

POLA_003_01WO_ST25
SEQUENCE LISTING

<110> Polaris Group

<120> ARGININE DEIMINASE WITH REDUCED CROSS-REACTIVITY TOWARD ADI - PEG
20 ANTIBODIES FOR CANCER TREATMENT

<130> POLA-003/01WO

<150> US 61/790,833

<151> 2013-03-15

<160> 32

<170> PatentIn version 3.5

<210> 1

<211> 409

<212> PRT

<213> Mycoplasma hominis

<400> 1

Met Ser Val Phe Asp Ser Lys Phe Asn Gly Ile His Val Tyr Ser Glu
1 5 10 15

Ile Gly Glu Leu Glu Thr Val Leu Val His Glu Pro Gly Arg Glu Ile
20 25 30

Asp Tyr Ile Thr Pro Ala Arg Leu Asp Glu Leu Leu Phe Ser Ala Ile
35 40 45

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

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

Glu Thr Tyr Asp Leu Ala Ser Lys Ala Ala Lys Glu Glu Phe Ile Glu
85 90 95

Thr Phe Leu Glu Glu Thr Val Pro Val Leu Thr Glu Ala Asn Lys Lys
100 105 110

Ala Val Arg Ala Phe Leu Leu Ser Lys Pro Thr His Glu Met Val Glu
115 120 125

Phe Met Met Ser Gly Ile Thr Lys Tyr Glu Leu Gly Val Glu Ser Glu
130 135 140

Asn Glu Leu Ile Val Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg Asp
145 150 155 160

Pro Phe Ala Ser Val Gly Asn Gly Val Thr Ile His Phe Met Arg Tyr
165 170 175

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Ile Val Arg Arg Arg Glu Thr Leu Phe Ala Arg Phe Val Phe Arg Asn
180 185 190

His Pro Lys Leu Val Lys Thr Pro Trp Tyr Tyr Asp Pro Ala Met Lys
195 200 205

Met Pro Ile Glu Gly Gly Asp Val Phe Ile Tyr Asn Asn Glu Thr Leu
210 215 220

Val Val Gly Val Ser Glu Arg Thr Asp Leu Asp Thr Ile Thr Leu Leu
225 230 235 240

Ala Lys Asn Ile Lys Ala Asn Lys Glu Val Glu Phe Lys Arg Ile Val
245 250 255

Ala Ile Asn Val Pro Lys Trp Thr Asn Leu Met His Leu Asp Thr Trp
260 265 270

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

Asp Val Phe Lys Phe Trp Asp Tyr Asp Leu Val Asn Gly Gly Ala Glu
290 295 300

Pro Gln Pro Gln Leu Asn Gly Leu Pro Leu Asp Lys Leu Leu Ala Ser
305 310 315 320

Ile Ile Asn Lys Glu Pro Val Leu Ile Pro Ile Gly Gly Ala Gly Ala
325 330 335

Thr Glu Met Glu Ile Ala Arg Glu Thr Asn Phe Asp Gly Thr Asn Tyr
340 345 350

Leu Ala Ile Lys Pro Gly Leu Val Ile Gly Tyr Asp Arg Asn Glu Lys
355 360 365

Thr Asn Ala Ala Leu Lys Ala Ala Gly Ile Thr Val Leu Pro Phe His
370 375 380

Gly Asn Gln Leu Ser Leu Gly Met Gly Asn Ala Arg Cys Met Ser Met
385 390 395 400

Pro Leu Ser Arg Lys Asp Val Lys Trp
405

<210> 2

<211> 392

<212> PRT

<213> Mycoplasma phocicerebrale

<400> 2

Ile His Val Tyr Ser Glu Ile Gly Glu Leu Glu Thr Val Leu Val His

1 5 10 15
 Glu Pro Gly Arg Glu Ile Asp Tyr Ile Thr Pro Ala Arg Leu Asp Glu
 20 25 30
 Leu Leu Phe Ser Ala Ile Leu Glu Ser His Asp Ala Arg Lys Glu His
 35 40 45
 Gln Ser Phe Val Lys Gln Leu Lys Asp Asn Gly Ile Asn Val Val Glu
 50 55 60
 Leu Thr Asp Leu Val Ala Glu Thr Phe Asp Leu Ala Ser Lys Glu Glu
 65 70 75 80
 Gln Glu Lys Leu Ile Glu Glu Phe Leu Glu Asp Ser Glu Pro Val Leu
 85 90 95
 Ser Glu Ala His Lys Thr Ala Val Arg Lys Phe Leu Thr Ser Arg Lys
 100 105 110
 Ser Thr Arg Glu Met Val Glu Phe Met Met Ala Gly Ile Thr Lys Tyr
 115 120 125
 Asp Leu Gly Ile Glu Ala Asp His Glu Leu Ile Val Asp Pro Met Pro
 130 135 140
 Asn Leu Tyr Phe Thr Arg Asp Pro Phe Ala Ser Val Gly Asn Gly Val
 145 150 155 160
 Thr Ile His Tyr Met Arg Tyr Lys Val Arg Gln Arg Glu Thr Leu Phe
 165 170 175
 Ser Arg Phe Val Phe Ser Asn His Pro Lys Leu Val Lys Thr Pro Trp
 180 185 190
 Tyr Tyr Asp Pro Ala Met Lys Met Ser Ile Glu Gly Gly Asp Val Phe
 195 200 205
 Ile Tyr Asn Asn Asp Thr Leu Val Val Gly Val Ser Glu Arg Thr Asp
 210 215 220
 Leu Glu Thr Ile Thr Leu Leu Ala Lys Asn Ile Lys Ala Asn Lys Glu
 225 230 235 240
 Val Glu Phe Lys Arg Ile Val Ala Ile Asn Val Pro Lys Trp Thr Asn
 245 250 255
 Leu Met His Leu Asp Thr Trp Leu Thr Met Leu Asp Lys Asp Lys Phe
 260 265 270
 Leu Tyr Ser Pro Ile Ala Asn Asp Val Phe Lys Phe Trp Asp Tyr Asp

275 POLA_003_01WO_ST25 280 285

Leu Val Asn Gly Gly Ala Glu Pro Gln Pro Lys Glu Asn Gly Leu Pro
290 295 300

Leu Glu Gly Leu Leu Gln Ser Ile Ile Asn Lys Lys Pro Val Leu Ile
305 310 315 320

Pro Ile Ala Gly Asn Asn Ala Ser His Ile Asp Ile Glu Arg Glu Thr
325 330 335

His Phe Asp Gly Thr Asn Tyr Leu Ala Ile Lys Pro Gly Val Val Ile
340 345 350

Gly Tyr Ala Arg Asn Glu Lys Thr Asn Ala Ala Leu Ala Ala Ala Gly
355 360 365

Ile Lys Val Leu Pro Phe His Gly Asn Gln Leu Ser Leu Gly Met Gly
370 375 380

Asn Ala Arg Cys Met Ser Met Pro
385 390

<210> 3
<211> 410
<212> PRT
<213> Mycoplasma arginini
<400> 3

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

Ile Gly Glu Leu Glu Ser Val Leu Val His Glu Pro Gly Arg Glu Ile
20 25 30

Asp Tyr Ile Thr Pro Ala Arg Leu Asp Glu Leu Leu Phe Ser Ala Ile
35 40 45

Leu Glu Ser His Asp Ala Arg Lys Glu His Lys Gln Phe Val Ala Glu
50 55 60

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

Glu Thr Tyr Asp Leu Ala Ser Gln Glu Ala Lys Asp Lys Leu Ile Glu
85 90 95

Glu Phe Leu Glu Asp Ser Glu Pro Val Leu Ser Glu Glu His Lys Val
100 105 110

Val Val Arg Asn Phe Leu Lys Ala Lys Lys Thr Ser Arg Glu Leu Val
115 120 125

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Glu Ile Met Met Ala Gly Ile Thr Lys Tyr Asp Leu Gly Ile Glu Ala
 130 135 140
 Asp His Glu Leu Ile Val Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg
 145 150 155 160
 Asp Pro Phe Ala Ser Val Gly Asn Gly Val Thr Ile His Tyr Met Arg
 165 170 175
 Tyr Lys Val Arg Gln Arg Glu Thr Leu Phe Ser Arg Phe Val Phe Ser
 180 185 190
 Asn His Pro Lys Leu Ile Asn Thr Pro Trp Tyr Tyr Asp Pro Ser Leu
 195 200 205
 Lys Leu Ser Ile Glu Gly Gly Asp Val Phe Ile Tyr Asn Asn Asp Thr
 210 215 220
 Leu Val Val Gly Val Ser Glu Arg Thr Asp Leu Gln Thr Val Thr Leu
 225 230 235 240
 Leu Ala Lys Asn Ile Val Ala Asn Lys Glu Cys Glu Phe Lys Arg Ile
 245 250 255
 Val Ala Ile Asn Val Pro Lys Trp Thr Asn Leu Met His Leu Asp Thr
 260 265 270
 Trp Leu Thr Met Leu Asp Lys Asp Lys Phe Leu Tyr Ser Pro Ile Ala
 275 280 285
 Asn Asp Val Phe Lys Phe Trp Asp Tyr Asp Leu Val Asn Gly Gly Ala
 290 295 300
 Glu Pro Gln Pro Val Glu Asn Gly Leu Pro Leu Glu Gly Leu Leu Gln
 305 310 315 320
 Ser Ile Ile Asn Lys Lys Pro Val Leu Ile Pro Ile Ala Gly Glu Gly
 325 330 335
 Ala Ser Gln Met Glu Ile Glu Arg Glu Thr His Phe Asp Gly Thr Asn
 340 345 350
 Tyr Leu Ala Ile Arg Pro Gly Val Val Ile Gly Tyr Ser Arg Asn Glu
 355 360 365
 Lys Thr Asn Ala Ala Leu Glu Ala Ala Gly Ile Lys Val Leu Pro Phe
 370 375 380
 His Gly Asn Gln Leu Ser Leu Gly Met Gly Asn Ala Arg Cys Met Ser
 385 390 395 400

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Met Pro Leu Ser Arg Lys Asp Val Lys Trp
 405 410

<210> 4
 <211> 409
 <212> PRT
 <213> Mycoplasma arthritidis

<400> 4

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

Ile Gly Glu Leu Glu Thr Val Leu Val His Glu Pro Gly Lys Glu Ile
 20 25 30

Asp Tyr Ile Thr Pro Ala Arg Leu Asp Glu Leu Leu Phe Ser Ala Ile
 35 40 45

Leu Glu Ser His Asp Ala Arg Lys Glu His Lys Glu Phe Val Ala Glu
 50 55 60

Leu Lys Lys Arg Gly Ile Asn Val Val Glu Leu Val Asp Leu Ile Val
 65 70 75 80

Glu Thr Tyr Asp Leu Ala Ser Lys Glu Ala Lys Glu Lys Leu Leu Glu
 85 90 95

Glu Phe Leu Asp Asp Ser Val Pro Val Leu Ser Asp Glu His Arg Ala
 100 105 110

Ala Val Lys Lys Phe Leu Gln Ser Gln Lys Ser Thr Arg Ser Leu Val
 115 120 125

Glu Tyr Met Ile Ala Gly Ile Thr Lys His Asp Leu Lys Ile Glu Ser
 130 135 140

Asp Leu Glu Leu Ile Val Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg
 145 150 155 160

Asp Pro Phe Ala Ser Val Gly Asn Gly Val Thr Ile His Tyr Met Arg
 165 170 175

Tyr Lys Val Arg Gln Arg Glu Thr Leu Phe Ser Arg Phe Val Phe Ser
 180 185 190

Asn His Pro Lys Leu Val Asn Thr Pro Trp Tyr Tyr Asp Pro Ala Glu
 195 200 205

Gly Leu Ser Ile Glu Gly Gly Asp Val Phe Ile Tyr Asn Asn Asp Thr
 210 215 220

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Leu Val Val Gly Val Ser Glu Arg Thr Asp Leu Gln Thr Ile Thr Leu
225 230 235 240

Leu Ala Lys Asn Ile Lys Ala Asn Lys Glu Cys Glu Phe Lys Arg Ile
245 250 255

Val Ala Ile Asn Val Pro Lys Trp Thr Asn Leu Met His Leu Asp Thr
260 265 270

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

Asn Asp Val Phe Lys Phe Trp Asp Tyr Asp Leu Val Asn Gly Gly Asp
290 295 300

Ala Pro Gln Pro Val Asp Asn Gly Leu Pro Leu Glu Asp Leu Leu Lys
305 310 315 320

Ser Ile Ile Gly Lys Lys Pro Thr Leu Ile Pro Ile Ala Gly Ala Gly
325 330 335

Ala Ser Gln Ile Asp Ile Glu Arg Glu Thr His Phe Asp Gly Thr Asn
340 345 350

Tyr Leu Ala Val Ala Pro Gly Ile Val Ile Gly Tyr Ala Arg Asn Glu
355 360 365

Lys Thr Asn Ala Ala Leu Glu Ala Ala Gly Ile Thr Val Leu Pro Phe
370 375 380

Arg Gly Asn Gln Leu Ser Leu Gly Met Gly Asn Ala Arg Cys Met Ser
385 390 395 400

Met Pro Leu Ser Arg Lys Asp Val Lys
405

<210> 5
<211> 408
<212> PRT
<213> Mycoplasma orale

<220>
<221> misc_feature
<222> (201)..(201)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> misc_feature
<222> (263)..(263)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> misc_feature
<222> (272)..(272)

