

eolf-seq1
SEQUENCE LISTING

<110> Inbiose N.V.

<120> IN VIVO SYNTHESIS OF SIALYLATED COMPOUNDS

<130> Sia/004/PCT

<150> EP16206916.5

<151> 2016-12-27

<160> 154

<170> PatentIn version 3.5

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eolf-seq1

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eolf-seql

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eolf-seql

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 gagctgcttc 70

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ttcattcacc 70

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 gagctgcttc 70

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ttcattcacc 70

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cgcttgatcat tggttgatgc 20

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eolf-seql

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 ctcgaatttc accaaaagtt gatgtggata atcaatcatc gggcctattc ctgcgggtaa 180
 aacgcagggc ccaactcagg atagggttta atattatttt agaggactta caagaaggaa 240
 gttatatggt ttaaaaattg taacaaagtt agaacacatt tatttagcag gtctaattta 300
 gggctgcaac tatctttttg gttattcata taaaatataa ttttttattt atatagagaa 360
 tacaagtgga atcatcttta acgccagctt gtagtgcgca ttgcagaata atggaagtgc 420
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eolf-seql

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<400> 32
 agaaagcatt ctcagtcac 20

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eolf-seql

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 cgtcatcaca ttgataatgc caaggcccct gatctcaaga aggtgctcaa ttaattccgg 240
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 aaggcgatgc cctcttttca caagctctag cgctgtttcg ctttttccga cgccgctttt 360
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 aggcgccagc ctgctctcaa ggaagttggt taaacggctt gacagtcttg tcgttttcag 480
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eolf-seq1

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cttctgagcg cgaatatgcc gaacaattcg ggatcagccg gatgacagtt cgccaggcgc	180
tttctaattt agttaatgaa ggcttgctct atcgcctgaa agggcggggc acctttgtca	240
gcaagccaaa aatggaacaa gcacttcaag ggctgacaag ctttaccgag gatatgaaaa	300
gccgcgggat gacaccgggc agcaggctca ttgattatca gcttattgat tcaactgagg	360
agctcgcggc tatattaggc tgcgggcacc ctcctctat ccataaaatc actcgggtgc	420
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gcataccgat ttcccgtgca aaacaggagc ttgagccaag cgctgccacc acggaagaag	600
cgaatattct tggtattcaa aaggagcgc ctgtcctatt aattaaacga acaacatatc	660
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ttgtccacta tatggatcgt ctttcataaa aaaagcctcc aacccttttt aaggattgga	780
gacatggcga aaatcaaact ggtctgggtgc cggacgatat gtttcttttt tcgtcttgaa	840
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agcatagatg tgagcgccgc agaaatcatc acgccggaga tcattttttt cttttccgga	180
cgcgcgggtat ggataatggc aagagcaacg gccggcagac agaaaatcat gtaaggga	240

eolf-seq1

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gttacggtgt tgcctgttga tgggtctgtg tattctccca tcataaaata gaaaggcgta	360
taaaaaatat gatgcaggcc aaaaggaatc agcaaacgat agatcgttgc ataaaagaac	420
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acaaagcggt ttccagagaa aaatccaagg accggatgca gctcgattga tgaaaatcgc	600
ttatataaat aggcggcgag aagcccata atgattcctc cgaaaacccc catatcaatc	660
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gtgacggtta aaattaagta tccgatgaca gcggcaagtc cggctacacc ttctccgccg	780
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cccgcatcct ttataatagg gatgttcagt aaatccttgt ctccgaaacg gagcaaaaga	900
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ttataaaaaga aggatacaaa tctttcatat tgggaggggca aatggtatta tggcttcaat	180
gaaaaagaac ggattgcata cagaatgggg agaataaat gacagcttta tattctgtta	240
tcaagtttaa aatcattgag ttaattaaat cgggcaaata tcaggcgaat gatcagctgc	300
cgacggagag tgagttttgc gaacaatatg atgtcagcag aacaactgtg agactggctc	360
tgcagcagct agagcttgag ggatatatta aaagaattca aggaaaaggg acatttgtat	420
cggcggccaa aatacaaacg ccgattccgc ataagattac gagctttgca gaacaaatga	480

