

SEQUENCE LISTING

<110> Flagship Pioneering, Inc.

<120> METHODS AND RELATED COMPOSITIONS FOR MANUFACTURING FOOD AND FEED

<130> 51215-007WO3

<150> US 62/584,011

<151> 2017-11-09

<150> US 62/450,038

<151> 2017-01-24

<160> 228

<170> PatentIn version 3.5

<210> 1

<211> 1526

<212> DNA

<213> Carsonella ruddii

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120

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240

cattatgttg ccatatagca tataactttt tgtaatactc attgtagcac gtgtgtagcc
300

ctacttataa gggccatgat gacttgacgt cgtcctcacc ttcttccaat ttatcattgg
360

cagttttctta ttagtttctaa tatattttta gtaaaataag ataagggttg cgctcgttat
420

aggacttaac ccaacatttc acaacacgag ctgacgacag ccatgcagca cctgtctcaa
480

agctaaaaaa gctttattat ttctaataaa ttcttttgat gtcaaaagta ggtaagattt
540

ttcgtgttg atcgaattaa accacatgct ccaccgcttg tgcgagcccc cgtcaattca
600

tttgagtttt aaccttgccg tcgtaatccc caggcgggtca acttaacgcg ttagcttttt
660

cactaaaaat atataacttt ttttcataaa acaaaattac aattataata ttttaataaat
720

agttgacatc gtttactgca tggactacca gggatatctaa tcctgtttgc tccccatgct
780

ttcgtgtatt agtgtcagta ttaaaataga aatacgcctt cgccactagt attctttcag
840

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900

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960

aacctgcaca ccctttacgc ccaataattc cgattaacgc ttgcacccct cgtattaccg
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cggctgctgg cacgaagtta gccggtgctt cttttacaaa taacgtcaaa gataatattt
1080

ttttattata aaatctcttc ttactttggt gaaagtgttt tacaacccta aggccttctt
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cacacacgcg atatagctgg atcaagcttt cgctcattgt ccaatatccc ccactgctgc
1200

cttccgtaaa agtttgggcc gtgtctcagt cccaatgtgg ttgttcatcc tctaagatca
1260

actacgaatc atagtcttgt taagctttta ctttaacaac taactaattc gatataagct
1320

cttctattag cgaacgacat tctcgttctt tatccattag gatacatatt gaattactat
1380

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1440

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<211> 1536
<212> DNA
<213> aleyrodidarum BT-B

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120

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180

ggggcttgat aaaaaaaatc aaccttgcg c ttttagaaaa ttacatgccg gattagctag
240

ttggtagagt aaaagcctac caaggtaacg atccgtagct ggtctgagag gatgatcagc
300

cacactggga ctgagaaaag gccagactc ctacgggagg cagcagtggg gaatattgga
360

caatgggggg aaccctgac cagtcatgcc gcgtgtgtga agaaggcctt tgggttgtaa
420

agcactttca gcgaagaaga aaagttagaa aataaaaagt tataactatg acggtactcg
480

cagaagaagc accggctaac tccgtgccag cagccgcggt aagacggagg gtgcaagcgt
540

taatcagaat tactgggcgt aaagggcatg taggtggttt gttaagcttt atgtgaaagc
600

cctatgctta acataggaac ggaataaaga actgacaaac tagagtgcag aagaggaagg
660

tagaattccc ggtgtagcgg tgaaatgcgt agatatctgg aggaatacca gttgcgaagg
720

cgaccttctg ggctgacact gacactgaga tgcgaaagcg tggggagcaa acaggattag
780

ataccctggg agtccacgct gtaaacgata tcaactagcc gttggattct taaagaattt
840

tgtggcgtag ctaacgcgat aagttgatcg cctggggagt acggtcgcaa ggctaaaact
900

caaatgaatt gacggggggc cgcacaagcg gtggagcatg tggtttaatt cgatgcaacg
960

cgcaaaacct tacctactct tgacatccaa agtactttcc agagatggaa gggcgcctta
1020

gggaactttg agacaggtgc tgcattggctg tcgtcagctc gtgttggtgaa atgttggtt
1080

aagtcccgtg acgagcgcaa cccttgctct tagttgccaa cgcataaggc gggaacttta
1140

aggagactgc tggtgataaa ccggaggaag gtggggacga cgtcaagtca tcatggccct
1200

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1260

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1320

aagtcggaat cgctagtaat cgtgaatcag aatgtcacgg tgaatacggt ctcgggcctt
1380

gtacacaccg cccgtcacac catggaagtg aaatgcacca gaagtggcaa gttaaaccaa
1440

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1500

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1536

<210> 3

<211> 1540

<212> DNA

<213> Buchnera aphidicola str. APS (Acyrtosiphon pisum)

<400> 3

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120

ggggatctac ccaaaagagg gggataacta ctagaaatgg tagctaatac cgcataatgt
180

tgaaaaacca aagtggggga ctttttggcc tcatgctttt ggatgaacct agacgagatt
240

agcttggttg tagagtaata gcctaccaag gcaacgatct ctagctgggc tgagaggata
300

accagccaca ctggaactga gacacggtcc agactcctac gggaggcagc agtggggaat
360

attgcacaat gggcgaaagc ctgatgcagc tatgccgcgt gtatgaagaa ggccttaggg
420

ttgtaaagta ctttcagcgg ggaggaaaaa aataaaacta ataattttat ttcgtgacgt
480

tacccgcaga agaagcaccc gctaactccg tgccagcagc cgcggtaata cggagggtgc
540

aagcgtaaat cagaattact gggcgtaaag agcgcgtagg tggtttttta agtcagggtg
600

gaaatcccta ggctcaacct aggaactgca tttgaaactg gaaaactaga gtttcgtaga
660

gggaggtaga attctagggt tagcggtgaa atgcgtagat atctggagga ataccggtgg
720

cgaaagcggc ctctaaacg aaaactgaca ctgaggcgcg aaagcgtggg gagcaaacag
780

gattagatac cctggtagtc catgccgtaa acgatgtcga cttggagggtt gtttccaaga
840

gaagtgactt ccgaagctaa cgcattaagt cgaccgcctg gggagtagcg ccgcaaggct
900

aaaactcaaa tgaattgacg ggggcccgca caagcgtggg agcatgtggt ttaattcgat
960

gcaacgcgaa aaaccttacc tggctctgac atccacagaa ttctttagaa ataaagaagt
1020

gccttcggga gctgtgagac aggtgctgca tggctgtcgt cagctcgtgt tgtgaaatgt
1080

tgggttaagt cccgcaacga gcgcaaccct tatcccctgt tgccagcggg tcggccggga
1140

actcagagga gactgccggg tataaaccgg aggaaggtag ggacgacgtc aagtcatcat
1200

ggcccttacg accagggcta cacacgtgct acaatggttt atacaaagag aagcaaattt
1260

gcaaagacaa gcaaacctca taaagtaa atcgtagtcgg actggagtct gcaactcgac
1320

tccacgaagt cggaatcgct agtaatcgtg gatcagaatg ccacggtgaa tacgttcccg
1380

ggccttgtag acaccgcccg tcacaccatg ggagtgggtt gcaaaagaag caggtatcct
1440

aaccctttaa aaggaaggcg cttaccactt tgtgattcat gactgggggtg aagtcgtaac
1500

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1540

<210> 4

<211> 1552

<212> DNA

<213> Buchnera aphidicola str. Sg (Schizaphis graminum)

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gtcgagcggc agcgaaaaga aagcttgctt tcttgctcgg gagcggcaaa cgggtgagta
120

atatctgggg atctgccc aaagaggggga taactactag aaatggtagc taataccgca
180

taaagttgaa aaaccaaagt gggggacctt ttttaaaggc ctcatgcttt tggatgaacc
240

cagacgagat tagcttggtg gtaaggtaaa agcttaccaa ggcaacgatc tctagctggt
300

ctgagaggat aaccagccac actggaactg agacacggtc cagactccta cgggaggcag
360

cagtggggaa tattgcacaa tgggcgaaag cctgatgcag ctatgccgcg tgtatgaaga
420

aggccttagg gttgtaaagt actttcagcg gggaggaaaa aattaaaact aataatttta
480

ttttgtgacg ttacccgcag aagaagcacc ggctaactcc gtgccagcag ccgcggtaat
540

acggagggtg cgagcgtaa tcagaattac tgggcgtaaa gagcacgtag gtggtttttt
600

aagtcagatg tgaaatccct aggcttaacc taggaactgc atttgaaact gaaatgctag
660

agtatcgtag agggaggtag aattctaggt gtagcgtga aatgcgtaga tatctggagg
720

aatacccgtg gcgaaagcgg cctcctaaac gaatactgac actgaggtgc gaaagcgtgg
780

ggagcaaaca ggattagata ccctggtagt ccatgccgta aacgatgtcg acttgagggt
840

tgtttccaag agaagtgact tccgaagcta acgcgttaag tcgaccgcct ggggagtacg
900

gccgcaaggc taaaactcaa atgaattgac gggggcccg cacaagcggg gagcatgtgg
960

tttaattcga tgcaacgcga aaaaccttac ctggtcttga catccacaga attttttaga
1020

aataaaaaag tgccttcggg aactgtgaga caggtgctgc atggctgtcg tcagctcgtg
1080

ttgtgaaatg ttgggttaag tcccgcaacg agcgcaacc ttatcccctg ttgccagcgg
1140

ttcggccggg aactcagagg agactgccgg ttataaaccg gaggaagggtg gggacgacgt
1200

caagtcatca tggcccttac gaccagggt acacacgtgc tacaatgggt tatacaaaga
1260

gaagcaaadc tgtaaagaca agcaaactc ataaagtaaa tcgtagtccg gactggagtc
1320

tgcaactcga ctccacgaag tcggaatcgc tagtaatcgt ggatcagaat gccacgggtga
1380

atacgttccc gggccttgta cacaccgccc gtcacaccat gggagtgggt tgcaaaagaa
1440

gcagatttcc taaccacgaa agtgaaggc gtctaccact ttgtgattca tgactggggt
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1552

<210> 5

<211> 1566

<212> DNA

<213> Buchnera aphidicola str. Bp (Baizongia pistaciae)

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120

agtaacatct ggggatctac ctaaaagagg gggacaacca ttggaaacga tggctaatac
180

cgcataatgt ttttaaataa accaaagtag gggactaaaa tttttagcct tatgctttta
240

gatgaacca gacgagatta gcttgatggg aaggtaatgg cttaccaagg cgacgatctc
300

tagctggtct gagaggataa ccagccacac tggaactgag atacggtcca gactcctacg
360

ggaggcagca gtggggaata ttgcacaatg ggctaaagcc tgatgcagct atgccgcgtg
420

tatgaagaag gccttagggg tgtaaagtac tttcagcggg gaggaaagaa ttatgtctaa
480

tatacatatt ttgtgacgtt acccgaagaa gaagcaccgg ctaactccgt gccagcagcc
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gcggtaatac ggaggggtgcg agcgттаатс агааттactg ggcgtaaaga gcacgtaggc
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660

tagactagag tctcatagag ggaggtagaa ttctaggtgt agcggtgaaa tgcgtagata
720

tctagaggaa taccggtggc gaaagcgacc tcctaaatga aaactgacgc tgaggtgcga
780

aagcgtgggg agcaaacagg attagatacc ctggtagtcc atgctgtaaa cgatgtcgac
840

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900

ggagtacggt cgcaaggcta aaactcaaat gaattgacgg gggcccgcac aagcggtgga
960

gcatgtggtt taattcgatg caacgcgaag aaccttacct ggtcttgaca tccatagaat
1020

tttttagaga taaaagagtg ccttagggaa ctatgagaca ggtgctgcat ggctgtcgtc
1080

agctcgtggt gtgaaatggt gggttaagtc ccgcaacgag cgcaaccctt atcctttggt
1140

gccatcaggt tatgctggga actcagagga gactgccggt tataaaccgg aggaaggtgg
1200

ggatgacgtc aagtcatcat ggcccttacg accagggtta cacacgtgct acaatggcat
1260

atacaaagag atgcaactct gcgaagataa gcaaacctca taaagtatgt cgtagtccgg
1320

actggagtct gcaactcgac tccacgaagt aggaatcgct agtaatcggt gatcagaatg
1380

ccacggtgaa tacgttcccc ggcttgtac acaccgcccg tcacaccatg ggagtgggtt
1440

gcaaaagaag caggtagctt aaccagatta ttttattgga gggcgcttac cactttgtga
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1566

<210> 6
<211> 828
<212> DNA
<213> Buchnera aphidicola BCc

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120

attattgaaa taggatcagg attaggagcg ttaacttttc ctatttgtag aatcattaaa
180

aaaatgatag tattagaaat tgatgaagat cttgtgtttt ttttaactca aagtttattt
240

attaaaaaat tacaaattat aattgctgat attataaaat ttgatttttg ttgttttttt
300

tctttacaga aatataaaaa atataggttt attggtaatt taccatataa tattgctact
360

atattttttt taaaaacaat taaatttctt tataatataa ttgatatgca ttttatgttt
420

caaaaagaag tagcaaagag attattagct actcctggta ctaaagaata tggtagatta
480

agtattattg cacaatattt ttataagata gaaactgtta ttaatgttaa taaatttaat
540

ttttttccta ctctaaagt agattctact tttttacgat ttactcctaa atattttaat
600

agtaaataa aaatagataa acatttttct gttttagaat taattactag attttctttt
660

caacatagaa gaaaattttt aaataataat ttaatatctt tattttctac aaaagaatta
720

atttctttag atattgatcc atattcaaga gcagaaaatg tttctttaat tcaatattgt
780

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828

<210> 7
<211> 921
<212> DNA
<213> Buchnera aphidicola (Cinara tujaefilina)

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120

caattcagta ataggaagtt ttttaggtat atttggataa ttactgtaat tcttaataaa
180

gttttttaca atcctatctt caatagaatg aaaactaata atagcaattt ttgatccgga
240

atgtaatatg ttaataataa tttttaatat tttatgtaat tcatttattt cttggttaat
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atatattcga aaagcttgaa atgttctcgt agctggatgt ttaaatttgt catattttgg
360

gattgatttt tttatgattt gaactaactc taacgtgctt gttatggttt ttttttttat
420

ttgtaatatg atggctcggg atattttttt tgcgtatttt tcttcgccaa aattttttat
480

tacctgttct attgtttttt ggtttgtttt ttttaaccat tgactaactg atattccaga
540

tttagggttc atacgcatat ctaaagggtcc atcattcata aatgaaaatc ctcggatact
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agaatttaac tgtattgaag aaatacctaa atctaataat attccatcta ttttatctct
660

atttttttct ttttttaata ttttttcaat attagaaaat ttacctaaaa atattttaaa
720

tcgcgaatct tttatttttt ttccgatttt tatagattgt gggctcttgat caatactata
780

taactttcca ttaaccacct attcttgaag aattgctttt gaatgaccac cacctccaaa
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921

<210> 8
<211> 822
<212> DNA
<213> Buchnera aphidicola str. G002 (Myzus persicae)

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120

acattagtag aaatcggacc aggattagct gcattaactg agcccatatc tcagttatta
180

aaagagttaa tagttattga aatagactgt aatctattat attttttaaa aaaacaacca
240

ttttattcaa aattaatagt tttttgtcaa gatgctttta actttaatta tacaaattta
300

ttttataaaa aaaataaatt aattcgtatt tttggtaatt taccatataa tatctctaca
360

tctttaatta tttttttatt tcaacacatt agagtaattc aagatatgaa ttttatgctt
420

caaaaagaag ttgctgcaag attaattgca ttacctggaa ataaatatta cggtcgtttg
480

agcattatat ctcaatatta ttgtgatatc aaaattttat taaatgttgc tcctgaagat
540

ttttggccta ttccgagagt tcattctata ttgttaaatt taacacctca tcataattct
600

ccttattttg tttatgatat taatatttta agccttatta caaataaggc tttccaaaat
660

agaagaaaaa tattacgtca tagtttaaaa aatttatttt ctgaaacaac tttattaaat
720

ttagatatta atcccagatt aagagctgaa aatatttctg tttttcagta ttgtcaatta
780

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822

<210> 9

<211> 822

<212> DNA

<213> Buchnera aphidicola str. Ak (Acyrthosiphon kondoi)

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180

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240

tcaaaaattaa cagtttttta tcaagacgct ttaaatttca attatacaga tttgttttat
300

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360

attatttctt tattcaatca tattaaagtt attcaagata tgaattttat gttacagaaa
420

gaggttgctg aaagattaat ttctattcct ggaaataaat cttatggccg tttaagcatt
480

atttctcagt attattgtaa aattaaata ttattaaatg ttgtacctga agattttcga
540

cctataccga aagtgcattc tgtttttatc aatttaactc ctcatacca ttctccatat
600

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660

aaaattttgc gtcatagttt aaaaaattta ttttctgaaa aagaactaat tcaattagaa
720

attaatccaa atttacgagc tgaaaatatt tctatctttc agtattgtca attagctgat
780

tatttatata aaaaattaaa taatcttgta aaaatcaatt aa
822

<210> 10

<211> 822

<212> DNA

<213> Buchnera aphidicola str. Ua (Uroleucon ambrosiae)

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300

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360

ttaataatat atttatttcg gaatattgat attattcaag atatgaattt tatgttacia
420

caagaagtgg ctaaaagatt agttgctatt cctggtgaaa aacttttatgg tcgtttaagt
480

attatatctc aatattattg taatattaaa atattattac atattcgacc tgaaaatttt
540

caacctattc ctaaagttaa ttcaatgttt gtaaatttaa ctccgcatat tcattctcct
600

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660

agaaaaatat tgcgtcatag ttaagaaat tttttttctg agcaagattt aattcattta
720

gaaattaatc caaatttaag agctgaaaat gtttctatta ttcaatattg tcaattggct
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aataatttat ataaaaaaca taaacagttt attaataatt aa
822

<210> 11
<211> 816
<212> DNA
<213> Buchnera aphidicola (Aphis glycines)

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120

ccgggattag ctgctatcac tcgacctatt tgtgatttga tagatcattt aattgtgatt
180

gaaattgata aaattttatt agatagatta aaacagttct cattttattc aaaattaaca
240

gtatatcatc aagatgcttt agcatttgat tacataaagt tatttaataa aaaaaataaa
300

ttagttcgaa tttttggtaa ttaccatat catgtttcta cgtctttaat attgcattta
360

tttaaaagaa ttaatattat taaagatatg aattttatgc tacaaaaaga agttgctgaa
420

cgtttaattg caactccagg tagtaaatta tatggtcggt taagtattat ttctcaatat
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<213> Moranella endobia

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<213> Hodgkinia

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<211> 1504

<212> DNA

<213> Wolbachia sp. wPip

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<212> DNA

<213> Uzinura diaspidicola

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<212> DNA

<213> Carsonella ruddii

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<210> 26

<211> 1761

<212> DNA

<213> Symbiotaphrina buchneri voucher JCM9740

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<223> n is a, g, c, or t

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<210> 27

<211> 1801

<212> DNA

<213> *Symbiotaphrina kochii* voucher CBS 589.63

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<222> (1753)..(1755)

<223> n is a, g, c, or t

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1801

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<212> DNA
<213> Burkholderia sp. SFA1

<400> 28
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120

cctgtagtgg gggatagccc ggcgaaagcc ggattaatac cgcatacgac ctaagggaga
180

aagcggggga tcttcggacc tcgcgctata ggggcggccg atggcagatt agctagttgg
240

tggggtaaag gcctaccaag gcgacgatct gtagctggtc tgagaggacg accagccaca
300

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360

gggggcaacc ctgatccagc aatgccgcgt gtgtgaagaa ggcttcgggt tgtaaagcac
420

ttttgtccgg aaagaaaact tcgtccctaa tatggatgga ggatgacggt accggaagaa
480

taagcaccgg ctaactacgt gccagcagcc gcggtaatac gtaggggtgcg agcgттаатс
540

ggaattactg ggcgtaaagc gtgcgcaggc ggtctgttaa gaccgatgtg aaatccccgg
600

gcttaacctg ggaactgcat tggtgactgg caggctttga gtgtggcaga ggggggtaga
660

attccacgtg tagcagtga atgcgtagag atgtggagga ataccgatgg cgaaggcagc
720

cccctgggcc aactactgac gctcatgcac gaaagcgtgg ggagcaaaca ggattagata
780

ccctggtagt ccacgcccta aacgatgtca actagttggt ggggattcat ttccttagta
840

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900

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1080

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1200

gggcttcaca cgtcatacaa tggtcggaac agagggttgc caagccgcga ggtggagcca
1260

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1320

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1380

cgccccgtcac accatgggag tgggtttcac cagaagtagg tagcctaacc gcaaggaggg
1440

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<210> 29

<211> 1408

<212> DNA

<213> Burkholderia sp. KM-A

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120

tccttcggga cctcgcgcta taggggcggc cgatggcaga ttagctagtt ggtggggtaa
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aggcctacca aggcgacgat ctgtagctgg tctgagagga cgaccagcca cactgggact
240

gagacacggc ccagactcct acgggaggca gcagtgggga attttggaca atgggggcaa
300

ccctgatcca gcaatgccgc gtgtgtgaag aaggccttcg ggttgtaaag cacttttgtc
360

cggaagaaa acgtcttggt taataacctga ggcggatgac ggtaccggaa gaataagcac
420

cggctaacta cgtgccagca gccgcggtaa tacgtagggg gcgagcggtta atcggaatta
480

ctgggcgtaa agcgtgcgca ggcggtctgt taagaccgat gtgaaatccc cgggcttaac
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ctgggaactg cattggtgac tggcaggctt tgagtgtggc agaggggggt agaattccac
600

gtgtagcagt gaaatgcgta gagatgtgga ggaataccga tggcgaaggc agccccctgg
660

gccaacactg acgctcatgc acgaaagcgt ggggagcaaa caggattaga taccctggta
720

gtccacgccc taaacgatgt caactagtgt ttggggattc atttccttag taacgtagct
780

aacgcgtgaa gttgaccgcc tggggagtac ggtcgcaaga ttaaaactca aaggaattga
840

cggggacccg cacaagcggg ggatgatgtg gattaattcg atgcaacgcg aaaaacctta
900

cctacccttg acatggtcgg aagtctgctg agagggtggac gtgctcgaaa gagaaccggc
960

gcacagggtg tgcattggctg tcgtcagctc gtgtcgtgag atgttggggt aagtcccgca
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acgagcgcaa cccttgctct tagttgctac gcaagagcac tctaaggaga ctgccggtga
1080

caaaccggag gaagggtggg atgacgtcaa gtcctcatgg cccttatggg tagggcttca
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aaaccgatcg tagtccggat cgcagtctgc aactcgactg cgtgaagctg gaatcgctag
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1320

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1380

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1408

<210> 30

<211> 1383

<212> DNA

<213> Burkholderia sp. KM-G

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120

tcttcggacc tcgcgctata ggggcggccg atggcagatt agctagttgg tggggtaaag
180

gcctaccaag gcgacgatct gtagctggtc tgagaggacg accagccaca ctgggactga
240

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ctgatccagc aatgccgcgt gtgtgaagaa ggccttcggg ttgtaaagca cttttgtccg
360

gaaagaaaac ttcgaggtta atacccttgg aggatgacgg taccggaaga ataagcaccg
420

gctaactacg tgccagcagc cgcggtaata cgtaggggtgc gagcgттаат cggaattact
480

gggcgtaaag cgtgcgcagg cggctctgtta agaccgatgt gaaatccccg ggcttaacct
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gggaactgca ttggtgactg gcaggctttg agtgtggcag aggggggtag aattccacgt
600

gtagcagtga aatgcgtaga gatgtggagg aataccgatg gcgaaggcag ccccctgggc
660

caacactgac gctcatgcac gaaagcgtgg ggagcaaaca ggattagata ccctggtagt
720

ccacgcccta aacgatgtca actagttggt ggggattcat ttccttagta acgtagctaa
780

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gggacccgca caagcgggtg atgatgtgga ttaattcgat gcaacgcgaa aaaccttacc
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tacccttgac atggtcggaa gtctgctgag aggtggacgt gctcgaaaga gaaccggcgc
960

acaggtgctg catggctgtc gtcagctcgt gtcgtgagat gttgggttaa gtcccgaac
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gagcgcaacc cttgtcctta gttgctacgc aagagcactc taaggagact gccggtgaca
1080

aaccggagga aggtggggat gacgtcaagt cctcatggcc cttatgggta gggcttcaca
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cgtcatacaa tggtcggaac agagggttgc caagccgcga ggtggagcca atcccagaaa
1200

accgatcgta gtccggatcg cagtctgcaa ctcgactgcg tgaagctgga atcgctagta
1260

atcgcggatc agcatgccgc ggtgaatacg ttcccgggtc ttgtacacac cgcccgtcac
1320

accatgggag tgggtttcac cagaagtagg tagcctaacc tgcaaaggag ggcgcttacc
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acg
1383

<210> 31

<400> 31
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<210> 32

<400> 32
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<210> 33

<211> 1505

<212> DNA

<213> Snodgrassella alvi

<400> 33

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120

aacgtaccga gtaatggggg ataactgtcc gaaaggatgg ctaataccgc atacgccctg
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aggggggaaag cgggggatcg aaagacctcg cgttatttga gcggccgatg ttggattagc
240

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300

cgccacattg ggactgagac acggcccaaa ctctacggg aggcagcagt ggggaatttt
360

ggacaatggg gggaaccctg atccagccat gccgcgtgtc tgaagaaggc cttcgggttg
420

taaaggactt ttgttaggga agaaaagccg ggtgttaata ccatctggtg ctgacggtag
480

ctaaagaata agcaccggct aactacgtgc cagcagccgc ggtaatacgt aggggtgcgag
540

cgттаатсгг ааттастгг сгтааагсга гсгсгагсгг ттааттаагт сагатгтгаа
600

атссссггагс тсааттггг асгтгсаттт гааастггтт аастагастг тгтсгагггг
660

aggtagaatt ccacgtgtag cagtgaaatg cgtagagatg tggaggaata ccgatggcga
720

aggcagcctc ctgggataac actgacgttc atgctcgaaa gcgtgggtag caaacaggat
780

tagataccct ggtagtccac gccctaaacg atgacaatta gctgttgga cactagatgt
840

cttagtagcg aagctaacgc gtgaaattgt ccgcctgggg agtacggtcg caagattaaa
900

actcaaagga attgacgggg acccgacaaa gcggtggatg atgtggatta attcgatgca
960

acgcgaagaa ccttacctgg tcttgacatg tacggaatct cttagagata ggagagtgcc
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1080

gttaagtccc gcaacgagcg caacccttgt cattagttgc catcattaag ttgggcactc
1140

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1200

cttatgacca gggcttcaca cgtcatacaa tggtcggtac agagggtagc gaagccgcga
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ggtgaagcca atctcagaaa gccgatcgta gtccggattg cactctgcaa ctcgagtgca
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tgaagtcgga atcgctagta atcgcaggtc agcatactgc ggtgaatacg ttcccgggtc
1380

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1440

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1500

cgtag
1505

<210> 34

<211> 1541

<212> DNA

<213> Gilliamella apicola

<400> 34

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120

tatggggatc tgccgaatgg aggggggacaa cagttggaaa cgactgctaa taccgcataa
180

agttgagaga ccaaagcatg ggaccttcgg gccatgcgcc atttgatgaa cccatatggg
240

attagctagt tggtagggta atggcttacc aaggcgacga tctctagctg gtctgagagg
300

atgaccagcc aacttggaac tgagacacgg tccagactcc tacgggaggg agcagtgggg
360

aatattgcac aatggggggaa accctgatgc agccatgccg cgtgtatgaa gaaggccttc
420

gggttgtaaa gtacttttcgg tgatgaggaa ggtggtgtat ctaatagggtg catcaattga
480

cgtaattac agaagaagca ccggctaact ccgtgccagc agccgcggta atacggaggg
540

tgcgagcggt aatcggaatg actgggcgta aagggcattg aggcggataa ttaagttagg
600

tgtgaaagcc ctgggctcaa cctaggaatt gcacttaaaa ctgggtaact agagtattgt
660

agaggaagggt agaattccac gtgtagcggg gaaatgcgta gagatgtgga ggaataccgg
720

tggcgaaggc ggccttctgg acagatactg acgctgagat gcgaaagcgt ggggagcaaa
780

caggattaga taccctggta gtccacgctg taaacgatgt cgatttgag tttgttgctt
840

agagtgatgg gctccgaagc taacgcgata aatcgaccgc ctggggagta cggccgcaag
900

gttaaaaactc aaatgaattg acggggggccc gcacaagcgg tggagcatgt ggtttaattc
960

gatgcaacgc gaagaacctt acctggtctt gacatccaca gaatcttgca gagatgcggg
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1200

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1541

<210> 35

<211> 1528

<212> DNA

<213> Bartonella apis

<400> 35

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120

cgcgtaggaa tctacctatt tctacggaat aacgcagaga aatttgtgct aataccgtat
180

acgtccttcg ggagaaagat ttatcggaga tagatgagcc cgcgttggat tagctagttg
240

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300

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tgggcgcaag cctgatccag ccatgccgcg tgagtgatga aggccctagg gttgtaaagc
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cgtaggcggg tatttaagtc aggggtgaaa tcccggggct caaccccgga actgcctttg
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720

ggtgcgaaag cgtgggggagc aaacaggatt agataccctg gtagtccacg ctgtaaacga
780

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gcctggggag tacggtcgca agattaaaac tcaaaggaat tgacgggggc ccgcacaagc
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1380