<223> Xaa can be any naturally occurring amino acid

<220>

<221> misc_feature

<222> (294)..(294)

<223> Xaa can be any naturally occurring amino acid

<400> 5

Ser Val Phe Ser Asp Lys Phe Asn Gly Ile His Val Tyr Ser Glu Ile
1 5 10 15

Gly Asp Leu Glu Ser Val Leu Val His Glu Pro Gly Lys Glu Ile Asp
20 25 30

Tyr Ile Thr Pro Ala Arg Leu Asp Glu Leu Leu Phe Ser Ala Ile Leu
35 40 45

Glu Ser Thr Asp Ala Arg Lys Glu His Lys Glu Phe Val Glu Ile Leu
50 55 60

Lys Lys Gln Gly Ile Asn Val Val Glu Leu Val Asp Leu Val Val Glu
65 70 75 80

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

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

Val Glu Lys Phe Leu Lys Ser Leu Lys Ser Thr Lys Glu Leu Ile Gln
115 120 125

Tyr Met Met Ala Gly Ile Thr Lys Tyr Asp Leu Gly Ile Lys Ala Asp
130 135 140

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

Pro Phe Ala Ser Val Gly Asn Gly Val Thr Ile His Tyr Met Arg Tyr
165 170 175

Lys Val Arg Gln Arg Glu Thr Leu Phe Ser Lys Phe Ile Phe Thr Asn
180 185 190

His Pro Lys Leu Val Lys Thr Pro Xaa Tyr Tyr Asp Pro Ala Met Lys
195 200 205

Leu Ser Ile Glu Gly Gly Asp Val Phe Ile Tyr Asn Asn Asp Thr Leu
210 215 220

Val Val Gly Val Ser Glu Arg Thr Asp Leu Glu Thr Ile Thr Leu Leu
225 230 235 240

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Ala Lys Asn Ile Lys₂₄₅ Ala Asn Lys Glu Cys₂₅₀ Glu Phe Lys Arg Ile Val₂₅₅

Ala Ile Asn Val₂₆₀ Pro Lys Xaa Thr Asn₂₆₅ Leu Met His Leu Asp₂₇₀ Thr Xaa

Leu Thr Met₂₇₅ Leu Asp Lys Asp Lys₂₈₀ Phe Leu Tyr Ser Pro₂₈₅ Ile Ala Asn

Asp Val₂₉₀ Phe Lys Phe Xaa Asp₂₉₅ Tyr Asp Leu Val Asn₃₀₀ Gly Gly Ser Asn

Pro Glu Pro Val Val Asn₃₁₀ Gly Leu Pro Leu Asp₃₁₅ Lys Leu Leu Glu Ser₃₂₀

Ile Ile Asn Lys Lys₃₂₅ Pro Val Leu Ile Pro₃₃₀ Ile Ala Gly Lys Gly₃₃₅ Ala

Thr Glu Ile Glu₃₄₀ Thr Ala Val Glu Thr₃₄₅ His Phe Asp Gly Thr₃₅₀ Asn Tyr

Leu Ala Ile₃₅₅ Lys Pro Gly Val Val₃₆₀ Val Gly Tyr Ser Arg₃₆₅ Asn Val Lys

Thr Asn₃₇₀ Ala Ala Leu Glu Ala₃₇₅ Asn Gly Ile Lys Val₃₈₀ Leu Pro Phe Lys

Gly Asn Gln Leu Ser Leu₃₉₀ Gly Met Gly Asn Ala₃₉₅ Arg Cys Met Ser Met₄₀₀

Pro Leu Ser Arg Lys₄₀₅ Asp Val Lys

<210> 6

<211> 391

<212> PRT

<213> Mycoplasma gateae

<400> 6

Ile His Val Tyr Ser₅ Glu Ile Gly Glu Leu₁₀ Glu Ser Val Leu Val₁₅ His

Glu Pro Gly Arg₂₀ Glu Ile Asp Tyr Ile₂₅ Thr Pro Ala Arg Leu₃₀ Asp Glu

Leu Leu Phe₃₅ Ser Ala Ile Leu Glu₄₀ Ser His Asp Ala Arg₄₅ Lys Glu His

Lys Leu₅₀ Phe Val Ser Glu Leu₅₅ Lys Ala Asn Asp Ile₆₀ Asn Val Val Glu

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Leu Thr Asp Leu Val Thr Glu Thr Tyr Asp Leu Ala Ser Gln Glu Ala
 65 70 75 80
 Lys Asp Asn Leu Ile Glu Glu Phe Leu Glu Asp Ser Glu Pro Val Leu
 85 90 95
 Thr Glu Glu Leu Lys Ser Val Val Arg Thr Tyr Leu Lys Ser Ile Lys
 100 105 110
 Ser Thr Arg Glu Leu Ile Gln Met Met Met Ala Gly Ile Thr Lys Tyr
 115 120 125
 Asp Leu Gly Ile Glu Ala Asp His Glu Leu Ile Val Asp Pro Met Pro
 130 135 140
 Asn Leu Tyr Phe Thr Arg Asp Pro Phe Ala Ser Val Gly Asn Gly Val
 145 150 155 160
 Thr Ile His Tyr Met Arg Tyr Lys Val Arg Gln Arg Glu Thr Leu Phe
 165 170 175
 Ser Arg Phe Val Phe Ser Asn His Pro Lys Leu Val Asn Thr Pro Trp
 180 185 190
 Tyr Tyr Asp Pro Ser Leu Lys Leu Ser Ile Glu Gly Gly Asp Val Phe
 195 200 205
 Ile Tyr Asn Asn Asn Thr Leu Val Val Gly Val Ser Glu Arg Thr Asp
 210 215 220
 Leu Glu Thr Val Thr Leu Leu Ala Lys Asn Ile Val Ala Asn Lys Glu
 225 230 235 240
 Cys Glu Phe Lys Arg Ile Val Ala Ile Asn Val Pro Lys Trp Thr Asn
 245 250 255
 Leu Met His Leu Asp Thr Trp Leu Thr Met Leu Asp Lys Asp Lys Phe
 260 265 270
 Leu Tyr Ser Pro Ile Ala Asn Asp Val Phe Lys Phe Trp Asp Tyr Asp
 275 280 285
 Leu Val Asn Gly Gly Glu Glu Pro Gln Pro Val Glu Asn Gly Leu Pro
 290 295 300
 Leu Glu Gly Leu Leu Glu Ser Ile Ile Asn Lys Lys Pro Ile Leu Ile
 305 310 315 320
 Pro Ile Ala Gly Glu Gly Ala Ser Gln Ile Asp Ile Glu Arg Glu Thr
 325 330 335

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His Phe Asp Gly Thr Asn Tyr Leu Ala Ile Arg Pro Gly Val Val Ile
 340 345 350

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

Ile Lys Val Leu Pro Phe His Gly Asn Gln Leu Ser Leu Gly Met Gly
 370 375 380

Asn Ala Arg Cys Met Ser Met
 385 390

<210> 7

<211> 392

<212> PRT

<213> Mycoplasma phocidae

<400> 7

Ile His Val Tyr Ser Glu Ile Gly Glu Leu Gln Thr Val Leu Val His
 1 5 10 15

Glu Pro Gly Arg Glu Ile Glu Tyr Ile Thr Pro Ala Arg Leu Asp Glu
 20 25 30

Leu Leu Phe Ser Ala Ile Leu Glu Ser His Asp Ala Arg Lys Glu His
 35 40 45

Gln Glu Phe Val Ala Glu Leu Lys Lys Asn Asn Ile Asn Val Val Glu
 50 55 60

Leu Thr Asp Leu Val Ser Glu Thr Tyr Asp Met Val Ser Lys Glu Lys
 65 70 75 80

Gln Glu Lys Leu Ile Glu Glu Phe Leu Glu Asp Ser Glu Pro Val Leu
 85 90 95

Ser Glu Glu His Lys Gly Leu Val Arg Lys Phe Leu Lys Ser Leu Lys
 100 105 110

Ser Ser Lys Glu Leu Ile Gln Tyr Met Met Ala Gly Ile Thr Lys His
 115 120 125

Asp Leu Asn Ile Glu Ala Asp His Glu Leu Ile Val Asp Pro Met Pro
 130 135 140

Asn Leu Tyr Phe Thr Arg Asp Pro Phe Ala Ser Val Gly Asn Gly Val
 145 150 155 160

Thr Ile His Tyr Met Arg Tyr Lys Val Arg Gln Arg Glu Thr Leu Phe
 165 170 175

Ser Arg Phe Ile Phe Ala Asn His Pro Lys Leu Met Asn Thr Pro Leu

180

185

190

Tyr Tyr Asn Pro Asp Met Lys Leu Ser Ile Glu Gly Gly Asp Val Phe
195 200 205

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

Leu Asp Thr Ile Thr Leu Leu Ala Lys Asn Ile Lys Ala Asn Lys Glu
225 230 235 240

Arg Glu Phe Lys Arg Ile Val Ala Ile Asn Val Pro Lys Trp Thr Asn
245 250 255

Leu Met His Leu Asp Thr Trp Leu Thr Met Leu Asp Lys Asp Lys Phe
260 265 270

Leu Tyr Ser Pro Ile Ala Asn Asp Val Phe Lys Phe Trp Asp Tyr Asp
275 280 285

Leu Val Asn Gly Gly Asp Glu Pro Gln Pro Lys Val Asn Gly Leu Pro
290 295 300

Leu Glu Lys Leu Leu Glu Ser Ile Ile Asn Lys Lys Pro Ile Leu Ile
305 310 315 320

Pro Ile Ala Gly Thr Ser Ala Ser Asn Ile Asp Val Glu Arg Glu Thr
325 330 335

His Phe Asp Gly Thr Asn Tyr Leu Ala Ile Ala Pro Gly Val Val Ile
340 345 350

Gly Tyr Ser Arg Asn Val Lys Thr Asn Glu Ala Leu Glu Ala Ala Gly
355 360 365

Ile Lys Val Leu Pro Phe Lys Gly Asn Gln Leu Ser Leu Gly Met Gly
370 375 380

Asn Ala Arg Cys Met Ser Met Pro
385 390

<210> 8

<211> 401

<212> PRT

<213> Mycoplasma columbinum

<400> 8

Met Ser Lys Ile Asn Val Tyr Ser Glu Ile Gly Glu Leu Lys Glu Val
1 5 10 15

Leu Val His Thr Pro Gly Asp Glu Ile Arg Arg Ile Ser Pro Ser Arg
20 25 30

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Leu Asp Glu₃₅ Leu Leu Phe Ser Ala₄₀ Ile Leu Glu Pro Asn₄₅ Glu Ala Ile
 Lys Glu₅₀ His Lys Gly Phe Leu₅₅ Lys Ile Leu Gln Asp₆₀ Lys Gly Ile Lys
 Val Ile Gln Leu Ser Asp₇₀ Leu Val Ala Glu Thr₇₅ Tyr Thr Tyr His Ala₈₀
 Thr Gln Lys Glu Arg₈₅ Glu Ala Phe Ile Glu₉₀ Lys Trp Leu Asp Glu₉₅ Ala
 Glu Pro Ala Leu₁₀₀ Thr Lys Asp Leu Arg₁₀₅ Ala Lys Val Lys Ser₁₁₀ Tyr Val
 Leu Ser Lys₁₁₅ Glu Gly Thr Pro Val₁₂₀ Ala Met Val Arg Thr₁₂₅ Met Met Ala
 Gly Val₁₃₀ Ser Lys Gln Glu Leu₁₃₅ Asn Val Glu Ser Glu₁₄₀ Thr Glu Leu Val
 Val₁₄₅ Asp Pro Met Pro Asn₁₅₀ Leu Tyr Phe Thr Arg₁₅₅ Asp Pro Phe Ala Ser₁₆₀
 Ala Gly Asn Gly Ile₁₆₅ Ser Leu Asn Asn Met₁₇₀ Lys Tyr Val Thr Arg₁₇₅ Lys
 Arg Glu Thr Ile₁₈₀ Phe Ala Glu Phe Ile₁₈₅ Phe Ala Thr His Pro₁₉₀ Asp Tyr
 Lys Thr Thr₁₉₅ Pro His Trp Phe Asp₂₀₀ Arg Leu Asp Glu Gly₂₀₅ Asn Ile Glu
 Gly Gly₂₁₀ Asp Val Phe Ile Tyr₂₁₅ Asn Lys Asp Thr Leu₂₂₀ Val Ile Gly Val
 Ser₂₂₅ Glu Arg Thr Asn Lys₂₃₀ Glu Ala Ile Leu Thr₂₃₅ Ile Ala Lys Lys Ile₂₄₀
 Lys Asn Asn Lys Glu₂₄₅ Ala Lys Phe Lys Lys₂₅₀ Ile Val Ala Ile Asn₂₅₅ Val
 Pro Pro Met Pro₂₆₀ Asn Leu Met His Leu₂₆₅ Asp Thr Trp Leu Thr₂₇₀ Met Val
 Asp Lys Asp₂₇₅ Lys Phe Leu Tyr Ser₂₈₀ Pro Asn Met Leu Ser₂₈₅ Val Leu Lys
 Val Trp₂₉₀ Glu Ile Asp Leu Ser₂₉₅ Lys Glu Ile Glu Met₃₀₀ Val Glu Thr Asn

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Lys Pro Leu Ala Asp Val Leu Glu Ser Ile Ile Gly Val Lys Pro Val
305 310 315 320

