213> Avian Influenza virus

<220>
<221> misc_feature
<222> (1)..(19)
<223> HA5 LB

<400> 29

Ala Asn Pro Ala Asn Asp Leu Cys Tyr Pro Gly Asp Phe Asn Asp Tyr
1 5 10 15

Glu Glu Leu

<210> 30
<211> 16
<212> PRT
<213> Avian Influenza virus

<220>
<221> misc_feature
<222> (1)..(16)
<223> NP 54-69

<400> 30

Gly Arg Leu Ile Gln Asn Ser Ile Thr Ile Glu Arg Met Val Leu Ser
1 5 10 15

<210> 31
<211> 14
<212> PRT
<213> Avian Influenza virus

<220>
<221> misc_feature
<222> (1)..(14)
<223> NP 147-160

<400> 31

Thr Tyr Gln Arg Thr Arg Ala Leu Val Arg Thr Gly Met Asp
1 5 10

<210> 32
<211> 19
<212> PRT
<213> E. coli

<220>
<221> misc_feature
<222> (1)..(19)
<223> PAL bis from E. coli

<400> 32

Glu Gly His Ala Asp Glu Arg Gly Thr Pro Glu Tyr Asn Ile Ser Leu
1 5 10 15

Gly Glu Arg

<210> 33
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 33

Gly His Ala Asp Glu Arg
1 5

<210> 34
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 34

Asp Glu Arg Gly Thr Pro
1 5

<210> 35
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 35

Glu Tyr Asn Ile Ser Leu
1 5

<210> 36
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 36

Ile Ser Leu Gly Glu Arg
1 5

<210> 37
<211> 19
<212> PRT
<213> Vibrio spp.

<220>
<221> misc_feature
<222> (1)..(19)
<223> PALbis from vibrio spp.

<400> 37

Glu Gly His Ala Asp Glu Arg Gly Thr Pro Glu Tyr Asn Ile Ala Leu
1 5 10 15

Gly Glu Arg

<210> 38
<211> 17
<212> PRT
<213> Campylobacter spp.

<220>
<221> misc_feature
<222> (1)..(17)
<223> corresponding peptide from Campylobacter spp.

<400> 38

Glu Gly Asn Cys Asp Glu Trp Gly Thr Asp Glu Tyr Asn Gln Ala Leu
1 5 10 15

Gly

<210> 39
<211> 19
<212> PRT
<213> E. coli

<220>
<221> misc_feature
<222> (1)..(19)
<223> PAL from E. coli

<400> 39

Thr Val Glu Gly His Ala Asp Glu Arg Gly Thr Pro Glu Tyr Asn Ile
1 5 10 15

Ser Leu Gly

<210> 40
<211> 21
<212> PRT
<213> Campylobacter jejuni

<220>
<221> misc_feature
<222> (1)..(21)
<223> Campylobacter jejuni Cj0113

<400> 40

Gly Val Ser Ile Thr Val Glu Gly Asn Cys Asp Glu Trp Gly Thr Asp
1 5 10 15

Glu Tyr Asn Gln Ala
20

<210> 41
<211> 19
<212> PRT
<213> Vibrio spp.

<220>
<221> misc_feature
<222> (1)..(19)
<223> Vibrio spp. alternative PAL epitope

<400> 41

Thr Val Glu Gly His Ala Asp Glu Arg Gly Thr Pro Glu Tyr Asn Ile
1 5 10 15

Ala Leu Gly

<210> 42
<211> 57
<212> DNA
<213> E. coli

<220>
<221> misc_feature
<222> (1)..(57)
<223> E. coli nucleotide sequence for PAL epitope

<400> 42
gaaggtcacg cggacgaacg tggtaccccg gaatacaaca tctctctggg tgaacgt 57

<210> 43
<211> 9
<212> PRT
<213> E. coli

<220>
<221> misc_feature
<222> (1)..(9)
<223> Epitope of PAL from E. coli

<400> 43

Glu Tyr Asn Ile Ser Leu Gly Glu Arg
1 5

<210> 44
<211> 9
<212> PRT
<213> Vibrio spp.

<220>
<221> misc_feature
<222> (1)..(9)
<223> Epitope of PAL from Vibrio spp.