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1528

<210> 36
<211> 1390
<212> DNA
<213> Parasaccharibacter apium

<220>
<221> misc_feature
<222> (643)..(756)
<223> n is a, g, c, or t

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120

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240

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420

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1080

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<210> 37

<211> 1583

<212> DNA

<213> *Lactobacillus kunkeei*

<400> 37

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120

gggtgttaca aactctcatg gtgtgacggg cgggtgtgtac aaggcccggg aacgtattca
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ccgtggcatg ctgatccacg attactagt attccaactt catgcaggcg agttgcagcc
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tgcaatccga actgagaatg gctttaagag attagcttga cctcgcgggt tcgcgactcg
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420

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480

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660

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720

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900

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960

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1080

acagttactc taacacttgt tcttctttaa caacagagtt ttacgatccg aaaaccttca
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1200

cctcccgtag gagtctgggc cgtgtctcag tcccaatgtg gccgattacc ctctcaggtc
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1583

<210> 38

<211> 1395

<212> DNA

<213> Lactobacillus Firm-4

<400> 38

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120

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180

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240

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300

ccacattggg actgagacac ggcccaaact cctacgggag gcagcagtag ggaatcttcc
360

acaatggacg caagtctgat ggagcaacgc cgcgtggatg aagaaggtct tcggatcgta
420

aaatcctgtt gttgaagaag aacggttgtg agagtaactg ctcataacgt gacggtaatc
480

aaccagaaaag tcacggctaa ctacgtgcca gcagccgcgg taatacgtag gtggcaagcg
540

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600

gccctcagct taactgagga agagcatcgg aaactgagag acttgagtgc agaagaggag
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agtggaactc catgtgtagc ggtgaaatgc gtagatatat ggaagaacac cagtggcgaa
720

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780

agataccctg gtagtccatg ccgtaaacga tgagtgctaa gtggtgggag gtttccgcct
840

ctcagtgctg cagctaacgc attaagcact ccgcctgggg agtacgaccg caaggttgaa
900

actcaaagga attgacgggg gcccgacaaa gcggtggagc atgtggttta attcgaagca
960

acgcgaagaa ctttaccagg tcttgacatc tcctgcaagc ctaagagatt aggggttccc
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1080

gttaagtccc gcaacgagcg caacccttgt tactagttgc cagcattaag ttgggcactc
1140

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1200

cttatgacct gggctacaca cgtgctacaa tggatggtac aatgagaagc gaactcgcca
1260

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1320

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1380

ttgtacacac cgccc
1395

<210> 39
<211> 1549
<212> DNA
<213> Enterococcus

<400> 39
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120

tctcgtggtg tgacggggcg tgtgtacaag gcccggaac gtattcaccg cggcgtgctg
180

atccgcgatt actagcgatt ccggcttcat gcaggcgagt tgcagcctgc aatccgaact
240

gagagaagct ttaagagatt tgcattgacct cgcgggtctag cgactcgttg tacttcccat
300

tgtagcacgt gtgtagccca ggtcataagg ggcattgatga tttgacgtca tccacacctt
360

cctccggttt gtcaccggca gtctcgttag agtgcccaac taaatgatgg caactaaca
420

taagggttgc gctcgttgcg ggacttaacc caacatctca cgacacgagc tgacgacaac
480

catgcaccac ctgtcacttt gtccccgaag ggaaagctct atctctagag tggtaaagg
540

atgtcaagac ctggtaaggc tcttcgcgtt gcttcgaatt aaaccacatg ctccaccgct
600

tgtgcggggc cccgtcaatt cctttgagtt tcaaccttgc ggtcgtactc ccagggcgga
660

gtgcttaatg cgtttgctgc agcactgaag ggcggaaacc ctccaacact tagcactcat
720

cgtttacggc gtggactacc agggatatcta atcctgtttg ctccccacgc tttcagcct
780

cagcgtcagt tacagaccag agagccgcct tcgccactgg tgttcctcca tatactacg
840

catttcaccg ctacacatgg aattccactc tcctcttctg cactcaagtc tccagtttc
900

caatgaccct ccccggttga gccgggggct ttcacatcag acttaagaaa ccgcctgcgc
960

tcgctttacg cccaataaat ccggacaacg cttgccacct acgtattacc gcggctgctg
1020

gcacgtagtt agccgtggct ttctggttag ataccgtcag gggacgttca gttactaacg
1080

tccttgttct tctctaacaa cagagtttta cgatccgaaa accttcttca ctcacgcggc
1140

gttgctcggg cagactttcg tccattgccg aagattccct actgctgcct cccgtaggag
1200

tctgggccgt gtctcagtcc cagtgtggcc gatcacctc tcaggtcggc tatgcatcgt
1260

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1320

acacccgaaa gcgcctttca ctcttatgcc atgcggcata aactgttatg cggatttagc
1380

acctgtttcc aagtgttatc cccctctgat gggtaggtta cccacgtgtt actcacccgt
1440

ccgccactcc tctttccaat tgagtgaag cactcgggag gaaagaagcg ttcgacttgc
1500

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1549

<210> 40
<211> 1541
<212> DNA
<213> Delftia

<400> 40
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120

gacccgctcc catggtgtga cgggcggtgt gtacaagacc cgggaacgta ttcaccgcgg
180

catgctgatc cgcgattact agcgattccg acttcacgca gtcgagttgc agactgcgat
240

ccggactacg actggtttta tgggattagc tccccctcgc gggttggcaa ccctctgtac
300

cagccattgt atgacgtgtg tagccccacc tataagggcc atgaggactt gacgtcatcc
360

ccaccttcct ccggtttgtc accggcagtc tcattagagt gctcaactga atgtagcaac
420

taatgacaag ggttgcgctc gttgcgggac ttaaccaac atctcacgac acgagctgac
480

gacagccatg cagcacctgt gtgcaggttc tctttcgagc acgaatccat ctctggaaac
540

ttcctgccat gtcaaagggtg ggtaaggttt ttcgcgttgc atcgaattaa accacatcat
600

ccaccgcttg tgcgggtccc cgtcaattcc tttgagtttc aaccttgcgg ccgtactccc
660

caggcgggtca acttcacgcg ttagcttcgt tactgagaaa actaattccc aacaaccagt
720

tgacatcggt tagggcggtg actaccaggg tatctaattcc tgtttgctcc ccacgctttc
780

gtgcatgagc gtcagtacag gtccagggga ttgccttcgc catcgggtgtt cctccgcata
840

tctacgcatt tcaactgctac acgcggaatt ccatccccct ctaccgtact ctagccatgc
900

agtcacaaat gcagttccca ggttgagccc ggggatttca catctgtctt acataaccgc
960

ctgcgcacgc tttacgccc a gtaattccga ttaacgctcg caccctacgt attaccgcgg
1020

ctgctggcac gtagttagcc ggtgcttatt cttacggtac cgtcatgggc ccctgtatt
1080

agaaggagct ttttcgttcc gtacaaaagc agtttacaac ccgaaggcct tcacctctgca
1140

cgcggcattg ctggatcagg ctttcgccc ttgtccaaaa ttccccactg ctgcctcccg
1200

taggagtctg ggccgtgtct cagtcccagt gtggctggtc gtcctctcag accagctaca
1260

gatcgtcggc ttggtaagct tttatccac caactaccta atctgccatc ggccgctcca
1320

atcgcgcgag gcccgaggg cccccgcttt catcctcaga tcgtatgcgg tattagctac
1380

tctttcgagt agttatcccc cacgactggg cacgttccga tgtattactc acccgttcgc
1440

cactcgtcag cgtccgaaga cctgttaccg ttcgacttgc atgtgtaagg catgccgcca
1500

gcgttcaatc tgagccagga tcaaactcta cagttcgatc t
1541

<210> 41
<211> 1502
<212> DNA
<213> Pelomonas

<220>
<221> misc_feature
<222> (192)..(193)
<223> n is a, g, c, or t

<220>
<221> misc_feature
<222> (832)..(833)
<223> n is a, g, c, or t

<400> 41
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120

ataactgctc gaaagagcag ctaataccgc atacgacctg agggtgaaag cgggggatcg
180

caagacctcg cnngattgga gcggccgata tcagattagg tagttggtgg ggtaaaggcc
240

caccaagcca acgatctgta gctggtctga gaggacgacc agccacactg ggactgagac
300

acggcccaga ctctacggg aggcagcagt ggggaatttt ggacaatggg cgcaagcctg
360

atccagccat gccgcgtgcg ggaagaaggc cttcgggttg taaaccgctt ttgtcagggg
420

agaaaagggt ctggttaata cctgggactc atgacggtac ctgaagaata agcaccggct
480

aactacgtgc cagcagccgc ggtaatacgt agggtgcaag cgttaatcgg aattactggg
540

cgtaaagcgt gcgcaggcgg ttatgcaaga cagaggtgaa atccccgggc tcaacctggg
600

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660

cagtgaaatg cgtagatatg cggaggaaca ccgatggcga aggcaatccc ctggacctgt
720

actgacgctc atgcacgaaa gcgtggggag caaacaggat tagataccct ggtagtccac
780

gccctaaacg atgtcaactg gttgttggga gggtttcttc tcagtaacgt anntaacgcg
840

tgaagttgac cgcctgggga gtacggccgc aaggttgaaa ctcaaaggaa ttgacgggga
900

cccgcaacaag cgggtggatga tgtggtttta ttcgatgcaa cgcgaaaaac cttacctacc
960

cttgacatgc caggaatcct gaagagattt gggagtgtc gaaagagAAC ctggacacag
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1080

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1200

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1260

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1320

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1380

tgggagcggg ttctgccaga agtagttagc ctaaccgcaa ggagggcgat taccacggca
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gggttcgtga ctgggggtgaa gtcgtaacaa ggtagccgta tcggaagggtg cggctggatc
1500

ac
1502

<210> 42
<211> 34
<212> PRT
<213> Lactococcus lactis

<400> 42

Ile Thr Ser Ile Ser Leu Cys Thr Pro Gly Cys Lys Thr Gly Ala Leu
1 5 10 15

Met Gly Cys Asn Met Lys Thr Ala Thr Cys His Cys Ser Ile His Val
20 25 30

Ser Lys

<210> 43
<211> 22
<212> PRT
<213> Staphylococcus epidermis

<400> 43

Ile Ala Ser Lys Phe Ile Cys Thr Pro Gly Cys Ala Lys Thr Gly Ser
1 5 10 15

Phe Asn Ser Tyr Cys Cys
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<210> 44
<211> 44
<212> PRT
<213> Pediococcus acidilactici

<400> 44

Lys Tyr Tyr Gly Asn Gly Val Thr Cys Gly Lys His Ser Cys Ser Val
1 5 10 15

Asp Trp Gly Lys Ala Thr Thr Cys Ile Ile Asn Asn Gly Ala Met Ala
20 25 30

Trp Ala Thr Gly Gly His Gln Gly Asn His Lys Cys
35 40

<210> 45
<211> 44
<212> PRT
<213> Enterococcus faecium

<400> 45

Ala Thr Arg Ser Tyr Gly Asn Gly Val Tyr Cys Asn Asn Ser Lys Cys
1 5 10 15

Trp Val Asn Trp Gly Glu Ala Lys Glu Asn Ile Ala Gly Ile Val Ile
20 25 30

Ser Gly Trp Ala Ser Gly Leu Ala Gly Met Gly His
35 40

<210> 46

<211> 39
<212> PRT
<213> Streptococcus lactis

<400> 46

Gly Thr Trp Asp Asp Ile Gly Gln Gly Ile Gly Arg Val Ala Tyr Trp
1 5 10 15

Val Gly Lys Ala Met Gly Asn Met Ser Asp Val Asn Gln Ala Ser Arg
20 25 30

Ile Asn Arg Lys Lys Lys His
35

<210> 47
<211> 48
<212> PRT
<213> Lactobacillus johnsonii

<400> 47

Asn Arg Trp Gly Asp Thr Val Leu Ser Ala Ala Ser Gly Ala Gly Thr
1 5 10 15

Gly Ile Lys Ala Cys Lys Ser Phe Gly Pro Trp Gly Met Ala Ile Cys
20 25 30

Gly Val Gly Gly Ala Ala Ile Gly Gly Tyr Phe Gly Tyr Thr His Asn
35 40 45

<210> 48
<211> 70
<212> PRT
<213> Enterococcus faecalis

<400> 48

Met Ala Lys Glu Phe Gly Ile Pro Ala Ala Val Ala Gly Thr Val Leu
1 5 10 15

Asn Val Val Glu Ala Gly Gly Trp Val Thr Thr Ile Val Ser Ile Leu
20 25 30

Thr Ala Val Gly Ser Gly Gly Leu Ser Leu Leu Ala Ala Ala Gly Arg
35 40 45

Glu Ser Ile Lys Ala Tyr Leu Lys Lys Glu Ile Lys Lys Lys Gly Lys
50 55 60

Arg Ala Val Ile Ala Trp
65 70

<210> 49
<211> 51
<212> PRT
<213> Staphylococcus aureus

<400> 49

Met Ser Trp Leu Asn Phe Leu Lys Tyr Ile Ala Lys Tyr Gly Lys Lys
1 5 10 15

Ala Val Ser Ala Ala Trp Lys Tyr Lys Gly Lys Val Leu Glu Trp Leu
20 25 30

Asn Val Gly Pro Thr Leu Glu Trp Val Trp Gln Lys Leu Lys Lys Ile
35 40 45

Ala Gly Leu
50

<210> 50
<211> 43
<212> PRT
<213> Lactococcus garvieae

<400> 50

Ile Gly Gly Ala Leu Gly Asn Ala Leu Asn Gly Leu Gly Thr Trp Ala
1 5 10 15

Asn Met Met Asn Gly Gly Gly Phe Val Asn Gln Trp Gln Val Tyr Ala
20 25 30

Asn Lys Gly Lys Ile Asn Gln Tyr Arg Pro Tyr
35 40

<210> 51
<211> 103
<212> PRT
<213> Escherichia coli

<400> 51

Met Arg Thr Leu Thr Leu Asn Glu Leu Asp Ser Val Ser Gly Gly Ala
1 5 10 15

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

Val Ala Gly Gly Ile Gly Ala Ala Ala Gly Gly Val Ala Gly Gly Ala
35 40 45

Ile Tyr Asp Tyr Ala Ser Thr His Lys Pro Asn Pro Ala Met Ser Pro
50 55 60

Ser Gly Leu Gly Gly Thr Ile Lys Gln Lys Pro Glu Gly Ile Pro Ser
65 70 75 80

Glu Ala Trp Asn Tyr Ala Ala Gly Arg Leu Cys Asn Trp Ser Pro Asn
85 90 95

Asn Leu Ser Asp Val Cys Leu
100

<210> 52
<211> 339
<212> PRT
<213> Cp1

<400> 52

Met Val Lys Lys Asn Asp Leu Phe Val Asp Val Ser Ser His Asn Gly
1 5 10 15

Tyr Asp Ile Thr Gly Ile Leu Glu Gln Met Gly Thr Thr Asn Thr Ile
20 25 30

Ile Lys Ile Ser Glu Ser Thr Thr Tyr Leu Asn Pro Cys Leu Ser Ala
35 40 45

Gln Val Glu Gln Ser Asn Pro Ile Gly Phe Tyr His Phe Ala Arg Phe
50 55 60

Gly Gly Asp Val Ala Glu Ala Glu Arg Glu Ala Gln Phe Phe Leu Asp
65 70 75 80

Asn Val Pro Met Gln Val Lys Tyr Leu Val Leu Asp Tyr Glu Asp Asp
85 90 95

Pro Ser Gly Asp Ala Gln Ala Asn Thr Asn Ala Cys Leu Arg Phe Met
100 105 110

Gln Met Ile Ala Asp Ala Gly Tyr Lys Pro Ile Tyr Tyr Ser Tyr Lys
115 120 125

Pro Phe Thr His Asp Asn Val Asp Tyr Gln Gln Ile Leu Ala Gln Phe
130 135 140

Pro Asn Ser Leu Trp Ile Ala Gly Tyr Gly Leu Asn Asp Gly Thr Ala
145 150 155 160

Asn Phe Glu Tyr Phe Pro Ser Met Asp Gly Ile Arg Trp Trp Gln Tyr
165 170 175

Ser Ser Asn Pro Phe Asp Lys Asn Ile Val Leu Leu Asp Asp Glu Glu
180 185 190

Asp Asp Lys Pro Lys Thr Ala Gly Thr Trp Lys Gln Asp Ser Lys Gly
195 200 205

Trp Trp Phe Arg Arg Asn Asn Gly Ser Phe Pro Tyr Asn Lys Trp Glu
210 215 220

Lys Ile Gly Gly Val Trp Tyr Tyr Phe Asp Ser Lys Gly Tyr Cys Leu
225 230 235 240

Thr Ser Glu Trp Leu Lys Asp Asn Glu Lys Trp Tyr Tyr Leu Lys Asp
245 250 255

Asn Gly Ala Met Ala Thr Gly Trp Val Leu Val Gly Ser Glu Trp Tyr
260 265 270

Tyr Met Asp Asp Ser Gly Ala Met Val Thr Gly Trp Val Lys Tyr Lys
275 280 285

Asn Asn Trp Tyr Tyr Met Thr Asn Glu Arg Gly Asn Met Val Ser Asn
290 295 300

Glu Phe Ile Lys Ser Gly Lys Gly Trp Tyr Phe Met Asn Thr Asn Gly
305 310 315 320

Glu Leu Ala Asp Asn Pro Ser Phe Thr Lys Glu Pro Asp Gly Leu Ile
325 330 335

Thr Val Ala

<210> 53
<211> 296
<212> PRT
<213> Dp-1

<400> 53

Met Gly Val Asp Ile Glu Lys Gly Val Ala Trp Met Gln Ala Arg Lys
1 5 10 15

Gly Arg Val Ser Tyr Ser Met Asp Phe Arg Asp Gly Pro Asp Ser Tyr
20 25 30

Asp Cys Ser Ser Ser Met Tyr Tyr Ala Leu Arg Ser Ala Gly Ala Ser
35 40 45

Ser Ala Gly Trp Ala Val Asn Thr Glu Tyr Met His Ala Trp Leu Ile
50 55 60

Glu Asn Gly Tyr Glu Leu Ile Ser Glu Asn Ala Pro Trp Asp Ala Lys
65 70 75 80

Arg Gly Asp Ile Phe Ile Trp Gly Arg Lys Gly Ala Ser Ala Gly Ala
85 90 95

Gly Gly His Thr Gly Met Phe Ile Asp Ser Asp Asn Ile Ile His Cys
100 105 110

Asn Tyr Ala Tyr Asp Gly Ile Ser Val Asn Asp His Asp Glu Arg Trp
115 120 125

Tyr Tyr Ala Gly Gln Pro Tyr Tyr Tyr Val Tyr Arg Leu Thr Asn Ala
130 135 140

Asn Ala Gln Pro Ala Glu Lys Lys Leu Gly Trp Gln Lys Asp Ala Thr
145 150 155 160

Gly Phe Trp Tyr Ala Arg Ala Asn Gly Thr Tyr Pro Lys Asp Glu Phe
165 170 175

Glu Tyr Ile Glu Glu Asn Lys Ser Trp Phe Tyr Phe Asp Asp Gln Gly
180 185 190

Tyr Met Leu Ala Glu Lys Trp Leu Lys His Thr Asp Gly Asn Trp Tyr
195 200 205

Trp Phe Asp Arg Asp Gly Tyr Met Ala Thr Ser Trp Lys Arg Ile Gly
210 215 220

Glu Ser Trp Tyr Tyr Phe Asn Arg Asp Gly Ser Met Val Thr Gly Trp
225 230 235 240

Ile Lys Tyr Tyr Asp Asn Trp Tyr Tyr Cys Asp Ala Thr Asn Gly Asp
245 250 255

Met Lys Ser Asn Ala Phe Ile Arg Tyr Asn Asp Gly Trp Tyr Leu Leu
260 265 270

Leu Pro Asp Gly Arg Leu Ala Asp Lys Pro Gln Phe Thr Val Glu Pro
275 280 285

Asp Gly Leu Ile Thr Ala Lys Val
290 295

<210> 54
<211> 233
<212> PRT
<213> gamma

<400> 54

Met Glu Ile Gln Lys Lys Leu Val Asp Pro Ser Lys Tyr Gly Thr Lys
1 5 10 15

Cys Pro Tyr Thr Met Lys Pro Lys Tyr Ile Thr Val His Asn Thr Tyr
20 25 30

Asn Asp Ala Pro Ala Glu Asn Glu Val Ser Tyr Met Ile Ser Asn Asn
35 40 45

Asn Glu Val Ser Phe His Ile Ala Val Asp Asp Lys Lys Ala Ile Gln
50 55 60

Gly Ile Pro Leu Glu Arg Asn Ala Trp Ala Cys Gly Asp Gly Asn Gly
65 70 75 80

Ser Gly Asn Arg Gln Ser Ile Ser Val Glu Ile Cys Tyr Ser Lys Ser
85 90 95

Gly Gly Asp Arg Tyr Tyr Lys Ala Glu Asp Asn Ala Val Asp Val Val
100 105 110

Arg Gln Leu Met Ser Met Tyr Asn Ile Pro Ile Glu Asn Val Arg Thr
115 120 125

His Gln Ser Trp Ser Gly Lys Tyr Cys Pro His Arg Met Leu Ala Glu
130 135 140

Gly Arg Trp Gly Ala Phe Ile Gln Lys Val Lys Asn Gly Asn Val Ala
145 150 155 160

Thr Thr Ser Pro Thr Lys Gln Asn Ile Ile Gln Ser Gly Ala Phe Ser
165 170 175

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

Thr Ala Asp Phe Ile Leu Gln Ser Asp Gly Leu Thr Tyr Phe Ile Ser
195 200 205

Lys Pro Thr Ser Asp Ala Gln Leu Lys Ala Met Lys Glu Tyr Leu Asp
210 215 220

Arg Lys Gly Trp Trp Tyr Glu Val Lys
225 230

<210> 55
<211> 481
<212> PRT
<213> MR11

<400> 55

Met Gln Ala Lys Leu Thr Lys Lys Glu Phe Ile Glu Trp Leu Lys Thr
1 5 10 15

Ser Glu Gly Lys Gln Phe Asn Val Asp Leu Trp Tyr Gly Phe Gln Cys
20 25 30

Phe Asp Tyr Ala Asn Ala Gly Trp Lys Val Leu Phe Gly Leu Leu Leu
35 40 45

Lys Gly Leu Gly Ala Lys Asp Ile Pro Phe Ala Asn Asn Phe Asp Gly

50					55					60					
Leu	Ala	Thr	Val	Tyr	Gln	Asn	Thr	Pro	Asp	Phe	Leu	Ala	Gln	Pro	Gly
65					70					75					80
Asp	Met	Val	Val	Phe	Gly	Ser	Asn	Tyr	Gly	Ala	Gly	Tyr	Gly	His	Val
				85					90					95	
Ala	Trp	Val	Ile	Glu	Ala	Thr	Leu	Asp	Tyr	Ile	Ile	Val	Tyr	Glu	Gln
			100					105					110		
Asn	Trp	Leu	Gly	Gly	Gly	Trp	Thr	Asp	Arg	Ile	Glu	Gln	Pro	Gly	Trp
		115					120					125			
Gly	Trp	Glu	Lys	Val	Thr	Arg	Arg	Gln	His	Ala	Tyr	Asp	Phe	Pro	Met
		130				135					140				
Trp	Phe	Ile	Arg	Pro	Asn	Phe	Lys	Ser	Glu	Thr	Ala	Pro	Arg	Ser	Ile
145					150					155					160
Gln	Ser	Pro	Thr	Gln	Ala	Ser	Lys	Lys	Glu	Thr	Ala	Lys	Pro	Gln	Pro
				165					170					175	
Lys	Ala	Val	Glu	Leu	Lys	Ile	Ile	Lys	Asp	Val	Val	Lys	Gly	Tyr	Asp
			180					185					190		
Leu	Pro	Lys	Arg	Gly	Gly	Asn	Pro	Lys	Gly	Ile	Val	Ile	His	Asn	Asp
		195					200					205			
Ala	Gly	Ser	Lys	Gly	Ala	Thr	Ala	Glu	Ala	Tyr	Arg	Asn	Gly	Leu	Val
	210					215					220				
Asn	Ala	Pro	Leu	Ser	Arg	Leu	Glu	Ala	Gly	Ile	Ala	His	Ser	Tyr	Val
225					230					235					240
Ser	Gly	Asn	Thr	Val	Trp	Gln	Ala	Leu	Asp	Glu	Ser	Gln	Val	Gly	Trp
				245					250					255	
His	Thr	Ala	Asn	Gln	Leu	Gly	Asn	Lys	Tyr	Tyr	Tyr	Gly	Ile	Glu	Val
			260					265					270		
Cys	Gln	Ser	Met	Gly	Ala	Asp	Asn	Ala	Thr	Phe	Leu	Lys	Asn	Glu	Gln
		275					280					285			