Leu Ile Pro Ile Ala Gly Lys Gly Ala Thr Gln Leu Asp Ile Asp Ile
325 330 335

Glu Thr His Phe Asp Gly Thr Asn Tyr Leu Thr Ile Ala Pro Gly Val
340 345 350

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

Ala Gly Val Thr Val Leu Ser Phe Glu Gly Asn Gln Leu Ser Leu Gly
370 375 380

Met Gly Ser Ala Arg Cys Met Ser Met Pro Leu Val Arg Glu Asp Val
385 390 395 400

Lys

<210> 9
<211> 407
<212> PRT
<213> Mycoplasma iowae
<400> 9

Met Gly Asn Asn Ile Pro Lys Lys Ile Asn Val Phe Ser Glu Ile Gly
1 5 10 15

Asn Leu Lys Arg Val Leu Val His Thr Pro Gly Lys Glu Ile Glu Tyr
20 25 30

Val Thr Pro Gln Arg Leu Asp Glu Leu Leu Phe Ser Ala Ile Leu Asp
35 40 45

Pro Val Arg Ala Arg Glu Glu His Lys Glu Phe Ile Lys Ile Leu Glu
50 55 60

Ser Gln Gly Val Glu Val Val Gln Leu Val Asp Leu Thr Ala Glu Thr
65 70 75 80

Tyr Asp Val Ala Glu Ser Gln Ala Lys Glu Asn Phe Ile Gln Lys Trp
85 90 95

Leu Asp Glu Ser Leu Pro Lys Leu Thr Asp Glu Asn Arg Asn Lys Val
100 105 110

Tyr Ser Leu Leu Lys Ser Leu Glu Lys Asp Pro Lys Glu Met Ile Arg
115 120 125

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Lys Met Met Ser Gly Val Leu Ala Ser Glu Ile Gly Val Lys Ser Asp
 130 135 140
 Val Glu Leu Ile Val Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg Asp
 145 150 155 160
 Pro Phe Ala Ser Val Gly Asn Gly Ile Thr Leu His Arg Met Phe Arg
 165 170 175
 Pro Thr Arg Arg Arg Glu Thr Ile Phe Ala Asp Phe Ile Phe Ser Asn
 180 185 190
 His Pro Glu Tyr Lys Ser Thr Gln Lys Tyr Tyr Glu Arg Glu Asp Lys
 195 200 205
 Phe Ser Leu Glu Gly Gly Asp Val Phe Ile Tyr Asn Asn Lys Thr Leu
 210 215 220
 Val Val Gly Val Ser Glu Arg Thr Glu Lys Gly Ala Ile Lys Ala Leu
 225 230 235 240
 Ala Lys Ala Val Gln Asn Asn Ser Asn Met Ser Phe Glu Lys Ile Tyr
 245 250 255
 Ala Ile Asn Val Pro Lys Met Ser Asn Leu Met His Leu Asp Thr Trp
 260 265 270
 Leu Thr Met Leu Asp Thr Asp Lys Phe Leu Tyr Ser Pro Asn Met Met
 275 280 285
 Gly Val Leu Lys Ile Trp Glu Ile Asp Leu Ser Asp Lys Ser Leu Lys
 290 295 300
 Trp Lys Glu Ile Arg Asp Ser Leu Asp His Phe Leu Ser Thr Ile Ile
 305 310 315 320
 Gly Lys Lys Ala Ile Thr Val Pro Val Ala Gly Lys Asp Ala Met Gln
 325 330 335
 Phe Glu Ile Asp Ile Glu Thr His Phe Asp Ala Thr Asn Phe Ile Ala
 340 345 350
 Val Ala Pro Gly Val Val Ile Gly Tyr Asp Arg Asn Lys Lys Thr Asn
 355 360 365
 Glu Ala Leu Lys Glu Ala Gly Ile Lys Val Leu Ser Trp Asn Gly Asp
 370 375 380
 Gln Leu Ser Leu Gly Met Gly Ser Ala Arg Cys Met Thr Met Pro Leu
 385 390 395 400

Tyr Arg Glu Glu Leu Lys Lys
405

<210> 10
<211> 402
<212> PRT
<213> Mycoplasma crocodyli

<400> 10

Met Asn Lys Ile Asn Val Tyr Ser Glu Val Gly Lys Leu Lys Glu Val
1 5 10 15

Leu Val His Thr Pro Gly Asp Glu Ile Arg Arg Ile Ser Pro Ser Arg
20 25 30

Leu Glu Glu Leu Leu Phe Ser Ala Ile Leu Glu Pro Asp Ser Ala Ile
35 40 45

Glu Glu His Lys Arg Phe Leu Lys Ile Leu Glu Asp Asn Asn Ile Lys
50 55 60

Val Ile Gln Leu Asp Gln Leu Val Ala Asp Thr Tyr Glu Leu Val Asn
65 70 75 80

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

Pro Lys Leu Asp Lys Lys Leu Arg Glu Lys Val Lys Glu Tyr Leu Leu
100 105 110

His Thr Gln Lys Thr Val Gly Thr Lys Arg Met Val Arg Ile Met Met
115 120 125

Ala Gly Val Asp Arg Val Glu Leu Gly Val Glu Leu Asp Arg Gln Leu
130 135 140

Val Val Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg Asp Pro Phe Ala
145 150 155 160

Ser Ala Gly Asn Gly Ile Ser Leu Asn Asn Met Lys Tyr Val Thr Arg
165 170 175

Lys Arg Glu Thr Ile Phe Ser Glu Phe Ile Phe Glu Asn His Pro Asp
180 185 190

Tyr Lys Thr Thr Pro His Trp Phe Asp Arg Leu Asp Lys Gly Asn Ile
195 200 205

Glu Gly Gly Asp Val Phe Ile Tyr Asn Arg Thr Thr Leu Val Ile Gly
210 215 220

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Ile Ser Glu Arg Thr Asn Lys Asp Ala Leu Leu Thr Ile Ala Asn Asn
 225 230 235 240

Ile Lys Ser Asn Lys Glu Ser Lys Phe Glu Arg Ile Val Ala Val Asn
 245 250 255

Val Pro Pro Met Pro Asn Leu Met His Leu Asp Thr Trp Leu Thr Met
 260 265 270

Val Asp His Asp Lys Phe Leu Tyr Ser Pro Asn Met Met Lys Thr Leu
 275 280 285

Lys Phe Trp Thr Ile Asp Leu Thr Lys Pro Ile Lys Met Val Glu Leu
 290 295 300

Glu Glu Ser Leu Ser Asp Met Ile Glu Thr Ile Ile Gly Lys Lys Pro
 305 310 315 320

Val Leu Ile Pro Ile Ala Gly His Asp Ala Ser Pro Leu Asp Val Asp
 325 330 335

Ile Glu Thr His Phe Asp Gly Thr Asn Tyr Leu Thr Ile Ala Pro Gly
 340 345 350

Val Val Val Gly Tyr Ser Arg Asn Lys Leu Thr Glu Lys Ala Leu Thr
 355 360 365

Lys Ala Gly Val Lys Val Leu Ser Phe Glu Gly Asn Gln Leu Ser Leu
 370 375 380

Gly Met Gly Ser Ala Arg Cys Met Ser Met Pro Leu Val Arg Glu Asp
 385 390 395 400

Ile Lys

<210> 11

<211> 430

<212> PRT

<213> Mycoplasma fermentans

<400> 11

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

Met Lys Ile Tyr Phe Ile Gly Arg Leu Ile Met Lys Lys Ile Asn Val
 20 25 30

Tyr Ser Glu Tyr Gly Lys Leu Lys Glu Val Leu Val His Thr Pro Gly
 35 40 45

Asp Glu Ile Arg Arg Ile Ala Pro Ser Arg Leu Asp Glu Leu Leu Phe

50

55

60

Ser 65 Ala Ile Leu Glu Pro 70 Asp Ser Ala Ile Ala 75 Glu His Lys Arg Phe 80

Val Gln Leu Leu 85 Lys Asp Asn Gly Ile 90 Lys Val Ile Gln Leu 95 Asp Glu

Leu Phe Ala 100 Lys Thr Phe Asp Leu 105 Val Ser Glu Ser Val 110 Lys Gln Ser

Leu Ile Glu 115 Arg Trp Leu Asp Glu 120 Cys Glu Pro Lys Leu 125 Asp Ala Thr

Leu Arg Ala 130 Lys Val Lys Glu 135 Tyr Ile Leu Glu Leu 140 Lys Ala Lys Ser

Ser 145 Lys Lys Met Val 150 Arg Val Met Met Ala 155 Gly Ile Asp Lys Lys Glu 160

Leu Gly Ile Glu 165 Leu Asp Arg Asp Leu 170 Val Val Asp Pro Met Pro 175 Asn

Leu Tyr Phe 180 Thr Arg Asp Pro Phe 185 Ala Ser Val Gly Asn Gly 190 Ile Ser

Leu His 195 His Met Lys Tyr Val 200 Thr Arg Gln Arg Glu 205 Thr Ile Phe Ser

Glu Phe 210 Ile Phe Asp Asn 215 Asn Leu Asp Tyr Asn Thr 220 Val Pro Arg Trp

Phe 225 Asp Arg Lys Asp Glu 230 Gly Arg Ile Glu Gly 235 Gly Asp Val Phe Ile 240

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

Glu Ala Ile 260 Asn Val Met Ala Arg Lys 265 Ile Ala Ala Asp Lys 270 Glu Val

Lys Phe 275 Lys Arg Ile Tyr Ala 280 Ile Asn Val Pro Pro 285 Met Pro Asn Leu

Met 290 His Leu Asp Thr Trp 295 Leu Thr Met Leu Asp Lys 300 Asn Lys Phe Leu

Tyr 305 Ser Pro Asn Met 310 Leu Ser Val Leu Lys Val 315 Trp Arg Ile Asp Leu 320

Asn Asp Pro Asp Phe Val Trp His Glu Ile Glu Gly Ser Leu Glu Glu

Ile Leu Glu Gln Ile Ile Gly Met Lys Pro Ile Leu Ile Pro Ile Ala
340 345 350

Gly Lys Gly Ala Ser Gln Leu Asp Ile Asp Ile Glu Thr His Phe Asp
355 360 365

Gly Thr Asn Tyr Leu Thr Ile Ala Pro Ser Val Val Val Gly Tyr Ser
370 375 380

Arg Asn Glu Lys Thr Glu Lys Ala Leu Lys Ala Ala Lys Val Lys Val
385 390 395 400

Leu Ser Phe Glu Gly Asn Gln Leu Ser Leu Gly Met Gly Ser Ala Arg
405 410 415

Cys Met Ser Met Pro Leu Ile Arg Glu Asp Ile Lys Lys Lys
420 425 430

<210> 12
<211> 452
<212> PRT
<213> Mycoplasma penetrans
<400> 12

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

Pro Gln Asn Arg Ser Ile Leu Lys Leu Tyr Arg Leu Pro Ser Leu Cys
20 25 30

Thr Gln Ile Ser Ile Phe Ile Gly Gly Lys Met Ser Ser Ile Asp Lys
35 40 45

Asn Ser Leu Gly Asn Gly Ile Asn Val Tyr Ser Glu Ile Gly Glu Leu
50 55 60

Lys Glu Val Leu Val His Thr Pro Gly Asp Glu Ile Arg Tyr Thr Ala
65 70 75 80

Pro Ser Arg Leu Glu Glu Leu Leu Phe Ser Ala Val Leu Lys Ala Asp
85 90 95

Thr Ala Ile Glu Glu His Lys Gly Phe Val Lys Ile Leu Gln Asn Asn
100 105 110

Gly Ile Lys Val Ile Gln Leu Cys Asp Leu Val Ala Glu Thr Tyr Glu
115 120 125

Leu Cys Ser Lys Glu Val Arg Asn Ser Phe Ile Glu Gln Tyr Leu Asp
130 135 140

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Glu Ala Leu Pro Val Leu Lys Lys Glu Ile Arg Pro Val Val Lys Asp
 145 150 155 160
 Tyr Leu Leu Ser Phe Pro Thr Val Gln Met Val Arg Lys Met Met Ser
 165 170 175
 Gly Ile Leu Ala Asn Glu Leu Asn Ile Lys Gln Asp Asn Pro Leu Ile
 180 185 190
 Ile Asp Gly Met Pro Asn Leu Tyr Phe Thr Arg Asp Pro Phe Ala Ser
 195 200 205
 Met Gly Asn Gly Val Ser Ile Asn Cys Met Lys Tyr Pro Thr Arg Lys
 210 215 220
 Arg Glu Val Ile Phe Ser Arg Phe Val Phe Thr Asn Asn Pro Lys Tyr
 225 230 235 240
 Lys Asn Thr Pro Arg Tyr Phe Asp Ile Val Gly Asn Asn Gly Thr Ile
 245 250 255
 Glu Gly Gly Asp Ile Phe Ile Tyr Asn Ser Lys Thr Leu Val Ile Gly
 260 265 270
 Asn Ser Glu Arg Thr Asn Phe Ala Ala Ile Glu Ser Val Ala Lys Asn
 275 280 285
 Ile Gln Ala Asn Lys Asp Cys Thr Phe Glu Arg Ile Val Val Ile Asn
 290 295 300
 Val Pro Pro Met Pro Asn Leu Met His Leu Asp Thr Trp Leu Thr Met
 305 310 315 320
 Leu Asp Tyr Asp Lys Phe Leu Tyr Ser Pro Asn Met Met Asn Val Leu
 325 330 335
 Lys Ile Trp Glu Ile Asp Leu Asn Val Lys Pro Val Lys Phe Val Glu
 340 345 350
 Lys Lys Gly Thr Leu Glu Glu Val Leu Tyr Ser Ile Ile Asp Lys Lys
 355 360 365
 Pro Ile Leu Ile Pro Ile Ala Gly Lys Gly Ala Asn Gln Leu Asp Ile
 370 375 380
 Asp Ile Glu Thr His Phe Asp Gly Thr Asn Tyr Leu Thr Ile Ala Pro
 385 390 395 400
 Gly Val Val Val Gly Tyr Glu Arg Asn Glu Lys Thr Gln Lys Ala Leu
 405 410 415