eolf-seql

gaggacttcg ttctgaatca aaagtgcttg agcttgtggt gattcctgcc gatcattcca	540
tcgccgagct tttgaaaatg aaagagaatg aacctgtcaa caagcttgtc agagtcagat	600
acgccgaggg ggaacctttg cagtatcata cctcatatat tccctggaag gcggcaccgg	660
ggctggcgca ggaggaatgc accggctcgc tgtttgaatt gttaaggaca aaatacaata	720
ttgaaatcag cagggggcacg gaatcgatcg aaccgatttt aacggatgaa acgatcagcg	780
gacacttatt aaccaatgtc ggagcgcctg cgtttttatc agaatccctt acctatgata	840
aaaatgaaga agtggtggaa tatgcgcaaa ttattacacg gggagaccga acgaaattca	900
ccgtagaaca gtcatatcat tcataaagca atgtgtttta agaagggaat ggtggttcta	960
tgtttttatt tacgaatgga aaagtgctgt ggggagcagt	1000

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gccctttcag gcgatagag	19

<210> 39
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<400> 39

eolf-seql

acggcgaaaa tcagcggaag

20

<210> 40

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic DNA

<400> 40

tcactctccg tcggcagctg

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<212> DNA

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<223> UTR1

<400> 41

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60

ggttttctaa tg

72

<210> 42

<211> 237

<212> PRT

<213> Escherichia coli

<400> 42

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

Pro Gly Thr Asn Val Ala Arg Leu Ala Glu Gln Ala Pro Ile His Trp
35 40 45

Val Ser Val Ala Gln Ile Glu Asn Ser Leu Ala Gly Arg Pro Pro Met
50 55 60

eolf-seq1

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

Phe Trp Arg Gly Lys Lys Thr Phe Ser Pro Glu Ser Glu Asp Tyr Leu
85 90 95

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

Ser Ile Pro Lys Glu Val Ala Arg Gln Leu Ile Asp Met His Val Arg
115 120 125

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

Glu Thr Val Ser Lys Thr Leu Ala Asp Asn Phe His Ile Pro Ala Thr
145 150 155 160

Asn Met Asn Pro Val Ile Phe Ala Gly Asp Lys Pro Gly Gln Asn Thr
165 170 175

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

Ser Asp Asn Asp Ile Thr Ala Ala Arg Asp Val Gly Ala Arg Gly Ile
195 200 205

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

Gly Ala Phe Gly Glu Glu Val Ile Val Asn Ser Glu Tyr
225 230 235

<210> 43

<211> 272

<212> PRT

<213> Escherichia coli

<400> 43

Met Ala Arg Leu Ala Ala Phe Asp Met Asp Gly Thr Leu Leu Met Pro

eolf-seql

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Gly	Glu	Lys	Thr
			25
Leu	Ser	Thr	Leu
			30
Ala	Arg	Leu	Arg
Glu	Arg	Asp	Ile
			35
Thr	Leu	Thr	Phe
			40
Ala	Thr	Gly	Arg
			45
His	Ala	Leu	Glu
Met	Gln	His	Ile
			50
Leu	Gly	Ala	Leu
			55
Ser	Leu	Asp	Ala
			60
Tyr	Leu	Ile	Thr
Gly	Asn	Gly	Thr
			65
Arg	Val	His	Ser
			70
Leu	Glu	Gly	Glu
			75
Leu	Leu	His	Arg
			80
Asp	Asp	Leu	Pro
			85
Ala	Asp	Val	Ala
			90
Glu	Leu	Val	Leu
			95
Tyr	Gln	Gln	Trp
Asp	Thr	Arg	Ala
			100
Ser	Met	His	Ile
			105
Phe	Asn	Asp	Asp
			110
Gly	Trp	Phe	Thr
Gly	Lys	Glu	Ile
			115
Pro	Ala	Leu	Leu
			120
Gln	Ala	Phe	Val
			125
Tyr	Ser	Gly	Phe
Arg	Tyr	Gln	Ile
			130
Ile	Asp	Val	Lys
			135
Lys	Lys	Met	Pro
			140
Leu	Gly	Ser	Val
Lys	Ile	Cys	Phe
			145
Cys	Gly	Asp	His
			150
Asp	Asp	Leu	Thr
			155
Arg	Leu	Gln	Ile
			160
Gln	Leu	Tyr	Glu
			165
Ala	Leu	Gly	Glu
			170
Ala	His	Leu	Cys
			175
Phe	Ser	Ala	
Thr	Asp	Cys	Leu
			180
Glu	Val	Leu	Pro
			185
Val	Gly	Cys	Asn
			190
Lys	Gly	Ala	Ala
Leu	Thr	Val	Leu
			195
Thr	Gln	His	Leu
			200
Gly	Leu	Ser	Leu
			205
Arg	Asp	Cys	Met
Ala	Phe	Gly	Asp
Ala	Met	Asn	Asp
Arg	Glu	Met	Leu
Val	Ser	Val	Gly