Ala Thr Phe Gln Glu Cys Ala Arg Leu Leu Lys Lys Trp Gly Leu Pro
290 295 300

Ala Asn Arg Asn Thr Ile Arg Leu His Asn Glu Phe Thr Ser Thr Ser
305 310 315 320

Cys Pro His Arg Ser Ser Val Leu His Thr Gly Phe Asp Pro Val Thr
325 330 335

Arg Gly Leu Leu Pro Glu Asp Lys Gln Leu Gln Leu Lys Asp Tyr Phe
340 345 350

Ile Lys Gln Ile Arg Val Tyr Met Asp Gly Lys Ile Pro Val Ala Thr
355 360 365

Val Ser Asn Glu Ser Ser Ala Ser Ser Asn Thr Val Lys Pro Val Ala
370 375 380

Ser Ala Trp Lys Arg Asn Lys Tyr Gly Thr Tyr Tyr Met Glu Glu Asn
385 390 395 400

Ala Arg Phe Thr Asn Gly Asn Gln Pro Ile Thr Val Arg Lys Ile Gly
405 410 415

Pro Phe Leu Ser Cys Pro Val Ala Tyr Gln Phe Gln Pro Gly Gly Tyr
420 425 430

Cys Asp Tyr Thr Glu Val Met Leu Gln Asp Gly His Val Trp Val Gly
435 440 445

Tyr Thr Trp Glu Gly Gln Arg Tyr Tyr Leu Pro Ile Arg Thr Trp Asn
450 455 460

Gly Ser Ala Pro Pro Asn Gln Ile Leu Gly Asp Leu Trp Gly Glu Ile
465 470 475 480

Ser

<210> 56
<211> 239
<212> PRT
<213> B30

<400> 56

Met Val Ile Asn Ile Glu Gln Ala Ile Ala Trp Met Ala Ser Arg Lys
1 5 10 15

Gly Lys Val Thr Tyr Ser Met Asp Tyr Arg Asn Gly Pro Ser Ser Tyr
20 25 30

Asp Cys Ser Ser Ser Val Tyr Phe Ala Leu Arg Ser Ala Gly Ala Ser
35 40 45

Asp Asn Gly Trp Ala Val Asn Thr Glu Tyr Glu His Asp Trp Leu Ile
50 55 60

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

Arg Gly Asp Ile Phe Ile Trp Gly Lys Arg Gly Ala Ser Ala Gly Ala
85 90 95

Phe Gly His Thr Gly Met Phe Val Asp Pro Asp Asn Ile Ile His Cys
100 105 110

Asn Tyr Gly Tyr Asn Ser Ile Thr Val Asn Asn His Asp Glu Ile Trp
115 120 125

Gly Tyr Asn Gly Gln Pro Tyr Val Tyr Ala Tyr Arg Tyr Ser Gly Lys
130 135 140

Gln Ser Asn Ala Lys Val Asp Asn Lys Ser Val Val Ser Lys Phe Glu
145 150 155 160

Lys Glu Leu Asp Val Asn Thr Pro Leu Ser Asn Ser Asn Met Pro Tyr
165 170 175

Tyr Glu Ala Thr Ile Ser Glu Asp Tyr Tyr Val Glu Ser Lys Pro Asp
180 185 190

Val Asn Ser Thr Asp Lys Glu Leu Leu Val Ala Gly Thr Arg Val Arg
195 200 205

Val Tyr Glu Lys Val Lys Gly Trp Ala Arg Ile Gly Ala Pro Gln Ser
210 215 220

Asn Gln Trp Val Glu Asp Ala Tyr Leu Ile Asp Ala Thr Asp Met
225 230 235

<210> 57
<211> 495
<212> PRT
<213> K

<400> 57

Met Ala Lys Thr Gln Ala Glu Ile Asn Lys Arg Leu Asp Ala Tyr Ala
1 5 10 15

Lys Gly Thr Val Asp Ser Pro Tyr Arg Val Lys Lys Ala Thr Ser Tyr
20 25 30

Asp Pro Ser Phe Gly Val Met Glu Ala Gly Ala Ile Asp Ala Asp Gly
35 40 45

Tyr Tyr His Ala Gln Cys Gln Asp Leu Ile Thr Asp Tyr Val Leu Trp
50 55 60

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

Lys Gln Ser Tyr Gly Thr Gly Phe Lys Ile His Glu Asn Lys Pro Ser
85 90 95

Thr Val Pro Lys Lys Gly Trp Ile Ala Val Phe Thr Ser Gly Ser Tyr
100 105 110

Glu Gln Trp Gly His Ile Gly Ile Val Tyr Asp Gly Gly Asn Thr Ser
115 120 125

Thr Phe Thr Ile Leu Glu Gln Asn Trp Asn Gly Tyr Ala Asn Lys Lys
130 135 140

Pro Thr Lys Arg Val Asp Asn Tyr Tyr Gly Leu Thr His Phe Ile Glu
145 150 155 160

Ile Pro Val Lys Ala Gly Thr Thr Val Lys Lys Glu Thr Ala Lys Lys
165 170 175

Ser Ala Ser Lys Thr Pro Ala Pro Lys Lys Lys Ala Thr Leu Lys Val
180 185 190

Ser Lys Asn His Ile Asn Tyr Thr Met Asp Lys Arg Gly Lys Lys Pro
195 200 205

Glu Gly Met Val Ile His Asn Asp Ala Gly Arg Ser Ser Gly Gln Gln
210 215 220

Tyr Glu Asn Ser Leu Ala Asn Ala Gly Tyr Ala Arg Tyr Ala Asn Gly
225 230 235 240

Ile Ala His Tyr Tyr Gly Ser Glu Gly Tyr Val Trp Glu Ala Ile Asp
245 250 255

Ala Lys Asn Gln Ile Ala Trp His Thr Gly Asp Gly Thr Gly Ala Asn
260 265 270

Ser Gly Asn Phe Arg Phe Ala Gly Ile Glu Val Cys Gln Ser Met Ser
275 280 285

Ala Ser Asp Ala Gln Phe Leu Lys Asn Glu Gln Ala Val Phe Gln Phe
290 295 300

Thr Ala Glu Lys Phe Lys Glu Trp Gly Leu Thr Pro Asn Arg Lys Thr
305 310 315 320

Val Arg Leu His Met Glu Phe Val Pro Thr Ala Cys Pro His Arg Ser
325 330 335

Met Val Leu His Thr Gly Phe Asn Pro Val Thr Gln Gly Arg Pro Ser
340 345 350

Gln Ala Ile Met Asn Lys Leu Lys Asp Tyr Phe Ile Lys Gln Ile Lys
355 360 365

Asn Tyr Met Asp Lys Gly Thr Ser Ser Ser Thr Val Val Lys Asp Gly
370 375 380

Lys Thr Ser Ser Ala Ser Thr Pro Ala Thr Arg Pro Val Thr Gly Ser
385 390 395 400

Trp Lys Lys Asn Gln Tyr Gly Thr Trp Tyr Lys Pro Glu Asn Ala Thr
405 410 415

Phe Val Asn Gly Asn Gln Pro Ile Val Thr Arg Ile Gly Ser Pro Phe

420

425

430

Leu Asn Ala Pro Val Gly Gly Asn Leu Pro Ala Gly Ala Thr Ile Val
 435 440 445

Tyr Asp Glu Val Cys Ile Gln Ala Gly His Ile Trp Ile Gly Tyr Asn
 450 455 460

Ala Tyr Asn Gly Asn Arg Val Tyr Cys Pro Val Arg Thr Cys Gln Gly
 465 470 475 480

Val Pro Pro Asn Gln Ile Pro Gly Val Ala Trp Gly Val Phe Lys
 485 490 495

<210> 58

<211> 281

<212> PRT

<213> A118

<400> 58

Met Thr Ser Tyr Tyr Tyr Ser Arg Ser Leu Ala Asn Val Asn Lys Leu
 1 5 10 15

Ala Asp Asn Thr Lys Ala Ala Ala Arg Lys Leu Leu Asp Trp Ser Glu
 20 25 30

Ser Asn Gly Ile Glu Val Leu Ile Tyr Glu Thr Ile Arg Thr Lys Glu
 35 40 45

Gln Gln Ala Ala Asn Val Asn Ser Gly Ala Ser Gln Thr Met Arg Ser
 50 55 60

Tyr His Leu Val Gly Gln Ala Leu Asp Phe Val Met Ala Lys Gly Lys
 65 70 75 80

Thr Val Asp Trp Gly Ala Tyr Arg Ser Asp Lys Gly Lys Lys Phe Val
 85 90 95

Ala Lys Ala Lys Ser Leu Gly Phe Glu Trp Gly Gly Asp Trp Ser Gly
 100 105 110

Phe Val Asp Asn Pro His Leu Gln Phe Asn Tyr Lys Gly Tyr Gly Thr
 115 120 125

Asp Thr Phe Gly Lys Gly Ala Ser Thr Ser Asn Ser Ser Lys Pro Ser
130 135 140

Ala Asp Thr Asn Thr Asn Ser Leu Gly Leu Val Asp Tyr Met Asn Leu
145 150 155 160

Asn Lys Leu Asp Ser Ser Phe Ala Asn Arg Lys Lys Leu Ala Thr Ser
165 170 175

Tyr Gly Ile Lys Asn Tyr Ser Gly Thr Ala Thr Gln Asn Thr Thr Leu
180 185 190

Leu Ala Lys Leu Lys Ala Gly Lys Pro His Thr Pro Ala Ser Lys Asn
195 200 205

Thr Tyr Tyr Thr Glu Asn Pro Arg Lys Val Lys Thr Leu Val Gln Cys
210 215 220

Asp Leu Tyr Lys Ser Val Asp Phe Thr Thr Lys Asn Gln Thr Gly Gly
225 230 235 240

Thr Phe Pro Pro Gly Thr Val Phe Thr Ile Ser Gly Met Gly Lys Thr
245 250 255

Lys Gly Gly Thr Pro Arg Leu Lys Thr Lys Ser Gly Tyr Tyr Leu Thr
260 265 270

Ala Asn Thr Lys Phe Val Lys Lys Ile
275 280

<210> 59
<211> 341
<212> PRT
<213> A511

<400> 59

Met Val Lys Tyr Thr Val Glu Asn Lys Ile Ile Ala Gly Leu Pro Lys
1 5 10 15

Gly Lys Leu Lys Gly Ala Asn Phe Val Ile Ala His Glu Thr Ala Asn
20 25 30

Ser Lys Ser Thr Ile Asp Asn Glu Val Ser Tyr Met Thr Arg Asn Trp
35 40 45

Lys Asn Ala Phe Val Thr His Phe Val Gly Gly Gly Gly Arg Val Val
50 55 60

Gln Val Ala Asn Val Asn Tyr Val Ser Trp Gly Ala Gly Gln Tyr Ala
65 70 75 80

Asn Ser Tyr Ser Tyr Ala Gln Val Glu Leu Cys Arg Thr Ser Asn Ala
85 90 95

Thr Thr Phe Lys Lys Asp Tyr Glu Val Tyr Cys Gln Leu Leu Val Asp
100 105 110

Leu Ala Lys Lys Ala Gly Ile Pro Ile Thr Leu Asp Ser Gly Ser Lys
115 120 125

Thr Ser Asp Lys Gly Ile Lys Ser His Lys Trp Val Ala Asp Lys Leu
130 135 140

Gly Gly Thr Thr His Gln Asp Pro Tyr Ala Tyr Leu Ser Ser Trp Gly
145 150 155 160

Ile Ser Lys Ala Gln Phe Ala Ser Asp Leu Ala Lys Val Ser Gly Gly
165 170 175

Gly Asn Thr Gly Thr Ala Pro Ala Lys Pro Ser Thr Pro Ala Pro Lys
180 185 190

Pro Ser Thr Pro Ser Thr Asn Leu Asp Lys Leu Gly Leu Val Asp Tyr
195 200 205

Met Asn Ala Lys Lys Met Asp Ser Ser Tyr Ser Asn Arg Asp Lys Leu
210 215 220

Ala Lys Gln Tyr Gly Ile Ala Asn Tyr Ser Gly Thr Ala Ser Gln Asn
225 230 235 240

Thr Thr Leu Leu Ser Lys Ile Lys Gly Gly Ala Pro Lys Pro Ser Thr
245 250 255

Pro Ala Pro Lys Pro Ser Thr Ser Thr Ala Lys Lys Ile Tyr Phe Pro
260 265 270

Pro Asn Lys Gly Asn Trp Ser Val Tyr Pro Thr Asn Lys Ala Pro Val

275		280		285											
Lys	Ala	Asn	Ala	Ile	Gly	Ala	Ile	Asn	Pro	Thr	Lys	Phe	Gly	Gly	Leu
290					295						300				
Thr	Tyr	Thr	Ile	Gln	Lys	Asp	Arg	Gly	Asn	Gly	Val	Tyr	Glu	Ile	Gln
305					310					315					320
Thr	Asp	Gln	Phe	Gly	Arg	Val	Gln	Val	Tyr	Gly	Ala	Pro	Ser	Thr	Gly
				325					330					335	
Ala	Val	Ile	Lys	Lys											
			340												
<210>	60														
<211>	289														
<212>	PRT														
<213>	A500														
<400>	60														
Met	Ala	Leu	Thr	Glu	Ala	Trp	Leu	Ile	Glu	Lys	Ala	Asn	Arg	Lys	Leu
1				5					10					15	
Asn	Ala	Gly	Gly	Met	Tyr	Lys	Ile	Thr	Ser	Asp	Lys	Thr	Arg	Asn	Val
			20					25					30		
Ile	Lys	Lys	Met	Ala	Lys	Glu	Gly	Ile	Tyr	Leu	Cys	Val	Ala	Gln	Gly
		35					40					45			
Tyr	Arg	Ser	Thr	Ala	Glu	Gln	Asn	Ala	Leu	Tyr	Ala	Gln	Gly	Arg	Thr
	50					55					60				
Lys	Pro	Gly	Ala	Ile	Val	Thr	Asn	Ala	Lys	Gly	Gly	Gln	Ser	Asn	His
65					70					75					80
Asn	Tyr	Gly	Val	Ala	Val	Asp	Leu	Cys	Leu	Tyr	Thr	Asn	Asp	Gly	Lys
				85					90					95	
Asp	Val	Ile	Trp	Glu	Ser	Thr	Thr	Ser	Arg	Trp	Lys	Lys	Val	Val	Ala
			100					105					110		
Ala	Met	Lys	Ala	Glu	Gly	Phe	Lys	Trp	Gly	Gly	Asp	Trp	Lys	Ser	Phe
		115					120					125			