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Val Glu Ala Gly Ile Lys Val Leu Ser Phe Asn Gly Ser Gln Leu Ser
 420 425 430

Leu Gly Met Gly Ser Ala Arg Cys Met Ser Met Pro Leu Ile Arg Glu
 435 440 445

Asn Leu Lys Lys
 450

<210> 13
 <211> 408
 <212> PRT
 <213> Mycoplasma gallisepticum

<400> 13

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

Gly Lys Leu Arg Lys Val Leu Val His Thr Pro Gly Lys Glu Leu Asp
 20 25 30

Tyr Val Thr Pro Gln Arg Leu Asp Glu Leu Leu Phe Ser Ser Leu Leu
 35 40 45

Asn Pro Ile Lys Ala Arg Gln Glu His Glu Thr Phe Ile Lys Leu Leu
 50 55 60

Glu Asp His Asp Val Glu Cys Val Gln Leu Ser Thr Leu Thr Ala Gln
 65 70 75 80

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

Trp Leu Asp Glu Cys Leu Pro Val Leu Ser Glu Ile Asn Arg Leu Lys
 100 105 110

Val Tyr Asp Tyr Leu Lys Ser Leu Ala Thr Asn Pro Gln Val Met Ile
 115 120 125

Arg Lys Met Met Ser Gly Ile Leu Ala Lys Glu Val Gly Ile Gln Ser
 130 135 140

Glu Val Glu Leu Val Ala Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg
 145 150 155 160

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

His Pro Thr Arg Lys Arg Glu Thr Ile Phe Ala Asp Phe Ile Phe Ser
 180 185 190

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His His Pro Glu Tyr Lys Asn Ala Pro Lys Tyr Tyr Ser Arg Glu Asp
195 200 205

Lys Tyr Ser Ile Glu Gly Gly Asp Leu Phe Val Tyr Asp Asp Lys Thr
210 215 220

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

Leu Ala Glu Lys Leu Arg Gln Asn Asp Glu Thr Ser Phe Glu Lys Ile
245 250 255

Tyr Ala Ile Asn Val Pro Lys Met Ser Asn Leu Met His Leu Asp Thr
260 265 270

Trp Leu Thr Met Leu Asp Tyr Asp Lys Phe Leu Tyr Ser Pro Asn Met
275 280 285

Met Gly Val Leu Lys Ile Trp Glu Ile Asp Leu Ile His Pro Thr Leu
290 295 300

Ile Trp Arg Glu Leu Asn Glu Ser Leu Glu Gly Phe Leu Ser Met Val
305 310 315 320

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

Gln Ile Glu Ile Asp Val Glu Thr Asn Phe Asp Ala Thr Asn Phe Leu
340 345 350

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

Asn Gln Ala Leu Arg Asp Ala Gly Val Lys Val Ile Ser Trp Asn Gly
370 375 380

Asp Gln Leu Ser Leu Gly Met Gly Ser Ala Arg Cys Met Ser Met Pro
385 390 395 400

Leu Tyr Arg Asp Pro Ile Lys Lys
405

<210> 14
<211> 402
<212> PRT
<213> Mycoplasma alligatoris

<400> 14

Met Ser Lys Ile Asn Val Tyr Ser Glu Val Gly Arg Leu Lys Glu Val
1 5 10 15

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Leu Val His Thr Pro Gly Asp Glu Ile Arg Arg Ile Ser Pro Thr Arg
 20 25 30
 Leu Glu Glu Leu Leu Phe Ser Ala Ile Leu Glu Pro Asp Thr Ala Ile
 35 40 45
 Glu Glu His Lys Arg Phe Leu Asn Val Leu Glu Lys Asn Gly Ile Lys
 50 55 60
 Ala Ile Gln Leu Asp Glu Leu Val Ala Gln Thr Tyr Asp Gln Val Asp
 65 70 75 80
 Gln Lys Ile Lys Asp Glu Phe Ile Asp Gln Trp Leu Gln Glu Ala Lys
 85 90 95
 Pro Val Leu Asn Asp Gln Leu Lys Lys Leu Val Lys Asn Tyr Leu Leu
 100 105 110
 Lys Ser Gln Lys Glu Phe Ser Thr Lys Lys Met Val Arg Ile Met Met
 115 120 125
 Ala Gly Ile Asp Lys Lys Glu Ile Asn Ile Asp Leu Asp Arg Asp Leu
 130 135 140
 Val Val Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg Asp Pro Phe Ala
 145 150 155 160
 Ser Val Gly Asn Gly Ile Ser Leu His Asn Met Lys Tyr Gln Thr Arg
 165 170 175
 Lys Arg Glu Thr Ile Phe Ala Gln Phe Ile Phe Lys Tyr Asn Lys Asp
 180 185 190
 Tyr Lys Thr Thr Pro His Trp Phe Asp Arg Phe Asp His Gly Ser Ile
 195 200 205
 Glu Gly Gly Asp Val Phe Val Tyr Thr Lys Asp Thr Leu Val Ile Gly
 210 215 220
 Ile Ser Glu Arg Thr Thr Lys Glu Ala Val Leu Asn Ile Ala Lys Lys
 225 230 235 240
 Ile Lys Ala Asn Thr Asp Ser Lys Phe Lys Lys Ile Val Ala Ile Asn
 245 250 255
 Val Pro Pro Met Pro Asn Leu Met His Leu Asp Thr Trp Ile Thr Met
 260 265 270
 Val Asp His Asp Lys Phe Leu Tyr Ser Pro Asn Met Met Lys Ser Leu
 275 280 285

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Lys Phe Trp Leu Ile Asp Leu Ser Lys Glu Ile Lys Met Val Glu Leu
 290 295 300

Glu Glu Ser Leu Ser Asn Met Leu Glu Ala Ile Ile Gly Lys Lys Pro
 305 310 315 320

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

Ile Glu Thr His Phe Asp Gly Thr Asn Tyr Leu Thr Ile Ala Pro Gly
 340 345 350

Val Val Val Gly Tyr Ser Arg Asn Lys Leu Thr Gln Lys Ala Leu Glu
 355 360 365

Asp Ala Gly Val Lys Val Leu Ser Phe Asp Gly Asn Gln Leu Ser Leu
 370 375 380

Gly Met Gly Ser Ala Arg Cys Met Ser Met Pro Leu Val Arg Glu Asp
 385 390 395 400

Ile Lys

<210> 15

<211> 438

<212> PRT

<213> Mycoplasma pneumoniae

<400> 15

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

Gln Pro Asn Thr Lys Ala Leu Gln Leu Lys Lys Lys Gln Phe Asn Ser
 20 25 30

Gly Val Arg Val Thr Ser Glu Ile Ser Phe Leu Arg Glu Val Ile Ala
 35 40 45

His His Pro Gly Ile Glu Thr Glu Arg Val Ile Asp Asn Gln Thr Phe
 50 55 60

Gly Ser Ala Met Tyr Leu Glu Arg Ala Gln Lys Glu His Gln Leu Phe
 65 70 75 80

Ile Lys Ile Leu Arg Gln His Gly Thr Lys Val His Tyr Leu Gln Asp
 85 90 95

Leu Leu Leu Glu Ala Leu Ser Ala Ala Asp Pro Asn Val Arg Gln Asp
 100 105 110

Phe Ile Lys Asn Phe Leu Leu Glu Ser Gly Ile Lys Ser Val Ser Thr

115 120 125
 Phe Glu Ala Cys Leu Asn Phe Phe Arg Ser Leu Asp Ser Leu Val Asp
 130 135 140
 Val Ile Lys Val Met Phe Gly Gly Ile Lys Val Ser Asp Val Pro Pro
 145 150 155 160
 Ile Thr Pro Gln Arg Phe Ala Asp Ile His Val Ser Asn Ser Pro Phe
 165 170 175
 Leu Ile Lys Pro Leu Ser Phe Ser Leu Tyr Pro His Lys Phe Phe Asn
 180 185 190
 Thr Leu Gly Thr Gly Val Ala Leu Phe Val Thr Asn Asp Ser Glu Leu
 195 200 205
 Lys Arg His Ser Leu Val Tyr Glu Tyr Ile Met Arg Phe His Pro Arg
 210 215 220
 Phe Asp Gly Val Lys Leu Tyr Thr Asn Arg Asp Phe Lys Asn Cys Leu
 225 230 235 240
 Ile Asn Ser Ser Asp Ile Ile Gln Ile Ser Asn Glu Ile Leu Leu Ile
 245 250 255
 Gly Ile Ser His Asp Thr Asp Val Leu Gly Ile Glu Ser Leu Ala Arg
 260 265 270
 Asn Leu Leu Ser Asp His Thr Asn Pro Ile Lys Gln Ile Ile Ala Ile
 275 280 285
 Asn Ile His Lys Phe Gly Ala Lys Thr Asn Leu Asn Lys Leu Ile Ala
 290 295 300
 Met Val Asp Val Asp Lys Phe Ile Ile Ala Arg Lys Val Leu Gln Ala
 305 310 315 320
 Thr Glu Ile Phe Glu Leu Thr Ala Thr Ala Gln Arg Asp Val Asp Gly
 325 330 335
 Leu Ala Gln Ile Lys Phe Lys Pro Leu Lys Phe Asn Phe Gly Glu Ile
 340 345 350
 Ile Glu Ala Ile Ile Asp Lys Gln Pro Arg Phe Val Ile Ile Gly Gly
 355 360 365
 Gly Asp Glu Val Ala Glu Arg Lys Glu Leu Leu Asp Cys Gly Met Gly
 370 375 380
 Val Leu Asn Leu Ser Pro Gly Glu Ile Val Val Phe Asp Arg Asn His

385 390 395 400

Tyr Thr Asn Asn Leu Leu Asn Glu Leu Gly Leu Ile Ile His Lys Ile
405 410 415

Pro Ala Ser Glu Leu Ser Arg Gly Pro Ser Gly Pro Leu Glu Met Val
420 425 430

Cys Ser Leu Trp Arg Glu
435

<210>	16
<211>	409
<212>	PRT
<213>	Mycoplasma mobile

<400> 16

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

Leu Lys Lys Val Leu Ile His Thr Pro Gly Asn Glu Leu Lys Tyr Val
20 25 30

Ser Pro Tyr Arg Leu Asp Glu Leu Leu Phe Ser Asn Val Leu Glu Trp
35 40 45

Arg Glu Ala Lys Lys Glu His Asn Glu Phe Ile Gln Lys Leu Lys Ser
50 55 60

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

Glu Glu Ser Ser Ile Lys Val Lys Asn Asp Phe Ile Arg Gln Tyr Leu
85 90 95

Asp Glu Ala Thr Pro Ile Leu Asp Gly Leu Thr Lys Gln Lys Leu Leu
100 105 110

Pro Phe Phe Leu Asp Ile Lys His Ser Thr Arg Lys Thr Ile Glu Leu
115 120 125

Met Met Ser Gly Ile Thr Gln Lys Asp Ile Ser Ile Ser His Ile Glu
130 135 140

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

Asn Phe Ile Ser Ile Gly Asn Ser Val Ile Ile Ser Asn Met Lys Tyr
165 170 175

Lys Thr Arg Lys Arg Glu Thr Ile Phe Thr Asp Phe Ile Phe Lys Asn
180 185 190

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His Pro Leu Tyr Lys Lys Val Asn Met Ala Phe Glu Arg Lys Asp Leu
 195 200 205