eolf-seql

210

215

220

Ser Gly Phe Ile Met Gly Asn Ala Met Pro Gln Leu Arg Ala Glu Leu
 225 230 235 240

Pro His Leu Pro Val Ile Gly His Cys Arg Asn Gln Ala Val Ser His
 245 250 255

Tyr Leu Thr His Trp Leu Asp Tyr Pro His Leu Pro Tyr Ser Pro Glu
 260 265 270

<210> 44

<211> 355

<212> PRT

<213> Escherichia coli

<400> 44

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

Glu Pro Gly Val Ile Pro Glu Leu Leu Lys Leu Gln Lys Ala Gly Tyr
 35 40 45

Lys Leu Val Met Ile Thr Asn Gln Asp Gly Leu Gly Thr Gln Ser Phe
 50 55 60

Pro Gln Ala Asp Phe Asp Gly Pro His Asn Leu Met Met Gln Ile Phe
 65 70 75 80

Thr Ser Gln Gly Val Gln Phe Asp Glu Val Leu Ile Cys Pro His Leu
 85 90 95

Pro Ala Asp Glu Cys Asp Cys Arg Lys Pro Lys Val Lys Leu Val Glu
 100 105 110

Arg Tyr Leu Ala Glu Gln Ala Met Asp Arg Ala Asn Ser Tyr Val Ile
 115 120 125

eolf-seql

Gly Asp Arg Ala Thr Asp Ile Gln Leu Ala Glu Asn Met Gly Ile Thr
130 135 140

Gly Leu Arg Tyr Asp Arg Glu Thr Leu Asn Trp Pro Met Ile Gly Glu
145 150 155 160

Gln Leu Thr Arg Arg Asp Arg Tyr Ala His Val Val Arg Asn Thr Lys
165 170 175

Glu Thr Gln Ile Asp Val Gln Val Trp Leu Asp Arg Glu Gly Gly Ser
180 185 190

Lys Ile Asn Thr Gly Val Gly Phe Phe Asp His Met Leu Asp Gln Ile
195 200 205

Ala Thr His Gly Gly Phe Arg Met Glu Ile Asn Val Lys Gly Asp Leu
210 215 220

Tyr Ile Asp Asp His His Thr Val Glu Asp Thr Gly Leu Ala Leu Gly
225 230 235 240

Glu Ala Leu Lys Ile Ala Leu Gly Asp Lys Arg Gly Ile Cys Arg Phe
245 250 255

Gly Phe Val Leu Pro Met Asp Glu Cys Leu Ala Arg Cys Ala Leu Asp
260 265 270

Ile Ser Gly Arg Pro His Leu Glu Tyr Lys Ala Glu Phe Thr Tyr Gln
275 280 285

Arg Val Gly Asp Leu Ser Thr Glu Met Ile Glu His Phe Phe Arg Ser
290 295 300

Leu Ser Tyr Thr Met Gly Val Thr Leu His Leu Lys Thr Lys Gly Lys
305 310 315 320

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

eolf-seql

Leu Arg Gln Ala Ile Arg Val Glu Gly Asp Thr Leu Pro Ser Ser Lys
 340 345 350

Gly Val Leu
 355

<210> 45
 <211> 266
 <212> PRT
 <213> Escherichia coli

<400> 45

Met Thr Glu Pro Leu Thr Glu Thr Pro Glu Leu Ser Ala Lys Tyr Ala
 1 5 10 15

Trp Phe Phe Asp Leu Asp Gly Thr Leu Ala Glu Ile Lys Pro His Pro
 20 25 30

Asp Gln Val Val Val Pro Asp Asn Ile Leu Gln Gly Leu Gln Leu Leu
 35 40 45

Ala Thr Ala Ser Asp Gly Ala Leu Ala Leu Ile Ser Gly Arg Ser Met
 50 55 60

Val Glu Leu Asp Ala Leu Ala Lys Pro Tyr Arg Phe Pro Leu Ala Gly
 65 70 75 80

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