Lys Asp Tyr Pro His Phe Glu Leu Cys Asp Ala Val Ser Gly Glu Lys
130 135 140

Ile Pro Ala Ala Thr Gln Asn Thr Asn Thr Asn Ser Asn Arg Tyr Glu
145 150 155 160

Gly Lys Val Ile Asp Ser Ala Pro Leu Leu Pro Lys Met Asp Phe Lys
165 170 175

Ser Ser Pro Phe Arg Met Tyr Lys Val Gly Thr Glu Phe Leu Val Tyr
180 185 190

Asp His Asn Gln Tyr Trp Tyr Lys Thr Tyr Ile Asp Asp Lys Leu Tyr
195 200 205

Tyr Met Tyr Lys Ser Phe Cys Asp Val Val Ala Lys Lys Asp Ala Lys
210 215 220

Gly Arg Ile Lys Val Arg Ile Lys Ser Ala Lys Asp Leu Arg Ile Pro
225 230 235 240

Val Trp Asn Asn Ile Lys Leu Asn Ser Gly Lys Ile Lys Trp Tyr Ala
245 250 255

Pro Asn Val Lys Leu Ala Trp Tyr Asn Tyr Arg Arg Gly Tyr Leu Glu
260 265 270

Leu Trp Tyr Pro Asn Asp Gly Trp Tyr Tyr Thr Ala Glu Tyr Phe Leu
275 280 285

Lys

<210> 61
<211> 239
<212> PRT
<213> LambdaSa1 prophage

<400> 61

Met Val Ile Asn Ile Glu Gln Ala Ile Ala Trp Met Ala Ser Arg Lys
1 5 10 15

Gly Lys Val Thr Tyr Ser Met Asp Tyr Arg Asn Gly Pro Ser Ser Tyr
20 25 30

Asp Cys Ser Ser Ser Val Tyr Phe Ala Leu Arg Ser Ala Gly Ala Ser
35 40 45

Asp Asn Gly Trp Ala Val Asn Thr Glu Tyr Glu His Asp Trp Leu Ile
50 55 60

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

Arg Gly Asp Ile Phe Ile Trp Gly Lys Arg Gly Ala Ser Ala Gly Ala
85 90 95

Phe Gly His Thr Gly Met Phe Val Asp Pro Asp Asn Ile Ile His Cys
100 105 110

Asn Tyr Gly Tyr Asn Ser Ile Thr Val Asn Asn His Asp Glu Ile Trp
115 120 125

Gly Tyr Asn Gly Gln Pro Tyr Val Tyr Ala Tyr Arg Tyr Ala Arg Lys
130 135 140

Gln Ser Asn Ala Lys Val Asp Asn Gln Ser Val Val Ser Lys Phe Glu
145 150 155 160

Lys Glu Leu Asp Val Asn Thr Pro Leu Ser Asn Ser Asn Met Pro Tyr
165 170 175

Tyr Glu Ala Thr Ile Ser Glu Asp Tyr Tyr Val Glu Ser Lys Pro Asp
180 185 190

Val Asn Ser Thr Asp Lys Glu Leu Leu Val Ala Gly Thr Arg Val Arg
195 200 205

Val Tyr Glu Lys Val Lys Gly Trp Ala Arg Ile Gly Ala Pro Gln Ser
210 215 220

Asn Gln Trp Val Glu Asp Ala Tyr Leu Ile Asp Ala Thr Asp Met
225 230 235

<210> 62

<211> 468

<212> PRT

<213> LambdaSa2 prophage

<400> 62

Met Glu Ile Asn Thr Glu Ile Ala Ile Ala Trp Met Ser Ala Arg Gln
1 5 10 15

Gly Lys Val Ser Tyr Ser Met Asp Tyr Arg Asp Gly Pro Asn Ser Tyr
20 25 30

Asp Cys Ser Ser Ser Val Tyr Tyr Ala Leu Arg Ser Ala Gly Ala Ser
35 40 45

Ser Ala Gly Trp Ala Val Asn Thr Glu Tyr Met His Asp Trp Leu Ile
50 55 60

Lys Asn Gly Tyr Glu Leu Ile Ala Glu Asn Val Asp Trp Asn Ala Val
65 70 75 80

Arg Gly Asp Ile Ala Ile Trp Gly Met Arg Gly His Ser Ser Gly Ala
85 90 95

Gly Gly His Val Val Met Phe Ile Asp Pro Glu Asn Ile Ile His Cys
100 105 110

Asn Trp Ala Asn Asn Gly Ile Thr Val Asn Asn Tyr Asn Gln Thr Ala
115 120 125

Ala Ala Ser Gly Trp Met Tyr Cys Tyr Val Tyr Arg Leu Lys Ser Gly
130 135 140

Ala Ser Thr Gln Gly Lys Ser Leu Asp Thr Leu Val Lys Glu Thr Leu
145 150 155 160

Ala Gly Asn Tyr Gly Asn Gly Glu Ala Arg Lys Ala Val Leu Gly Asn
165 170 175

Gln Tyr Glu Ala Val Met Ser Val Ile Asn Gly Lys Thr Thr Thr Asn
180 185 190

Gln Lys Thr Val Asp Gln Leu Val Gln Glu Val Ile Ala Gly Lys His
195 200 205

Gly Asn Gly Glu Ala Arg Lys Lys Ser Leu Gly Ser Gln Tyr Asp Ala
210 215 220

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

Phe Lys Ala Gln Glu Val Asn Lys Pro Thr Glu Thr Lys Thr Ser Gln
245 250 255

Thr Glu Leu Thr Gly Gln Ala Thr Ala Thr Lys Glu Glu Gly Asp Leu
260 265 270

Ser Phe Asn Gly Thr Ile Leu Lys Lys Ala Val Leu Asp Lys Ile Leu
275 280 285

Gly Asn Cys Lys Lys His Asp Ile Leu Pro Ser Tyr Ala Leu Thr Ile
290 295 300

Leu His Tyr Glu Gly Leu Trp Gly Thr Ser Ala Val Gly Lys Ala Asp
305 310 315 320

Asn Asn Trp Gly Gly Met Thr Trp Thr Gly Gln Gly Asn Arg Pro Ser
325 330 335

Gly Val Thr Val Thr Gln Gly Ser Ala Arg Pro Ser Asn Glu Gly Gly
340 345 350

His Tyr Met His Tyr Ala Ser Val Asp Asp Phe Leu Thr Asp Trp Phe
355 360 365

Tyr Leu Leu Arg Ala Gly Gly Ser Tyr Lys Val Ser Gly Ala Lys Thr
370 375 380

Phe Ser Glu Ala Ile Lys Gly Met Phe Lys Val Gly Gly Ala Val Tyr
385 390 395 400

Asp Tyr Ala Ala Ser Gly Phe Asp Ser Tyr Ile Val Gly Ala Ser Ser
405 410 415

Arg Leu Lys Ala Ile Glu Ala Glu Asn Gly Ser Leu Asp Lys Phe Asp
420 425 430

Lys Ala Thr Asp Ile Gly Asp Gly Ser Lys Asp Lys Ile Asp Ile Thr
435 440 445

Ile Glu Gly Ile Glu Val Thr Ile Asn Gly Ile Thr Tyr Glu Leu Thr
450 455 460

Lys Lys Pro Val
465

<210> 63
<211> 236
<212> PRT
<213> (ATCC700407) prophage

<400> 63

Met Thr Asp Ser Ile Gln Glu Met Arg Lys Leu Gln Ser Ile Pro Val
1 5 10 15

Arg Tyr Asp Met Gly Asp Arg Tyr Gly Asn Asp Ala Asp Arg Asp Gly
20 25 30

Arg Ile Glu Met Asp Cys Ser Ser Ala Val Ser Lys Ala Leu Gly Ile
35 40 45

Ser Met Thr Asn Asn Thr Glu Thr Leu Gln Gln Ala Leu Pro Ala Ile
50 55 60

Gly Tyr Gly Lys Ile His Asp Ala Val Asp Gly Thr Phe Asp Met Gln
65 70 75 80

Ala Tyr Asp Val Ile Ile Trp Ala Pro Arg Asp Gly Ser Ser Ser Leu
85 90 95

Gly Ala Phe Gly His Val Leu Ile Ala Thr Ser Pro Thr Thr Ala Ile
100 105 110

His Cys Asn Tyr Gly Ser Asp Gly Ile Thr Glu Asn Asp Tyr Asn Tyr
115 120 125

Ile Trp Glu Ile Asn Gly Arg Pro Arg Glu Ile Val Phe Arg Lys Gly
130 135 140

Val Thr Gln Thr Gln Ala Thr Val Thr Ser Gln Phe Glu Arg Glu Leu
145 150 155 160

Asp Val Asn Ala Arg Leu Thr Val Ser Asp Lys Pro Tyr Tyr Glu Ala
165 170 175

Thr Leu Ser Glu Asp Tyr Tyr Val Glu Ala Gly Pro Arg Ile Asp Ser

180

185

190

Gln Asp Lys Glu Leu Ile Lys Ala Gly Thr Arg Val Arg Val Tyr Glu
 195 200 205

Lys Leu Asn Gly Trp Ser Arg Ile Asn His Pro Glu Ser Ala Gln Trp
 210 215 220

Val Glu Asp Ser Tyr Leu Val Asp Ala Thr Glu Met
 225 230 235

<210> 64

<211> 481

<212> PRT

<213> Phi11 and Phi12

<400> 64

Met Gln Ala Lys Leu Thr Lys Asn Glu Phe Ile Glu Trp Leu Lys Thr
 1 5 10 15

Ser Glu Gly Lys Gln Phe Asn Val Asp Leu Trp Tyr Gly Phe Gln Cys
 20 25 30

Phe Asp Tyr Ala Asn Ala Gly Trp Lys Val Leu Phe Gly Leu Leu Leu
 35 40 45

Lys Gly Leu Gly Ala Lys Asp Ile Pro Phe Ala Asn Asn Phe Asp Gly
 50 55 60

Leu Ala Thr Val Tyr Gln Asn Thr Pro Asp Phe Leu Ala Gln Pro Gly
 65 70 75 80

Asp Met Val Val Phe Gly Ser Asn Tyr Gly Ala Gly Tyr Gly His Val
 85 90 95

Ala Trp Val Ile Glu Ala Thr Leu Asp Tyr Ile Ile Val Tyr Glu Gln
 100 105 110

Asn Trp Leu Gly Gly Gly Trp Thr Asp Gly Ile Glu Gln Pro Gly Trp
 115 120 125

Gly Trp Glu Lys Val Thr Arg Arg Gln His Ala Tyr Asp Phe Pro Met
 130 135 140

Trp Phe Ile Arg Pro Asn Phe Lys Ser Glu Thr Ala Pro Arg Ser Val
145 150 155 160

Gln Ser Pro Thr Gln Ala Pro Lys Lys Glu Thr Ala Lys Pro Gln Pro
165 170 175

Lys Ala Val Glu Leu Lys Ile Ile Lys Asp Val Val Lys Gly Tyr Asp
180 185 190

Leu Pro Lys Arg Gly Ser Asn Pro Lys Gly Ile Val Ile His Asn Asp
195 200 205

Ala Gly Ser Lys Gly Ala Thr Ala Glu Ala Tyr Arg Asn Gly Leu Val
210 215 220

Asn Ala Pro Leu Ser Arg Leu Glu Ala Gly Ile Ala His Ser Tyr Val
225 230 235 240

Ser Gly Asn Thr Val Trp Gln Ala Leu Asp Glu Ser Gln Val Gly Trp
245 250 255

His Thr Ala Asn Gln Ile Gly Asn Lys Tyr Tyr Tyr Gly Ile Glu Val
260 265 270

Cys Gln Ser Met Gly Ala Asp Asn Ala Thr Phe Leu Lys Asn Glu Gln
275 280 285

Ala Thr Phe Gln Glu Cys Ala Arg Leu Leu Lys Lys Trp Gly Leu Pro
290 295 300

Ala Asn Arg Asn Thr Ile Arg Leu His Asn Glu Phe Thr Ser Thr Ser
305 310 315 320

Cys Pro His Arg Ser Ser Val Leu His Thr Gly Phe Asp Pro Val Thr
325 330 335

Arg Gly Leu Leu Pro Glu Asp Lys Arg Leu Gln Leu Lys Asp Tyr Phe
340 345 350

Ile Lys Gln Ile Arg Ala Tyr Met Asp Gly Lys Ile Pro Val Ala Thr
355 360 365

Val Ser Asn Glu Ser Ser Ala Ser Ser Asn Thr Val Lys Pro Val Ala
370 375 380

Ser Ala Trp Lys Arg Asn Lys Tyr Gly Thr Tyr Tyr Met Glu Glu Ser
385 390 395 400

Ala Arg Phe Thr Asn Gly Asn Gln Pro Ile Thr Val Arg Lys Val Gly
405 410 415

Pro Phe Leu Ser Cys Pro Val Gly Tyr Gln Phe Gln Pro Gly Gly Tyr
420 425 430

Cys Asp Tyr Thr Glu Val Met Leu Gln Asp Gly His Val Trp Val Gly
435 440 445

Tyr Thr Trp Glu Gly Gln Arg Tyr Tyr Leu Pro Ile Arg Thr Trp Asn
450 455 460

Gly Ser Ala Pro Pro Asn Gln Ile Leu Gly Asp Leu Trp Gly Glu Ile
465 470 475 480

Ser

<210> 65
<211> 481
<212> PRT
<213> (Phi)H5

<400> 65

Met Gln Ala Lys Leu Thr Lys Lys Glu Phe Ile Glu Trp Leu Lys Thr
1 5 10 15

Ser Glu Gly Lys Gln Tyr Asn Ala Asp Gly Trp Tyr Gly Phe Gln Cys
20 25 30

Phe Asp Tyr Ala Asn Ala Gly Trp Lys Ala Leu Phe Gly Leu Leu Leu
35 40 45

Lys Gly Val Gly Ala Lys Asp Ile Pro Phe Ala Asn Asn Phe Asp Gly
50 55 60

Leu Ala Thr Val Tyr Gln Asn Thr Pro Asp Phe Leu Ala Gln Pro Gly
65 70 75 80

Asp Met Val Val Phe Gly Ser Asn Tyr Gly Ala Gly Tyr Gly His Val

85

90

95

Ala Trp Val Ile Glu Ala Thr Leu Asp Tyr Ile Ile Val Tyr Glu Gln
 100 105 110

Asn Trp Leu Gly Gly Gly Trp Thr Asp Gly Val Gln Gln Pro Gly Ser
 115 120 125

Gly Trp Glu Lys Val Thr Arg Arg Gln His Ala Tyr Asp Phe Pro Met
 130 135 140

Trp Phe Ile Arg Pro Asn Phe Lys Ser Glu Thr Ala Pro Arg Ser Val
 145 150 155 160

Gln Ser Pro Thr Gln Ala Ser Lys Lys Glu Thr Ala Lys Pro Gln Pro
 165 170 175

Lys Ala Val Glu Leu Lys Ile Ile Lys Asp Val Val Lys Gly Tyr Asp
 180 185 190

Leu Pro Lys Arg Gly Ser Asn Pro Asn Phe Ile Val Ile His Asn Asp
 195 200 205

Ala Gly Ser Lys Gly Ala Thr Ala Glu Ala Tyr Arg Asn Gly Leu Val
 210 215 220

Asn Ala Pro Leu Ser Arg Leu Glu Ala Gly Ile Ala His Ser Tyr Val
 225 230 235 240

Ser Gly Asn Thr Val Trp Gln Ala Leu Asp Glu Ser Gln Val Gly Trp
 245 250 255

His Thr Ala Asn Gln Ile Gly Asn Lys Tyr Gly Tyr Gly Ile Glu Val
 260 265 270

Cys Gln Ser Met Gly Ala Asp Asn Ala Thr Phe Leu Lys Asn Glu Gln
 275 280 285

Ala Thr Phe Gln Glu Cys Ala Arg Leu Leu Lys Lys Trp Gly Leu Pro
 290 295 300

Ala Asn Arg Asn Thr Ile Arg Leu His Asn Glu Phe Thr Ser Thr Ser
 305 310 315 320

Cys Pro His Arg Ser Ser Val Leu His Thr Gly Phe Asp Pro Val Thr
325 330 335

Arg Gly Leu Leu Pro Glu Asp Lys Arg Leu Gln Leu Lys Asp Tyr Phe
340 345 350

Ile Lys Gln Ile Arg Ala Tyr Met Asp Gly Lys Ile Pro Val Ala Thr
355 360 365

Val Ser Asn Asp Ser Ser Ala Ser Ser Asn Thr Val Lys Pro Val Ala
370 375 380

Ser Ala Trp Lys Arg Asn Lys Tyr Gly Thr Tyr Tyr Met Glu Glu Ser
385 390 395 400

Ala Arg Phe Thr Asn Gly Asn Gln Pro Ile Thr Val Arg Lys Val Gly
405 410 415

Pro Phe Leu Ser Cys Pro Val Gly Tyr Gln Phe Gln Pro Gly Gly Tyr
420 425 430

Cys Asp Tyr Thr Glu Val Met Leu Gln Asp Gly His Val Trp Val Gly
435 440 445

Tyr Thr Trp Glu Gly Gln Arg Tyr Tyr Leu Pro Ile Arg Thr Trp Asn
450 455 460

Gly Ser Ala Pro Pro Asn Gln Ile Leu Gly Asp Leu Trp Gly Glu Ile
465 470 475 480

Ser

<210> 66
<211> 477
<212> PRT
<213> (Phi)WMY

<400> 66

Met Lys Thr Lys Ala Gln Ala Lys Ser Trp Ile Asn Ser Lys Ile Gly
1 5 10 15

Lys Gly Ile Asp Trp Asp Gly Met Tyr Gly Tyr Gln Cys Met Asp Glu
20 25 30

Ala Val Asp Tyr Ile His His Val Thr Asp Gly Lys Val Thr Met Trp
35 40 45

Gly Asn Ala Ile Asp Ala Pro Lys Asn Asn Phe Gln Gly Leu Cys Thr
50 55 60

Val Tyr Thr Asn Thr Pro Glu Phe Arg Pro Ala Tyr Gly Asp Val Ile
65 70 75 80

Val Trp Ser Tyr Gly Thr Phe Ala Thr Tyr Gly His Ile Ala Ile Val
85 90 95

Val Asn Pro Asp Pro Tyr Gly Asp Leu Gln Tyr Ile Thr Val Leu Glu
100 105 110

Gln Asn Trp Asn Gly Asn Gly Ile Tyr Lys Thr Glu Phe Ala Thr Ile
115 120 125

Arg Thr His Asp Tyr Thr Gly Val Ser His Phe Ile Arg Pro Lys Phe
130 135 140

Ala Asp Glu Val Lys Glu Thr Ala Lys Thr Val Asn Lys Leu Ser Val
145 150 155 160

Gln Lys Lys Ile Val Thr Pro Lys Asn Ser Val Glu Arg Ile Lys Asn
165 170 175

Tyr Val Lys Thr Ser Gly Tyr Ile Asn Gly Glu His Tyr Glu Leu Tyr
180 185 190

Asn Arg Gly His Lys Pro Lys Gly Val Val Ile His Asn Thr Ala Gly
195 200 205

Thr Ala Ser Ala Thr Gln Glu Gly Gln Arg Leu Thr Asn Met Thr Phe
210 215 220

Gln Gln Leu Ala Asn Gly Val Ala His Val Tyr Ile Asp Lys Asn Thr
225 230 235 240

Ile Tyr Glu Thr Leu Pro Glu Asp Arg Ile Ala Trp His Val Ala Gln
245 250 255

Gln Tyr Gly Asn Thr Glu Phe Tyr Gly Ile Glu Val Cys Gly Ser Arg
260 265 270

Asn Thr Asp Lys Glu Gln Phe Leu Ala Asn Glu Gln Val Ala Phe Gln
275 280 285

Glu Ala Ala Arg Arg Leu Lys Ser Trp Gly Met Arg Ala Asn Arg Asn
290 295 300

Thr Val Arg Leu His His Thr Phe Ser Ser Thr Glu Cys Pro Asp Met
305 310 315 320

Ser Met Leu Leu His Thr Gly Tyr Ser Met Lys Asn Gly Lys Pro Thr
325 330 335

Gln Asp Ile Thr Asn Lys Cys Ala Asp Tyr Phe Met Lys Gln Ile Asn
340 345 350

Ala Tyr Ile Asp Gly Lys Gln Pro Thr Ser Thr Val Val Gly Ser Ser
355 360 365

Ser Ser Asn Lys Leu Lys Ala Lys Asn Lys Asp Lys Ser Thr Gly Trp
370 375 380

Asn Thr Asn Glu Tyr Gly Thr Leu Trp Lys Lys Glu His Ala Thr Phe
385 390 395 400

Thr Cys Gly Val Arg Gln Gly Ile Val Thr Arg Thr Thr Gly Pro Phe
405 410 415

Thr Ser Cys Pro Gln Ala Gly Val Leu Tyr Tyr Gly Gln Ser Val Asn
420 425 430

Tyr Asp Thr Val Cys Lys Gln Asp Gly Tyr Val Trp Ile Ser Trp Thr
435 440 445

Thr Ser Asp Gly Tyr Asp Val Trp Met Pro Ile Arg Thr Trp Asp Arg
450 455 460

Ser Thr Asp Lys Val Ser Glu Ile Trp Gly Thr Ile Ser
465 470 475

<210> 67
<211> 443

<212> PRT

<213> (Phi)NCTC 11261

<400> 67

Met Ala Thr Tyr Gln Glu Tyr Lys Ser Arg Ser Asn Gly Asn Ala Tyr
1 5 10 15

Asp Ile Asp Gly Ser Phe Gly Ala Gln Cys Trp Asp Gly Tyr Ala Asp
20 25 30

Tyr Cys Lys Tyr Leu Gly Leu Pro Tyr Ala Asn Cys Thr Asn Thr Gly
35 40 45

Tyr Ala Arg Asp Ile Trp Glu Gln Arg His Glu Asn Gly Ile Leu Asn
50 55 60

Tyr Phe Asp Glu Val Glu Val Met Gln Ala Gly Asp Val Ala Ile Phe
65 70 75 80

Met Val Val Asp Gly Val Thr Pro Tyr Ser His Val Ala Ile Phe Asp
85 90 95

Ser Asp Ala Gly Gly Gly Tyr Gly Trp Phe Leu Gly Gln Asn Gln Gly
100 105 110

Gly Ala Asn Gly Ala Tyr Asn Ile Val Lys Ile Pro Tyr Ser Ala Thr
115 120 125

Tyr Pro Thr Ala Phe Arg Pro Lys Val Phe Lys Asn Ala Val Thr Val
130 135 140

Thr Gly Asn Ile Gly Leu Asn Lys Gly Asp Tyr Phe Ile Asp Val Ser
145 150 155 160

Ala Tyr Gln Gln Ala Asp Leu Thr Thr Thr Cys Gln Gln Ala Gly Thr
165 170 175

Thr Lys Thr Ile Ile Lys Val Ser Glu Ser Ile Ala Trp Leu Ser Asp
180 185 190

Arg His Gln Gln Gln Ala Asn Thr Ser Asp Pro Ile Gly Tyr Tyr His
195 200 205

Phe Gly Arg Phe Gly Gly Asp Ser Ala Leu Ala Gln Arg Glu Ala Asp

210					215					220					
Leu 225	Phe	Leu	Ser	Asn	Leu 230	Pro	Ser	Lys	Lys	Val 235	Ser	Tyr	Leu	Val	Ile 240
Asp	Tyr	Glu	Asp	Ser 245	Ala	Ser	Ala	Asp	Lys 250	Gln	Ala	Asn	Thr	Asn 255	Ala
Val	Ile	Ala	Phe	Met	Asp	Lys	Ile	Ala 265	Ser	Ala	Gly	Tyr	Lys 270	Pro	Ile
Tyr	Tyr	Ser 275	Tyr	Lys	Pro	Phe	Thr 280	Leu	Asn	Asn	Ile	Asp 285	Tyr	Gln	Lys
Ile 290	Ile	Ala	Lys	Tyr	Pro	Asn 295	Ser	Ile	Trp	Ile	Ala 300	Gly	Tyr	Pro	Asp
Tyr 305	Glu	Val	Arg	Thr	Glu 310	Pro	Leu	Trp	Glu	Phe 315	Phe	Pro	Ser	Met	Asp 320
Gly	Val	Arg	Trp	Trp 325	Gln	Phe	Thr	Ser	Val 330	Gly	Val	Ala	Gly	Gly 335	Leu
Asp	Lys	Asn	Ile 340	Val	Leu	Leu	Ala	Asp 345	Asp	Ser	Ser	Lys	Met 350	Asp	Ile
Pro	Lys	Val 355	Asp	Lys	Pro	Gln	Glu 360	Leu	Thr	Phe	Tyr	Gln 365	Lys	Leu	Ala
Thr 370	Asn	Thr	Lys	Leu	Asp	Asn 375	Ser	Asn	Val	Pro	Tyr 380	Tyr	Glu	Ala	Thr
Leu 385	Ser	Thr	Asp	Tyr	Tyr 390	Val	Glu	Ser	Lys	Pro 395	Asn	Ala	Ser	Ser	Ala 400
Asp	Lys	Glu	Phe	Ile 405	Lys	Ala	Gly	Thr	Arg 410	Val	Arg	Val	Tyr	Glu 415	Lys
Val	Asn	Gly	Trp	Ser	Arg	Ile	Asn 420	His	Pro	Glu	Ser	Ala	Gln 430	Trp	Val
Glu	Asp	Ser	Tyr	Leu	Val	Asn	Ala 440	Thr	Asp	Met					

<210> 68
<211> 334
<212> PRT
<213> (Phi)FWLLm3

<400> 68

Met Val Lys Tyr Thr Val Glu Asn Lys Ile Ile Ala Gly Leu Pro Lys
1 5 10 15

Gly Lys Leu Lys Gly Ala Asn Phe Val Ile Ala His Glu Thr Ala Asn
20 25 30

Ser Lys Ser Thr Ile Asp Asn Glu Val Ser Tyr Met Thr Arg Asn Trp
35 40 45

Gln Asn Ala Phe Val Thr His Phe Val Gly Gly Gly Gly Arg Val Val
50 55 60

Gln Val Ala Asn Val Asn Tyr Val Ser Trp Gly Ala Gly Gln Tyr Ala
65 70 75 80

Asn Ser Tyr Ser Tyr Ala Gln Val Glu Leu Cys Arg Thr Ser Asn Ala
85 90 95

Thr Thr Phe Lys Lys Asp Tyr Glu Val Tyr Cys Gln Leu Leu Val Asp
100 105 110

Leu Ala Lys Lys Ala Gly Ile Pro Ile Thr Leu Asp Ser Gly Ser Lys
115 120 125

Thr Ser Asp Lys Gly Ile Lys Ser His Lys Trp Val Ala Asp Lys Leu
130 135 140

Gly Gly Thr Thr His Gln Asp Pro Tyr Ala Tyr Leu Ser Ser Trp Gly
145 150 155 160

Ile Ser Lys Ala Gln Phe Ala Ser Asp Leu Ala Lys Val Ser Gly Gly
165 170 175

Gly Asn Thr Gly Thr Ala Pro Ala Lys Pro Ser Thr Pro Ser Thr Asn
180 185 190

Leu Asp Lys Leu Gly Leu Val Asp Tyr Met Asn Ala Lys Lys Met Asp
195 200 205

Ser Ser Tyr Ser Asn Arg Ala Lys Leu Ala Lys Gln Tyr Gly Ile Ala
210 215 220

Asn Tyr Ser Gly Thr Ala Ser Gln Asn Thr Thr Leu Leu Ser Lys Ile
225 230 235 240

Lys Gly Gly Ala Pro Lys Pro Ser Thr Pro Ala Pro Lys Pro Ser Thr
245 250 255

Ser Thr Ala Lys Lys Ile Tyr Phe Pro Pro Asn Lys Gly Asn Trp Ser
260 265 270

Val Tyr Pro Thr Asn Lys Ala Pro Val Lys Ala Asn Ala Ile Gly Ala
275 280 285

Ile Asn Pro Thr Lys Phe Gly Gly Leu Thr Tyr Thr Ile Gln Lys Asp
290 295 300

Arg Gly Asn Gly Val Tyr Glu Ile Gln Thr Asp Gln Phe Gly Arg Val
305 310 315 320

Gln Val Tyr Gly Ala Pro Ser Thr Gly Ala Val Ile Lys Lys
325 330

<210> 69
<211> 1278
<212> PRT
<213> (Phi)BPS13

<400> 69

Met Ala Lys Arg Glu Lys Tyr Ile Phe Asp Val Glu Ala Glu Val Gly
1 5 10 15

Lys Ala Ala Lys Ser Ile Lys Ser Leu Glu Ala Glu Leu Ser Lys Leu
20 25 30

Gln Lys Leu Asn Lys Glu Ile Asp Ala Thr Gly Gly Asp Arg Thr Glu
35 40 45

Lys Glu Met Leu Ala Thr Leu Lys Ala Ala Lys Glu Val Asn Ala Glu
50 55 60

Tyr Gln Lys Met Gln Arg Ile Leu Lys Asp Leu Ser Lys Tyr Ser Gly

65

70

75

80

Lys Val Ser Arg Lys Glu Phe Asn Asp Ser Lys Val Ile Asn Asn Ala
85 90 95

Lys Thr Ser Val Gln Gly Gly Lys Val Thr Asp Ser Phe Gly Gln Met
100 105 110

Leu Lys Asn Met Glu Arg Gln Ile Asn Ser Val Asn Lys Gln Phe Asp
115 120 125

Asn His Arg Lys Ala Met Val Asp Arg Gly Gln Gln Tyr Thr Pro His
130 135 140

Leu Lys Thr Asn Arg Lys Asp Ser Gln Gly Asn Ser Asn Pro Ser Met
145 150 155 160

Met Gly Arg Asn Lys Ser Thr Thr Gln Asp Met Glu Lys Ala Val Asp
165 170 175

Lys Phe Leu Asn Gly Gln Asn Glu Ala Thr Thr Gly Leu Asn Gln Ala
180 185 190

Leu Tyr Gln Leu Lys Glu Ile Ser Lys Leu Asn Arg Arg Ser Glu Ser
195 200 205

Leu Ser Arg Arg Ala Ser Ala Ser Gly Tyr Met Ser Phe Gln Gln Tyr
210 215 220

Ser Asn Phe Thr Gly Asp Arg Arg Thr Val Gln Gln Thr Tyr Gly Gly
225 230 235 240

Leu Lys Thr Ala Asn Arg Glu Arg Val Leu Glu Leu Ser Gly Gln Ala
245 250 255

Thr Gly Ile Ser Lys Glu Leu Asp Arg Leu Asn Ser Lys Lys Gly Leu
260 265 270

Thr Ala Arg Glu Gly Glu Glu Arg Lys Lys Leu Met Arg Gln Leu Glu
275 280 285

Gly Ile Asp Ala Glu Leu Thr Ala Arg Lys Lys Leu Asn Ser Ser Leu
290 295 300

Asp Glu Thr Thr Ser Asn Met Glu Lys Phe Asn Gln Ser Leu Val Asp
305 310 315 320

Ala Gln Val Ser Val Lys Pro Glu Arg Gly Thr Met Arg Gly Met Met
325 330 335

Tyr Glu Arg Ala Pro Ala Ile Ala Leu Ala Ile Gly Gly Ala Ile Thr
340 345 350

Ala Thr Ile Gly Lys Leu Tyr Ser Glu Gly Gly Asn His Ser Lys Ala
355 360 365

Met Arg Pro Asp Glu Met Tyr Val Gly Gln Gln Thr Gly Ala Val Gly
370 375 380

Ala Asn Trp Arg Pro Asn Arg Thr Ala Thr Met Arg Ser Gly Leu Gly
385 390 395 400

Asn His Leu Gly Phe Thr Gly Gln Glu Met Met Glu Phe Gln Ser Asn
405 410 415

Tyr Leu Ser Ala Asn Gly Tyr His Gly Ala Glu Asp Met Lys Ala Ala
420 425 430

Thr Thr Gly Gln Ala Thr Phe Ala Arg Ala Thr Gly Leu Gly Ser Asp
435 440 445

Glu Val Lys Asp Phe Phe Asn Thr Ala Tyr Arg Ser Gly Gly Ile Asp
450 455 460

Gly Asn Gln Thr Lys Gln Phe Gln Asn Ala Phe Leu Gly Ala Met Lys
465 470 475 480

Gln Ser Gly Ala Val Gly Arg Glu Lys Asp Gln Leu Lys Ala Leu Asn
485 490 495

Gly Ile Leu Ser Ser Met Ser Gln Asn Arg Thr Val Ser Asn Gln Asp
500 505 510

Met Met Arg Thr Val Gly Leu Gln Ser Ala Ile Ser Ser Ser Gly Val
515 520 525

Ala Ser Leu Gln Gly Thr Lys Gly Gly Ala Leu Met Glu Gln Leu Asp

530					535					540					
Asn 545	Gly	Ile	Arg	Glu	Gly 550	Phe	Asn	Asp	Pro	Gln 555	Met	Arg	Val	Leu	Phe 560
Gly	Gln	Gly	Thr	Lys 565	Tyr	Gln	Gly	Met	Gly 570	Gly	Arg	Ala	Ala	Leu	Arg 575
Lys	Gln	Met	Glu 580	Lys	Gly	Ile	Ser	Asp 585	Pro	Asp	Asn	Leu	Asn	Thr	Leu 590
Ile	Asp	Ala 595	Ser	Lys	Ala	Ser	Ala 600	Gly	Gln	Asp	Pro	Ala 605	Glu	Gln	Ala
Glu 610	Val	Leu	Ala	Thr	Leu	Ala 615	Ser	Lys	Met	Gly	Val 620	Asn	Met	Ser	Ser
Asp 625	Gln	Ala	Arg	Gly	Leu 630	Ile	Asp	Leu	Gln	Pro 635	Ser	Gly	Lys	Leu	Thr 640
Lys	Glu	Asn	Ile	Asp 645	Lys	Val	Met	Lys	Glu 650	Gly	Leu	Lys	Glu	Gly 655	Ser
Ile	Glu	Ser	Ala 660	Lys	Arg	Asp	Lys	Ala 665	Tyr	Ser	Glu	Ser	Lys 670	Ala	Ser
Ile	Asp	Asn 675	Ser	Ser	Glu	Ala	Ala 680	Thr	Ala	Lys	Gln	Ala 685	Thr	Glu	Leu
Asn 690	Asp	Met	Gly	Ser	Lys	Leu 695	Arg	Gln	Ala	Asn	Ala 700	Ala	Leu	Gly	Gly
Leu 705	Pro	Ala	Pro	Leu	Tyr 710	Thr	Ala	Ile	Ala	Ala 715	Val	Val	Ala	Phe	Thr 720
Ala	Ala	Val	Ala	Gly 725	Ser	Ala	Leu	Met	Phe 730	Lys	Gly	Ala	Ser	Trp 735	Leu
Lys	Gly	Gly	Met 740	Ala	Ser	Lys	Tyr	Gly 745	Gly	Lys	Gly	Gly	Lys 750	Gly	Gly
Lys	Gly	Gly	Gly	Thr	Gly	Gly	Gly 760	Gly	Gly	Ala	Gly	Gly	Ala	Ala	Ala 765

Thr Gly Ala Gly Ala Ala Ala Gly Ala Gly Gly Val Gly Ala Ala Ala
770 775 780

Ala Gly Glu Val Gly Ala Gly Val Ala Ala Gly Gly Ala Ala Ala Gly
785 790 795 800

Ala Ala Ala Gly Gly Ser Lys Leu Ala Gly Val Gly Lys Gly Phe Met
805 810 815

Lys Gly Ala Gly Lys Leu Met Leu Pro Leu Gly Ile Leu Met Gly Ala
820 825 830

Ser Glu Ile Met Gln Ala Pro Glu Glu Ala Lys Gly Ser Ala Ile Gly
835 840 845

Ser Ala Val Gly Gly Ile Gly Gly Gly Ile Ala Gly Gly Ala Ala Thr
850 855 860

Gly Ala Ile Ala Gly Ser Phe Leu Gly Pro Ile Gly Thr Ala Val Gly
865 870 875 880

Gly Ile Ala Gly Gly Ile Ala Gly Gly Phe Ala Gly Ser Ser Leu Gly
885 890 895

Glu Thr Ile Gly Gly Trp Phe Asp Ser Gly Pro Lys Glu Asp Ala Ser
900 905 910

Ala Ala Asp Lys Ala Lys Ala Asp Ala Ser Ala Ala Ala Leu Ala Ala
915 920 925

Ala Ala Gly Thr Ser Gly Ala Val Gly Ser Ser Ala Leu Gln Ser Gln
930 935 940

Met Ala Gln Gly Ile Thr Gly Ala Pro Asn Met Ser Gln Val Gly Ser
945 950 955 960

Met Ala Ser Ala Leu Gly Ile Ser Ser Gly Ala Met Ala Ser Ala Leu
965 970 975

Gly Ile Ser Ser Gly Gln Glu Asn Gln Ile Gln Thr Met Thr Asp Lys
980 985 990

Glu Asn Thr Asn Thr Lys Lys Ala Asn Glu Ala Lys Lys Gly Asp Asn

995					1000					1005				
Leu	Ser	Tyr	Glu	Arg	Glu	Asn	Ile	Ser	Met	Tyr	Glu	Arg	Val	Leu
1010						1015					1020			
Thr	Arg	Ala	Glu	Gln	Ile	Leu	Ala	Gln	Ala	Arg	Ala	Gln	Asn	Gly
1025						1030					1035			
Ile	Met	Gly	Val	Gly	Gly	Gly	Gly	Thr	Ala	Gly	Ala	Gly	Gly	Gly
1040						1045					1050			
Ile	Asn	Gly	Phe	Thr	Gly	Gly	Gly	Lys	Leu	Gln	Phe	Leu	Ala	Ala
1055						1060					1065			
Gly	Gln	Lys	Trp	Ser	Ser	Ser	Asn	Leu	Gln	Gln	His	Asp	Leu	Gly
1070						1075					1080			
Phe	Thr	Asp	Gln	Asn	Leu	Thr	Ala	Glu	Asp	Leu	Asp	Lys	Trp	Ile
1085						1090					1095			
Asp	Ser	Lys	Ala	Pro	Gln	Gly	Ser	Met	Met	Arg	Gly	Met	Gly	Ala
1100						1105					1110			
Thr	Phe	Leu	Lys	Ala	Gly	Gln	Glu	Tyr	Gly	Leu	Asp	Pro	Arg	Tyr
1115						1120					1125			
Leu	Ile	Ala	His	Ala	Ala	Glu	Glu	Ser	Gly	Trp	Gly	Thr	Ser	Lys
1130						1135					1140			
Ile	Ala	Arg	Asp	Lys	Gly	Asn	Phe	Phe	Gly	Ile	Gly	Ala	Phe	Asp
1145						1150					1155			
Asp	Ser	Pro	Tyr	Ser	Ser	Ala	Tyr	Glu	Phe	Lys	Asp	Gly	Thr	Gly
1160						1165					1170			
Ser	Ala	Ala	Glu	Arg	Gly	Ile	Met	Gly	Gly	Ala	Lys	Trp	Ile	Ser
1175						1180					1185			
Glu	Lys	Tyr	Tyr	Gly	Lys	Gly	Asn	Thr	Thr	Leu	Asp	Lys	Met	Lys
1190						1195					1200			
Ala	Ala	Gly	Tyr	Ala	Thr	Asn	Ala	Ser	Trp	Ala	Pro	Asn	Ile	Ala
1205						1210					1215			