Asn Asn Gln Ile Ser Ile Ile Glu Gly Gly Asp Val Leu Val Tyr Ser
 210 215 220

Lys Glu Ile Leu Ile Ile Gly Ile Ser Glu Arg Thr Thr Met Ser Ala
 225 230 235 240

Ile Leu Glu Leu Ala Glu Asn Phe Lys Lys Thr Lys Arg Ser Phe Lys
 245 250 255

Lys Ile Tyr Gly Val Glu Val Pro Lys Met Lys Asn Leu Met His Leu
 260 265 270

Asp Thr Trp Leu Thr Met Ile Asp Tyr Asp Lys Phe Ile Tyr Ser Pro
 275 280 285

Asn Val Leu Thr Asp Leu Lys Phe Trp Glu Ile Asn Leu Asp Tyr Glu
 290 295 300

Lys Ile Ser Ser Lys Glu Leu His Ala Ser Leu Ser Glu Phe Leu Lys
 305 310 315 320

Leu Ile Ile Gly Lys Asp Pro Ile Leu Ile Pro Ile Gly Gly Lys Gly
 325 330 335

Ala Ser Gln Ile Thr Ile Asp Ile Glu Thr Asn Phe Val Ala Ala Asn
 340 345 350

Tyr Leu Val Ile Arg Pro Gly Val Val Ile Gly Tyr Ser Arg Asn Tyr
 355 360 365

Glu Thr Gln Lys Ala Leu Glu Gly His Gly Val Lys Val Ile Ala Phe
 370 375 380

Glu Gly Asn Gln Leu Ser Leu Gly Met Gly Ser Ser Arg Cys Met Ser
 385 390 395 400

Met Pro Leu Ile Arg Ser Asn Leu Lys
 405

<210> 17
 <211> 411
 <212> PRT
 <213> Streptococcus pyogenes

<400> 17

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

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Lys Lys Val Leu Leu His Arg Pro Gly Lys Glu Ile Glu Asn Leu Met
 20 25 30
 Pro Asp Tyr Leu Glu Arg Leu Leu Phe Asp Asp Ile Pro Phe Leu Glu
 35 40 45
 Asp Ala Gln Lys Glu His Asp Ala Phe Ala Gln Ala Leu Arg Asp Glu
 50 55 60
 Gly Ile Glu Val Leu Tyr Leu Glu Thr Leu Ala Ala Glu Ser Leu Val
 65 70 75 80
 Thr Pro Glu Ile Arg Glu Ala Phe Ile Asp Glu Tyr Leu Ser Glu Ala
 85 90 95
 Asn Ile Arg Gly Arg Ala Thr Lys Lys Ala Ile Arg Glu Leu Leu Met
 100 105 110
 Ala Ile Glu Asp Asn Gln Glu Leu Ile Glu Lys Thr Met Ala Gly Val
 115 120 125
 Gln Lys Ser Glu Leu Pro Glu Ile Pro Ala Ser Glu Lys Gly Leu Thr
 130 135 140
 Asp Leu Val Glu Ser Asn Tyr Pro Phe Ala Ile Asp Pro Met Pro Asn
 145 150 155 160
 Leu Tyr Phe Thr Arg Asp Pro Phe Ala Thr Ile Gly Thr Gly Val Ser
 165 170 175
 Leu Asn His Met Phe Ser Glu Thr Arg Asn Arg Glu Thr Leu Tyr Gly
 180 185 190
 Lys Tyr Ile Phe Thr His His Pro Ile Tyr Gly Gly Gly Lys Val Pro
 195 200 205
 Met Val Tyr Asp Arg Asn Glu Thr Thr Arg Ile Glu Gly Gly Asp Glu
 210 215 220
 Leu Val Leu Ser Lys Asp Val Leu Ala Val Gly Ile Ser Gln Arg Thr
 225 230 235 240
 Asp Ala Ala Ser Ile Glu Lys Leu Leu Val Asn Ile Phe Lys Gln Asn
 245 250 255
 Leu Gly Phe Lys Lys Val Leu Ala Phe Glu Phe Ala Asn Asn Arg Lys
 260 265 270
 Phe Met His Leu Asp Thr Val Phe Thr Met Val Asp Tyr Asp Lys Phe
 275 280 285

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Thr Ile His Pro Glu Ile Glu Gly Asp Leu Arg Val Tyr Ser Val Thr
 290 295 300

Tyr Asp Asn Glu Glu Leu His Ile Val Glu Glu Lys Gly Asp Leu Ala
 305 310 315 320

Glu Leu Leu Ala Ala Asn Leu Gly Val Glu Lys Val Asp Leu Ile Arg
 325 330 335

Cys Gly Gly Asp Asn Leu Val Ala Ala Gly Arg Glu Gln Trp Asn Asp
 340 345 350

Gly Ser Asn Thr Leu Thr Ile Ala Pro Gly Val Val Val Tyr Asn
 355 360 365

Arg Asn Thr Ile Thr Asn Ala Ile Leu Glu Ser Lys Gly Leu Lys Leu
 370 375 380

Ile Lys Ile His Gly Ser Glu Leu Val Arg Gly Arg Gly Gly Pro Arg
 385 390 395 400

Cys Met Ser Met Pro Phe Glu Arg Glu Asp Ile
 405 410

<210> 18
 <211> 408
 <212> PRT
 <213> Enterococcus faecalis
 <400> 18

Met Ser His Pro Ile Asn Val Phe Ser Glu Ile Gly Lys Leu Lys Thr
 1 5 10 15

Val Met Leu His Arg Pro Gly Lys Glu Leu Glu Asn Leu Met Pro Asp
 20 25 30

Tyr Leu Glu Arg Leu Leu Phe Asp Asp Ile Pro Phe Leu Glu Lys Ala
 35 40 45

Gln Ala Glu His Asp Ala Phe Ala Glu Leu Leu Arg Ser Lys Asp Ile
 50 55 60

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

Glu Val Arg Arg Gln Phe Ile Asp Gln Phe Leu Glu Glu Ala Asn Ile
 85 90 95

Arg Ser Glu Ser Ala Lys Glu Lys Val Arg Glu Leu Met Leu Glu Ile
 100 105 110

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Asp Asp Asn Glu Glu Leu Ile Gln Lys Ala Ile Ala Gly Ile Gln Lys
 115 120 125
 Gln Glu Leu Pro Lys Tyr Glu Gln Glu Phe Leu Thr Asp Met Val Glu
 130 135 140
 Ala Asp Tyr Pro Phe Ile Ile Asp Pro Met Pro Asn Leu Tyr Phe Thr
 145 150 155 160
 Arg Asp Asn Phe Ala Thr Met Gly His Gly Ile Ser Leu Asn His Met
 165 170 175
 Tyr Ser Val Thr Arg Gln Arg Glu Thr Ile Phe Gly Gln Tyr Ile Phe
 180 185 190
 Asp Tyr His Pro Arg Phe Ala Gly Lys Glu Val Pro Arg Val Tyr Asp
 195 200 205
 Arg Ser Glu Ser Thr Arg Ile Glu Gly Gly Asp Glu Leu Ile Leu Ser
 210 215 220
 Lys Glu Val Val Ala Ile Gly Ile Ser Gln Arg Thr Asp Ala Ala Ser
 225 230 235 240
 Ile Glu Lys Ile Ala Arg Asn Ile Phe Glu Gln Lys Leu Gly Phe Lys
 245 250 255
 Asn Ile Leu Ala Phe Asp Ile Gly Glu His Arg Lys Phe Met His Leu
 260 265 270
 Asp Thr Val Phe Thr Met Ile Asp Tyr Asp Lys Phe Thr Ile His Pro
 275 280 285
 Glu Ile Glu Gly Gly Leu Val Val Tyr Ser Ile Thr Glu Lys Ala Asp
 290 295 300
 Gly Asp Ile Gln Ile Thr Lys Glu Lys Asp Thr Leu Asp Asn Ile Leu
 305 310 315 320
 Cys Lys Tyr Leu His Leu Asp Asn Val Gln Leu Ile Arg Cys Gly Ala
 325 330 335
 Gly Asn Leu Thr Ala Ala Ala Arg Glu Gln Trp Asn Asp Gly Ser Asn
 340 345 350
 Thr Leu Ala Ile Ala Pro Gly Glu Val Val Val Tyr Asp Arg Asn Thr
 355 360 365
 Ile Thr Asn Lys Ala Leu Glu Glu Ala Gly Val Lys Leu Asn Tyr Ile
 370 375 380

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Pro Gly Ser Glu Leu Val Arg Gly Arg Gly Gly Pro Arg Cys Met Ser
385 390 395 400

Met Pro Leu Tyr Arg Glu Asp Leu
405

<210> 19
<211> 403
<212> PRT
<213> Mycoplasma capricolum

<400> 19

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

Val Leu Val His Arg Pro Gly Asp Glu Ile Glu Asn Leu Thr Pro Glu
20 25 30

Leu Leu Glu Arg Leu Leu Phe Asp Asp Val Pro Phe Lys Asp Val Ala
35 40 45

Val Lys Glu His Asp Ala Phe Thr Lys Ile Met Arg Asp Asn Gly Val
50 55 60

Glu Val Leu Tyr Ile Glu Lys Leu Ala Ala Glu Thr Leu Asp Gln His
65 70 75 80

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

Ile Glu Asp Lys Tyr Lys Glu Lys Tyr Arg Asp Phe Ile Ser Ser Leu
100 105 110

Asp Asn Tyr Arg Met Ile Lys Lys Met Ile Ala Gly Thr Lys Lys Leu
115 120 125

Glu Leu Gly Ile Asp Glu Gly Tyr Lys Ala Tyr Pro Phe Ile Ala Asp
130 135 140

Pro Leu Pro Asn Val Leu Phe Gln Arg Asp Pro Phe Ser Ser Val Gly
145 150 155 160

Phe Gly Ile Thr Met Asn Arg Met Trp Ser Val Thr Arg Asn Arg Glu
165 170 175

Thr Ile Phe Pro Asp Leu Val Phe Lys His His Asn Arg Phe Ala Asn
180 185 190

Gln Val Pro Tyr Tyr Tyr Glu Arg Asp Trp Lys Glu Glu Thr Ile Glu
195 200 205

Gly Gly Asp Ile Leu Val Leu Asn Lys Glu Thr Leu Ile Ile Gly Val
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215

220

Thr Gln Arg Thr Thr Leu Lys Ala Ile Glu Lys Phe Ser Glu Arg Leu
 225 230 235 240

Phe Asn Asp Pro Glu Ser Ser Tyr Ser Lys Val Ile Ala Leu Asp Leu
 245 250 255

Pro Lys Ser Arg Ala Phe Met His Leu Asp Thr Val Phe Thr Asn Ile
 260 265 270

Asp Tyr Asp Lys Phe Ile Ala His Pro Leu Ile Phe Asp Cys Ile Asp
 275 280 285

Glu Phe Lys Ile Tyr Glu Val Ser Lys Gln Gly Thr Lys Glu Val Lys
 290 295 300

Lys Thr Leu Ile Glu Leu Leu Ser Asp Ala Ala Gly Arg Glu Val Gln
 305 310 315 320

Ile Ile Arg Cys Gly Gly Asn Asp Val Val Gly Ala Ser Arg Glu Gln
 325 330 335

Trp Asn Asp Gly Thr Asn Val Val Ala Leu Arg Pro Gly Lys Val Ile
 340 345 350

Ala Tyr Glu Arg Asn Trp Ile Thr Ile Asp Leu Leu Arg Lys Ala Gly
 355 360 365

Val Glu Val Leu Thr Ile Ala Ser Ser Glu Leu Ser Arg Gly Arg Gly
 370 375 380

Gly Pro Arg Cys Met Thr Met Pro Leu Trp Arg Glu Asp Leu Gln Glu
 385 390 395 400

Ile Lys Arg

<210> 20

<211> 410

<212> PRT

<213> Halothermothrix orenii

<400> 20

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

Lys Lys Val Leu Leu His Arg Pro Gly His Glu Ile Glu Asn Leu Thr
 20 25 30

Pro Asp Leu Leu Glu Arg Leu Leu Phe Asp Asp Ile Pro Tyr Leu Lys
 35 40 45

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Val Ala Gln Glu Glu His Asp Ala Phe Ala Gln Thr Leu Arg Asp Asn
 50 55 60
 Gly Val Glu Val Leu Tyr Leu His Glu Leu Ala Ala Glu Ala Ile Gln
 65 70 75 80
 Glu Asp Glu Ile Arg Lys Lys Phe Ile Glu Gln Phe Leu Asp Glu Ala
 85 90 95
 Gly Val Ile Gly Lys Gly Ala Arg Gln Val Leu Lys Glu Tyr Phe Ala
 100 105 110
 Asp Met Asp Asn Glu Thr Leu Ile Arg Lys Met Met Ala Gly Val Arg
 115 120 125
 Lys Lys Glu Ile Pro Ala Ile Glu Lys Val Ala Ser Leu Asn Asp Met
 130 135 140
 Val Glu Glu Asp Tyr Pro Phe Val Leu Asp Pro Met Pro Asn Leu Tyr
 145 150 155 160
 Phe Thr Arg Asp Pro Phe Ala Thr Ile Gly Thr Gly Ile Thr Leu Asn
 165 170 175
 His Met Arg Thr Glu Thr Arg Asn Arg Glu Val Ile Phe Ala Glu Tyr
 180 185 190
 Ile Phe Ser Tyr His Pro Asp Phe Lys Asp Thr Glu Ile Pro Phe Trp
 195 200 205
 Phe Asp Arg Asn Glu Thr Thr Ser Ile Glu Gly Gly Asp Glu Leu Ile
 210 215 220
 Leu Ser Asp Lys Val Leu Ala Met Gly Ile Ser Glu Arg Thr Asp Ala
 225 230 235 240
 Ala Ser Ile Glu Lys Val Ala Arg Asn Ile Phe Thr Asp Gly Gln Pro
 245 250 255
 Phe Glu Thr Ile Leu Ala Phe Lys Ile Pro Glu Lys Arg Ala Phe Met
 260 265 270
 His Leu Asp Thr Val Phe Thr Met Val Asp Tyr Asp Lys Phe Thr Ile
 275 280 285
 His Ala Glu Ile Glu Gly Pro Leu Lys Val Tyr Ser Ile Thr Lys Gly
 290 295 300
 Asp Asn Asp Glu Leu Lys Ile Asp Glu Glu Lys Ala Thr Leu Glu Asp
 305 310 315 320

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Thr Leu Lys Lys Tyr Leu Gly Leu Asp Glu Val Thr Leu Ile Arg Cys
 325 330 335