<400> 44

Glu Tyr Asn Ile Ala Leu Gly Glu Arg
1 5

<210> 45
<211> 16
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic: composite minimal epitope

<220>
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<222> (2)..(2)
<223> Xaa can be Arg or Met

<220>
<221> misc_feature
<222> (3)..(3)
<223> Xaa can be Val or Ile

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<222> (4)..(4)
<223> Xaa can be Ile or Va

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<222> (5)..(5)
<223> Xaa can be Ser or Arg

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<221> misc_feature
<222> (6)..(6)
<223> Xaa can be Phe or Tyr

<220>
<221> misc_feature
<222> (13)..(13)
<223> Xaa can be His or Tyr

<400> 45

Pro Xaa Xaa Xaa Xaa Xaa Gly Tyr Gly Ala Cys Glu Xaa Asn Leu Gly
1 5 10 15

<210> 46
<211> 43
<212> PRT
<213> Eimeria maxima

<220>
<221> misc_feature
<222> (1)..(43)
<223> MPP

<400> 46

Pro Ser His Asp Ala Pro Glu Ser Glu Arg Thr Pro Arg Val Ile Ser
1 5 10 15

Phe Gly Tyr Gly Ala Cys Glu His Asn Leu Gly Val Ser Leu Phe Arg
20 25 30

Arg Glu Glu Thr Lys Lys Asp Pro Arg Gly Arg
35 40

<210> 47
<211> 28
<212> PRT
<213> Neospora canium

<400> 47

Pro Arg Ile Val Ser Phe Gly Tyr Gly Ala Cys Glu His Asn Leu Gly
1 5 10 15

Met Ser Leu Tyr Asp Arg Gln Gly Leu Gln Arg Gln
20 25

<210> 48
<211> 21
<212> PRT
<213> Eimeria tenella

<400> 48

Glu Ser Gln Arg Ala Pro Met Val Ile Arg Tyr Gly Tyr Gly Ala Cys
1 5 10 15

Glu Tyr Asn Leu Gly
20

<210> 49
<211> 10
<212> PRT
<213> Eimeria maxima

<220>
<221> misc_feature
<222> (1)..(10)
<223> TRAP-1

<400> 49

Gly Gly Gly Phe Pro Thr Ala Ala Val Ala
1 5 10

<210> 50
<211> 40
<212> PRT
<213> Eimeria maxima

<220>
<221> misc_feature
<222> (1)..(40)
<223> TRAP-02

<400> 50

Ala Ala Pro Glu Thr Pro Ala Val Gln Pro Lys Pro Glu Glu Gly His
1 5 10 15

Glu Arg Pro Glu Pro Glu Glu Glu Glu Glu Lys Lys Glu Glu Gly Gly
20 25 30

Gly Phe Pro Thr Ala Ala Val Ala
35 40

<210> 51
<211> 40
<212> PRT
<213> Eimeria maxima

<220>
<221> misc_feature
<222> (1)..(40)
<223> TRAP-03

<400> 51

Gly Gly Gly Phe Pro Thr Ala Ala Val Ala Gly Gly Val Gly Gly Val
1 5 10 15

Leu Leu Ile Ala Ala Val Gly Gly Gly Val Ala Ala Phe Thr Ser Gly
20 25 30

Gly Gly Gly Ala Gly Ala Gln Glu
35 40

<210> 52
<211> 21
<212> PRT
<213> Campylobacter jejuni

<220>
<221> misc_feature
<222> (1)..(21)
<223> Cj0982

<400> 52

Lys Asp Ile Val Leu Asp Ala Glu Ile Gly Gly Val Ala Lys Gly Lys
1 5 10 15

Asp Gly Lys Glu Lys
20

<210> 53
<211> 35
<212> PRT
<213> Campylobacter jejuni

<220>

<221> misc_feature
<222> (1)..(35)
<223> Cj0420

<400> 53

Lys Val Ala Leu Gly Val Ala Val Pro Lys Asp Ser Asn Ile Thr Ser
1 5 10 15

Val Glu Asp Leu Lys Asp Lys Thr Leu Leu Leu Asn Lys Gly Thr Thr
20 25 30

Ala Asp Ala
35

<210> 54
<211> 276
<212> PRT
<213> Gallus gallus

<220>
<221> misc_feature
<222> (1)..(276)
<223> CD40

<400> 54

Met Gly Arg Leu Gly Leu Leu Gly Leu Leu Cys Ala Leu Leu Leu Gly
1 5 10 15

Cys Gly Gln Pro Gly Asp Ala Val Asn Cys Ser Asp Lys Gln Tyr Glu
20 25 30

His Lys Gly Arg Cys Cys Asn Arg Cys Gln Pro Gly Lys Lys Leu Ala
35 40 45

Ser Glu Cys Asn Asp Thr Glu Asp Ser Val Cys Thr Pro Cys Glu Asn
50 55 60

Gly Gln Tyr Gln Gln Ser Trp Thr Lys Glu Arg His Cys Thr Pro His

```
65                  70                  75                  80

Glu Ile Cys Glu Asp Asn Ala Gly Leu Ile Val Lys Arg His Gly Asn
                85                  90                  95