Ser Ile Met Ala Gly Ala Pro Thr Gly Ser Gly Ser Gly Asn Val
1220 1225 1230

Thr Ala Thr Ile Asn Val Asn Val Lys Gly Asp Glu Lys Val Ser
1235 1240 1245

Asp Lys Leu Lys Asn Ser Ser Asp Met Lys Lys Ala Gly Lys Asp
1250 1255 1260

Ile Gly Ser Leu Leu Gly Phe Tyr Ser Arg Glu Met Thr Ile Ala
1265 1270 1275

<210> 70
<211> 495
<212> PRT
<213> (Phi)GH15

<400> 70

Met Ala Lys Thr Gln Ala Glu Ile Asn Lys Arg Leu Asp Ala Tyr Ala
1 5 10 15

Lys Gly Thr Val Asp Ser Pro Tyr Arg Ile Lys Lys Ala Thr Ser Tyr
20 25 30

Asp Pro Ser Phe Gly Val Met Glu Ala Gly Ala Ile Asp Ala Asp Gly
35 40 45

Tyr Tyr His Ala Gln Cys Gln Asp Leu Ile Thr Asp Tyr Val Leu Trp
50 55 60

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

Lys Gln Ser Tyr Gly Thr Gly Phe Lys Ile His Glu Asn Lys Pro Ser
85 90 95

Thr Val Pro Lys Lys Gly Trp Ile Ala Val Phe Thr Ser Gly Ser Tyr
100 105 110

Gln Gln Trp Gly His Ile Gly Ile Val Tyr Asp Gly Gly Asn Thr Ser
115 120 125

Thr Phe Thr Ile Leu Glu Gln Asn Trp Asn Gly Tyr Ala Asn Lys Lys
130 135 140

Pro Thr Lys Arg Val Asp Asn Tyr Tyr Gly Leu Thr His Phe Ile Glu
145 150 155 160

Ile Pro Val Lys Ala Gly Thr Thr Val Lys Lys Glu Thr Ala Lys Lys
165 170 175

Ser Ala Ser Lys Thr Pro Ala Pro Lys Lys Lys Ala Thr Leu Lys Val
180 185 190

Ser Lys Asn His Ile Asn Tyr Thr Met Asp Lys Arg Gly Lys Lys Pro
195 200 205

Glu Gly Met Val Ile His Asn Asp Ala Gly Arg Ser Ser Gly Gln Gln
210 215 220

Tyr Glu Asn Ser Leu Ala Asn Ala Gly Tyr Ala Arg Tyr Ala Asn Gly
225 230 235 240

Ile Ala His Tyr Tyr Gly Ser Glu Gly Tyr Val Trp Glu Ala Ile Asp
245 250 255

Ala Lys Asn Gln Ile Ala Trp His Thr Gly Asp Gly Thr Gly Ala Asn
260 265 270

Ser Gly Asn Phe Arg Phe Ala Gly Ile Glu Val Cys Gln Ser Met Ser
275 280 285

Ala Ser Asp Ala Gln Phe Leu Lys Asn Glu Gln Ala Val Phe Gln Phe
290 295 300

Thr Ala Glu Lys Phe Lys Glu Trp Gly Leu Thr Pro Asn Arg Lys Thr
305 310 315 320

Val Arg Leu His Met Glu Phe Val Pro Thr Ala Cys Pro His Arg Ser
325 330 335

Met Val Leu His Thr Gly Phe Asn Pro Val Thr Gln Gly Arg Pro Ser
340 345 350

Gln Ala Ile Met Asn Lys Leu Lys Asp Tyr Phe Ile Lys Gln Ile Lys
355 360 365

Asn Tyr Met Asp Lys Gly Thr Ser Ser Ser Thr Val Val Lys Asp Gly
370 375 380

Lys Thr Ser Ser Ala Ser Thr Pro Ala Thr Arg Pro Val Thr Gly Ser
385 390 395 400

Trp Lys Lys Asn Gln Tyr Gly Thr Trp Tyr Lys Pro Glu Asn Ala Thr
405 410 415

Phe Val Asn Gly Asn Gln Pro Ile Val Thr Arg Ile Gly Ser Pro Phe
420 425 430

Leu Asn Ala Pro Val Gly Gly Asn Leu Pro Ala Gly Ala Thr Ile Val
435 440 445

Tyr Asp Glu Val Cys Ile Gln Ala Gly His Ile Trp Ile Gly Tyr Asn
450 455 460

Ala Tyr Asn Gly Asp Arg Val Tyr Cys Pro Val Arg Thr Cys Gln Gly
465 470 475 480

Val Pro Pro Asn His Ile Pro Gly Val Ala Trp Gly Val Phe Lys
485 490 495

<210> 71
<211> 264
<212> PRT
<213> (Phi)8074-B1

<400> 71

Met Lys Ile Gly Ile Asp Met Gly His Thr Leu Ser Gly Ala Asp Tyr
1 5 10 15

Gly Val Val Gly Leu Arg Pro Glu Ser Val Leu Thr Arg Glu Val Gly
20 25 30

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

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

Tyr Tyr Arg Ala Asn Gln Ala Asn Val Asp Leu Phe Ile Ser Ile His
65 70 75 80

Phe Asn Ala Thr Pro Gly Gly Thr Gly Thr Glu Val Tyr Thr Tyr Ala
85 90 95

Gly Arg Gln Leu Gly Glu Ala Thr Arg Ile Arg Gln Glu Phe Lys Ser
100 105 110

Leu Gly Leu Arg Asp Arg Gly Thr Lys Asp Gly Ser Gly Leu Ala Val
115 120 125

Ile Arg Asn Thr Lys Ala Lys Ala Met Leu Val Glu Cys Cys Phe Cys
130 135 140

Asp Asn Pro Asn Asp Met Lys Leu Tyr Asn Ser Glu Ser Phe Ser Asn
145 150 155 160

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

Asn Asn Asn Gln Gly Gly Asn Lys Val Lys Ala Val Val Ile Tyr Asn
180 185 190

Glu Gly Ala Asp Arg Arg Gly Ala Glu Tyr Leu Ala Asp Tyr Leu Asn
195 200 205

Cys Pro Thr Ile Ser Asn Ser Arg Thr Phe Asp Tyr Ser Cys Val Glu
210 215 220

His Val Tyr Ala Val Gly Gly Lys Lys Glu Gln Tyr Thr Lys Tyr Leu
225 230 235 240

Lys Thr Leu Leu Ser Gly Ala Asn Arg Tyr Asp Thr Met Gln Gln Ile
245 250 255

Leu Asn Phe Ile Asn Gly Gly Lys
260

<210> 72
<211> 209
<212> PRT
<213> (Phi)SPN1S

<400> 72

Met Asp Ile Asn Gln Phe Arg Arg Ala Ser Gly Ile Asn Glu Gln Leu
1 5 10 15

Ala Ala Arg Trp Phe Pro His Ile Thr Thr Ala Met Asn Glu Phe Gly
20 25 30

Ile Thr Lys Pro Asp Asp Gln Ala Met Phe Ile Ala Gln Val Gly His
35 40 45

Glu Ser Gly Gly Phe Thr Arg Leu Gln Glu Asn Phe Asn Tyr Ser Val
50 55 60

Asn Gly Leu Ser Gly Phe Ile Arg Ala Gly Arg Ile Thr Pro Asp Gln
65 70 75 80

Ala Asn Ala Leu Gly Arg Lys Thr Tyr Glu Lys Ser Leu Pro Leu Glu
85 90 95

Arg Gln Arg Ala Ile Ala Asn Leu Val Tyr Ser Lys Arg Met Gly Asn
100 105 110

Asn Gly Pro Gly Asp Gly Trp Asn Tyr Arg Gly Arg Gly Leu Ile Gln
115 120 125

Ile Thr Gly Leu Asn Asn Tyr Arg Asp Cys Gly Asn Gly Leu Lys Val
130 135 140

Asp Leu Val Ala Gln Pro Glu Leu Leu Ala Gln Asp Glu Tyr Ala Ala
145 150 155 160

Arg Ser Ala Ala Trp Phe Phe Ser Ser Lys Gly Cys Met Lys Tyr Thr
165 170 175

Gly Asp Leu Val Arg Val Thr Gln Ile Ile Asn Gly Gly Gln Asn Gly
180 185 190

Ile Asp Asp Arg Arg Thr Arg Tyr Ala Ala Ala Arg Lys Val Leu Ala
195 200 205

Leu

<210> 73
<211> 290
<212> PRT
<213> (Phi)CN77

<400> 73

Met Gly Tyr Trp Gly Tyr Pro Asn Gly Gln Ile Pro Asn Asp Lys Met
1 5 10 15

Ala Leu Tyr Arg Gly Cys Leu Leu Arg Ala Asp Ala Ala Ala Gln Ala
20 25 30

Tyr Ala Leu Gln Asp Ala Tyr Thr Arg Ala Thr Gly Lys Pro Leu Val
35 40 45

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

Leu Tyr Leu Ser Gly Arg Gly Asn Ile Ala Ala Val Pro Gly Leu Ser
65 70 75 80

Asn His Gly Trp Gly Leu Ala Cys Asp Phe Ala Ala Pro Leu Asn Ser
85 90 95

Ser Gly Ser Glu Glu His Arg Trp Met Arg Gln Asn Ala Pro Leu Phe
100 105 110

Gly Phe Asp Trp Ala Arg Gly Lys Ala Asp Asn Glu Pro Trp His Trp
115 120 125

Glu Tyr Gly Asn Val Pro Val Ser Arg Trp Ala Ser Leu Asp Val Thr
130 135 140

Pro Ile Asp Arg Asn Asp Met Ala Asp Ile Thr Glu Gly Gln Met Gln
145 150 155 160

Arg Ile Ala Val Ile Leu Leu Asp Thr Glu Ile Gln Thr Pro Leu Gly
165 170 175

Pro Arg Leu Val Lys His Ala Leu Gly Asp Ala Leu Leu Leu Gly Gln
180 185 190

Ala Asn Ala Asn Ser Ile Ala Glu Val Pro Asp Lys Thr Trp Asp Val
195 200 205

Leu Val Asp His Pro Leu Ala Lys Asn Glu Asp Gly Thr Pro Leu Lys
210 215 220

Val Arg Leu Gly Asp Val Ala Lys Tyr Glu Pro Leu Glu His Gln Asn
225 230 235 240

Thr Arg Asp Ala Ile Ala Lys Leu Gly Thr Leu Gln Phe Thr Asp Lys
245 250 255

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

Leu Val Lys Lys Ile Val Asp Gly Val Arg Ala Leu Phe Gly Arg Ala
275 280 285

Ala Ala
290

<210> 74
<211> 185
<212> PRT
<213> (Phi)AB2

<400> 74

Met Ile Leu Thr Lys Asp Gly Phe Ser Ile Ile Arg Asn Glu Leu Phe
1 5 10 15

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

Ala Lys Ala Thr Glu Ser Gly Leu Thr Tyr Pro Glu Ala Ala Tyr Leu
35 40 45

Leu Ala Thr Ile Tyr His Glu Thr Gly Leu Pro Ser Gly Tyr Arg Thr
50 55 60

Met Gln Pro Ile Lys Glu Ala Gly Ser Asp Ser Tyr Leu Arg Ser Lys
65 70 75 80

Lys Tyr Tyr Pro Tyr Ile Gly Tyr Gly Tyr Val Gln Leu Thr Trp Lys
85 90 95

Glu Asn Tyr Glu Arg Ile Gly Lys Leu Ile Gly Val Asp Leu Ile Lys
100 105 110

Asn Pro Glu Lys Ala Leu Glu Pro Leu Ile Ala Ile Gln Ile Ala Ile
115 120 125

Lys Gly Met Leu Asn Gly Trp Phe Thr Gly Val Gly Phe Arg Arg Lys
130 135 140

Arg Pro Val Ser Lys Tyr Asn Lys Gln Gln Tyr Val Ala Ala Arg Asn
145 150 155 160

Ile Ile Asn Gly Lys Asp Lys Ala Glu Leu Ile Ala Lys Tyr Ala Ile
165 170 175

Ile Phe Glu Arg Ala Leu Arg Ser Leu
180 185

<210> 75
<211> 262
<212> PRT
<213> (Phi)B4

<400> 75

Met Ala Met Ala Leu Gln Thr Leu Ile Asp Lys Ala Asn Arg Lys Leu
1 5 10 15

Asn Val Ser Gly Met Arg Lys Asp Val Ala Asp Arg Thr Arg Ala Val
20 25 30

Ile Thr Gln Met His Ala Gln Gly Ile Tyr Ile Cys Val Ala Gln Gly
35 40 45

Phe Arg Ser Phe Ala Glu Gln Asn Ala Leu Tyr Ala Gln Gly Arg Thr
50 55 60

Lys Pro Gly Ser Ile Val Thr Asn Ala Arg Gly Gly Gln Ser Asn His
65 70 75 80

Asn Tyr Gly Val Ala Val Asp Leu Cys Leu Tyr Thr Gln Asp Gly Ser
85 90 95

Asp Val Ile Trp Thr Val Glu Gly Asn Phe Arg Lys Val Ile Ala Ala
100 105 110

Met Lys Ala Gln Gly Phe Lys Trp Gly Gly Asp Trp Val Ser Phe Lys
115 120 125

Asp Tyr Pro His Phe Glu Leu Tyr Asp Val Val Gly Gly Gln Lys Pro

130		135		140											
Pro	Ala	Asp	Asn	Gly	Gly	Ala	Val	Asp	Asn	Gly	Gly	Gly	Ser	Gly	Ser
145				150					155						160
Thr	Gly	Gly	Ser	Gly	Gly	Gly	Ser	Thr	Gly	Gly	Gly	Ser	Thr	Gly	Gly
				165					170					175	
Gly	Tyr	Asp	Ser	Ser	Trp	Phe	Thr	Lys	Glu	Thr	Gly	Thr	Phe	Val	Thr
			180					185					190		
Asn	Thr	Ser	Ile	Lys	Leu	Arg	Thr	Ala	Pro	Phe	Thr	Ser	Ala	Asp	Val
		195					200					205			
Ile	Ala	Thr	Leu	Pro	Ala	Gly	Ser	Pro	Val	Asn	Tyr	Asn	Gly	Phe	Gly
	210					215					220				
Ile	Glu	Tyr	Asp	Gly	Tyr	Val	Trp	Ile	Arg	Gln	Pro	Arg	Ser	Asn	Gly
225					230					235					240
Tyr	Gly	Tyr	Leu	Ala	Thr	Gly	Glu	Ser	Lys	Gly	Gly	Lys	Arg	Gln	Asn
			245						250					255	
Tyr	Trp	Gly	Thr	Phe	Lys										
			260												
<210>	76														
<211>	274														
<212>	PRT														
<213>	(Phi)CTP1														
<400>	76														
Met	Lys	Lys	Ile	Ala	Asp	Ile	Ser	Asn	Leu	Asn	Gly	Asn	Val	Asp	Val
1				5					10					15	
Lys	Leu	Leu	Phe	Asn	Leu	Gly	Tyr	Ile	Gly	Ile	Ile	Ala	Lys	Ala	Ser
			20					25					30		
Glu	Gly	Gly	Thr	Phe	Val	Asp	Lys	Tyr	Tyr	Lys	Gln	Asn	Tyr	Thr	Asn
		35					40					45			
Thr	Lys	Ala	Gln	Gly	Lys	Ile	Thr	Gly	Ala	Tyr	His	Phe	Ala	Asn	Phe
	50					55					60				

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

Ile Ala Gly Thr Thr Pro Asp Phe Val Val Leu Asp Leu Glu Gln Gln
85 90 95

Cys Thr Gly Asp Ile Thr Asp Ala Cys Leu Ala Phe Leu Asn Ile Val
100 105 110

Ala Lys Lys Phe Lys Cys Val Val Tyr Cys Asn Ser Ser Phe Ile Lys
115 120 125

Glu His Leu Asn Ser Lys Ile Cys Ala Tyr Pro Leu Trp Ile Ala Asn
130 135 140

Tyr Gly Val Ala Thr Pro Ala Phe Thr Leu Trp Thr Lys Tyr Ala Met
145 150 155 160

Trp Gln Phe Thr Glu Lys Gly Gln Val Ser Gly Ile Ser Gly Tyr Ile
165 170 175

Asp Phe Ser Tyr Ile Thr Asp Glu Phe Ile Lys Tyr Ile Lys Gly Glu
180 185 190

Asp Glu Val Glu Asn Leu Val Val Tyr Asn Asp Gly Ala Asp Gln Arg
195 200 205

Ala Ala Glu Tyr Leu Ala Asp Arg Leu Ala Cys Pro Thr Ile Asn Asn
210 215 220

Ala Arg Lys Phe Asp Tyr Ser Asn Val Lys Asn Val Tyr Ala Val Gly
225 230 235 240

Gly Asn Lys Glu Gln Tyr Thr Ser Tyr Leu Thr Thr Leu Ile Ala Gly
245 250 255

Ser Thr Arg Tyr Thr Thr Met Gln Ala Val Leu Asp Tyr Ile Lys Asn
260 265 270

Leu Lys

<210> 77
<211> 628

<212> PRT

<213> Staphylococcus virus 187

<400> 77

Met Ala Leu Pro Lys Thr Gly Lys Pro Thr Ala Lys Gln Val Val Asp
1 5 10 15

Trp Ala Ile Asn Leu Ile Gly Ser Gly Val Asp Val Asp Gly Tyr Tyr
20 25 30

Gly Arg Gln Cys Trp Asp Leu Pro Asn Tyr Ile Phe Asn Arg Tyr Trp
35 40 45

Asn Phe Lys Thr Pro Gly Asn Ala Arg Asp Met Ala Trp Tyr Arg Tyr
50 55 60

Pro Glu Gly Phe Lys Val Phe Arg Asn Thr Ser Asp Phe Val Pro Lys
65 70 75 80

Pro Gly Asp Ile Ala Val Trp Thr Gly Gly Asn Tyr Asn Trp Asn Thr
85 90 95

Trp Gly His Thr Gly Ile Val Val Gly Pro Ser Thr Lys Ser Tyr Phe
100 105 110

Tyr Ser Val Asp Gln Asn Trp Asn Asn Ser Asn Ser Tyr Val Gly Ser
115 120 125

Pro Ala Ala Lys Ile Lys His Ser Tyr Phe Gly Val Thr His Phe Val
130 135 140

Arg Pro Ala Tyr Lys Ala Glu Pro Lys Pro Thr Pro Pro Ala Gln Asn
145 150 155 160

Asn Pro Ala Pro Lys Asp Pro Glu Pro Ser Lys Lys Pro Glu Ser Asn
165 170 175

Lys Pro Ile Tyr Lys Val Val Thr Lys Ile Leu Phe Thr Thr Ala His
180 185 190

Ile Glu His Val Lys Ala Asn Arg Phe Val His Tyr Ile Thr Lys Ser
195 200 205

Asp Asn His Asn Asn Lys Pro Asn Lys Ile Val Ile Lys Asn Thr Asn

210					215					220					
Thr	Ala	Leu	Ser	Thr	Ile	Asp	Val	Tyr	Arg	Tyr	Arg	Asp	Glu	Leu	Asp
225					230					235					240
Lys	Asp	Glu	Ile	Pro	His	Phe	Phe	Val	Asp	Arg	Leu	Asn	Val	Trp	Ala
				245					250					255	
Cys	Arg	Pro	Ile	Glu	Asp	Ser	Ile	Asn	Gly	Tyr	His	Asp	Ser	Val	Val
			260					265					270		
Leu	Ser	Ile	Thr	Glu	Thr	Arg	Thr	Ala	Leu	Ser	Asp	Asn	Phe	Lys	Met
		275					280					285			
Asn	Glu	Ile	Glu	Cys	Leu	Ser	Leu	Ala	Glu	Ser	Ile	Leu	Lys	Ala	Asn
	290					295					300				
Asn	Lys	Lys	Met	Ser	Ala	Ser	Asn	Ile	Ile	Val	Asp	Asn	Lys	Ala	Trp
305					310					315					320
Arg	Thr	Phe	Lys	Leu	His	Thr	Gly	Lys	Asp	Ser	Leu	Lys	Ser	Ser	Ser
				325					330					335	
Phe	Thr	Ser	Lys	Asp	Tyr	Gln	Lys	Ala	Val	Asn	Glu	Leu	Ile	Lys	Leu
			340					345					350		
Phe	Asn	Asp	Lys	Asp	Lys	Leu	Leu	Asn	Asn	Lys	Pro	Lys	Asp	Val	Val
		355					360					365			
Glu	Arg	Ile	Arg	Ile	Arg	Thr	Ile	Val	Lys	Glu	Asn	Thr	Lys	Phe	Val
	370					375					380				
Pro	Ser	Glu	Leu	Lys	Pro	Arg	Asn	Asn	Ile	Arg	Asp	Lys	Gln	Asp	Ser
385					390					395					400
Lys	Ile	Asp	Arg	Val	Ile	Asn	Asn	Tyr	Thr	Leu	Lys	Gln	Ala	Leu	Asn
				405					410					415	
Ile	Gln	Tyr	Lys	Leu	Asn	Pro	Lys	Pro	Gln	Thr	Ser	Asn	Gly	Val	Ser
			420					425					430		
Trp	Tyr	Asn	Ala	Ser	Val	Asn	Gln	Ile	Lys	Ser	Ala	Met	Asp	Thr	Thr
		435					440					445			

Lys Ile Phe Asn Asn Asn Val Gln Val Tyr Gln Phe Leu Lys Leu Asn
450 455 460

Gln Tyr Gln Gly Ile Pro Val Asp Lys Leu Asn Lys Leu Leu Val Gly
465 470 475 480

Lys Gly Thr Leu Ala Asn Gln Gly His Ala Phe Ala Asp Gly Cys Lys
485 490 495

Lys Tyr Asn Ile Asn Glu Ile Tyr Leu Ile Ala His Arg Phe Leu Glu
500 505 510

Ser Ala Asn Gly Thr Ser Phe Phe Ala Ser Gly Lys Thr Gly Val Tyr
515 520 525

Asn Tyr Phe Gly Ile Gly Ala Phe Asp Asn Asn Pro Asn Asn Ala Met
530 535 540

Ala Phe Ala Arg Ser His Gly Trp Thr Ser Pro Thr Lys Ala Ile Ile
545 550 555 560

Gly Gly Ala Glu Phe Val Gly Lys Gly Tyr Phe Asn Val Gly Gln Asn
565 570 575

Thr Leu Tyr Arg Met Arg Trp Asn Pro Gln Lys Pro Gly Thr His Gln
580 585 590

Tyr Ala Thr Asp Ile Ser Trp Ala Lys Val Gln Ala Gln Met Ile Ser
595 600 605

Ala Met Tyr Lys Glu Ile Gly Leu Thr Gly Asp Tyr Phe Ile Tyr Asp
610 615 620

Gln Tyr Lys Lys
625

<210> 78
<211> 291
<212> PRT
<213> (Phi)P35

<400> 78

Met Ala Arg Lys Phe Thr Lys Ala Glu Leu Val Ala Lys Ala Glu Lys
1 5 10 15

Lys Val Gly Gly Leu Lys Pro Asp Val Lys Lys Ala Val Leu Ser Ala
20 25 30

Val Lys Glu Ala Tyr Asp Arg Tyr Gly Ile Gly Ile Ile Val Ser Gln
35 40 45

Gly Tyr Arg Ser Ile Ala Glu Gln Asn Gly Leu Tyr Ala Gln Gly Arg
50 55 60

Thr Lys Pro Gly Asn Ile Val Thr Asn Ala Lys Gly Gly Gln Ser Asn
65 70 75 80

His Asn Phe Gly Val Ala Val Asp Phe Ala Ile Asp Leu Ile Asp Asp
85 90 95

Gly Lys Ile Asp Ser Trp Gln Pro Ser Ala Thr Ile Val Asn Met Met
100 105 110

Lys Arg Arg Gly Phe Lys Trp Gly Gly Asp Trp Lys Ser Phe Thr Asp
115 120 125

Leu Pro His Phe Glu Ala Cys Asp Trp Tyr Arg Gly Glu Arg Lys Tyr
130 135 140

Lys Val Asp Thr Ser Glu Trp Lys Lys Lys Glu Asn Ile Asn Ile Val
145 150 155 160

Ile Lys Asp Val Gly Tyr Phe Gln Asp Lys Pro Gln Phe Leu Asn Ser
165 170 175

Lys Ser Val Arg Gln Trp Lys His Gly Thr Lys Val Lys Leu Thr Lys
180 185 190

His Asn Ser His Trp Tyr Thr Gly Val Val Lys Asp Gly Asn Lys Ser
195 200 205

Val Arg Gly Tyr Ile Tyr His Ser Met Ala Lys Val Thr Ser Lys Asn
210 215 220

Ser Asp Gly Ser Val Asn Ala Thr Ile Asn Ala His Ala Phe Cys Trp
225 230 235 240

Asp Asn Lys Lys Leu Asn Gly Gly Asp Phe Ile Asn Leu Lys Arg Gly
245 250 255

Phe Lys Gly Ile Thr His Pro Ala Ser Asp Gly Phe Tyr Pro Leu Tyr
260 265 270

Phe Ala Ser Arg Lys Lys Thr Phe Tyr Ile Pro Arg Tyr Met Phe Asp
275 280 285

Ile Lys Lys
290

<210> 79
<211> 342
<212> PRT
<213> (Phi)CP-7

<400> 79

Met Val Lys Lys Asn Asp Leu Phe Val Asp Val Ala Ser His Gln Gly
1 5 10 15

Tyr Asp Ile Ser Gly Ile Leu Glu Glu Ala Gly Thr Thr Asn Thr Ile
20 25 30

Ile Lys Val Ser Glu Ser Thr Ser Tyr Leu Asn Pro Cys Leu Ser Ala
35 40 45

Gln Val Ser Gln Ser Asn Pro Ile Gly Phe Tyr His Phe Ala Trp Phe
50 55 60

Gly Gly Asn Glu Glu Glu Ala Glu Ala Glu Ala Arg Tyr Phe Leu Asp
65 70 75 80

Asn Val Pro Thr Gln Val Lys Tyr Leu Val Leu Asp Tyr Glu Asp His
85 90 95

Ala Ser Ala Ser Val Gln Arg Asn Thr Thr Ala Cys Leu Arg Phe Met
100 105 110

Gln Ile Ile Ala Glu Ala Gly Tyr Thr Pro Ile Tyr Tyr Ser Tyr Lys
115 120 125

Pro Phe Thr Leu Asp Asn Val Asp Tyr Gln Gln Ile Leu Ala Gln Phe
130 135 140

Pro Asn Ser Leu Trp Ile Ala Gly Tyr Gly Leu Asn Asp Gly Thr Ala
145 150 155 160

Asn Phe Glu Tyr Phe Pro Ser Met Asp Gly Ile Arg Trp Trp Gln Tyr
165 170 175

Ser Ser Asn Pro Phe Asp Lys Asn Ile Val Leu Leu Asp Asp Glu Lys
180 185 190

Glu Asp Asn Ile Asn Asn Glu Asn Thr Leu Lys Ser Leu Thr Thr Val
195 200 205

Ala Asn Glu Val Ile Gln Gly Leu Trp Gly Asn Gly Gln Glu Arg Tyr
210 215 220

Asp Ser Leu Ala Asn Ala Gly Tyr Asp Pro Gln Ala Val Gln Asp Lys
225 230 235 240

Val Asn Glu Ile Leu Asn Ala Arg Glu Ile Ala Asp Leu Thr Thr Val
245 250 255

Ala Asn Glu Val Ile Gln Gly Leu Trp Gly Asn Gly Gln Glu Arg Tyr
260 265 270

Asp Ser Leu Ala Asn Ala Gly Tyr Asp Pro Gln Ala Val Gln Asp Lys
275 280 285

Val Asn Glu Ile Leu Asn Ala Arg Glu Ile Ala Asp Leu Thr Thr Val
290 295 300

Ala Asn Glu Val Ile Gln Gly Leu Trp Gly Asn Gly Gln Glu Arg Tyr
305 310 315 320

Asp Ser Leu Ala Asn Ala Gly Tyr Asp Pro Gln Ala Val Gln Asp Lys
325 330 335

Val Asn Glu Leu Leu Ser
340

<210> 80

<211> 328

<212> PRT

<213> (Phi)EFAP-1

<400> 80

Met Lys Leu Lys Gly Ile Leu Leu Ser Val Val Thr Thr Phe Gly Leu
1 5 10 15

Leu Phe Gly Ala Thr Asn Val Gln Ala Tyr Glu Val Asn Asn Glu Phe
20 25 30

Asn Leu Gln Pro Trp Glu Gly Ser Gln Gln Leu Ala Tyr Pro Asn Lys
35 40 45

Ile Ile Leu His Glu Thr Ala Asn Pro Arg Ala Thr Gly Arg Asn Glu
50 55 60

Ala Thr Tyr Met Lys Asn Asn Trp Phe Asn Ala His Thr Thr Ala Ile
65 70 75 80

Val Gly Asp Gly Gly Ile Val Tyr Lys Val Ala Pro Glu Gly Asn Val
85 90 95

Ser Trp Gly Ala Gly Asn Ala Asn Pro Tyr Ala Pro Val Gln Ile Glu
100 105 110

Leu Gln His Thr Asn Asp Pro Glu Leu Phe Lys Ala Asn Tyr Lys Ala
115 120 125

Tyr Val Asp Tyr Thr Arg Asp Met Gly Lys Lys Phe Gly Ile Pro Met
130 135 140

Thr Leu Asp Gln Gly Gly Ser Leu Trp Glu Lys Gly Val Val Ser His
145 150 155 160

Gln Trp Val Thr Asp Phe Val Trp Gly Asp His Thr Asp Pro Tyr Gly
165 170 175

Tyr Leu Ala Lys Met Gly Ile Ser Lys Ala Gln Leu Ala His Asp Leu
180 185 190

Ala Asn Gly Val Ser Gly Asn Thr Ala Thr Pro Thr Pro Lys Pro Asp
195 200 205

Lys Pro Lys Pro Thr Gln Pro Ser Lys Pro Ser Asn Lys Lys Arg Phe
210 215 220

Asn Tyr Arg Val Asp Gly Leu Glu Tyr Val Asn Gly Met Trp Gln Ile
225 230 235 240

Tyr Asn Glu His Leu Gly Lys Ile Asp Phe Asn Trp Thr Glu Asn Gly
245 250 255

Ile Pro Val Glu Val Val Asp Lys Val Asn Pro Ala Thr Gly Gln Pro
260 265 270

Thr Lys Asp Gln Val Leu Lys Val Gly Asp Tyr Phe Asn Phe Gln Glu
275 280 285

Asn Ser Thr Gly Val Val Gln Glu Gln Thr Pro Tyr Met Gly Tyr Thr
290 295 300

Leu Ser His Val Gln Leu Pro Asn Glu Phe Ile Trp Leu Phe Thr Asp
305 310 315 320

Ser Lys Gln Ala Leu Met Tyr Gln
325

<210> 81
<211> 48
<212> PRT
<213> Homo sapiens

<400> 81

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

Gly Leu Gly Lys Leu Gly Lys Asp Ala Val Glu Asp Leu Glu Ser Val
20 25 30

Gly Lys Gly Ala Val His Asp Val Lys Asp Val Leu Asp Ser Val Leu
35 40 45

<210> 82
<211> 37
<212> PRT
<213> Hyalophora cecropia

<400> 82

Lys Trp Lys Leu Phe Lys Lys Ile Glu Lys Val Gly Gln Asn Ile Arg
1 5 10 15

Asp Gly Ile Ile Lys Ala Gly Pro Ala Val Ala Val Val Gly Gln Ala
20 25 30

Thr Gln Ile Ala Lys
35

<210> 83
<211> 62
<212> PRT
<213> Drosophila teissieri

<400> 83

Met Lys Tyr Phe Ser Val Leu Val Val Leu Thr Leu Ile Leu Ala Ile
1 5 10 15

Val Asp Gln Ser Asp Ala Phe Ile Asn Leu Leu Asp Lys Val Glu Asp
20 25 30

Ala Leu His Thr Gly Ala Gln Ala Gly Phe Lys Leu Ile Arg Pro Val
35 40 45

Glu Arg Gly Ala Thr Pro Lys Lys Ser Glu Lys Pro Glu Lys
50 55 60

<210> 84
<211> 66
<212> PRT
<213> Bombyx mori

<400> 84

Met Asn Ile Leu Lys Phe Phe Phe Val Phe Ile Val Ala Met Ser Leu
1 5 10 15

Val Ser Cys Ser Thr Ala Ala Pro Ala Lys Ile Pro Ile Lys Ala Ile
20 25 30

Lys Thr Val Gly Lys Ala Val Gly Lys Gly Leu Arg Ala Ile Asn Ile
35 40 45

Ala Ser Thr Ala Asn Asp Val Phe Asn Phe Leu Lys Pro Lys Lys Arg
50 55 60

Lys His
65

<210> 85
<211> 71
<212> PRT
<213> Ceratitis capitata

<400> 85

Met Ala Asn Leu Lys Ala Val Phe Leu Ile Cys Ile Val Ala Phe Ile
1 5 10 15

Ala Leu Gln Cys Val Val Ala Glu Pro Ala Ala Glu Asp Ser Val Val
20 25 30

Val Lys Arg Ser Ile Gly Ser Ala Leu Lys Lys Ala Leu Pro Val Ala
35 40 45

Lys Lys Ile Gly Lys Ile Ala Leu Pro Ile Ala Lys Ala Ala Leu Pro
50 55 60

Val Ala Ala Gly Leu Val Gly
65 70

<210> 86
<211> 53
<212> PRT
<213> Apis mellifera

<400> 86

Met Lys Val Val Ile Phe Ile Phe Ala Leu Leu Ala Thr Ile Cys Ala
1 5 10 15

Ala Phe Ala Tyr Val Pro Leu Pro Asn Val Pro Gln Pro Gly Arg Arg
20 25 30

Pro Phe Pro Thr Phe Pro Gly Gln Gly Pro Phe Asn Pro Lys Ile Lys
35 40 45

Trp Pro Gln Gly Tyr
50

<210> 87
<211> 283
<212> PRT
<213> Apis mellifera

<400> 87

Lys Asn Phe Ala Leu Ala Ile Leu Val Val Thr Phe Val Val Ala Val

1	5	10	15
Phe Gly Asn Thr Asn Leu Asp Pro Pro Thr Arg Pro Thr Arg Leu Arg	20	25	30
Arg Glu Ala Lys Pro Glu Ala Glu Pro Gly Asn Asn Arg Pro Val Tyr	35	40	45
Ile Pro Gln Pro Arg Pro Pro His Pro Arg Leu Arg Arg Glu Ala Glu	50	55	60
Pro Glu Ala Glu Pro Gly Asn Asn Arg Pro Val Tyr Ile Pro Gln Pro	65	70	75
Arg Pro Pro His Pro Arg Leu Arg Arg Glu Ala Glu Leu Glu Ala Glu	85	90	95
Pro Gly Asn Asn Arg Pro Val Tyr Ile Ser Gln Pro Arg Pro Pro His	100	105	110
Pro Arg Leu Arg Arg Glu Ala Glu Pro Glu Ala Glu Pro Gly Asn Asn	115	120	125
Arg Pro Val Tyr Ile Pro Gln Pro Arg Pro Pro His Pro Arg Leu Arg	130	135	140
Arg Glu Ala Glu Leu Glu Ala Glu Pro Gly Asn Asn Arg Pro Val Tyr	145	150	155
Ile Ser Gln Pro Arg Pro Pro His Pro Arg Leu Arg Arg Glu Ala Glu	165	170	175
Pro Glu Ala Glu Pro Gly Asn Asn Arg Pro Val Tyr Ile Pro Gln Pro	180	185	190
Arg Pro Pro His Pro Arg Leu Arg Arg Glu Ala Glu Pro Glu Ala Glu	195	200	205
Pro Gly Asn Asn Arg Pro Val Tyr Ile Pro Gln Pro Arg Pro Pro His	210	215	220
Pro Arg Leu Arg Arg Glu Ala Glu Pro Glu Ala Glu Pro Gly Asn Asn	225	230	235
			240

Arg Pro Val Tyr Ile Pro Gln Pro Arg Pro Pro His Pro Arg Leu Arg
245 250 255

Arg Glu Ala Lys Pro Glu Ala Lys Pro Gly Asn Asn Arg Pro Val Tyr
260 265 270

Ile Pro Gln Pro Arg Pro Pro His Pro Arg Ile
275 280

<210> 88
<211> 228
<212> PRT
<213> Sus scrofa

<400> 88

Met Glu Thr Gln Arg Ala Ser Leu Cys Leu Gly Arg Trp Ser Leu Trp
1 5 10 15

Leu Leu Leu Leu Ala Leu Val Val Pro Ser Ala Ser Ala Gln Ala Leu
20 25 30

Ser Tyr Arg Glu Ala Val Leu Arg Ala Val Asp Arg Leu Asn Glu Gln
35 40 45

Ser Ser Glu Ala Asn Leu Tyr Arg Leu Leu Glu Leu Asp Gln Pro Pro
50 55 60

Lys Ala Asp Glu Asp Pro Gly Thr Pro Lys Pro Val Ser Phe Thr Val
65 70 75 80

Lys Glu Thr Val Cys Pro Arg Pro Thr Arg Arg Pro Pro Glu Leu Cys
85 90 95

Asp Phe Lys Glu Asn Gly Arg Val Lys Gln Cys Val Gly Thr Val Thr
100 105 110

Leu Asp Gln Ile Lys Asp Pro Leu Asp Ile Thr Cys Asn Glu Gly Val
115 120 125

Arg Arg Phe Pro Trp Trp Trp Pro Phe Leu Arg Arg Pro Arg Leu Arg
130 135 140

Arg Gln Ala Phe Pro Pro Pro Asn Val Pro Gly Pro Arg Phe Pro Pro
145 150 155 160

Pro Asn Val Pro Gly Pro Arg Phe Pro Pro Pro Asn Phe Pro Gly Pro
165 170 175

Arg Phe Pro Pro Pro Asn Phe Pro Gly Pro Arg Phe Pro Pro Pro Asn
180 185 190

Phe Pro Gly Pro Pro Phe Pro Pro Pro Ile Phe Pro Gly Pro Trp Phe
195 200 205

Pro Pro Pro Pro Pro Phe Arg Pro Pro Pro Phe Gly Pro Pro Arg Phe
210 215 220

Pro Gly Arg Arg
225

<210> 89
<211> 144
<212> PRT
<213> Bos taurus

<400> 89

Met Gln Thr Gln Arg Ala Ser Leu Ser Leu Gly Arg Trp Ser Leu Trp
1 5 10 15

Leu Leu Leu Leu Gly Leu Val Val Pro Ser Ala Ser Ala Gln Ala Leu
20 25 30

Ser Tyr Arg Glu Ala Val Leu Arg Ala Val Asp Gln Leu Asn Glu Leu
35 40 45

Ser Ser Glu Ala Asn Leu Tyr Arg Leu Leu Glu Leu Asp Pro Pro Pro
50 55 60

Lys Asp Asn Glu Asp Leu Gly Thr Arg Lys Pro Val Ser Phe Thr Val
65 70 75 80

Lys Glu Thr Val Cys Pro Arg Thr Ile Gln Gln Pro Ala Glu Gln Cys
85 90 95

Asp Phe Lys Glu Lys Gly Arg Val Lys Gln Cys Val Gly Thr Val Thr
100 105 110

Leu Asp Pro Ser Asn Asp Gln Phe Asp Leu Asn Cys Asn Glu Leu Gln

115	120	125
Ser Val Ile Leu Pro Trp	Lys Trp Pro Trp Trp	Pro Trp Arg Arg Gly
130	135	140