Ala Gly Gly Asp Tyr Ile Asp Ala Gly Arg Glu Gln Trp Asn Asp Gly
 340 345 350

Ser Asn Thr Leu Ala Ile Ala Pro Gly Glu Val Val Val Tyr Asn Arg
 355 360 365

Asn His Thr Thr Asn Arg Leu Leu Glu Glu His Gly Ile Lys Leu His
 370 375 380

Val Ile Pro Ser Ser Glu Leu Ser Arg Gly Arg Gly Gly Pro Arg Cys
 385 390 395 400

Met Ser Met Pro Leu Val Arg Glu Asp Ile
 405 410

<210> 21

<211> 411

<212> PRT

<213> Staphylococcus aureus

<400> 21

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

Thr Val Leu Leu Lys Arg Pro Gly Lys Glu Leu Glu Asn Leu Val Pro
 20 25 30

Asp Tyr Leu Asp Gly Leu Leu Phe Asp Asp Ile Pro Tyr Leu Glu Val
 35 40 45

Ala Gln Lys Glu His Asp His Phe Ala Gln Val Leu Arg Glu Glu Gly
 50 55 60

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

Pro Gln Val Arg Ser Glu Phe Ile Asp Asp Val Leu Ala Glu Ser Lys
 85 90 95

Lys Thr Ile Leu Gly His Glu Glu Glu Ile Lys Ala Leu Phe Ala Thr
 100 105 110

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

Glu Glu Ile Asn Pro Lys Cys Thr His Leu Val Glu Tyr Met Asp Asp
 130 135 140

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Lys Tyr Pro Phe Tyr Leu Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg
 145 150 155 160
 Asp Pro Gln Ala Ser Ile Gly His Gly Ile Thr Ile Asn Arg Met Phe
 165 170 175
 Trp Arg Ala Arg Arg Arg Glu Ser Ile Phe Ile Gln Tyr Ile Val Lys
 180 185 190
 His His Pro Arg Phe Lys Asp Ala Asn Ile Pro Ile Trp Leu Asp Arg
 195 200 205
 Asp Cys Pro Phe Asn Ile Glu Gly Gly Asp Glu Leu Val Leu Ser Lys
 210 215 220
 Asp Val Leu Ala Ile Gly Val Ser Glu Arg Thr Ser Ala Gln Ala Ile
 225 230 235 240
 Glu Lys Leu Ala Arg Arg Ile Phe Glu Asn Pro Gln Ala Thr Phe Lys
 245 250 255
 Lys Val Val Ala Ile Glu Ile Pro Thr Ser Arg Thr Phe Met His Leu
 260 265 270
 Asp Thr Val Phe Thr Met Ile Asp Tyr Asp Lys Phe Thr Met His Ser
 275 280 285
 Ala Ile Leu Lys Ala Glu Gly Asn Met Asn Ile Phe Ile Ile Glu Tyr
 290 295 300
 Asp Asp Val Asn Lys Asp Ile Ala Ile Lys Gln Ser Ser His Leu Lys
 305 310 315 320
 Asp Thr Leu Glu Asp Val Leu Gly Ile Asp Asp Ile Gln Phe Ile Pro
 325 330 335
 Thr Gly Asn Gly Asp Val Ile Asp Gly Ala Arg Glu Gln Trp Asn Asp
 340 345 350
 Gly Ser Asn Thr Leu Cys Ile Arg Pro Gly Val Val Val Thr Tyr Asp
 355 360 365
 Arg Asn Tyr Val Ser Asn Asp Leu Leu Arg Gln Lys Gly Ile Lys Val
 370 375 380
 Ile Glu Ile Ser Gly Ser Glu Leu Val Arg Gly Arg Gly Gly Pro Arg
 385 390 395 400
 Cys Met Ser Gln Pro Leu Phe Arg Glu Asp Ile
 405 410

<210> 22
 <211> 417
 <212> PRT
 <213> *Pseudomonas plecoglossicida*
 <400> 22
 Met Ser Ala Glu Lys Gln Lys Tyr Gly Val His Ser Glu Ala Gly Lys
 1 5 10 15
 Leu Arg Lys Val Met Val Cys Ala Pro Gly Leu Ala His Lys Arg Leu
 20 25 30
 Thr Pro Ser Asn Cys Asp Glu Leu Leu Phe Asp Asp Val Ile Trp Val
 35 40 45
 Asp Gln Ala Lys Arg Asp His Phe Asp Phe Val Thr Lys Met Arg Glu
 50 55 60
 Arg Gly Val Asp Val Leu Glu Met His Asn Leu Leu Thr Asp Ile Val
 65 70 75 80
 Gln Asn Pro Glu Ala Leu Lys Trp Ile Leu Asp Arg Lys Ile Thr Pro
 85 90 95
 Asp Thr Val Gly Val Gly Leu Thr Asn Glu Val Arg Ser Trp Leu Glu
 100 105 110
 Gly Gln Glu Pro Arg His Leu Ala Glu Phe Leu Ile Gly Gly Val Ala
 115 120 125
 Gly Gln Asp Leu Pro Glu Ser Glu Gly Ala Ser Val Val Lys Met Tyr
 130 135 140
 Asn Asp Tyr Leu Gly His Ser Ser Phe Ile Leu Pro Pro Leu Pro Asn
 145 150 155 160
 Thr Gln Phe Thr Arg Asp Thr Thr Cys Trp Ile Tyr Gly Gly Val Thr
 165 170 175
 Leu Asn Pro Met Tyr Trp Pro Ala Arg Arg Gln Glu Thr Leu Leu Thr
 180 185 190
 Thr Ala Ile Tyr Lys Phe His Pro Glu Phe Thr Lys Ala Asp Phe Gln
 195 200 205
 Val Trp Tyr Gly Asp Pro Asp Gln Glu His Gly Gln Ala Thr Leu Glu
 210 215 220
 Gly Gly Asp Val Met Pro Ile Gly Lys Gly Ile Val Leu Ile Gly Met
 225 230 235 240

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

Phe Ala Lys Gly Ala Val Glu Gln Val Ile Val Ala Gly Leu Pro Lys
 260 265 270

Ser Arg Ala Ala Met His Leu Asp Thr Val Phe Ser Phe Cys Asp Arg
 275 280 285

Asp Leu Val Thr Val Phe Pro Glu Val Val Arg Glu Ile Val Pro Phe
 290 295 300

Ile Ile Arg Pro Asp Glu Ser Lys Pro Tyr Gly Met Asp Val Arg Arg
 305 310 315 320

Glu Asn Lys Ser Phe Ile Glu Val Val Gly Glu Gln Leu Gly Val Lys
 325 330 335

Leu Arg Val Val Glu Thr Gly Gly Asn Ser Phe Ala Ala Glu Arg Glu
 340 345 350

Gln Trp Asp Asp Gly Asn Asn Val Val Ala Leu Glu Pro Gly Val Val
 355 360 365

Ile Gly Tyr Asp Arg Asn Thr Tyr Thr Asn Thr Leu Leu Arg Lys Ala
 370 375 380

Gly Ile Glu Val Ile Thr Ile Ser Ala Gly Glu Leu Gly Arg Gly Arg
 385 390 395 400

Gly Gly Gly His Cys Met Thr Cys Pro Ile Val Arg Asp Pro Ile Asn
 405 410 415

Tyr

<210> 23

<211> 417

<212> PRT

<213> Pseudomonas putida

<400> 23

Met Ser Ala Glu Lys Gln Lys Tyr Gly Val His Ser Glu Ala Gly Lys
 1 5 10 15

Leu Arg Lys Val Met Val Cys Ser Pro Gly Leu Ala His Lys Arg Leu
 20 25 30

Thr Pro Ser Asn Cys Asp Glu Leu Leu Phe Asp Asp Val Ile Trp Val
 35 40 45

Asp Gln Ala Lys Arg Asp His Phe Asp Phe Val Thr Lys Met Arg Glu
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50

55

60

Arg Gly Val Asp Val Leu Glu Met His Asn Leu Leu Thr Asp Ile Val
65 70 75 80

Gln Gln Pro Glu Ala Leu Lys Trp Ile Leu Asp Arg Lys Ile Thr Ser
85 90 95

Asp Thr Val Gly Val Gly Leu Thr Asn Glu Val Arg Ser Trp Leu Glu
100 105 110

Gly Leu Glu Pro Arg His Leu Ala Glu Phe Leu Ile Gly Gly Val Ala
115 120 125

Gly Gln Asp Leu Pro Glu Ser Glu Gly Ala Ser Val Val Lys Met Tyr
130 135 140

Asn Asp Tyr Leu Gly His Ser Ser Phe Ile Leu Pro Pro Leu Pro Asn
145 150 155 160

Thr Gln Phe Thr Arg Asp Thr Thr Cys Trp Ile Tyr Gly Gly Val Thr
165 170 175

Leu Asn Pro Met Tyr Trp Pro Ala Arg Arg Gln Glu Thr Leu Leu Thr
180 185 190

Thr Ala Ile Tyr Lys Phe His Lys Glu Phe Thr Gly Ala Asp Phe Gln
195 200 205

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

Gly Gly Asp Val Met Pro Ile Gly Lys Gly Ile Val Leu Ile Gly Met
225 230 235 240

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

Phe Ala Lys Gly Ala Val Glu Lys Val Ile Val Ala Gly Leu Pro Lys
260 265 270

Ser Arg Ala Ala Met His Leu Asp Thr Val Phe Ser Phe Cys Asp Arg
275 280 285

Asp Leu Val Thr Val Phe Pro Glu Val Val Lys Glu Ile Val Pro Phe
290 295 300

Ile Ile Arg Pro Asp Glu Ser Lys Pro Tyr Gly Met Asp Val Arg Arg
305 310 315 320

Glu Asn Lys Ser Phe Ile Glu Val Val Gly Glu Gln Leu Gly Val Lys

325

330

335

Leu Arg Val Val Glu Thr Gly Gly Asn Ser Phe Ala Ala Glu Arg Glu
 340 345 350

Gln Trp Asp Asp Gly Asn Asn Val Val Ala Met Glu Pro Gly Val Val
 355 360 365

Ile Gly Tyr Asp Arg Asn Thr Tyr Thr Asn Thr Leu Leu Arg Lys Ala
 370 375 380

Gly Ile Glu Val Ile Thr Ile Ser Ala Gly Glu Leu Gly Arg Gly Arg
 385 390 395 400

Gly Gly Gly His Cys Met Thr Cys Pro Ile Val Arg Asp Pro Ile Asp
 405 410 415

Tyr

<210> 24

<211> 418

<212> PRT

<213> Pseudomonas aeruginosa

<400> 24

Met Ser Thr Glu Lys Thr Lys Leu Gly Val His Ser Glu Ala Gly Lys
 1 5 10 15

Leu Arg Lys Val Met Val Cys Ser Pro Gly Leu Ala His Gln Arg Leu
 20 25 30

Thr Pro Ser Asn Cys Asp Glu Leu Leu Phe Asp Asp Val Ile Trp Val
 35 40 45

Asn Gln Ala Lys Arg Asp His Phe Asp Phe Val Thr Lys Met Arg Glu
 50 55 60

Arg Gly Ile Asp Val Leu Glu Met His Asn Leu Leu Thr Glu Thr Ile
 65 70 75 80

Gln Asn Pro Glu Ala Leu Lys Trp Ile Leu Asp Arg Lys Ile Thr Ala
 85 90 95

Asp Ser Val Gly Leu Gly Leu Thr Ser Glu Leu Arg Ser Trp Leu Glu
 100 105 110

Ser Leu Glu Pro Arg Lys Leu Ala Glu Tyr Leu Ile Gly Gly Val Ala
 115 120 125

Ala Asp Asp Leu Pro Ala Ser Glu Gly Ala Asn Ile Leu Lys Met Tyr
 130 135 140

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Arg Glu Tyr Leu Gly His Ser Ser Phe Leu Leu Pro Pro Leu Pro Asn
 145 150 155 160
 Thr Gln Phe Thr Arg Asp Thr Thr Cys Trp Ile Tyr Gly Gly Val Thr
 165 170 175
 Leu Asn Pro Met Tyr Trp Pro Ala Arg Arg Gln Glu Thr Leu Leu Thr
 180 185 190
 Thr Ala Ile Tyr Lys Phe His Pro Glu Phe Ala Asn Ala Glu Phe Glu
 195 200 205
 Ile Trp Tyr Gly Asp Pro Asp Lys Asp His Gly Ser Ser Thr Leu Glu
 210 215 220
 Gly Gly Asp Val Met Pro Ile Gly Asn Gly Val Val Leu Ile Gly Met
 225 230 235 240
 Gly Glu Arg Ser Ser Arg Gln Ala Ile Gly Gln Val Ala Gln Ser Leu
 245 250 255
 Phe Ala Lys Gly Ala Ala Glu Arg Val Ile Val Ala Gly Leu Pro Lys
 260 265 270
 Ser Arg Ala Ala Met His Leu Asp Thr Val Phe Ser Phe Cys Asp Arg
 275 280 285
 Asp Leu Val Thr Val Phe Pro Glu Val Val Lys Glu Ile Val Pro Phe
 290 295 300
 Ser Leu Arg Pro Asp Ala Ser Ser Pro Tyr Gly Met Ser Ile Arg Arg
 305 310 315 320
 Glu Glu Lys Thr Phe Leu Glu Val Val Ala Glu Ser Leu Gly Leu Lys
 325 330 335
 Lys Leu Arg Val Val Glu Thr Gly Gly Asn Ser Phe Ala Ala Glu Arg
 340 345 350
 Glu Gln Trp Asp Asp Gly Asn Asn Val Val Cys Leu Glu Pro Gly Val
 355 360 365
 Val Val Gly Tyr Asp Arg Asn Thr Tyr Thr Asn Thr Leu Leu Arg Lys
 370 375 380
 Ala Gly Val Glu Val Ile Thr Ile Ser Ala Ser Glu Leu Gly Arg Gly
 385 390 395 400
 Arg Gly Gly Gly His Cys Met Thr Cys Pro Ile Ile Arg Asp Pro Ile
 405 410 415