Ala Thr His Asn Thr Val Cys Gln Cys Arg Ala Gly Met His Cys Ser
            100                 105                 110

Asp Ala Ser Cys Gln Thr Cys Val Glu Asn Glu Pro Cys Lys Gln Gly
        115                 120                 125

Phe Gly Phe Val Ala Ala Met Ala Glu Ala Arg Met Thr Ser Pro Cys
    130                 135                 140

Glu Pro Cys Ala Glu Gly Thr Phe Ser Asn Val Ser Ser Lys Thr Glu
145                 150                 155                 160

Pro Cys His Phe Trp Thr Ser Cys Glu Glu Lys Gly Leu Val Val Lys
                165                 170                 175

Val Lys Gly Thr Asn Thr Ser Asp Val Ile Cys Glu Ser Ser Arg Arg
            180                 185                 190

Ser Ser Leu Ser Val Leu Ile Pro Ile Thr Ala Ala Val Val Thr Cys
        195                 200                 205

Leu Val Gly Ile Cys Ile Tyr Cys Leu Val His Thr Asp Leu Arg Arg
    210                 215                 220

Arg Gly Pro Lys Gln Ala Glu Ala Glu Ala Pro Arg Glu Leu Val Thr
225                 230                 235                 240

Gln Gln Pro Glu Glu Val Asp Phe Pro Val Gln Glu Thr Arg Leu Gly
                245                 250                 255

Gly Gln Pro Val Ala Gln Glu Asp Gly Lys Glu Ser Arg Ile Ala Glu
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260 265 270

Gln Glu Gln Leu
275

<210> 55
<211> 280
<212> PRT
<213> Bos Taurus

<220>
<221> misc_feature
<222> (1)..(280)
<223> CD40

<400> 55

Met Val Arg Leu Pro Leu Gln Cys Leu Phe Trp Gly Phe Phe Leu Thr
1 5 10 15

Ala Val His Ser Glu Pro Ala Thr Ala Cys Gly Glu Lys Gln Tyr Pro
20 25 30

Val Asn Ser Leu Cys Cys Asp Leu Cys Pro Pro Gly Gln Lys Leu Val
35 40 45

Asn Asp Cys Thr Glu Val Ser Lys Thr Glu Cys Gln Ser Cys Gly Lys
50 55 60

Gly Glu Phe Leu Ser Thr Trp Asn Arg Glu Lys Tyr Cys His Glu His
65 70 75 80

Arg Tyr Cys Asn Pro Asn Leu Gly Leu Arg Ile Gln Ser Glu Gly Thr
85 90 95

Leu Asn Thr Asp Thr Thr Cys Val Cys Val Glu Gly Gln His Cys Thr
100 105 110

```
Ser His Thr Cys Glu Ser Cys Thr Pro His Ser Leu Cys Leu Pro Gly
        115                 120                 125

Phe Gly Val Lys Gln Ile Ala Thr Gly Leu Leu Asp Thr Val Cys Glu
    130                 135                 140

Pro Cys Pro Leu Gly Phe Phe Ser Asn Val Ser Ser Ala Phe Glu Lys
145                 150                 155                 160

Cys His Arg Trp Thr Ser Cys Glu Arg Lys Gly Leu Val Glu Gln His
                165                 170                 175

Val Gly Thr Asn Lys Thr Asp Val Val Cys Gly Phe Gln Ser Arg Met
            180                 185                 190

Arg Thr Leu Val Val Ile Pro Val Thr Met Gly Val Leu Phe Ala Val
        195                 200                 205

Leu Leu Val Ser Ala Cys Ile Arg Asn Ile Thr Lys Lys Arg Gln Ala
    210                 215                 220

Lys Ala Leu His Pro Thr Ala Glu Arg Gln Asp Pro Val Glu Thr Ile
225                 230                 235                 240

Asp Pro Glu Asp Phe Pro Gly Pro His Pro Pro Pro Pro Val Gln Glu
                245                 250                 255

Thr Leu Cys Trp Cys Gln Pro Val Ala Gln Glu Asp Gly Lys Glu Ser
            260                 265                 270

Arg Ile Ser Val Gln Glu Arg Glu
        275                 280
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<210> 56
<211> 278
<212> PRT
<213> Sus scrofa domesticus