His Leu Pro Asp Ala Ile Ala Arg Asp Ile Ser Val Gln Leu His Thr
 100 105 110

Val Ile Ala Gln Tyr Pro Gly Ala Glu Leu Glu Ala Lys Gly Met Ala
 115 120 125

Phe Ala Leu His Tyr Arg Gln Ala Pro Gln His Glu Asp Ala Leu Met
 130 135 140

eolf-seql

Thr Leu Ala Gln Arg Ile Thr Gln Ile Trp Pro Gln Met Ala Leu Gln
145 150 155 160

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

Glu Ala Ile Ala Ala Phe Met Gln Glu Ala Pro Phe Ile Gly Arg Thr
180 185 190

Pro Val Phe Leu Gly Asp Asp Leu Thr Asp Glu Ser Gly Phe Ala Val
195 200 205

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

Gln Ala Ser Trp Arg Leu Ala Gly Val Pro Asp Val Trp Ser Trp Leu
225 230 235 240

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

Asp Asp Tyr Glu Ser Phe Ser Arg Ser Ile
260 265

<210> 46
<211> 253
<212> PRT
<213> Escherichia coli

<400> 46

Met Arg Ile Leu Leu Ser Asn Asp Asp Gly Val His Ala Pro Gly Ile
1 5 10 15

Gln Thr Leu Ala Lys Ala Leu Arg Glu Phe Ala Asp Val Gln Val Val
20 25 30

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

eolf-seql

Ser Ser Leu Arg Thr Phe Thr Phe Glu Asn Gly Asp Ile Ala Val Gln
50 55 60

Met Gly Thr Pro Thr Asp Cys Val Tyr Leu Gly Val Asn Ala Leu Met
65 70 75 80

Arg Pro Arg Pro Asp Ile Val Val Ser Gly Ile Asn Ala Gly Pro Asn
85 90 95

Leu Gly Asp Asp Val Ile Tyr Ser Gly Thr Val Ala Ala Ala Met Glu
100 105 110

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

Lys His Tyr Asp Thr Ala Ala Ala Val Thr Cys Ser Ile Leu Arg Ala
130 135 140

Leu Cys Lys Glu Pro Leu Arg Thr Gly Arg Ile Leu Asn Ile Asn Val
145 150 155 160

Pro Asp Leu Pro Leu Asp Gln Ile Lys Gly Ile Arg Val Thr Arg Cys
165 170 175

Gly Thr Arg His Pro Ala Asp Gln Val Ile Pro Gln Gln Asp Pro Arg
180 185 190

Gly Asn Thr Leu Tyr Trp Ile Gly Pro Pro Gly Gly Lys Cys Asp Ala
195 200 205

Gly Pro Gly Thr Asp Phe Ala Ala Val Asp Glu Gly Tyr Val Ser Ile
210 215 220

Thr Pro Leu His Val Asp Leu Thr Ala His Ser Ala Gln Asp Val Val
225 230 235 240

Ser Asp Trp Leu Asn Ser Val Gly Val Gly Thr Gln Trp
245 250

eolf-seql

<210> 47
 <211> 191
 <212> PRT
 <213> Escherichia coli

<400> 47

Met Ala Lys Ser Val Pro Ala Ile Phe Leu Asp Arg Asp Gly Thr Ile
 1 5 10 15

Asn Val Asp His Gly Tyr Val His Glu Ile Asp Asn Phe Glu Phe Ile
 20 25 30

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

Leu Val Val Val Thr Asn Gln Ser Gly Ile Ala Arg Gly Lys Phe Thr
 50 55 60

Glu Ala Gln Phe Glu Thr Leu Thr Glu Trp Met Asp Trp Ser Leu Ala
 65 70 75 80