Asp Tyr

<210> 25
 <211> 402
 <212> PRT
 <213> Mycobacterium bovis

<400> 25

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

Val Ile Leu His Arg Pro Gly Ala Glu Leu Arg Arg Leu Thr Pro Arg
 20 25 30

Asn Thr Asp Gln Leu Leu Phe Asp Gly Leu Pro Trp Val Ser Arg Ala
 35 40 45

Gln Asp Glu His Asp Glu Phe Ala Glu Leu Leu Ala Ser Arg Gly Ala
 50 55 60

Glu Val Leu Leu Leu Ser Asp Leu Leu Thr Glu Ala Leu His His Ser
 65 70 75 80

Gly Ala Ala Arg Met Gln Gly Ile Ala Ala Ala Val Asp Ala Pro Arg
 85 90 95

Leu Gly Leu Pro Leu Ala Gln Glu Leu Ser Ala Tyr Leu Arg Ser Leu
 100 105 110

Asp Pro Gly Arg Leu Ala His Val Leu Thr Ala Gly Met Thr Phe Asn
 115 120 125

Glu Leu Pro Ser Asp Thr Arg Thr Asp Val Ser Leu Val Leu Arg Met
 130 135 140

His His Gly Gly Asp Phe Val Ile Glu Pro Leu Pro Asn Leu Val Phe
 145 150 155 160

Thr Arg Asp Ser Ser Ile Trp Ile Gly Pro Arg Val Val Ile Pro Ser
 165 170 175

Leu Ala Leu Arg Ala Arg Val Arg Glu Ala Ser Leu Thr Asp Leu Ile
 180 185 190

Tyr Ala His His Pro Arg Phe Thr Gly Val Arg Arg Ala Tyr Glu Ser
 195 200 205

Arg Thr Ala Pro Val Glu Gly Gly Asp Val Leu Leu Leu Ala Pro Gly
 210 215 220

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Val Val Ala Val Gly Val Gly Glu Arg Thr Thr Pro Ala Gly Ala Glu
225 230 235 240

Ala Leu Ala Arg Ser Leu Phe Asp Asp Asp Leu Ala His Thr Val Leu
245 250 255

Ala Val Pro Ile Ala Gln Gln Arg Ala Gln Met His Leu Asp Thr Val
260 265 270

Cys Thr Met Val Asp Thr Asp Thr Met Val Met Tyr Ala Asn Val Val
275 280 285

Asp Thr Leu Glu Ala Phe Thr Ile Gln Arg Thr Pro Asp Gly Val Thr
290 295 300

Ile Gly Asp Ala Ala Pro Phe Ala Glu Ala Ala Ala Lys Ala Met Gly
305 310 315 320

Ile Asp Lys Leu Arg Val Ile His Thr Gly Met Asp Pro Val Val Ala
325 330 335

Glu Arg Glu Gln Trp Asp Asp Gly Asn Asn Thr Leu Ala Leu Ala Pro
340 345 350

Gly Val Val Val Ala Tyr Glu Arg Asn Val Gln Thr Asn Ala Arg Leu
355 360 365

Gln Asp Ala Gly Ile Glu Val Leu Thr Ile Ala Gly Ser Glu Leu Gly
370 375 380

Thr Gly Arg Gly Gly Pro Arg Cys Met Ser Cys Pro Ala Ala Arg Asp
385 390 395 400

Pro Leu

<210> 26

<211> 410

<212> PRT

<213> Artificial Sequence

<220>

<223> Mycoplasma arginini arginine deiminase with flanking synthesized residues added

<400> 26

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

Ile Gly Glu Leu Glu Ser Val Leu Val His Glu Pro Gly Arg Glu Ile
20 25 30

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Asp Tyr Ile Thr Pro Ala Arg Leu Asp Glu Leu Leu Phe Ser Ala Ile
 35 40 45
 Leu Glu Ser His Asp Ala Arg Lys Glu His Lys Gln Phe Val Ala Glu
 50 55 60
 Leu Lys Ala Asn Asp Ile Asn Val Val Glu Leu Ile Asp Leu Val Ala
 65 70 75 80
 Glu Thr Tyr Asp Leu Ala Ser Gln Glu Ala Lys Asp Lys Leu Ile Glu
 85 90 95
 Glu Phe Leu Glu Asp Ser Glu Pro Val Leu Ser Glu Glu His Lys Val
 100 105 110
 Val Val Arg Asn Phe Leu Lys Ala Lys Lys Thr Ser Arg Glu Leu Val
 115 120 125
 Glu Ile Met Met Ala Gly Ile Thr Lys Tyr Asp Leu Gly Ile Glu Ala
 130 135 140
 Asp His Glu Leu Ile Val Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg
 145 150 155 160
 Asp Pro Phe Ala Ser Val Gly Asn Gly Val Thr Ile His Tyr Met Arg
 165 170 175
 Tyr Lys Val Arg Gln Arg Glu Thr Leu Phe Ser Arg Phe Val Phe Ser
 180 185 190
 Asn His Pro Lys Leu Ile Asn Thr Pro Trp Tyr Tyr Asp Pro Ser Leu
 195 200 205
 Lys Leu Ser Ile Glu Gly Gly Asp Val Phe Ile Tyr Asn Asn Asp Thr
 210 215 220
 Leu Val Val Gly Val Ser Glu Arg Thr Asp Leu Gln Thr Val Thr Leu
 225 230 235 240
 Leu Ala Lys Asn Ile Val Ala Asn Lys Glu Ser Glu Phe Lys Arg Ile
 245 250 255
 Val Ala Ile Asn Val Pro Lys Trp Thr Asn Leu Met His Leu Asp Thr
 260 265 270
 Trp Leu Thr Met Leu Asp Lys Asp Lys Phe Leu Tyr Ser Pro Ile Ala
 275 280 285
 Asn Asp Val Phe Lys Phe Trp Asp Tyr Asp Leu Val Asn Gly Gly Ala
 290 295 300

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Glu Pro Gln Pro Val Glu Asn Gly Leu Pro Leu Glu Gly Leu Leu Gln
 305 310 315 320

Ser Ile Ile Asn Lys Lys Pro Val Leu Ile Pro Ile Ala Gly Glu Gly
 325 330 335

Ala Ser Gln Met Glu Ile Glu Arg Glu Thr His Phe Asp Gly Thr Asn
 340 345 350

Tyr Leu Ala Ile Arg Pro Gly Val Val Ile Gly Tyr Ser Arg Asn Glu
 355 360 365

Lys Thr Asn Ala Ala Leu Glu Ala Ala Gly Ile Lys Val Leu Pro Phe
 370 375 380

His Gly Asn Gln Leu Ser Leu Gly Met Gly Asn Ala Arg Cys Met Ser
 385 390 395 400

Met Pro Leu Ser Arg Lys Asp Val Lys Trp
 405 410

<210> 27
 <211> 410
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> mycoplasma arthritidis arginine deiminase with flanking
 synthesized residues added

<400> 27

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

Ile Gly Glu Leu Glu Thr Val Leu Val His Glu Pro Gly Lys Glu Ile
 20 25 30

Asp Tyr Ile Thr Pro Ala Arg Leu Asp Glu Leu Leu Phe Ser Ala Ile
 35 40 45

Leu Glu Ser His Asp Ala Arg Lys Glu His Lys Glu Phe Val Ala Glu
 50 55 60

Leu Lys Lys Arg Gly Ile Asn Val Val Glu Leu Val Asp Leu Ile Val
 65 70 75 80

Glu Thr Tyr Asp Leu Ala Ser Lys Glu Ala Lys Glu Lys Leu Leu Glu
 85 90 95

Glu Phe Leu Asp Asp Ser Val Pro Val Leu Ser Asp Glu His Arg Ala
 100 105 110

Thr Val Lys Lys Phe Leu Gln Ser Gln Lys Ser Thr Arg Ser Leu Val

115

120

125

Glu Tyr Met Ile Ala Gly Ile Thr Lys His Asp Leu Lys Ile Glu Ser
 130 135 140

Asp Leu Glu Leu Ile Val Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg
 145 150 155 160

Asp Pro Phe Ala Ser Val Gly Asn Gly Val Thr Ile His Tyr Met Arg
 165 170 175

Tyr Lys Val Arg Gln Arg Glu Thr Leu Phe Ser Arg Phe Val Phe Ser
 180 185 190

Asn His Pro Lys Leu Val Asn Thr Pro Trp Tyr Tyr Asp Pro Ala Glu
 195 200 205

Gly Leu Thr Ile Glu Gly Gly Asp Val Phe Ile Tyr Asn Asn Asp Thr
 210 215 220

Leu Val Val Gly Val Ser Glu Arg Thr Asp Leu Gln Thr Ile Thr Leu
 225 230 235 240

Leu Ala Lys Asn Ile Lys Ala Asn Lys Glu Ser Glu Phe Lys Arg Ile
 245 250 255

Val Ala Ile Asn Val Pro Lys Trp Thr Asn Leu Met His Leu Asp Thr
 260 265 270

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

Asn Asp Val Phe Lys Phe Trp Asp Tyr Asp Leu Val Asn Gly Gly Asp
 290 295 300

Ala Pro Gln Pro Val Asp Asn Gly Leu Pro Leu Glu Asp Leu Leu Lys
 305 310 315 320

Ser Ile Ile Gly Lys Lys Pro Thr Leu Ile Pro Ile Ala Gly Ala Gly
 325 330 335

Ala Ser Gln Ile Asp Ile Glu Arg Glu Thr His Phe Asp Gly Thr Asn
 340 345 350

Tyr Leu Ala Val Ala Pro Gly Ile Val Ile Gly Tyr Ala Arg Asn Glu
 355 360 365

Lys Thr Asn Ala Ala Leu Glu Ala Ala Gly Ile Thr Val Leu Pro Phe
 370 375 380

Arg Gly Asn Gln Leu Ser Leu Gly Met Gly Asn Ala Arg Cys Met Ser
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385

390

400

Met Pro Leu Ser Arg Lys Asp Val Lys Trp
405 410

<210> 28

<211> 410

<212> PRT

<213> Artificial Sequence

<220>

<223> mycoplasma phocicerebrale arginine deiminase with flanking
synthesized residues added

<400> 28

Met Ser Val Phe Asp Ser Lys Phe Asn Gly Ile His Val Tyr Ser Glu
1 5 10 15

Ile Gly Glu Leu Glu Thr Val Leu Val His Glu Pro Gly Arg Glu Ile
20 25 30

Asp Tyr Ile Thr Pro Ala Arg Leu Asp Glu Leu Leu Phe Ser Ala Ile
35 40 45

Leu Glu Ser His Asp Ala Arg Lys Glu His Gln Ser Phe Val Lys Gln
50 55 60

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

Glu Thr Phe Asp Leu Ala Ser Lys Glu Glu Gln Glu Lys Leu Ile Glu
85 90 95

Glu Phe Leu Glu Asp Ser Glu Pro Val Leu Ser Glu Ala His Lys Thr
100 105 110

Ala Val Arg Lys Phe Leu Thr Ser Arg Lys Ser Thr Arg Glu Met Val
115 120 125

Glu Phe Met Met Ala Gly Ile Thr Lys Tyr Asp Leu Gly Ile Glu Ala
130 135 140

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

Asp Pro Phe Ala Ser Val Gly Asn Gly Val Thr Ile His Tyr Met Arg
165 170 175

Tyr Lys Val Arg Gln Arg Glu Thr Leu Phe Ser Arg Phe Val Phe Ser
180 185 190

Asn His Pro Lys Leu Val Lys Thr Pro Trp Tyr Tyr Asp Pro Ala Met
195 200 205

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Lys Met Ser Ile Glu Gly Gly Asp Val Phe Ile Tyr Asn Asn Asp Thr
210 215 220

Leu Val Val Gly Val Ser Glu Arg Thr Asp Leu Glu Thr Ile Thr Leu
225 230 235 240

Leu Ala Lys Asn Ile Lys Ala Asn Lys Glu Val Glu Phe Lys Arg Ile
245 250 255

Val Ala Ile Asn Val Pro Lys Trp Thr Asn Leu Met His Leu Asp Thr
260 265 270

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

Asn Asp Val Phe Lys Phe Trp Asp Tyr Asp Leu Val Asn Gly Gly Ala
290 295 300

Glu Pro Gln Pro Lys Glu Asn Gly Leu Pro Leu Glu Gly Leu Leu Gln
305 310 315 320

Ser Ile Ile Asn Lys Lys Pro Val Leu Ile Pro Ile Ala Gly Asn Asn
325 330 335

Ala Ser His Ile Asp Ile Glu Arg Glu Thr His Phe Asp Gly Thr Asn
340 345 350

Tyr Leu Ala Ile Lys Pro Gly Val Val Ile Gly Tyr Ala Arg Asn Glu
355 360 365

Lys Thr Asn Ala Ala Leu Ala Ala Ala Gly Ile Lys Val Leu Pro Phe
370 375 380

His Gly Asn Gln Leu Ser Leu Gly Met Gly Asn Ala Arg Cys Met Ser
385 390 395 400

Met Pro Leu Ser Arg Lys Asp Val Lys Trp
405 410

<210> 29

<211> 410

<212> PRT

<213> Artificial Sequence

<220>

<223> mycoplasma gateae arginine deiminase with flanking synthesized residues added