<220>
<221> misc_feature
<222> (1)..(278)
<223> CD40

<400> 56

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Met Val Arg Leu Pro Leu Lys Cys Leu Leu Trp Gly Cys Phe Leu Thr
1               5                   10                  15


Ala Val His Pro Glu Pro Pro Thr Ser Cys Lys Glu Asn Gln Tyr Pro
            20                  25                  30


Thr Asn Ser Arg Cys Cys Asn Leu Cys Pro Pro Gly Gln Lys Leu Val
        35                  40                  45


Asn His Cys Thr Glu Val Thr Glu Thr Glu Cys Leu Pro Cys Ser Ser
    50                  55                  60


Ser Glu Phe Leu Ala Thr Trp Asn Arg Glu Lys His Cys His Gln His
65                  70                  75                  80


Lys Tyr Cys Asp Pro Asn Leu Gly Leu Gln Val Gln Arg Glu Gly Thr
                85                  90                  95


Ser Lys Thr Asp Thr Thr Cys Val Cys Ser Glu Gly His His Cys Thr
            100                 105                 110


Asn Ser Ala Cys Glu Ser Cys Thr Leu His Ser Leu Cys Phe Pro Gly
        115                 120                 125


Leu Gly Val Lys Gln Met Ala Thr Glu Val Ser Asp Thr Ile Cys Glu
    130                 135                 140


Pro Cys Pro Val Gly Phe Phe Ser Asn Val Ser Ser Ala Ser Glu Lys
145                 150                 155                 160
```

```
Cys Gln Pro Trp Thr Ser Cys Glu Ser Lys Gly Leu Val Glu Gln Arg
                165                 170                 175


Ala Gly Thr Asn Lys Thr Asp Val Val Cys Gly Phe Gln Ser Arg Met
            180                 185                 190


Arg Ala Leu Val Val Ile Pro Ile Thr Leu Gly Ile Leu Phe Ala Val
        195                 200                 205


Leu Leu Val Phe Leu Cys Ile Arg Lys Val Thr Lys Glu Gln Glu Thr
    210                 215                 220


Lys Ala Leu His Pro Lys Thr Glu Arg Gln Asp Pro Val Glu Thr Ile
225                 230                 235                 240


Asp Leu Glu Asp Phe Pro Asp Ser Thr Ala Pro Val Gln Glu Thr Leu
                245                 250                 255


His Trp Cys Gln Pro Val Thr Gln Glu Asp Gly Lys Glu Ser Arg Ile
            260                 265                 270


Ser Val Gln Glu Arg Glu
        275


<210>  57
<211>  16
<212>  PRT
<213>  Clostridium perfringens


<220>
<221>  misc_feature
<222>  (1)..(16)
<223>  Alpha toxin

<400>  57

Asn Ala Trp Ser Lys Glu Tyr Ala Arg Gly Phe Ala Lys Thr Gly Lys
1               5                   10                  15
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<210> 58
<211> 9
<212> PRT
<213> Avian influenza

<220>
<221> misc_feature
<222> (1)..(9)
<223> M2e peptide

<400> 58

Cys Glu Val Glu Thr Pro Thr Arg Asn
1 5

<210> 59
<211> 9
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(9)
<223> Alpha-31

<400> 59

Gly Lys Ile Asp Gly Thr Gly Thr His
1 5

<210> 60
<211> 15
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(15)
<223> Alpha-51

<400> 60

Glu Asn Asp Met Ser Lys Asn Glu Pro Glu Ser Val Arg Lys Asn
1 5 10 15

<210> 61
<211> 20
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(20)
<223> Alpha-71

<400> 61

Glu Asn Met His Glu Leu Gln Leu Gly Ser Thr Tyr Pro Asp Tyr Asp
1 5 10 15

Lys Asn Ala Tyr
20

<210> 62
<211> 20
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(20)
<223> Alpha-81

<400> 62

Thr Tyr Pro Asp Tyr Asp Lys Asn Ala Tyr Asp Leu Tyr Gln Asp His
1 5 10 15

Phe Trp Asp Pro
20

<210> 63

<211> 20
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(20)
<223> Alpha-91

<400> 63

Asp Leu Tyr Gln Asp His Phe Trp Asp Pro Asp Thr Asp Asn Asn Phe
1 5 10 15

Ser Lys Asp Asn
20

<210> 64
<211> 10
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(10)
<223> Alpha-117

<400> 64

Ile Pro Asp Thr Gly Glu Ser Gln Ile Arg
1 5 10

<210> 65
<211> 10
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(10)
<223> Alpha-136