<210> 90
 <211> 149
 <212> PRT
 <213> Sus scrofa

<400> 90

Met Glu Thr Gln Arg Ala Ser Leu Cys Leu Gly Arg Trp Ser Leu Trp
1 5 10 15

Leu Leu Leu Leu Ala Leu Val Val Pro Ser Ala Ser Ala Gln Ala Leu
20 25 30

Ser Tyr Arg Glu Ala Val Leu Arg Ala Val Asp Arg Leu Asn Glu Gln
35 40 45

Ser Ser Glu Ala Asn Leu Tyr Arg Leu Leu Glu Leu Asp Gln Pro Pro
50 55 60

Lys Ala Asp Glu Asp Pro Gly Thr Pro Lys Pro Val Ser Phe Thr Val
65 70 75 80

Lys Glu Thr Val Cys Pro Arg Pro Thr Arg Gln Pro Pro Glu Leu Cys
85 90 95

Asp Phe Lys Glu Asn Gly Arg Val Lys Gln Cys Val Gly Thr Val Thr
100 105 110

Leu Asp Gln Ile Lys Asp Pro Leu Asp Ile Thr Cys Asn Glu Val Gln
115 120 125

Gly Val Arg Gly Gly Arg Leu Cys Tyr Cys Arg Arg Arg Phe Cys Val
130 135 140

Cys Val Gly Arg Gly
145

<210> 91
 <211> 17
 <212> PRT
 <213> Tachypleus gigas

<400> 91

Lys Trp Cys Phe Arg Val Cys Tyr Arg Gly Ile Cys Tyr Arg Arg Cys
1 5 10 15

Arg

<210> 92

<211> 102

<212> PRT

<213> *Anopheles gambiae*

<400> 92

Met Lys Cys Ala Thr Ile Val Cys Thr Ile Ala Val Val Leu Ala Ala
1 5 10 15

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

Leu Ser Gly Gly Ala Asn Leu Asn Thr Leu Leu Asp Glu Leu Pro Glu
35 40 45

Glu Thr His His Ala Ala Leu Glu Asn Tyr Arg Ala Lys Arg Ala Thr
50 55 60

Cys Asp Leu Ala Ser Gly Phe Gly Val Gly Ser Ser Leu Cys Ala Ala
65 70 75 80

His Cys Ile Ala Arg Arg Tyr Arg Gly Gly Tyr Cys Asn Ser Lys Ala
85 90 95

Val Cys Val Cys Arg Asn
100

<210> 93

<211> 70

<212> PRT

<213> *Drosophila melanogaster*

<400> 93

Met Met Gln Ile Lys Tyr Leu Phe Ala Leu Phe Ala Val Leu Met Leu
1 5 10 15

Val Val Leu Gly Ala Asn Glu Ala Asp Ala Asp Cys Leu Ser Gly Arg

20

25

30

Tyr Lys Gly Pro Cys Ala Val Trp Asp Asn Glu Thr Cys Arg Arg Val
 35 40 45

Cys Lys Glu Glu Gly Arg Ser Ser Gly His Cys Ser Pro Ser Leu Lys
 50 55 60

Cys Trp Cys Glu Gly Cys
 65 70

<210> 94

<211> 63

<212> PRT

<213> Medicago truncatula

<400> 94

Met Thr Lys Ile Val Val Phe Ile Tyr Val Val Ile Leu Leu Leu Thr
 1 5 10 15

Ile Phe His Val Ser Ala Lys Lys Lys Arg Tyr Ile Glu Cys Glu Thr
 20 25 30

His Glu Asp Cys Ser Gln Val Phe Met Pro Pro Phe Val Met Arg Cys
 35 40 45

Val Ile His Glu Cys Lys Ile Phe Asn Gly Glu His Leu Arg Tyr
 50 55 60

<210> 95

<211> 76

<212> PRT

<213> Medicago truncatula

<400> 95

Met Ala Lys Ile Met Lys Phe Val Tyr Asn Met Ile Pro Phe Leu Ser
 1 5 10 15

Ile Phe Ile Ile Thr Leu Gln Val Asn Val Val Val Cys Glu Ile Asp
 20 25 30

Ala Asp Cys Pro Gln Ile Cys Met Pro Pro Tyr Glu Val Arg Cys Val
 35 40 45

Asn His Arg Cys Gly Trp Val Asn Thr Asp Asp Ser Leu Phe Leu Thr

50		55		60
Gln Glu Phe Thr Arg Ser Lys Gln Tyr Ile Ile Ser				
65		70		75

<210> 96
 <211> 76
 <212> PRT
 <213> Medicago truncatula
 <400> 96

Met Tyr Lys Val Val Glu Ser Ile Phe Ile Arg Tyr Met His Arg Lys
1 5 10 15

Pro Asn Met Thr Lys Phe Phe Lys Phe Val Tyr Thr Met Phe Ile Leu
20 25 30

Ile Ser Leu Phe Leu Val Val Thr Asn Ala Asn Ala His Asn Cys Thr
35 40 45

Asp Ile Ser Asp Cys Ser Ser Asn His Cys Ser Tyr Glu Gly Val Ser
50 55 60

Leu Cys Met Asn Gly Gln Cys Ile Cys Ile Tyr Glu
65 70 75

<210> 97
 <211> 64
 <212> PRT
 <213> Medicago truncatula
 <400> 97

Met Val Glu Thr Leu Arg Leu Phe Tyr Ile Met Ile Leu Phe Val Ser
1 5 10 15

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

Ser Glu Asp Phe Glu Cys Tyr Ile Lys Asn Pro His Val Pro Phe Gly
35 40 45

His Leu Arg Cys Phe Glu Gly Phe Cys Gln Gln Leu Asn Gly Pro Ala
50 55 60

<210> 98

<211> 67
<212> PRT
<213> Medicago truncatula

<400> 98

Met Ala Lys Ile Val Asn Phe Val Tyr Ser Met Ile Val Phe Leu Phe
1 5 10 15

Leu Phe Leu Val Ala Thr Lys Ala Ala Arg Gly Tyr Leu Cys Val Thr
20 25 30

Asp Ser His Cys Pro Pro His Met Cys Pro Pro Gly Met Glu Pro Arg
35 40 45

Cys Val Arg Arg Met Cys Lys Cys Leu Pro Ile Gly Trp Arg Lys Tyr
50 55 60

Phe Val Pro
65

<210> 99
<211> 96
<212> PRT
<213> Medicago truncatula

<400> 99

Met Gln Ile Gly Lys Asn Met Val Glu Thr Pro Lys Leu Asp Tyr Val
1 5 10 15

Ile Ile Phe Phe Phe Leu Tyr Phe Phe Phe Arg Gln Met Ile Ile Leu
20 25 30

Arg Leu Asn Thr Thr Phe Arg Pro Leu Asn Phe Lys Met Leu Arg Phe
35 40 45

Trp Gly Gln Asn Arg Asn Ile Met Lys His Arg Gly Gln Lys Val His
50 55 60

Phe Ser Leu Ile Leu Ser Asp Cys Lys Thr Asn Lys Asp Cys Pro Lys
65 70 75 80

Leu Arg Arg Ala Asn Val Arg Cys Arg Lys Ser Tyr Cys Val Pro Ile
85 90 95

<210> 100

<211> 65
<212> PRT
<213> Medicago truncatula

<400> 100

Met Leu Arg Leu Tyr Leu Val Ser Tyr Phe Leu Leu Lys Arg Thr Leu
1 5 10 15

Leu Val Ser Tyr Phe Ser Tyr Phe Ser Thr Tyr Ile Ile Glu Cys Lys
20 25 30

Thr Asp Asn Asp Cys Pro Ile Ser Gln Leu Lys Ile Tyr Ala Trp Lys
35 40 45

Cys Val Lys Asn Gly Cys His Leu Phe Asp Val Ile Pro Met Met Tyr
50 55 60

Glu
65

<210> 101
<211> 79
<212> PRT
<213> Medicago truncatula

<400> 101

Met Ala Glu Ile Leu Lys Phe Val Tyr Ile Val Ile Leu Phe Val Ser
1 5 10 15

Leu Leu Leu Ile Val Val Ala Ser Glu Arg Glu Cys Val Thr Asp Asp
20 25 30

Asp Cys Glu Lys Leu Tyr Pro Thr Asn Glu Tyr Arg Met Met Cys Asp
35 40 45

Ser Gly Tyr Cys Met Asn Leu Leu Asn Gly Lys Ile Ile Tyr Leu Leu
50 55 60

Cys Leu Lys Lys Lys Lys Phe Leu Ile Ile Ile Ser Val Leu Leu
65 70 75

<210> 102
<211> 95
<212> PRT
<213> Medicago truncatula

<400> 102

Met Ala Glu Ile Ile Lys Phe Val Tyr Ile Met Ile Leu Cys Val Ser
1 5 10 15

Leu Leu Leu Ile Glu Val Ala Gly Glu Glu Cys Val Thr Asp Ala Asp
20 25 30

Cys Asp Lys Leu Tyr Pro Asp Ile Arg Lys Pro Leu Met Cys Ser Ile
35 40 45

Gly Glu Cys Tyr Ser Leu Tyr Lys Gly Lys Phe Ser Leu Ser Ile Ile
50 55 60

Ser Lys Thr Ser Phe Ser Leu Met Val Tyr Asn Val Val Thr Leu Val
65 70 75 80

Ile Cys Leu Arg Leu Ala Tyr Ile Ser Leu Leu Leu Lys Phe Leu
85 90 95

<210> 103

<211> 100

<212> PRT

<213> Medicago truncatula

<400> 103

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

Leu Ile Ile Leu Pro Ala Lys Ile Arg Gly Glu Thr Leu Ser Leu Thr
20 25 30

His Pro Lys Cys His His Ile Met Leu Pro Ser Leu Phe Ile Thr Glu
35 40 45

Val Phe Gln Arg Val Thr Asp Asp Gly Cys Pro Lys Pro Val Asn His
50 55 60

Leu Arg Val Val Lys Cys Ile Glu His Ile Cys Glu Tyr Gly Tyr Asn
65 70 75 80

Tyr Arg Pro Asp Phe Ala Ser Gln Ile Pro Glu Ser Thr Lys Met Pro
85 90 95

Arg Lys Arg Glu

100

<210> 104
<211> 78
<212> PRT
<213> Medicago truncatula

<400> 104

Met Val Glu Ile Leu Lys Asn Phe Tyr Ala Met Asn Leu Phe Ile Phe
1 5 10 15

Leu Ile Ile Leu Ala Val Lys Ile Arg Gly Ala His Phe Pro Cys Val
20 25 30

Thr Asp Asp Asp Cys Pro Lys Pro Val Asn Lys Leu Arg Val Ile Lys
35 40 45

Cys Ile Asp His Ile Cys Gln Tyr Ala Arg Asn Leu Pro Asp Phe Ala
50 55 60

Ser Glu Ile Ser Glu Ser Thr Lys Met Pro Cys Lys Gly Glu
65 70 75

<210> 105
<211> 72
<212> PRT
<213> Medicago truncatula

<400> 105

Met Phe His Ala Gln Ala Glu Asn Met Ala Lys Val Ser Asn Phe Val
1 5 10 15

Cys Ile Met Ile Leu Phe Leu Ala Leu Phe Phe Ile Thr Met Asn Asp
20 25 30

Ala Ala Arg Phe Glu Cys Arg Glu Asp Ser His Cys Val Thr Arg Ile
35 40 45

Lys Cys Val Leu Pro Arg Lys Pro Glu Cys Arg Asn Tyr Ala Cys Gly
50 55 60

Cys Tyr Asp Ser Asn Lys Tyr Arg
65 70

<210> 106

<211> 78
<212> PRT
<213> Medicago truncatula

<400> 106

Met Gln Met Arg Gln Asn Met Ala Thr Ile Leu Asn Phe Val Phe Val
1 5 10 15

Ile Ile Leu Phe Ile Ser Leu Leu Leu Val Val Thr Lys Gly Tyr Arg
20 25 30

Glu Pro Phe Ser Ser Phe Thr Glu Gly Pro Thr Cys Lys Glu Asp Ile
35 40 45

Asp Cys Pro Ser Ile Ser Cys Val Asn Pro Gln Val Pro Lys Cys Ile
50 55 60

Met Phe Glu Cys His Cys Lys Tyr Ile Pro Thr Thr Leu Lys
65 70 75

<210> 107
<211> 71
<212> PRT
<213> Medicago truncatula

<400> 107

Met Ala Thr Ile Leu Met Tyr Val Tyr Ile Thr Ile Leu Phe Ile Ser
1 5 10 15

Ile Leu Thr Val Leu Thr Glu Gly Leu Tyr Glu Pro Leu Tyr Asn Phe
20 25 30

Arg Arg Asp Pro Asp Cys Arg Arg Asn Ile Asp Cys Pro Ser Tyr Leu
35 40 45

Cys Val Ala Pro Lys Val Pro Arg Cys Ile Met Phe Glu Cys His Cys
50 55 60

Lys Asp Ile Pro Ser Asp His
65 70

<210> 108
<211> 57
<212> PRT
<213> Medicago truncatula

<400> 108

Met Thr Thr Ser Leu Lys Phe Val Tyr Val Ala Ile Leu Phe Leu Ser
1 5 10 15

Leu Leu Leu Val Val Met Gly Gly Ile Arg Arg Phe Glu Cys Arg Gln
20 25 30

Asp Ser Asp Cys Pro Ser Tyr Phe Cys Glu Lys Leu Thr Val Pro Lys
35 40 45

Cys Phe Trp Ser Lys Cys Tyr Cys Lys
50 55

<210> 109

<211> 57

<212> PRT

<213> Medicago truncatula

<400> 109

Met Thr Thr Ser Leu Lys Phe Val Tyr Val Ala Ile Leu Phe Leu Ser
1 5 10 15

Leu Leu Leu Val Val Met Gly Gly Ile Arg Lys Lys Glu Cys Arg Gln
20 25 30

Asp Ser Asp Cys Pro Ser Tyr Phe Cys Glu Lys Leu Thr Ile Ala Lys
35 40 45

Cys Ile His Ser Thr Cys Leu Cys Lys
50 55

<210> 110

<211> 66

<212> PRT

<213> Medicago truncatula

<400> 110

Met Gln Ile Gly Lys Asn Met Val Glu Thr Pro Lys Leu Val Tyr Phe
1 5 10 15

Ile Ile Leu Phe Leu Ser Ile Phe Leu Cys Ile Thr Val Ser Asn Ser
20 25 30

Ser Phe Ser Gln Ile Phe Asn Ser Ala Cys Lys Thr Asp Lys Asp Cys
35 40 45

Pro Lys Phe Gly Arg Val Asn Val Arg Cys Arg Lys Gly Asn Cys Val
50 55 60

Pro Ile
65

<210> 111
<211> 57
<212> PRT
<213> Medicago truncatula

<400> 111

Met Thr Ala Ile Leu Lys Lys Phe Ile Asn Ala Val Phe Leu Phe Ile
1 5 10 15

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

Asn Asp Glu Cys Val Tyr Pro Asp Val Phe Gln Cys Ile Asn Asn Ile
35 40 45

Cys Lys Cys Val Ser His His Arg Thr
50 55

<210> 112
<211> 74
<212> PRT
<213> Medicago truncatula

<400> 112

Met Gln Lys Arg Lys Asn Met Ala Gln Ile Ile Phe Tyr Val Tyr Ala
1 5 10 15

Leu Ile Ile Leu Phe Ser Pro Phe Leu Ala Ala Arg Leu Val Phe Val
20 25 30

Asn Pro Glu Lys Pro Cys Val Thr Asp Ala Asp Cys Asp Arg Tyr Arg
35 40 45

His Glu Ser Ala Ile Tyr Ser Asp Met Phe Cys Lys Asp Gly Tyr Cys
50 55 60

Phe Ile Asp Tyr His His Asp Pro Tyr Pro
65 70

<210> 113
<211> 76
<212> PRT
<213> Medicago truncatula

<400> 113

Met Gln Met Arg Lys Asn Met Ala Gln Ile Leu Phe Tyr Val Tyr Ala
1 5 10 15

Leu Leu Ile Leu Phe Thr Pro Phe Leu Val Ala Arg Ile Met Val Val
20 25 30

Asn Pro Asn Asn Pro Cys Val Thr Asp Ala Asp Cys Gln Arg Tyr Arg
35 40 45

His Lys Leu Ala Thr Arg Met Ile Cys Asn Gln Gly Phe Cys Leu Met
50 55 60

Asp Phe Thr His Asp Pro Tyr Ala Pro Ser Leu Pro
65 70 75

<210> 114
<211> 64
<212> PRT
<213> Medicago truncatula

<400> 114

Met Asn His Ile Ser Lys Phe Val Tyr Ala Leu Ile Ile Phe Leu Ser
1 5 10 15

Ile Tyr Leu Val Val Leu Asp Gly Leu Pro Ile Ser Cys Lys Asp His
20 25 30

Phe Glu Cys Arg Arg Lys Ile Asn Ile Leu Arg Cys Ile Tyr Arg Gln
35 40 45

Glu Lys Pro Met Cys Ile Asn Ser Ile Cys Thr Cys Val Lys Leu Leu
50 55 60

<210> 115
<211> 67
<212> PRT
<213> Medicago truncatula

<400> 115

Met Gln Arg Glu Lys Asn Met Ala Lys Ile Phe Glu Phe Val Tyr Ala
1 5 10 15

Met Ile Ile Phe Ile Leu Leu Phe Leu Val Glu Lys Asn Val Val Ala
20 25 30

Tyr Leu Lys Phe Glu Cys Lys Thr Asp Asp Asp Cys Gln Lys Ser Leu
35 40 45

Leu Lys Thr Tyr Val Trp Lys Cys Val Lys Asn Glu Cys Tyr Phe Phe
50 55 60

Ala Lys Lys
65

<210> 116
<211> 61
<212> PRT
<213> Medicago truncatula

<400> 116

Met Ala Gly Ile Ile Lys Phe Val His Val Leu Ile Ile Phe Leu Ser
1 5 10 15

Leu Phe His Val Val Lys Asn Asp Asp Gly Ser Phe Cys Phe Lys Asp
20 25 30

Ser Asp Cys Pro Asp Glu Met Cys Pro Ser Pro Leu Lys Glu Met Cys
35 40 45

Tyr Phe Leu Gln Cys Lys Cys Gly Val Asp Thr Ile Ala
50 55 60

<210> 117
<211> 59
<212> PRT
<213> Medicago truncatula

<400> 117

Met Ala Asn Thr His Lys Leu Val Ser Met Ile Leu Phe Ile Phe Leu
1 5 10 15

Phe Leu Ala Ser Asn Asn Val Glu Gly Tyr Val Asn Cys Glu Thr Asp
20 25 30

Ala Asp Cys Pro Pro Ser Thr Arg Val Lys Arg Phe Lys Cys Val Lys
35 40 45

Gly Glu Cys Arg Trp Thr Arg Met Ser Tyr Ala
50 55

<210> 118
<211> 63
<212> PRT
<213> Medicago truncatula

<400> 118

Met Gln Arg Arg Lys Lys Lys Ala Gln Val Val Met Phe Val His Asp
1 5 10 15

Leu Ile Ile Cys Ile Tyr Leu Phe Ile Val Ile Thr Thr Arg Lys Thr
20 25 30

Asp Ile Arg Cys Arg Phe Tyr Tyr Asp Cys Pro Arg Leu Glu Tyr His
35 40 45

Phe Cys Glu Cys Ile Glu Asp Phe Cys Ala Tyr Ile Arg Leu Asn
50 55 60

<210> 119
<211> 57
<212> PRT
<213> Medicago truncatula

<400> 119

Met Ala Lys Val Tyr Met Phe Val Tyr Ala Leu Ile Ile Phe Val Ser
1 5 10 15

Pro Phe Leu Leu Ala Thr Phe Arg Thr Arg Leu Pro Cys Glu Lys Asp
20 25 30

Asp Asp Cys Pro Glu Ala Phe Leu Pro Pro Val Met Lys Cys Val Asn
35 40 45

Arg Phe Cys Gln Tyr Glu Ile Leu Glu
50 55

<210> 120
<211> 77
<212> PRT

<213> Medicago truncatula

<400> 120

Met Ile Lys Gln Phe Ser Val Cys Tyr Ile Gln Met Arg Arg Asn Met
1 5 10 15

Thr Thr Ile Leu Lys Phe Pro Tyr Ile Met Val Ile Cys Leu Leu Leu
20 25 30

Leu His Val Ala Ala Tyr Glu Asp Phe Glu Lys Glu Ile Phe Asp Cys
35 40 45

Lys Lys Asp Gly Asp Cys Asp His Met Cys Val Thr Pro Gly Ile Pro
50 55 60

Lys Cys Thr Gly Tyr Val Cys Phe Cys Phe Glu Asn Leu
65 70 75

<210> 121

<211> 73

<212> PRT

<213> Medicago truncatula

<400> 121

Met Gln Arg Ser Arg Asn Met Thr Thr Ile Phe Lys Phe Ala Tyr Ile
1 5 10 15

Met Ile Ile Cys Val Phe Leu Leu Asn Ile Ala Ala Gln Glu Ile Glu
20 25 30

Asn Gly Ile His Pro Cys Lys Lys Asn Glu Asp Cys Asn His Met Cys
35 40 45

Val Met Pro Gly Leu Pro Trp Cys His Glu Asn Asn Leu Cys Phe Cys
50 55 60

Tyr Glu Asn Ala Tyr Gly Asn Thr Arg
65 70

<210> 122

<211> 85

<212> PRT

<213> Medicago truncatula

<400> 122

Met Thr Ile Ile Ile Lys Phe Val Asn Val Leu Ile Ile Phe Leu Ser
1 5 10 15

Leu Phe His Val Ala Lys Asn Asp Asp Asn Lys Leu Leu Leu Ser Phe
20 25 30

Ile Glu Glu Gly Phe Leu Cys Phe Lys Asp Ser Asp Cys Pro Tyr Asn
35 40 45

Met Cys Pro Ser Pro Leu Lys Glu Met Cys Tyr Phe Ile Lys Cys Val
50 55 60

Cys Gly Val Tyr Gly Pro Ile Arg Glu Arg Arg Leu Tyr Gln Ser His
65 70 75 80

Asn Pro Met Ile Gln
85

<210> 123
<211> 69
<212> PRT
<213> Medicago truncatula

<400> 123

Met Arg Lys Asn Met Thr Lys Ile Leu Met Ile Gly Tyr Ala Leu Met
1 5 10 15

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

Arg Ala Ser Arg Lys Lys Pro Val Asp Val Ile Pro Cys Ile Tyr Asp
35 40 45

His Asp Cys Pro Arg Lys Leu Tyr Phe Leu Glu Arg Cys Val Gly Arg
50 55 60

Val Cys Lys Tyr Leu
65

<210> 124
<211> 58
<212> PRT
<213> Medicago truncatula

<400> 124

Met Ala His Lys Leu Val Tyr Ala Ile Thr Leu Phe Ile Phe Leu Phe
1 5 10 15

Leu Ile Ala Asn Asn Ile Glu Asp Asp Ile Phe Cys Ile Thr Asp Asn
20 25 30

Asp Cys Pro Pro Asn Thr Leu Val Gln Arg Tyr Arg Cys Ile Asn Gly
35 40 45

Lys Cys Asn Leu Ser Phe Val Ser Tyr Gly
50 55

<210> 125
<211> 61
<212> PRT
<213> Medicago truncatula

<400> 125

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

Leu Cys Leu Val Val Ala Asp Gly Val Lys Asn Ile Asn Arg Glu Cys
20 25 30

Thr Gln Thr Ser Asp Cys Tyr Lys Lys Tyr Pro Phe Ile Pro Trp Gly
35 40 45

Lys Val Arg Cys Val Lys Gly Arg Cys Arg Leu Asp Met
50 55 60

<210> 126
<211> 62
<212> PRT
<213> Medicago truncatula

<400> 126

Met Ala Lys Ile Ile Lys Phe Val Tyr Val Leu Ala Ile Phe Phe Ser
1 5 10 15

Leu Phe Leu Val Ala Lys Asn Val Asn Gly Trp Thr Cys Val Glu Asp
20 25 30

Ser Asp Cys Pro Ala Asn Ile Cys Gln Pro Pro Met Gln Arg Met Cys
35 40 45

Phe Tyr Gly Glu Cys Ala Cys Val Arg Ser Lys Phe Cys Thr
50 55 60

<210> 127
<211> 61
<212> PRT
<213> Medicago truncatula

<400> 127

Met Val Lys Ile Ile Lys Phe Val Tyr Phe Met Thr Leu Phe Leu Ser
1 5 10 15

Met Leu Leu Val Thr Thr Lys Glu Asp Gly Ser Val Glu Cys Ile Ala
20 25 30

Asn Ile Asp Cys Pro Gln Ile Phe Met Leu Pro Phe Val Met Arg Cys
35 40 45

Ile Asn Phe Arg Cys Gln Ile Val Asn Ser Glu Asp Thr
50 55 60

<210> 128
<211> 67
<212> PRT
<213> Medicago truncatula

<400> 128

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

Leu Phe Phe Ala Ala Asn Asn Val Asp Ala Asn Ile Met Asn Cys Gln
20 25 30

Ser Thr Phe Asp Cys Pro Arg Asp Met Cys Ser His Ile Arg Asp Val
35 40 45

Ile Cys Ile Phe Lys Lys Cys Lys Cys Ala Gly Gly Arg Tyr Met Pro
50 55 60

Gln Val Pro
65

<210> 129
<211> 62
<212> PRT
<213> Medicago truncatula

<400> 129

Met Gln Arg Arg Lys Asn Met Ala Asn Asn His Met Leu Ile Tyr Ala
1 5 10 15

Met Ile Ile Cys Leu Phe Pro Tyr Leu Val Val Thr Phe Lys Thr Ala
20 25 30

Ile Thr Cys Asp Cys Asn Glu Asp Cys Leu Asn Phe Phe Thr Pro Leu
35 40 45

Asp Asn Leu Lys Cys Ile Asp Asn Val Cys Glu Val Phe Met
50 55 60

<210> 130

<211> 65

<212> PRT

<213> Medicago truncatula

<400> 130

Met Val Asn Ile Leu Lys Phe Ile Tyr Val Ile Ile Phe Phe Ile Leu
1 5 10 15

Met Phe Phe Val Leu Ile Asp Val Asp Gly His Val Leu Val Glu Cys
20 25 30

Ile Glu Asn Arg Asp Cys Glu Lys Gly Met Cys Lys Phe Pro Phe Ile
35 40 45

Val Arg Cys Leu Met Asp Gln Cys Lys Cys Val Arg Ile His Asn Leu
50 55 60

Ile
65

<210> 131

<211> 74

<212> PRT

<213> Medicago truncatula

<400> 131

Met Ile Ile Gln Phe Ser Ile Tyr Tyr Met Gln Arg Arg Lys Leu Asn
1 5 10 15

Met Val Glu Ile Leu Lys Phe Ser His Ala Leu Ile Ile Phe Leu Phe

20

25

30

Leu Ser Ala Leu Val Thr Asn Ala Asn Ile Phe Phe Cys Ser Thr Asp
 35 40 45

Glu Asp Cys Thr Trp Asn Leu Cys Arg Gln Pro Trp Val Gln Lys Cys
 50 55 60

Arg Leu His Met Cys Ser Cys Glu Lys Asn
 65 70

<210> 132

<211> 58

<212> PRT

<213> Medicago truncatula

<400> 132

Met Asp Glu Val Phe Lys Phe Val Tyr Val Met Ile Ile Phe Pro Phe
 1 5 10 15

Leu Ile Leu Asp Val Ala Thr Asn Ala Glu Lys Ile Arg Arg Cys Phe
 20 25 30

Asn Asp Ala His Cys Pro Pro Asp Met Cys Thr Leu Gly Val Ile Pro
 35 40 45

Lys Cys Ser Arg Phe Thr Ile Cys Ile Cys
 50 55

<210> 133

<211> 64

<212> PRT

<213> Medicago truncatula

<400> 133

Met His Arg Lys Pro Asn Met Thr Lys Phe Phe Lys Phe Val Tyr Thr
 1 5 10 15

Met Phe Ile Leu Ile Ser Leu Phe Leu Val Val Thr Asn Ala Asn Ala
 20 25 30

Asn Asn Cys Thr Asp Thr Ser Asp Cys Ser Ser Asn His Cys Ser Tyr
 35 40 45

Glu Gly Val Ser Leu Cys Met Asn Gly Gln Cys Ile Cys Ile Tyr Glu

50

55

60

<210> 134

<211> 69

<212> PRT

<213> Medicago truncatula

<400> 134

Met	Gln	Met	Lys	Lys	Met	Ala	Thr	Ile	Leu	Lys	Phe	Val	Tyr	Leu	Ile
1				5					10					15	

Ile	Leu	Leu	Ile	Tyr	Pro	Leu	Leu	Val	Val	Thr	Glu	Glu	Ser	His	Tyr
			20					25					30		

Met	Lys	Phe	Ser	Ile	Cys	Lys	Asp	Asp	Thr	Asp	Cys	Pro	Thr	Leu	Phe
		35					40					45			

Cys	Val	Leu	Pro	Asn	Val	Pro	Lys	Cys	Ile	Gly	Ser	Lys	Cys	His	Cys
	50					55						60			

Lys	Leu	Met	Val	Asn
65				

<210> 135

<211> 64

<212> PRT

<213> Medicago truncatula

<400> 135

Met	Val	Glu	Thr	Leu	Arg	Leu	Phe	Tyr	Ile	Met	Ile	Leu	Phe	Val	Ser
1				5					10					15	

Leu	Tyr	Leu	Val	Val	Val	Asp	Gly	Val	Ser	Lys	Leu	Ala	Gln	Ser	Cys
			20					25					30		

Ser	Glu	Asp	Phe	Glu	Cys	Tyr	Ile	Lys	Asn	Pro	His	Ala	Pro	Phe	Gly
		35					40					45			