<400> 29

Met Ser Val Phe Asp Ser Lys Phe Asn Gly Ile His Val Tyr Ser Glu
1 5 10 15

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Ile Gly Glu Leu Glu Ser Val Leu Val His Glu Pro Gly Arg Glu Ile
 20 25 30
 Asp Tyr Ile Thr Pro Ala Arg Leu Asp Glu Leu Leu Phe Ser Ala Ile
 35 40 45
 Leu Glu Ser His Asp Ala Arg Lys Glu His Lys Leu Phe Val Ser Glu
 50 55 60
 Leu Lys Ala Asn Asp Ile Asn Val Val Glu Leu Thr Asp Leu Val Thr
 65 70 75 80
 Glu Thr Tyr Asp Leu Ala Ser Gln Glu Ala Lys Asp Asn Leu Ile Glu
 85 90 95
 Glu Phe Leu Glu Asp Ser Glu Pro Val Leu Thr Glu Glu Leu Lys Ser
 100 105 110
 Val Val Arg Thr Tyr Leu Lys Ser Ile Lys Ser Thr Arg Glu Leu Ile
 115 120 125
 Gln Met Met Met Ala Gly Ile Thr Lys Tyr Asp Leu Gly Ile Glu Ala
 130 135 140
 Asp His Glu Leu Ile Val Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg
 145 150 155 160
 Asp Pro Phe Ala Ser Val Gly Asn Gly Val Thr Ile His Tyr Met Arg
 165 170 175
 Tyr Lys Val Arg Gln Arg Glu Thr Leu Phe Ser Arg Phe Val Phe Ser
 180 185 190
 Asn His Pro Lys Leu Val Asn Thr Pro Trp Tyr Tyr Asp Pro Ser Leu
 195 200 205
 Lys Leu Ser Ile Glu Gly Gly Asp Val Phe Ile Tyr Asn Asn Asn Thr
 210 215 220
 Leu Val Val Gly Val Ser Glu Arg Thr Asp Leu Glu Thr Val Thr Leu
 225 230 235 240
 Leu Ala Lys Asn Ile Val Ala Asn Lys Glu Cys Glu Phe Lys Arg Ile
 245 250 255
 Val Ala Ile Asn Val Pro Lys Trp Thr Asn Leu Met His Leu Asp Thr
 260 265 270
 Trp Leu Thr Met Leu Asp Lys Asp Lys Phe Leu Tyr Ser Pro Ile Ala
 275 280 285

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Asn Asp Val Phe Lys Phe Trp Asp Tyr Asp Leu Val Asn Gly Gly Glu
290 295 300

Glu Pro Gln Pro Val Glu Asn Gly Leu Pro Leu Glu Gly Leu Leu Glu
305 310 315 320

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

Ala Ser Gln Ile Asp Ile Glu Arg Glu Thr His Phe Asp Gly Thr Asn
340 345 350

Tyr Leu Ala Ile Arg Pro Gly Val Val Ile Gly Tyr Ser Arg Asn Glu
355 360 365

Lys Thr Asn Ala Ala Leu Glu Ala Ala Gly Ile Lys Val Leu Pro Phe
370 375 380

His Gly Asn Gln Leu Ser Leu Gly Met Gly Asn Ala Arg Cys Met Ser
385 390 395 400

Met Pro Leu Ser Arg Lys Asp Val Lys Trp
405 410

<210> 30

<211> 410

<212> PRT

<213> Artificial Sequence

<220>

<223> mycoplasma phocidae arginine deiminase with flanking synthesized residues added

<400> 30

Met Ser Val Phe Asp Ser Lys Phe Asn Gly Ile His Val Tyr Ser Glu
1 5 10 15

Ile Gly Glu Leu Gln Thr Val Leu Val His Glu Pro Gly Arg Glu Ile
20 25 30

Glu Tyr Ile Thr Pro Ala Arg Leu Asp Glu Leu Leu Phe Ser Ala Ile
35 40 45

Leu Glu Ser His Asp Ala Arg Lys Glu His Gln Glu Phe Val Ala Glu
50 55 60

Leu Lys Lys Asn Asn Ile Asn Val Val Glu Leu Thr Asp Leu Val Ser
65 70 75 80

Glu Thr Tyr Asp Met Val Ser Lys Glu Lys Gln Glu Lys Leu Ile Glu
85 90 95

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Glu Phe Leu Glu Asp Ser Glu Pro Val Leu Ser Glu Glu His Lys Gly
 100 105 110
 Leu Val Arg Lys Phe Leu Lys Ser Leu Lys Ser Ser Lys Glu Leu Ile
 115 120 125
 Gln Tyr Met Met Ala Gly Ile Thr Lys His Asp Leu Asn Ile Glu Ala
 130 135 140
 Asp His Glu Leu Ile Val Asp Pro Met Pro Asn Leu Tyr Phe Thr Arg
 145 150 155 160
 Asp Pro Phe Ala Ser Val Gly Asn Gly Val Thr Ile His Tyr Met Arg
 165 170 175
 Tyr Lys Val Arg Gln Arg Glu Thr Leu Phe Ser Arg Phe Ile Phe Ala
 180 185 190
 Asn His Pro Lys Leu Met Asn Thr Pro Leu Tyr Tyr Asn Pro Asp Met
 195 200 205
 Lys Leu Ser Ile Glu Gly Gly Asp Val Phe Val Tyr Asn Asn Glu Thr
 210 215 220
 Leu Val Val Gly Val Ser Glu Arg Thr Asp Leu Asp Thr Ile Thr Leu
 225 230 235 240
 Leu Ala Lys Asn Ile Lys Ala Asn Lys Glu Arg Glu Phe Lys Arg Ile
 245 250 255
 Val Ala Ile Asn Val Pro Lys Trp Thr Asn Leu Met His Leu Asp Thr
 260 265 270
 Trp Leu Thr Met Leu Asp Lys Asp Lys Phe Leu Tyr Ser Pro Ile Ala
 275 280 285
 Asn Asp Val Phe Lys Phe Trp Asp Tyr Asp Leu Val Asn Gly Gly Asp
 290 295 300
 Glu Pro Gln Pro Lys Val Asn Gly Leu Pro Leu Glu Lys Leu Leu Glu
 305 310 315 320
 Ser Ile Ile Asn Lys Lys Pro Ile Leu Ile Pro Ile Ala Gly Thr Ser
 325 330 335
 Ala Ser Asn Ile Asp Val Glu Arg Glu Thr His Phe Asp Gly Thr Asn
 340 345 350
 Tyr Leu Ala Ile Ala Pro Gly Val Val Ile Gly Tyr Ser Arg Asn Val
 355 360 365

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Lys Thr Asn Glu Ala Leu Glu Ala Ala Gly Ile Lys Val Leu Pro Phe
 370 375 380

Lys Gly Asn Gln Leu Ser Leu Gly Met Gly Asn Ala Arg Cys Met Ser
 385 390 395 400

Met Pro Leu Ser Arg Lys Asp Val Lys Trp
 405 410

<210> 31

<211> 411

<212> PRT

<213> Artificial Sequence

<220>

<223> mycoplasma H.oreinii arginine deiminase with flanking synthesized
 residues added

<400> 31

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

Leu Lys Lys Val Leu Leu His Arg Pro Gly His Glu Ile Glu Asn Leu
 20 25 30

Thr Pro Asp Leu Leu Glu Arg Leu Leu Phe Asp Asp Ile Pro Tyr Leu
 35 40 45

Lys Val Ala Gln Glu Glu His Asp Ala Phe Ala Gln Thr Leu Arg Asp
 50 55 60

Asn Gly Val Glu Val Leu Tyr Leu His Glu Leu Ala Ala Glu Ala Ile
 65 70 75 80

Gln Glu Asp Glu Ile Arg Lys Lys Phe Ile Glu Gln Phe Leu Asp Glu
 85 90 95

Ala Gly Val Ile Gly Lys Gly Ala Arg Gln Val Leu Lys Glu Tyr Phe
 100 105 110

Ala Asp Met Asp Asn Glu Thr Leu Ile Arg Lys Met Met Ala Gly Val
 115 120 125

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

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

Tyr Phe Thr Arg Asp Pro Phe Ala Thr Ile Gly Thr Gly Ile Thr Leu
 165 170 175

Asn His Met Arg Thr Glu Thr Arg Asn Arg Glu Val Ile Phe Ala Glu

180

185

190

Tyr Ile Phe Ser Tyr His Pro Asp Phe Lys Asp Thr Glu Ile Pro Phe
 195 200 205

Trp Phe Asp Arg Asn Glu Thr Thr Ser Ile Glu Gly Gly Asp Glu Leu
 210 215 220

Ile Leu Ser Asp Lys Val Leu Ala Met Gly Ile Ser Glu Arg Thr Asp
 225 230 235 240

Ala Ala Ser Ile Glu Lys Val Ala Arg Asn Ile Phe Thr Asp Gly Gln
 245 250 255

Pro Phe Glu Thr Ile Leu Ala Phe Lys Ile Pro Glu Lys Arg Ala Phe
 260 265 270

Met His Leu Asp Thr Val Phe Thr Met Val Asp Tyr Asp Lys Phe Thr
 275 280 285

Ile His Ala Glu Ile Glu Gly Pro Leu Lys Val Tyr Ser Ile Thr Lys
 290 295 300

Gly Asp Asn Asp Glu Leu Lys Ile Asp Glu Gly Lys Ala Thr Leu Glu
 305 310 315 320

Asp Thr Leu Lys Lys Tyr Leu Gly Leu Asp Glu Val Thr Leu Ile Arg
 325 330 335

Cys Ala Gly Gly Asp Tyr Ile Asp Ala Gly Arg Glu Gln Trp Asn Asp
 340 345 350

Gly Ser Asn Thr Leu Ala Ile Ala Pro Gly Glu Val Val Val Tyr Asn
 355 360 365

Arg Asn His Thr Thr Asn Arg Leu Leu Glu Glu His Gly Ile Lys Leu
 370 375 380

His Val Ile Pro Ser Ser Glu Leu Ser Arg Gly Arg Gly Gly Pro Arg
 385 390 395 400

Cys Met Ser Met Pro Leu Val Arg Glu Asp Ile
 405 410

<210> 32

<211> 404

<212> PRT

<213> Artificial Sequence

<220>

<223> mycobacterium bovis arginine deiminase with flanking synthesized
 residues added

<400> 32

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

Arg Val Val Ile Leu His Arg Pro Gly Ala Glu Leu Arg Arg Leu Thr
20 25 30

Pro Arg Asn Thr Asp Gln Leu Leu Phe Asp Gly Leu Pro Trp Val Ser
35 40 45

Arg Ala Gln Asp Glu His Asp Glu Phe Ala Glu Leu Leu Ala Ser Arg
50 55 60

Gly Ala Glu Val Leu Leu Leu Ser Asp Leu Leu Thr Glu Ala Leu His
65 70 75 80

His Ser Gly Ala Ala Arg Met Gln Gly Ile Ala Ala Ala Val Asp Ala
85 90 95

Pro Arg Leu Gly Leu Pro Leu Ala Gln Glu Leu Ser Ala Tyr Leu Arg
100 105 110

Ser Leu Asp Pro Gly Arg Leu Ala His Val Leu Thr Ala Gly Met Thr
115 120 125

Phe Asn Glu Leu Pro Ser Asp Thr Arg Thr Asp Val Ser Leu Val Leu
130 135 140

Arg Met His His Gly Gly Asp Phe Val Ile Glu Pro Leu Pro Asn Leu
145 150 155 160

Val Phe Thr Arg Asp Ser Ser Ile Trp Ile Gly Pro Arg Val Val Ile
165 170 175

Pro Ser Leu Ala Leu Arg Ala Arg Val Arg Glu Ala Ser Leu Thr Asp
180 185 190

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

Glu Ser Arg Thr Ala Pro Val Glu Gly Gly Asp Val Leu Leu Leu Ala
210 215 220

Pro Gly Val Val Ala Val Gly Val Gly Glu Arg Thr Thr Pro Ala Gly
225 230 235 240

Ala Glu Ala Leu Ala Arg Ser Leu Phe Asp Asp Asp Leu Ala His Thr
245 250 255

Val Leu Ala Val Pro Ile Ala Gln Gln Arg Ala Gln Met His Leu Asp
260 265 270

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Thr Val Cys Thr Met Val Asp Thr Asp Thr Met Val Met Tyr Ala Asn
275 280 285

Val Val Asp Thr Leu Glu Ala Phe Thr Ile Gln Arg Thr Pro Asp Gly
290 295 300

Val Thr Ile Gly Asp Ala Ala Pro Phe Ala Glu Ala Ala Ala Lys Ala
305 310 315 320

Met Gly Ile Asp Lys Leu Arg Val Ile His Thr Gly Met Asp Pro Val
325 330 335

Val Ala Glu Arg Glu Gln Trp Asp Asp Gly Asn Asn Thr Leu Ala Leu
340 345 350

Ala Pro Gly Val Val Val Ala Tyr Glu Arg Asn Val Gln Thr Asn Ala
355 360 365

Arg Leu Gln Asp Ala Gly Ile Glu Val Leu Thr Ile Ala Gly Ser Glu
370 375 380

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

Arg Asp Pro Leu