Asp Arg Asp Val Asp Leu Asp Gly Ile Tyr Tyr Cys Pro His His Pro
 85 90 95

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

His Pro Gly Met Leu Leu Ser Ala Arg Asp Tyr Leu His Ile Asp Met
 115 120 125

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

Val Ala Ala Asn Val Gly Thr Lys Val Leu Val Arg Thr Gly Lys Pro
 145 150 155 160

Ile Thr Pro Glu Ala Glu Asn Ala Ala Asp Trp Val Leu Asn Ser Leu
 165 170 175

Ala Asp Leu Pro Gln Ala Ile Lys Lys Gln Gln Lys Pro Ala Gln

eolf-seql

180

185

190

<210> 48
 <211> 219
 <212> PRT
 <213> Escherichia coli

<400> 48

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

Thr Ala His Leu His Phe Gln Ala Trp Gln Gln Ile Ala Ala Glu Ile
 20 25 30

Gly Ile Ser Ile Asp Ala Gln Phe Asn Glu Ser Leu Lys Gly Ile Ser
 35 40 45

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

Asp Phe Asn Ser Gln Glu Arg Ala Gln Leu Ala Tyr Arg Lys Asn Leu
 65 70 75 80

Leu Tyr Val His Ser Leu Arg Glu Leu Thr Val Asn Ala Val Leu Pro
 85 90 95

Gly Ile Arg Ser Leu Leu Ala Asp Leu Arg Ala Gln Gln Ile Ser Val
 100 105 110

Gly Leu Ala Ser Val Ser Leu Asn Ala Pro Thr Ile Leu Ala Ala Leu
 115 120 125

Glu Leu Arg Glu Phe Phe Thr Phe Cys Ala Asp Ala Ser Gln Leu Lys
 130 135 140

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

Gly Val Pro Pro Gln Ala Cys Ile Gly Ile Glu Asp Ala Gln Ala Gly
 165 170 175

eolf-seql

Ile Asp Ala Ile Asn Ala Ser Gly Met Arg Ser Val Gly Ile Gly Ala
180 185 190

Gly Leu Thr Gly Ala Gln Leu Leu Leu Pro Ser Thr Glu Ser Leu Thr
195 200 205

Trp Pro Arg Leu Ser Ala Phe Trp Gln Asn Val
210 215

<210> 49

<211> 271

<212> PRT

<213> Escherichia coli

<400> 49

Met Phe Ser Ile Gln Gln Pro Leu Leu Val Phe Ser Asp Leu Asp Gly
1 5 10 15

Thr Leu Leu Asp Ser His Ser Tyr Asp Trp Gln Pro Ala Ala Pro Trp
20 25 30

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

Lys Thr Ser Ala Glu Met Leu Tyr Leu Gln Lys Thr Leu Gly Leu Gln
50 55 60

Gly Leu Pro Leu Ile Ala Glu Asn Gly Ala Val Ile Gln Leu Ala Glu
65 70 75 80

Gln Trp Gln Glu Ile Asp Gly Phe Pro Arg Ile Ile Ser Gly Ile Ser
85 90 95

His Gly Glu Ile Ser Leu Val Leu Asn Thr Leu Arg Glu Lys Glu His
100 105 110

Phe Lys Phe Thr Thr Phe Asp Asp Val Asp Asp Ala Thr Ile Ala Glu
115 120 125

eolf-seql

Trp Thr Gly Leu Ser Arg Ser Gln Ala Ala Leu Thr Gln Leu His Glu
130 135 140

Ala Ser Val Thr Leu Ile Trp Arg Asp Ser Asp Glu Arg Met Ala Gln
145 150 155 160

Phe Thr Ala Arg Leu Asn Glu Leu Gly Leu Gln Phe Met Gln Gly Ala