Gln	Leu	Arg	Cys	Phe	Glu	Gly	Tyr	Cys	Gln	Arg	Leu	Asp	Lys	Pro	Thr
	50					55					60				

<210> 136

<211> 63

<212> PRT

<213> Medicago truncatula

<400> 136

Met Thr Thr Phe Leu Lys Val Ala Tyr Ile Met Ile Ile Cys Val Phe
1 5 10 15

Val Leu His Leu Ala Ala Gln Val Asp Ser Gln Lys Arg Leu His Gly
20 25 30

Cys Lys Glu Asp Arg Asp Cys Asp Asn Ile Cys Ser Val His Ala Val
35 40 45

Thr Lys Cys Ile Gly Asn Met Cys Arg Cys Leu Ala Asn Val Lys
50 55 60

<210> 137

<211> 61

<212> PRT

<213> Medicago truncatula

<400> 137

Met Arg Ile Asn Arg Thr Pro Ala Ile Phe Lys Phe Val Tyr Thr Ile
1 5 10 15

Ile Ile Tyr Leu Phe Leu Leu Arg Val Val Ala Lys Asp Leu Pro Phe
20 25 30

Asn Ile Cys Glu Lys Asp Glu Asp Cys Leu Glu Phe Cys Ala His Asp
35 40 45

Lys Val Ala Lys Cys Met Leu Asn Ile Cys Phe Cys Phe
50 55 60

<210> 138

<211> 54

<212> PRT

<213> Medicago truncatula

<400> 138

Met Ala Glu Ile Leu Lys Ile Leu Tyr Val Phe Ile Ile Phe Leu Ser
1 5 10 15

Leu Ile Leu Ala Val Ile Ser Gln His Pro Phe Thr Pro Cys Glu Thr
20 25 30

Asn Ala Asp Cys Lys Cys Arg Asn His Lys Arg Pro Asp Cys Leu Trp
35 40 45

His Lys Cys Tyr Cys Tyr
50

<210> 139
<211> 65
<212> PRT
<213> *Medicago truncatula*

<400> 139

Met Arg Lys Ser Met Ala Thr Ile Leu Lys Phe Val Tyr Val Ile Met
1 5 10 15

Leu Phe Ile Tyr Ser Leu Phe Val Ile Glu Ser Phe Gly His Arg Phe
20 25 30

Leu Ile Tyr Asn Asn Cys Lys Asn Asp Thr Glu Cys Pro Asn Asp Cys
35 40 45

Gly Pro His Glu Gln Ala Lys Cys Ile Leu Tyr Ala Cys Tyr Cys Val
50 55 60

Glu
65

<210> 140
<211> 58
<212> PRT
<213> *Medicago truncatula*

<400> 140

Met Asn Thr Ile Leu Lys Phe Ile Phe Val Val Phe Leu Phe Leu Ser
1 5 10 15

Ile Phe Leu Ser Ala Gly Asn Ser Lys Ser Tyr Gly Pro Cys Thr Thr
20 25 30

Leu Gln Asp Cys Glu Thr His Asn Trp Phe Glu Val Cys Ser Cys Ile
35 40 45

Asp Phe Glu Cys Lys Cys Trp Ser Leu Leu
50 55

<210> 141
<211> 64

<212> PRT
<213> Medicago truncatula

<400> 141

Met Ala Glu Ile Ile Lys Phe Val Tyr Ile Met Ile Leu Cys Val Ser
1 5 10 15

Leu Leu Leu Ile Ala Glu Ala Ser Gly Lys Glu Cys Val Thr Asp Ala
20 25 30

Asp Cys Glu Asn Leu Tyr Pro Gly Asn Lys Lys Pro Met Phe Cys Asn
35 40 45

Asn Thr Gly Tyr Cys Met Ser Leu Tyr Lys Glu Pro Ser Arg Tyr Met
50 55 60

<210> 142
<211> 64
<212> PRT
<213> Medicago truncatula

<400> 142

Met Ala Lys Ile Ile Lys Phe Val Tyr Ile Met Ile Leu Cys Val Ser
1 5 10 15

Leu Leu Leu Ile Val Glu Ala Gly Gly Lys Glu Cys Val Thr Asp Val
20 25 30

Asp Cys Glu Lys Ile Tyr Pro Gly Asn Lys Lys Pro Leu Ile Cys Ser
35 40 45

Thr Gly Tyr Cys Tyr Ser Leu Tyr Glu Glu Pro Pro Arg Tyr His Lys
50 55 60

<210> 143
<211> 64
<212> PRT
<213> Medicago truncatula

<400> 143

Met Ala Lys Val Thr Lys Phe Gly Tyr Ile Ile Ile His Phe Leu Ser
1 5 10 15

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

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

Glu Cys Trp Asn Tyr Ala Cys Val Cys Tyr Asp Ser Asn Lys Tyr Arg
50 55 60

<210> 144
<211> 55
<212> PRT
<213> Medicago truncatula

<400> 144

Met Ala Lys Ile Phe Asn Tyr Val Tyr Ala Leu Ile Met Phe Leu Ser
1 5 10 15

Leu Phe Leu Met Gly Thr Ser Gly Met Lys Asn Gly Cys Lys His Thr
20 25 30

Gly His Cys Pro Arg Lys Met Cys Gly Ala Lys Thr Thr Lys Cys Arg
35 40 45

Asn Asn Lys Cys Gln Cys Val
50 55

<210> 145
<211> 69
<212> PRT
<213> Medicago truncatula

<400> 145

Met Thr Glu Ile Leu Lys Phe Val Cys Val Met Ile Ile Phe Ile Ser
1 5 10 15

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

Phe Arg Asp Ser Asp Cys Pro Lys His Met Cys Pro Ser Ser Leu Val
35 40 45

Ala Lys Cys Ile Asn Arg Leu Cys Arg Cys Arg Arg Pro Glu Leu Gln
50 55 60

Val Gln Leu Asn Pro
65

<210> 146
<211> 69
<212> PRT
<213> Medicago truncatula

<400> 146

Met Ala His Ile Ile Met Phe Val Tyr Ala Leu Ile Tyr Ala Leu Ile
1 5 10 15

Ile Phe Ser Ser Leu Phe Val Arg Asp Gly Ile Pro Cys Leu Ser Asp
20 25 30

Asp Glu Cys Pro Glu Met Ser His Tyr Ser Phe Lys Cys Asn Asn Lys
35 40 45

Ile Cys Glu Tyr Asp Leu Gly Glu Met Ser Asp Asp Asp Tyr Tyr Leu
50 55 60

Glu Met Ser Arg Glu
65

<210> 147
<211> 77
<212> PRT
<213> Medicago truncatula

<400> 147

Met Tyr Arg Glu Lys Asn Met Ala Lys Thr Leu Lys Phe Val Tyr Val
1 5 10 15

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

Arg Val Ser Tyr Asn Ser Phe Ile Ala Leu Pro Val Cys Gln Thr Ala
35 40 45

Ala Asp Cys Pro Glu Gly Thr Arg Gly Arg Thr Tyr Lys Cys Ile Asn
50 55 60

Asn Lys Cys Arg Tyr Pro Lys Leu Leu Lys Pro Ile Gln
65 70 75

<210> 148
<211> 56
<212> PRT

<213> Medicago truncatula

<400> 148

Met Ala His Ile Phe Asn Tyr Val Tyr Ala Leu Leu Val Phe Leu Ser
1 5 10 15

Leu Phe Leu Met Val Thr Asn Gly Ile His Ile Gly Cys Asp Lys Asp
20 25 30

Arg Asp Cys Pro Lys Gln Met Cys His Leu Asn Gln Thr Pro Lys Cys
35 40 45

Leu Lys Asn Ile Cys Lys Cys Val
50 55

<210> 149

<211> 77

<212> PRT

<213> Medicago truncatula

<400> 149

Met Ala Glu Ile Leu Lys Cys Phe Tyr Thr Met Asn Leu Phe Ile Phe
1 5 10 15

Leu Ile Ile Leu Pro Ala Lys Ile Arg Glu His Ile Gln Cys Val Ile
20 25 30

Asp Asp Asp Cys Pro Lys Ser Leu Asn Lys Leu Leu Ile Ile Lys Cys
35 40 45

Ile Asn His Val Cys Gln Tyr Val Gly Asn Leu Pro Asp Phe Ala Ser
50 55 60

Gln Ile Pro Lys Ser Thr Lys Met Pro Tyr Lys Gly Glu
65 70 75

<210> 150

<211> 70

<212> PRT

<213> Medicago truncatula

<400> 150

Met Ala Tyr Ile Ser Arg Ile Phe Tyr Val Leu Ile Ile Phe Leu Ser
1 5 10 15

Leu Phe Phe Val Val Ile Asn Gly Val Lys Ser Leu Leu Leu Ile Lys
20 25 30

Val Arg Ser Phe Ile Pro Cys Gln Arg Ser Asp Asp Cys Pro Arg Asn
35 40 45

Leu Cys Val Asp Gln Ile Ile Pro Thr Cys Val Trp Ala Lys Cys Lys
50 55 60

Cys Lys Asn Tyr Asn Asp
65 70

<210> 151
<211> 64
<212> PRT
<213> Medicago truncatula

<400> 151

Met Ala Asn Val Thr Lys Phe Val Tyr Ile Ala Ile Tyr Phe Leu Ser
1 5 10 15

Leu Phe Phe Ile Ala Lys Asn Asp Ala Thr Ala Thr Phe Cys His Asp
20 25 30

Asp Ser His Cys Val Thr Lys Ile Lys Cys Val Leu Pro Arg Thr Pro
35 40 45

Gln Cys Arg Asn Glu Ala Cys Gly Cys Tyr His Ser Asn Lys Phe Arg
50 55 60

<210> 152
<211> 62
<212> PRT
<213> Medicago truncatula

<400> 152

Met Gly Glu Ile Met Lys Phe Val Tyr Val Met Ile Ile Tyr Leu Phe
1 5 10 15

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

Thr Ser Cys Asp Ser Ser Lys Asp Cys Arg Ser Phe Leu Cys Tyr Ser
35 40 45

Pro Lys Phe Pro Val Cys Lys Arg Gly Ile Cys Glu Cys Ile
50 55 60

<210> 153
<211> 61
<212> PRT
<213> Medicago truncatula

<400> 153

Met Gly Glu Met Phe Lys Phe Ile Tyr Thr Phe Ile Leu Phe Val His
1 5 10 15

Leu Phe Leu Val Val Ile Phe Glu Asp Ile Gly His Ile Lys Tyr Cys
20 25 30

Gly Ile Val Asp Asp Cys Tyr Lys Ser Lys Lys Pro Leu Phe Lys Ile
35 40 45

Trp Lys Cys Val Glu Asn Val Cys Val Leu Trp Tyr Lys
50 55 60

<210> 154
<211> 63
<212> PRT
<213> Medicago truncatula

<400> 154

Met Ala Arg Thr Leu Lys Phe Val Tyr Ser Met Ile Leu Phe Leu Ser
1 5 10 15

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

Asp Cys Pro Lys Asp Leu Tyr Pro Leu Leu Tyr Lys Cys Ile Tyr Asn
35 40 45

Lys Cys Ile Val Phe Thr Arg Ile Pro Phe Pro Phe Asp Trp Ile
50 55 60

<210> 155
<211> 66
<212> PRT
<213> Medicago truncatula

<400> 155

Met Ala Asn Ile Thr Lys Phe Val Tyr Ile Ala Ile Leu Phe Leu Ser

20

25

30

Leu Glu Thr Ile Glu Cys Glu Thr Asp Gly Asp Cys Pro Arg Ser Met
 35 40 45

Ile Lys Met Trp Asn Lys Asn Tyr Arg His Lys Cys Ile Asp Gly Lys
 50 55 60

Cys Glu Trp Ile Lys Lys Leu Pro
 65 70

<210> 158

<211> 54

<212> PRT

<213> Medicago truncatula

<400> 158

Met Phe Val Tyr Asp Leu Ile Leu Phe Ile Ser Leu Ile Leu Val Val
 1 5 10 15

Thr Gly Ile Asn Ala Glu Ala Asp Thr Ser Cys His Ser Phe Asp Asp
 20 25 30

Cys Pro Trp Val Ala His His Tyr Arg Glu Cys Ile Glu Gly Leu Cys
 35 40 45

Ala Tyr Arg Ile Leu Tyr
 50

<210> 159

<211> 69

<212> PRT

<213> Medicago truncatula

<400> 159

Met Gln Arg Arg Lys Lys Ser Met Ala Lys Met Leu Lys Phe Phe Phe
 1 5 10 15

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

Gly Ala Tyr Ile Glu Cys Glu Val Asp Asp Asp Cys Pro Lys Pro Met
 35 40 45

Lys Asn Ser His Pro Asp Thr Tyr Tyr Lys Cys Val Lys His Arg Cys

50

55

60

Gln Trp Ala Trp Lys
65

<210> 160

<211> 140

<212> PRT

<213> Medicago truncatula

<400> 160

Met Phe Val Tyr Thr Leu Ile Ile Phe Leu Phe Pro Ser His Val Ile
1 5 10 15

Thr Asn Lys Ile Ala Ile Tyr Cys Val Ser Asp Asp Asp Cys Leu Lys
20 25 30

Thr Phe Thr Pro Leu Asp Leu Lys Cys Val Asp Asn Val Cys Glu Phe
35 40 45

Asn Leu Arg Cys Lys Gly Lys Cys Gly Glu Arg Asp Glu Lys Phe Val
50 55 60

Phe Leu Lys Ala Leu Lys Lys Met Asp Gln Lys Leu Val Leu Glu Glu
65 70 75 80

Gln Gly Asn Ala Arg Glu Val Lys Ile Pro Lys Lys Leu Leu Phe Asp
85 90 95

Arg Ile Gln Val Pro Thr Pro Ala Thr Lys Asp Gln Val Glu Glu Asp
100 105 110

Asp Tyr Asp Asp Asp Asp Glu Glu Glu Glu Glu Glu Asp Asp Val
115 120 125

Asp Met Trp Phe His Leu Pro Asp Val Val Cys His
130 135 140

<210> 161

<211> 60

<212> PRT

<213> Medicago truncatula

<400> 161

Met Ala Lys Phe Ser Met Phe Val Tyr Ala Leu Ile Asn Phe Leu Ser

```

1           5           10           15
Leu Phe Leu Val Glu Thr Ala Ile Thr Asn Ile Arg Cys Val Ser Asp
      20      25      30
Asp Asp Cys Pro Lys Val Ile Lys Pro Leu Val Met Lys Cys Ile Gly
      35      40      45
Asn Tyr Cys Tyr Phe Phe Met Ile Tyr Glu Gly Pro
      50      55      60

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<210> 163
<211> 61
<212> PRT
<213> Medicago truncatula

<400> 163

Met Gln Arg Lys Lys Asn Met Gly Gln Ile Leu Ile Phe Val Phe Ala
1          5          10          15

Leu Ile Asn Phe Leu Ser Pro Ile Leu Val Glu Met Thr Thr Thr Thr
          20          25          30

Ile Pro Cys Thr Phe Ile Asp Asp Cys Pro Lys Met Pro Leu Val Val
          35          40          45

Lys Cys Ile Asp Asn Phe Cys Asn Tyr Phe Glu Ile Lys

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50 55 60

<210> 164
<211> 57
<212> PRT
<213> Medicago truncatula

<400> 164

Met Ala Gln Thr Leu Met Leu Val Tyr Ala Leu Ile Ile Phe Thr Ser
1 5 10 15

Leu Phe Leu Val Val Ile Ser Arg Gln Thr Asp Ile Pro Cys Lys Ser
 20 25 30

Asp Asp Ala Cys Pro Arg Val Ser Ser His His Ile Glu Cys Val Lys
 35 40 45

Gly Phe Cys Thr Tyr Trp Lys Leu Asp
50 55

<210> 165
<211> 77
<212> PRT
<213> Medicago truncatula

<400> 165

Met Leu Arg Arg Lys Asn Thr Val Gln Ile Leu Met Phe Val Ser Ala
1 5 10 15

Leu Leu Ile Tyr Ile Phe Leu Phe Leu Val Ile Thr Ser Ser Ala Asn
 20 25 30

Ile Pro Cys Asn Ser Asp Ser Asp Cys Pro Trp Lys Ile Tyr Tyr Thr
 35 40 45

Tyr Arg Cys Asn Asp Gly Phe Cys Val Tyr Lys Ser Ile Asp Pro Ser
50 55 60

Thr Ile Pro Gln Tyr Met Thr Asp Leu Ile Phe Pro Arg
65 70 75

<400> 166

Met Ala Val Ile Leu Lys Phe Val Tyr Ile Met Ile Ile Phe Leu Phe
1 5 10 15

Leu Leu Tyr Val Val Asn Gly Thr Arg Cys Asn Arg Asp Glu Asp Cys
20 25 30

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

Cys Phe Cys Leu Ser Ser Gly Lys Glu Ala Tyr
50 55

<210> 167

<211> 62

<212> PRT

<213> Medicago truncatula

<400> 167

Met Asp Ala Ile Leu Lys Phe Ile Tyr Ala Met Phe Leu Phe Leu Phe
1 5 10 15

Leu Phe Val Thr Thr Arg Asn Val Glu Ala Leu Phe Glu Cys Asn Arg
20 25 30

Asp Phe Val Cys Gly Asn Asp Asp Glu Cys Val Tyr Pro Tyr Ala Val
35 40 45

Gln Cys Ile His Arg Tyr Cys Lys Cys Leu Lys Ser Arg Asn
50 55 60

<210> 168

<211> 67

<212> PRT

<213> Medicago truncatula

<400> 168

Met Gln Ile Gly Arg Lys Lys Met Gly Glu Thr Pro Lys Leu Val Tyr
1 5 10 15

Val Ile Ile Leu Phe Leu Ser Ile Phe Leu Cys Thr Asn Ser Ser Phe
20 25 30

Ser Gln Met Ile Asn Phe Arg Gly Cys Lys Arg Asp Lys Asp Cys Pro
35 40 45

Gln Phe Arg Gly Val Asn Ile Arg Cys Arg Ser Gly Phe Cys Thr Pro
50 55 60

Ile Asp Ser
65

<210> 169
<211> 76
<212> PRT
<213> Medicago truncatula

<400> 169

Met Gln Met Arg Lys Asn Met Ala Gln Ile Leu Phe Tyr Val Tyr Ala
1 5 10 15

Leu Leu Ile Leu Phe Ser Pro Phe Leu Val Ala Arg Ile Met Val Val
20 25 30

Asn Pro Asn Asn Pro Cys Val Thr Asp Ala Asp Cys Gln Arg Tyr Arg
35 40 45

His Lys Leu Ala Thr Arg Met Val Cys Asn Ile Gly Phe Cys Leu Met
50 55 60

Asp Phe Thr His Asp Pro Tyr Ala Pro Ser Leu Pro
65 70 75

<210> 170
<211> 77
<212> PRT
<213> Medicago truncatula

<400> 170

Met Tyr Val Tyr Tyr Ile Gln Met Gly Lys Asn Met Ala Gln Arg Phe
1 5 10 15

Met Phe Ile Tyr Ala Leu Ile Ile Phe Leu Ser Gln Phe Phe Val Val
20 25 30

Ile Asn Thr Ser Asp Ile Pro Asn Asn Ser Asn Arg Asn Ser Pro Lys
35 40 45

Glu Asp Val Phe Cys Asn Ser Asn Asp Asp Cys Pro Thr Ile Leu Tyr
50 55 60

Tyr Val Ser Lys Cys Val Tyr Asn Phe Cys Glu Tyr Trp
65 70 75

<210> 171
<211> 67
<212> PRT
<213> Medicago truncatula

<400> 171

Met Ala Lys Ile Val Asn Phe Val Tyr Ser Met Ile Ile Phe Val Ser
1 5 10 15

Leu Phe Leu Val Ala Thr Lys Gly Gly Ser Lys Pro Phe Leu Thr Arg
20 25 30

Pro Tyr Pro Cys Asn Thr Gly Ser Asp Cys Pro Gln Asn Met Cys Pro
35 40 45

Pro Gly Tyr Lys Pro Gly Cys Glu Asp Gly Tyr Cys Asn His Cys Tyr
50 55 60

Lys Arg Trp
65

<210> 172
<211> 62
<212> PRT
<213> Medicago truncatula

<400> 172

Met Val Arg Thr Leu Lys Phe Val Tyr Val Ile Ile Leu Ile Leu Ser
1 5 10 15

Leu Phe Leu Val Ala Lys Gly Gly Gly Lys Lys Ile Tyr Cys Glu Asn
20 25 30

Ala Ala Ser Cys Pro Arg Leu Met Tyr Pro Leu Val Tyr Lys Cys Leu
35 40 45

Asp Asn Lys Cys Val Lys Phe Met Met Lys Ser Arg Phe Val
50 55 60

<210> 173
<211> 62

<212> PRT
<213> Medicago truncatula

<400> 173

Met Ala Arg Thr Leu Lys Phe Val Tyr Ala Val Ile Leu Phe Leu Ser
1 5 10 15

Leu Phe Leu Val Ala Lys Gly Asp Asp Val Lys Ile Lys Cys Val Val
20 25 30

Ala Ala Asn Cys Pro Asp Leu Met Tyr Pro Leu Val Tyr Lys Cys Leu
35 40 45

Asn Gly Ile Cys Val Gln Phe Thr Leu Thr Phe Pro Phe Val
50 55 60

<210> 174
<211> 65
<212> PRT
<213> Medicago truncatula

<400> 174

Met Ser Asn Thr Leu Met Phe Val Ile Thr Phe Ile Val Leu Val Thr
1 5 10 15

Leu Phe Leu Gly Pro Lys Asn Val Tyr Ala Phe Gln Pro Cys Val Thr
20 25 30

Thr Ala Asp Cys Met Lys Thr Leu Lys Thr Asp Glu Asn Ile Trp Tyr
35 40 45

Glu Cys Ile Asn Asp Phe Cys Ile Pro Phe Pro Ile Pro Lys Gly Arg
50 55 60

Lys
65

<210> 175
<211> 76
<212> PRT
<213> Medicago truncatula

<400> 175

Met Lys Arg Val Val Asn Met Ala Lys Ile Val Lys Tyr Val Tyr Val
1 5 10 15

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

Tyr Tyr Tyr Lys Cys Phe Lys Asp Ser Asp Cys Val Lys Leu Leu Cys
35 40 45

Arg Ile Pro Leu Arg Pro Lys Cys Met Tyr Arg His Ile Cys Lys Cys
50 55 60

Lys Val Val Leu Thr Gln Asn Asn Tyr Val Leu Thr
65 70 75

<210> 176
<211> 66
<212> PRT
<213> Medicago truncatula

<400> 176

Met Lys Arg Gly Lys Asn Met Ser Lys Ile Leu Lys Phe Ile Tyr Ala
1 5 10 15

Thr Leu Val Leu Tyr Leu Phe Leu Val Val Thr Lys Ala Ser Asp Asp
20 25 30

Glu Cys Lys Ile Asp Gly Asp Cys Pro Ile Ser Trp Gln Lys Phe His
35 40 45

Thr Tyr Lys Cys Ile Asn Gln Lys Cys Lys Trp Val Leu Arg Phe His
50 55 60

Glu Tyr
65

<210> 177
<211> 64
<212> PRT
<213> Medicago truncatula

<400> 177

Met Ala Lys Thr Leu Asn Phe Met Phe Ala Leu Ile Leu Phe Ile Ser
1 5 10 15

Leu Phe Leu Val Ser Lys Asn Val Ala Ile Asp Ile Phe Val Cys Gln
20 25 30

Thr Asp Ala Asp Cys Pro Lys Ser Glu Leu Ser Met Tyr Thr Trp Lys
35 40 45

Cys Ile Asp Asn Glu Cys Asn Leu Phe Lys Val Met Gln Gln Met Val
50 55 60

<210> 178
<211> 59
<212> PRT
<213> Medicago truncatula

<400> 178

Met Ala Asn Thr His Lys Leu Val Ser Met Ile Leu Phe Ile Phe Leu
1 5 10 15

Phe Leu Val Ala Asn Asn Val Glu Gly Tyr Val Asn Cys Glu Thr Asp
20 25 30

Ala Asp Cys Pro Pro Ser Thr Arg Val Lys Arg Phe Lys Cys Val Lys
35 40 45

Gly Glu Cys Arg Trp Thr Arg Met Ser Tyr Ala
50 55

<210> 179
<211> 59
<212> PRT
<213> Medicago truncatula

<400> 179

Met Ala His Phe Leu Met Phe Val Tyr Ala Leu Ile Thr Cys Leu Ser
1 5 10 15

Leu Phe Leu Val Glu Met Gly His Leu Ser Ile His Cys Val Ser Val
20 25 30

Asp Asp Cys Pro Lys Val Glu Lys Pro Ile Thr Met Lys Cys Ile Asn
35 40 45

Asn Tyr Cys Lys Tyr Phe Val Asp His Lys Leu
50 55

<210> 180
<211> 66
<212> PRT

<213> Medicago truncatula

<400> 180

Met Asn Gln Ile Pro Met Phe Gly Tyr Thr Leu Ile Ile Phe Phe Ser
1 5 10 15

Leu Phe Pro Val Ile Thr Asn Gly Asp Arg Ile Pro Cys Val Thr Asn
20 25 30

Gly Asp Cys Pro Val Met Arg Leu Pro Leu Tyr Met Arg Cys Ile Thr
35 40 45

Tyr Ser Cys Glu Leu Phe Phe Asp Gly Pro Asn Leu Cys Ala Val Glu
50 55 60

Arg Ile
65

<210> 181

<211> 61

<212> PRT

<213> Medicago truncatula

<400> 181

Met Arg Lys Asp Met Ala Arg Ile Ser Leu Phe Val Tyr Ala Leu Ile
1 5 10 15

Ile Phe Phe Ser Leu Phe Phe Val Leu Thr Asn Gly Glu Leu Glu Ile
20 25 30

Arg Cys Val Ser Asp Ala Asp Cys Pro Leu Phe Pro Leu Pro Leu His
35 40 45

Asn Arg Cys Ile Asp Asp Val Cys His Leu Phe Thr Ser
50 55 60

<210> 182

<211> 60

<212> PRT

<213> Medicago truncatula

<400> 182

Met Ala Gln Ile Leu Met Phe Val Tyr Phe Leu Ile Ile Phe Leu Ser
1 5 10 15

Leu Phe Leu Val Glu Ser Ile Lys Ile Phe Thr Glu His Arg Cys Arg
20 25 30

Thr Asp Ala Asp Cys Pro Ala Arg Glu Leu Pro Glu Tyr Leu Lys Cys
35 40 45

Gln Gly Gly Met Cys Arg Leu Leu Ile Lys Lys Asp
50 55 60

<210> 183
<211> 56
<212> PRT
<213> Medicago truncatula

<400> 183

Met Ala Arg Val Ile Ser Leu Phe Tyr Ala Leu Ile Ile Phe Leu Phe
1 5 10 15

Leu Phe Leu Val Ala Thr Asn Gly Asp Leu Ser Pro Cys Leu Arg Ser
20 25 30

Gly Asp Cys Ser Lys Asp Glu Cys Pro Ser His Leu Val Pro Lys Cys
35 40 45

Ile Gly Leu Thr Cys Tyr Cys Ile
50 55

<210> 184
<211> 62
<212> PRT
<213> Medicago truncatula

<400> 184

Met Gln Arg Arg Lys Asn Met Ala Gln Ile Leu Leu Phe Ala Tyr Val
1 5 10 15

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

Ile Pro Cys Val Lys Asp Thr Asp Cys Pro Thr Leu Pro Cys Pro Leu
35 40 45

Tyr Ser Lys Cys Val Asp Gly Phe Cys Lys Met Leu Ser Ile
50 55 60

<210> 185
<211> 66
<212> PRT
<213> Medicago truncatula

<400> 185

Met Asn His Ile Ser Lys Phe Val Tyr Ala Leu Ile Ile Phe Leu Ser
1 5 10 15

Val Tyr Leu Val Val Leu Asp Gly Arg Pro Val Ser Cys Lys Asp His
20 25 30

Tyr Asp Cys Arg Arg Lys Val Lys Ile Val Gly Cys Ile Phe Pro Gln
35 40 45

Glu Lys Pro Met Cys Ile Asn Ser Met Cys Thr Cys Ile Arg Glu Ile
50 55 60

Val Pro
65

<210> 186
<211> 86
<212> PRT
<213> Medicago truncatula

<400> 186

Met Lys Ser Gln Asn His Ala Lys Phe Ile Ser Phe Tyr Lys Asn Asp
1 5 10 15

Leu Phe Lys Ile Phe Gln Asn Asn Asp Ser His Phe Lys Val Phe Phe
20 25 30

Ala Leu Ile Ile Phe Leu Tyr Thr Tyr Leu His Val Thr Asn Gly Val
35 40 45

Phe Val Ser Cys Asn Ser His Ile His Cys Arg Val Asn Asn His Lys
50 55 60

Ile Gly Cys Asn Ile Pro Glu Gln Tyr Leu Leu Cys Val Asn Leu Phe
65 70 75 80

Cys Leu Trp Leu Asp Tyr
85

<210> 187
<211> 62
<212> PRT
<213> Medicago truncatula

<400> 187

Met Thr Tyr Ile Ser Lys Val Val Tyr Ala Leu Ile Ile Phe Leu Ser
1 5 10 15

Ile Tyr Val Gly Val Asn Asp Cys Met Leu Val Thr Cys Glu Asp His
20 25 30