<400> 65

Glu Trp Gln Arg Gly Asn Tyr Lys Gln Ala
1 5 10

<210> 66
<211> 23
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(23)
<223> Alpha-158

<400> 66

Asp Ile Asp Thr Pro Tyr His Pro Ala Asn Val Thr Ala Val Asp Ser
1 5 10 15

Ala Gly His Val Lys Phe Glu
20

<210> 67
<211> 20
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(20)
<223> Alpha-170

<400> 67

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

Lys Glu Gln Tyr
20

<210> 68
<211> 20
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(20)
<223> Alpha-181

<400> 68

Thr Phe Ala Glu Glu Arg Lys Glu Gln Tyr Lys Ile Asn Thr Ala Gly
1 5 10 15

Cys Lys Thr Asn
20

<210> 69
<211> 21
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(21)
<223> Alpha-191

<400> 69

Lys Ile Asn Thr Val Gly Cys Lys Thr Asn Glu Asp Phe Tyr Ala Asp
1 5 10 15

Ile Leu Lys Asn Lys
20

<210> 70
<211> 20
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(20)
<223> Alpha-200

<400> 70

Glu Asp Phe Tyr Ala Asp Ile Leu Lys Asn Lys Asp Phe Asn Ala Trp
1 5 10 15

Ser Lys Glu Tyr
20

<210> 71
<211> 20
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(20)
<223> Alpha-210

<400> 71

Lys Asp Phe Asn Ala Trp Ser Lys Glu Tyr Ala Arg Gly Phe Ala Lys
1 5 10 15

Thr Gly Lys Ser
20

<210> 72
<211> 17
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(17)
<223> Alpha-220

<400> 72

Ala Arg Gly Phe Ala Lys Thr Gly Lys Ser Ile Tyr Tyr Ser His Ala
1 5 10 15

Ser

<210> 73
<211> 17
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(17)
<223> Alpha-233

<400> 73

Ser His Ala Ser Met Ser His Ser Trp Asp Asp Trp Asp Tyr Ala Ala
1 5 10 15

Lys

<210> 74
<211> 20
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(20)
<223> Alpha-240

<400> 74

Ser Trp Asp Asp Trp Asp Tyr Ala Ala Lys Val Thr Leu Ala Asn Ser
1 5 10 15

Gln Lys Gly Thr

20

<210> 75
<211> 16
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(16)
<223> Alpha-270

<400> 75

Asp Val Ser Glu Gly Asn Asp Pro Ser Val Gly Asn Asn Val Lys Glu
1 5 10 15

<210> 76
<211> 12
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(12)
<223> Alpha-291

<400> 76

Ser Thr Ser Gly Glu Lys Asp Ala Gly Thr Asp Asp
1 5 10

<210> 77
<211> 13
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(13)
<223> Alpha-309

<400> 77

Lys Thr Lys Asp Gly Lys Thr Gln Glu Trp Glu Met Asp
1 5 10

<210> 78
<211> 21
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(21)
<223> Alpha-320

<400> 78

Asp Asn Pro Gly Asn Asp Phe Met Ala Gly Ser Lys Asp Thr Tyr Thr
1 5 10 15

Phe Lys Leu Lys Asp
20

<210> 79
<211> 20
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(20)
<223> Alpha-330

<400> 79

Ser Lys Asp Thr Tyr Thr Phe Lys Leu Lys Asp Glu Asn Leu Lys Ile
1 5 10 15

Asp Asp Ile Gln
20

<210> 80
<211> 16
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(16)
<223> Alpha-354

<400> 80

Arg Lys Arg Lys Tyr Thr Ala Phe Pro Asp Ala Tyr Lys Pro Glu Asn
1 5 10 15

<210> 81
<211> 19
<212> PRT
<213> Clostridium perfringens

<220>
<221> misc_feature
<222> (1)..(19)
<223> Alpha-379

<400> 81

Val Val Asp Lys Asp Ile Asn Glu Trp Ile Ser Gly Asn Ser Thr Tyr
1 5 10 15

Asn Ile Lys

<210> 82
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Alpha-210 Control

<400> 82

Lys Asp Phe Asn Ala Trp Ser Lys Glu Tyr Ala Arg Gly Phe Ala Lys
1 5 10 15

Thr Gly Lys Ser
20

<210> 83
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic: Alpha-220 Control

<400> 83

Ala Arg Gly Phe Ala Lys Thr Gly Lys Ser Ile Tyr Tyr Ser His Ala
1 5 10 15

Ser