Phe Asp Cys Arg Gln Asn Val Gln Gln Val Gly Cys Ser Phe Arg Glu
35 40 45

Ile Pro Gln Cys Ile Asn Ser Ile Cys Lys Cys Met Lys Gly
50 55 60

<210> 188
<211> 63
<212> PRT
<213> Medicago truncatula

<400> 188

Met Thr His Ile Ser Lys Phe Val Phe Ala Leu Ile Ile Phe Leu Ser
1 5 10 15

Ile Tyr Val Gly Val Asn Asp Cys Lys Arg Ile Pro Cys Lys Asp Asn
20 25 30

Asn Asp Cys Asn Asn Asn Trp Gln Leu Leu Ala Cys Arg Phe Glu Arg
35 40 45

Glu Val Pro Arg Cys Ile Asn Ser Ile Cys Lys Cys Met Pro Met
50 55 60

<210> 189
<211> 60
<212> PRT
<213> Medicago truncatula

<400> 189

Met Val Gln Thr Pro Lys Leu Val Tyr Val Ile Val Leu Leu Leu Ser
1 5 10 15

Ile Phe Leu Gly Met Thr Ile Cys Asn Ser Ser Phe Ser His Phe Phe

20

25

30

Glu Gly Ala Cys Lys Ser Asp Lys Asp Cys Pro Lys Leu His Arg Ser
 35 40 45

Asn Val Arg Cys Arg Lys Gly Gln Cys Val Gln Ile
 50 55 60

<210> 190

<211> 77

<212> PRT

<213> Medicago truncatula

<400> 190

Met Thr Lys Ile Leu Met Leu Phe Tyr Ala Met Ile Val Phe His Ser
 1 5 10 15

Ile Phe Leu Val Ala Ser Tyr Thr Asp Glu Cys Ser Thr Asp Ala Asp
 20 25 30

Cys Glu Tyr Ile Leu Cys Leu Phe Pro Ile Ile Lys Arg Cys Ile His
 35 40 45

Asn His Cys Lys Cys Val Pro Met Gly Ser Ile Glu Pro Met Ser Thr
 50 55 60

Ile Pro Asn Gly Val His Lys Phe His Ile Ile Asn Asn
 65 70 75

<210> 191

<211> 64

<212> PRT

<213> Medicago truncatula

<400> 191

Met Ala Lys Thr Leu Asn Phe Val Cys Ala Met Ile Leu Phe Ile Ser
 1 5 10 15

Leu Phe Leu Val Ser Lys Asn Val Ala Leu Tyr Ile Ile Glu Cys Lys
 20 25 30

Thr Asp Ala Asp Cys Pro Ile Ser Lys Leu Asn Met Tyr Asn Trp Arg
 35 40 45

Cys Ile Lys Ser Ser Cys His Leu Tyr Lys Val Ile Gln Phe Met Val

<400> 194

Met Gln Arg Leu Asp Asn Met Ala Lys Asn Val Lys Phe Ile Tyr Val
1 5 10 15

Ile Ile Leu Leu Leu Phe Ile Phe Leu Val Ile Ile Val Cys Asp Ser
20 25 30

Ala Phe Val Pro Asn Ser Gly Pro Cys Thr Thr Asp Lys Asp Cys Lys
35 40 45

Gln Val Lys Gly Tyr Ile Ala Arg Cys Arg Lys Gly Tyr Cys Met Gln
50 55 60

Ser Val Lys Arg Thr Trp Ser Ser Tyr Ser Arg
65 70 75

<210> 195

<211> 102

<212> PRT

<213> Medicago truncatula

<400> 195

Met Lys Phe Ile Tyr Ile Met Ile Leu Phe Leu Ser Leu Phe Leu Val
1 5 10 15

Gln Phe Leu Thr Cys Lys Gly Leu Thr Val Pro Cys Glu Asn Pro Thr
20 25 30

Thr Cys Pro Glu Asp Phe Cys Thr Pro Pro Met Ile Thr Arg Cys Ile
35 40 45

Asn Phe Ile Cys Leu Cys Asp Gly Pro Glu Tyr Ala Glu Pro Glu Tyr
50 55 60

Asp Gly Pro Glu Pro Glu Tyr Asp His Lys Gly Asp Phe Leu Ser Val
65 70 75 80

Lys Pro Lys Ile Ile Asn Glu Asn Met Met Met Arg Glu Arg His Met
85 90 95

Met Lys Glu Ile Glu Val
100

<210> 196

<211> 59
<212> PRT
<213> *Medicago truncatula*

<400> 196

Met Ala Gln Phe Leu Met Phe Ile Tyr Val Leu Ile Ile Phe Leu Tyr
1 5 10 15

Leu Phe Tyr Val Glu Ala Ala Met Phe Glu Leu Thr Lys Ser Thr Ile
20 25 30

Arg Cys Val Thr Asp Ala Asp Cys Pro Asn Val Val Lys Pro Leu Lys
35 40 45

Pro Lys Cys Val Asp Gly Phe Cys Glu Tyr Thr
50 55

<210> 197
<211> 70
<212> PRT
<213> *Medicago truncatula*

<400> 197

Met Lys Met Arg Ile His Met Ala Gln Ile Ile Met Phe Phe Tyr Ala
1 5 10 15

Leu Ile Ile Phe Leu Ser Pro Phe Leu Val Asp Arg Arg Ser Phe Pro
20 25 30

Ser Ser Phe Val Ser Pro Lys Ser Tyr Thr Ser Glu Ile Pro Cys Lys
35 40 45

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

Asp Ser Leu Cys Thr Tyr
65 70

<210> 198
<211> 41
<212> PRT
<213> *Medicago truncatula*

<400> 198

Thr Arg Met Leu Thr Ile Pro Cys Thr Ser Asp Asp Asn Cys Pro Lys
1 5 10 15

Val Ile Ser Pro Cys His Thr Lys Cys Phe Asp Gly Phe Cys Gly Trp
20 25 30

Tyr Ile Glu Gly Ser Tyr Glu Gly Pro
35 40

<210> 199

<211> 69

<212> PRT

<213> Medicago truncatula

<400> 199

Met Ala Gln Phe Leu Leu Phe Val Tyr Ser Leu Ile Ile Phe Leu Ser
1 5 10 15

Leu Phe Phe Gly Glu Ala Ala Phe Glu Arg Thr Glu Thr Arg Met Leu
20 25 30

Thr Ile Pro Cys Thr Ser Asp Asp Asn Cys Pro Lys Val Ile Ser Pro
35 40 45

Cys His Thr Lys Cys Phe Asp Gly Phe Cys Gly Trp Tyr Ile Glu Gly
50 55 60

Ser Tyr Glu Gly Pro
65

<210> 200

<211> 78

<212> PRT

<213> Buchnera aphidicola

<400> 200

Met Lys Leu Leu His Gly Phe Leu Ile Ile Met Leu Thr Met His Leu
1 5 10 15

Ser Ile Gln Tyr Ala Tyr Gly Gly Pro Phe Leu Thr Lys Tyr Leu Cys
20 25 30

Asp Arg Val Cys His Lys Leu Cys Gly Asp Glu Phe Val Cys Ser Cys
35 40 45

Ile Gln Tyr Lys Ser Leu Lys Gly Leu Trp Phe Pro His Cys Pro Thr
50 55 60

Gly Lys Ala Ser Val Val Leu His Asn Phe Leu Thr Ser Pro
65 70 75

<210> 201
<211> 77
<212> PRT
<213> Buchnera aphidicola

<400> 201

Met Lys Leu Leu Tyr Gly Phe Leu Ile Ile Met Leu Thr Ile His Leu
1 5 10 15

Ser Val Gln Tyr Phe Glu Ser Pro Phe Glu Thr Lys Tyr Asn Cys Asp
20 25 30

Thr His Cys Asn Lys Leu Cys Gly Lys Ile Asp His Cys Ser Cys Ile
35 40 45

Gln Tyr His Ser Met Glu Gly Leu Trp Phe Pro His Cys Arg Thr Gly
50 55 60

Ser Ala Ala Gln Met Leu His Asp Phe Leu Ser Asn Pro
65 70 75

<210> 202
<211> 86
<212> PRT
<213> Buchnera aphidicola

<400> 202

Met Ser Val Arg Lys Asn Val Leu Pro Thr Met Phe Val Val Leu Leu
1 5 10 15

Ile Met Ser Pro Val Thr Pro Thr Ser Val Phe Ile Ser Ala Val Cys
20 25 30

Tyr Ser Gly Cys Gly Ser Leu Ala Leu Val Cys Phe Val Ser Asn Gly
35 40 45

Ile Thr Asn Gly Leu Asp Tyr Phe Lys Ser Ser Ala Pro Leu Ser Thr
50 55 60

Ser Glu Thr Ser Cys Gly Glu Ala Phe Asp Thr Cys Thr Asp His Cys
65 70 75 80

Leu Ala Asn Phe Lys Phe
85

<210> 203
<211> 69
<212> PRT
<213> Buchnera aphidicola

<400> 203

Met Arg Leu Leu Tyr Gly Phe Leu Ile Ile Met Leu Thr Ile Tyr Leu
1 5 10 15

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

Ile Glu Ile Cys Ser Lys Tyr Cys Ala Val Val Cys Asn Tyr Thr Ser
35 40 45

Arg Pro Cys Tyr Cys Val Glu Ala Ala Lys Glu Arg Asp Gln Trp Phe
50 55 60

Pro Tyr Cys Tyr Asp
65

<210> 204
<211> 77
<212> PRT
<213> Buchnera aphidicola

<400> 204

Met Arg Leu Leu Tyr Gly Phe Leu Ile Ile Met Leu Thr Ile His Leu
1 5 10 15

Ser Val Gln Asp Ile Asp Pro Asn Thr Leu Arg Gly Pro Tyr Pro Thr
20 25 30

Lys Glu Ile Cys Ser Lys Tyr Cys Glu Tyr Asn Val Val Cys Gly Ala
35 40 45

Ser Leu Pro Cys Ile Cys Val Gln Asp Ala Arg Gln Leu Asp His Trp
50 55 60

Phe Ala Cys Cys Tyr Asp Gly Gly Pro Glu Met Leu Met
65 70 75

<210> 205
<211> 108
<212> PRT
<213> Buchnera aphidicola

<400> 205

Met Lys Leu Phe Val Val Val Val Leu Val Ala Val Gly Ile Met Phe
1 5 10 15

Val Phe Ala Ser Asp Thr Ala Ala Ala Pro Thr Asp Tyr Glu Asp Thr
20 25 30

Asn Asp Met Ile Ser Leu Ser Ser Leu Val Gly Asp Asn Ser Pro Tyr
35 40 45

Val Arg Val Ser Ser Ala Asp Ser Gly Gly Ser Ser Lys Thr Ser Ser
50 55 60

Lys Asn Pro Ile Leu Gly Leu Leu Lys Ser Val Ile Lys Leu Leu Thr
65 70 75 80

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

Pro Pro Ala Leu Arg Lys Asn Arg Gly Met Leu Ala
100 105

<210> 206
<211> 178
<212> PRT
<213> Buchnera aphidicola

<400> 206

Met Val Ala Cys Lys Val Ile Leu Ala Val Ala Val Val Phe Val Ala
1 5 10 15

Ala Val Gln Gly Arg Pro Gly Gly Glu Pro Glu Trp Ala Ala Pro Ile
20 25 30

Phe Ala Glu Leu Lys Ser Val Ser Asp Asn Ile Thr Asn Leu Val Gly
35 40 45

Leu Asp Asn Ala Gly Glu Tyr Ala Thr Ala Ala Lys Asn Asn Leu Asn
50 55 60

Ala Phe Ala Glu Ser Leu Lys Thr Glu Ala Ala Val Phe Ser Lys Ser
65 70 75 80

Phe Glu Gly Lys Ala Ser Ala Ser Asp Val Phe Lys Glu Ser Thr Lys
85 90 95

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

Leu Thr Leu Lys Asp Phe Thr Glu Lys Ser Glu Gln Ala Leu Lys Tyr
115 120 125

Met Val Glu His Gly Thr Glu Ile Thr Lys Lys Ala Gln Gly Asn Thr
130 135 140

Glu Thr Glu Lys Glu Ile Lys Glu Phe Phe Lys Lys Gln Ile Glu Asn
145 150 155 160

Leu Ile Gly Gln Gly Lys Ala Leu Gln Ala Lys Ile Ala Glu Ala Lys
165 170 175

Lys Ala

<210> 207
<211> 311
<212> PRT
<213> Buchnera aphidicola

<400> 207

Met Lys Thr Ser Ser Ser Lys Val Phe Ala Ser Cys Val Ala Ile Val
1 5 10 15

Cys Leu Ala Ser Val Ala Asn Ala Leu Pro Val Gln Lys Ser Val Ala
20 25 30

Ala Thr Thr Glu Asn Pro Ile Val Glu Lys His Gly Cys Arg Ala His
35 40 45

Lys Asn Leu Val Arg Gln Asn Val Val Asp Leu Lys Thr Tyr Asp Ser
50 55 60

Met Leu Ile Thr Asn Glu Val Val Gln Lys Gln Ser Asn Glu Val Gln

65

70

75

80

Ser Ser Glu Gln Ser Asn Glu Gly Gln Asn Ser Glu Gln Ser Asn Glu
85 90 95

Gly Gln Asn Ser Glu Gln Ser Asn Glu Val Gln Ser Ser Glu His Ser
100 105 110

Asn Glu Gly Gln Asn Ser Lys Gln Ser Asn Glu Gly Gln Asn Ser Glu
115 120 125

Gln Ser Asn Glu Val Gln Ser Ser Glu His Ser Asn Glu Gly Gln Asn
130 135 140

Ser Glu Gln Ser Asn Glu Val Gln Ser Ser Glu His Ser Asn Glu Gly
145 150 155 160

Gln Asn Ser Lys Gln Ser Asn Glu Gly Gln Asn Ser Lys Gln Ser Asn
165 170 175

Glu Val Gln Ser Ser Glu His Trp Asn Glu Gly Gln Asn Ser Lys Gln
180 185 190

Ser Asn Glu Asp Gln Asn Ser Glu Gln Ser Asn Glu Gly Gln Asn Ser
195 200 205

Lys Gln Ser Asn Glu Gly Gln Asn Ser Lys Gln Ser Asn Glu Asp Gln
210 215 220

Asn Ser Glu Gln Ser Asn Glu Gly Gln Asn Ser Lys Gln Ser Asn Glu
225 230 235 240

Val Gln Ser Ser Glu Gln Ser Asn Glu Gly Gln Asn Ser Lys Gln Ser
245 250 255

Asn Glu Gly Gln Ser Ser Glu Gln Ser Asn Glu Gly Gln Asn Ser Lys
260 265 270

Gln Ser Asn Glu Val Gln Ser Pro Glu Glu His Tyr Asp Leu Pro Asp
275 280 285

Pro Glu Ser Ser Tyr Glu Ser Glu Glu Thr Lys Gly Ser His Glu Ser
290 295 300

Gly Asp Asp Ser Glu His Arg
305 310

<210> 208
<211> 431
<212> PRT
<213> Buchnera aphidicola

<400> 208

Met Lys Thr Ile Ile Leu Gly Leu Cys Leu Phe Gly Ala Leu Phe Trp
1 5 10 15

Ser Thr Gln Ser Met Pro Val Gly Glu Val Ala Pro Ala Val Pro Ala
20 25 30

Val Pro Ser Glu Ala Val Pro Gln Lys Gln Val Glu Ala Lys Pro Glu
35 40 45

Thr Asn Ala Ala Ser Pro Val Ser Asp Ala Lys Pro Glu Ser Asp Ser
50 55 60

Lys Pro Val Asp Ala Glu Val Lys Pro Thr Val Ser Glu Val Lys Ala
65 70 75 80

Glu Ser Glu Gln Lys Pro Ser Gly Glu Pro Lys Pro Glu Ser Asp Ala
85 90 95

Lys Pro Val Val Ala Ser Glu Ser Lys Pro Glu Ser Asp Pro Lys Pro
100 105 110

Ala Ala Val Val Glu Ser Lys Pro Glu Asn Asp Ala Val Ala Pro Glu
115 120 125

Thr Asn Asn Asp Ala Lys Pro Glu Asn Ala Ala Ala Pro Val Ser Glu
130 135 140

Asn Lys Pro Ala Thr Asp Ala Lys Ala Glu Thr Glu Leu Ile Ala Gln
145 150 155 160

Ala Lys Pro Glu Ser Lys Pro Ala Ser Asp Leu Lys Ala Glu Pro Glu
165 170 175

Ala Ala Lys Pro Asn Ser Glu Val Pro Val Ala Leu Pro Leu Asn Pro
180 185 190

Thr Glu Thr Lys Ala Thr Gln Gln Ser Val Glu Thr Asn Gln Val Glu
195 200 205

Gln Ala Ala Pro Ala Ala Ala Gln Ala Asp Pro Ala Ala Ala Pro Ala
210 215 220

Ala Asp Pro Ala Pro Ala Pro Ala Ala Ala Pro Val Ala Ala Glu Glu
225 230 235 240

Ala Lys Leu Ser Glu Ser Ala Pro Ser Thr Glu Asn Lys Ala Ala Glu
245 250 255

Glu Pro Ser Lys Pro Ala Glu Gln Gln Ser Ala Lys Pro Val Glu Asp
260 265 270

Ala Val Pro Ala Ala Ser Glu Ile Ser Glu Thr Lys Val Ser Pro Ala
275 280 285

Val Pro Ala Val Pro Glu Val Pro Ala Ser Pro Ser Ala Pro Ala Val
290 295 300

Ala Asp Pro Val Ser Ala Pro Glu Ala Glu Lys Asn Ala Glu Pro Ala
305 310 315 320

Lys Ala Ala Asn Ser Ala Glu Pro Ala Val Gln Ser Glu Ala Lys Pro
325 330 335

Ala Glu Asp Ile Gln Lys Ser Gly Ala Val Val Ser Ala Glu Asn Pro
340 345 350

Lys Pro Val Glu Glu Gln Lys Pro Ala Glu Val Ala Lys Pro Ala Glu
355 360 365

Gln Ser Lys Ser Glu Ala Pro Ala Glu Ala Pro Lys Pro Thr Glu Gln
370 375 380

Ser Ala Ala Glu Glu Pro Lys Lys Pro Glu Ser Ala Asn Asp Glu Lys
385 390 395 400

Lys Glu Gln His Ser Val Asn Lys Arg Asp Ala Thr Lys Glu Lys Lys
405 410 415

Pro Thr Asp Ser Ile Met Lys Lys Gln Lys Gln Lys Lys Ala Asn
420 425 430

<210> 209

<211> 160

<212> PRT

<213> Buchnera aphidicola

<400> 209

Met Asn Gly Lys Ile Val Leu Cys Phe Ala Val Val Phe Ile Gly Gln
1 5 10 15

Ala Met Ser Ala Ala Thr Gly Thr Thr Pro Glu Val Glu Asp Ile Lys
20 25 30

Lys Val Ala Glu Gln Met Ser Gln Thr Phe Met Ser Val Ala Asn His
35 40 45

Leu Val Gly Ile Thr Pro Asn Ser Ala Asp Ala Gln Lys Ser Ile Glu
50 55 60

Lys Ile Arg Thr Ile Met Asn Lys Gly Phe Thr Asp Met Glu Thr Glu
65 70 75 80

Ala Asn Lys Met Lys Asp Ile Val Arg Lys Asn Ala Asp Pro Lys Leu
85 90 95

Val Glu Lys Tyr Asp Glu Leu Glu Lys Glu Leu Lys Lys His Leu Ser
100 105 110

Thr Ala Lys Asp Met Phe Glu Asp Lys Val Val Lys Pro Ile Gly Glu
115 120 125

Lys Val Glu Leu Lys Lys Ile Thr Glu Asn Val Ile Lys Thr Thr Lys
130 135 140

Asp Met Glu Ala Thr Met Asn Lys Ala Ile Asp Gly Phe Lys Lys Gln
145 150 155 160

<210> 210

<211> 415

<212> PRT

<213> Buchnera aphidicola

<400> 210

Met 1	His	Leu	Phe 5	Leu	Ala	Leu	Gly	Leu	Phe 10	Ile	Val	Cys	Gly 15	Met	Val
Asp	Ala	Thr	Phe 20	Tyr	Asn	Pro	Arg	Ser 25	Gln	Thr	Phe	Asn	Gln 30	Leu	Met
Glu	Arg	Arg 35	Gln	Arg	Ser	Ile	Pro 40	Ile	Pro	Tyr	Ser	Tyr 45	Gly	Tyr	His
Tyr	Asn 50	Pro	Ile	Glu	Pro	Ser 55	Ile	Asn	Val	Leu	Asp 60	Ser	Leu	Ser	Glu
Gly 65	Leu	Asp	Ser	Arg	Ile 70	Asn	Thr	Phe	Lys	Pro 75	Ile	Tyr	Gln	Asn	Val 80
Lys	Met	Ser	Thr	Gln 85	Asp	Val	Asn	Ser	Val 90	Pro	Arg	Thr	Gln	Tyr 95	Gln
Pro	Lys	Asn	Ser 100	Leu	Tyr	Asp	Ser	Glu 105	Tyr	Ile	Ser	Ala	Lys 110	Asp	Ile
Pro	Ser	Leu 115	Phe	Pro	Glu	Glu	Asp 120	Ser	Tyr	Asp	Tyr	Lys 125	Tyr	Leu	Gly
Ser	Pro 130	Leu	Asn	Lys	Tyr	Leu 135	Thr	Arg	Pro	Ser	Thr 140	Gln	Glu	Ser	Gly
Ile 145	Ala	Ile	Asn	Leu	Val 150	Ala	Ile	Lys	Glu	Thr 155	Ser	Val	Phe	Asp	Tyr 160
Gly	Phe	Pro	Thr	Tyr 165	Lys	Ser	Pro	Tyr	Ser 170	Ser	Asp	Ser	Val	Trp 175	Asn
Phe	Gly	Ser	Lys 180	Ile	Pro	Asn	Thr 185	Val	Phe	Glu	Asp	Pro	Gln 190	Ser	Val
Glu	Ser	Asp 195	Pro	Asn	Thr	Phe	Lys 200	Val	Ser	Ser	Pro	Thr 205	Ile	Lys	Ile
Val	Lys 210	Leu	Leu	Pro	Glu	Thr 215	Pro	Glu	Gln	Glu	Ser 220	Ile	Ile	Thr	Thr
Thr 225	Lys	Asn	Tyr	Glu	Leu 230	Asn	Tyr	Lys	Thr	Thr 235	Gln	Glu	Thr	Pro	Thr 240

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

Glu Trp His Pro Met Val Pro Lys Glu Asn Thr Thr Lys Asp Glu Ser
260 265 270

Ser Phe Ile Thr Thr Glu Glu Pro Leu Thr Glu Asp Lys Ser Asn Ser
275 280 285

Ile Thr Ile Glu Lys Thr Gln Thr Glu Asp Glu Ser Asn Ser Ile Glu
290 295 300

Phe Asn Ser Ile Arg Thr Glu Glu Lys Ser Asn Ser Ile Thr Thr Glu
305 310 315 320

Glu Asn Gln Lys Glu Asp Asp Glu Ser Met Ser Thr Thr Ser Gln Glu
325 330 335

Thr Thr Thr Ala Phe Asn Leu Asn Asp Thr Phe Asp Thr Asn Arg Tyr
340 345 350

Ser Ser Ser His Glu Ser Leu Met Leu Arg Ile Arg Glu Leu Met Lys
355 360 365

Asn Ile Ala Asp Gln Gln Asn Lys Ser Gln Phe Arg Thr Val Asp Asn
370 375 380

Ile Pro Ala Lys Ser Gln Ser Asn Leu Ser Ser Asp Glu Ser Thr Asn
385 390 395 400

Gln Gln Phe Glu Pro Gln Leu Val Asn Gly Ala Asp Thr Tyr Lys
405 410 415

<210> 211

<211> 126

<212> PRT

<213> Sitophilus zeamais

<400> 211

Met Thr Arg Thr Met Leu Phe Leu Ala Cys Val Ala Ala Leu Tyr Val
1 5 10 15

Cys Ile Ser Ala Thr Ala Gly Lys Pro Glu Glu Phe Ala Lys Leu Ser

20

25

30

Asp Glu Ala Pro Ser Asn Asp Gln Ala Met Tyr Glu Ser Ile Gln Arg
 35 40 45

Tyr Arg Arg Phe Val Asp Gly Asn Arg Tyr Asn Gly Gly Gln Gln Gln
 50 55 60

Gln Gln Gln Pro Lys Gln Trp Glu Val Arg Pro Asp Leu Ser Arg Asp
 65 70 75 80

Gln Arg Gly Asn Thr Lys Ala Gln Val Glu Ile Asn Lys Lys Gly Asp
 85 90 95

Asn His Asp Ile Asn Ala Gly Trp Gly Lys Asn Ile Asn Gly Pro Asp
 100 105 110

Ser His Lys Asp Thr Trp His Val Gly Gly Ser Val Arg Trp
 115 120 125

<210> 212

<211> 220

<212> PRT

<213> Acyrthosiphon pisum

<400> 212

Met Lys Glu Thr Thr Val Val Trp Ala Lys Leu Phe Leu Ile Leu Ile
 1 5 10 15

Ile Leu Ala Lys Pro Leu Gly Leu Lys Ala Val Asn Glu Cys Lys Arg
 20 25 30

Leu Gly Asn Asn Ser Cys Arg Ser His Gly Glu Cys Cys Ser Gly Phe
 35 40 45

Cys Phe Ile Glu Pro Gly Trp Ala Leu Gly Val Cys Lys Arg Leu Gly
 50 55 60

Thr Pro Lys Lys Ser Asp Asp Ser Asn Asn Gly Lys Asn Ile Glu Lys
 65 70 75 80

Asn Asn Gly Val His Glu Arg Ile Asp Asp Val Phe Glu Arg Gly Val
 85 90 95

Cys Ser Tyr Tyr Lys Gly Pro Ser Ile Thr Ala Asn Gly Asp Val Phe
100 105 110

Asp Glu Asn Glu Met Thr Ala Ala His Arg Thr Leu Pro Phe Asn Thr
115 120 125

Met Val Lys Val Glu Gly Met Gly Thr Ser Val Val Val Lys Ile Asn
130 135 140

Asp Arg Lys Thr Ala Ala Asp Gly Lys Val Met Leu Leu Ser Arg Ala
145 150 155 160

Ala Ala Glu Ser Leu Asn Ile Asp Glu Asn Thr Gly Pro Val Gln Cys
165 170 175

Gln Leu Lys Phe Val Leu Asp Gly Ser Gly Cys Thr Pro Asp Tyr Gly
180 185 190

Asp Thr Cys Val Leu His His Glu Cys Cys Ser Gln Asn Cys Phe Arg
195 200 205

Glu Met Phe Ser Asp Lys Gly Phe Cys Leu Pro Lys
210 215 220

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

<220>
<223> Penetratin

<400> 213

Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys
1 5 10 15

<210> 214
<211> 13
<212> PRT
<213> Human immunodeficiency virus 1

<400> 214

Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln
1 5 10

<210> 215

<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> pVEC

<400> 215

Leu Leu Ile Ile Leu Arg Arg Arg Ile Arg Lys Gln Ala His Ala His
1 5 10 15

Ser Lys

<210> 216
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Transportan

<400> 216

Gly Trp Thr Leu Asn Ser Ala Gly Tyr Leu Leu Gly Lys Ile Asn Leu
1 5 10 15

Lys Ala Leu Ala Ala Leu Ala Lys Lys Ile Leu
20 25

<210> 217
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> MPG

<400> 217

Gly Ala Leu Phe Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly
1 5 10 15

Ala Trp Ser Gln Pro Lys Lys Lys Arg Lys Val
20 25

<210> 218
<211> 21
<212> PRT
<213> Artificial Sequence

<220>

<223> Pep-1

<400> 218

Lys Glu Thr Trp Trp Glu Thr Trp Trp Thr Glu Trp Ser Gln Pro Lys
1 5 10 15

Lys Lys Arg Lys Val
20

<210> 219

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> MAP

<400> 219

Lys Leu Ala Leu Lys Leu Ala Leu Lys Ala Leu Lys Ala Ala Leu Lys
1 5 10 15

Leu Ala

<210> 220

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> R6W3

<400> 220

Arg Arg Trp Trp Arg Arg Trp Arg Arg
1 5

<210> 221

<211> 13

<212> PRT

<213> Pandinum imperator

<400> 221

Phe Leu Ser Thr Ile Trp Asn Gly Ile Lys Gly Leu Leu
1 5 10

<210> 222

<211> 13

<212> PRT
<213> Urodacus yaschenkoi

<400> 222

Ile Leu Ser Ala Ile Trp Ser Gly Ile Lys Ser Leu Phe
1 5 10

<210> 223
<211> 13
<212> PRT
<213> Scorpiops tibetanus

<400> 223

Leu Trp Gly Lys Leu Trp Glu Gly Val Lys Ser Leu Ile
1 5 10

<210> 224
<211> 22
<212> PRT
<213> Apostichopus japonicus

<400> 224

Phe Pro Phe Leu Lys Leu Ser Leu Lys Ile Pro Lys Ser Ala Ile Lys
1 5 10 15

Ser Ala Ile Lys Arg Leu
20

<210> 225
<211> 13
<212> PRT
<213> Urodacus yaschenkoi

<400> 225

Ile Leu Ser Ala Ile Trp Ser Gly Ile Lys Gly Leu Leu
1 5 10

<210> 226
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Uy192 + cell penetrating peptide

<400> 226

Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Phe Leu Ser Thr Ile
1 5 10 15

Trp Asn Gly Ile Lys Gly Leu Leu Phe Ala Met
20 25

<210> 227
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Universal bacterial primer 27F

<400> 227
agagtttgat cmtggctcag
20

<210> 228
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Universal bacterial primer 1492R

<400> 228
taccttggtta cgactt
16