165 170 175

Arg Phe Trp His Val Leu Asp Ala Ser Ala Gly Lys Asp Gln Ala Ala
180 185 190

Asn Trp Ile Ile Ala Thr Tyr Gln Gln Leu Ser Gly Lys Arg Pro Thr
195 200 205

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

Met Asp Tyr Ala Val Ile Val Lys Gly Leu Asn Arg Glu Gly Val His
225 230 235 240

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

Pro Glu Gly Trp Arg Glu Gly Leu Asp His Phe Phe Ser Ala Arg
260 265 270

<210> 50
<211> 216
<212> PRT
<213> Escherichia coli

<400> 50

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

Ser Leu Pro Ala Val Glu Arg Ala Trp Ser Asn Trp Ala Arg Arg His
20 25 30

eolf-seq1

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

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

Ala Ala Glu Phe Thr Arg Leu Glu His Ile Glu Ala Thr Glu Thr Glu
65 70 75 80

Gly Ile Thr Ala Leu Pro Gly Ala Ile Ala Leu Leu Ser His Leu Asn
85 90 95

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

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

Val Thr Ala Glu Arg Val Lys Arg Gly Lys Pro Glu Pro Asp Ala Tyr
130 135 140

Leu Leu Gly Ala Gln Leu Leu Gly Leu Ala Pro Gln Glu Cys Val Val
145 150 155 160

Val Glu Asp Ala Pro Ala Gly Val Leu Ser Gly Leu Ala Ala Gly Cys
165 170 175

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

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

Pro Asn Gly Asp Val Ile Ile Gln
210 215

<210> 51

<211> 270

<212> PRT

<213> Escherichia coli

eolf-seql

<400> 51

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

Pro Asp His Thr Ile Ser Pro Ala Val Lys Asn Ala Ile Ala Ala Ala
20 25 30

Arg Ala Arg Gly Val Asn Val Val Leu Thr Thr Gly Arg Pro Tyr Ala
35 40 45

Gly Val His Asn Tyr Leu Lys Glu Leu His Met Glu Gln Pro Gly Asp
50 55 60

Tyr Cys Ile Thr Tyr Asn Gly Ala Leu Val Gln Lys Ala Ala Asp Gly
65 70 75 80

Ser Thr Val Ala Gln Thr Ala Leu Ser Tyr Asp Asp Tyr Arg Phe Leu
85 90 95

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

Thr Thr Leu Tyr Thr Ala Asn Arg Asp Ile Ser Tyr Tyr Thr Val His
115 120 125

Glu Ser Phe Val Ala Thr Ile Pro Leu Val Phe Cys Glu Ala Glu Lys
130 135 140

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

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

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

Lys Arg Val Asn Lys Gly Thr Gly Val Lys Ser Leu Ala Asp Val Leu

eolf-seql

195

200

205

Gly Ile Lys Pro Glu Glu Ile Met Ala Ile Gly Asp Gln Glu Asn Asp
210 215 220

Ile Ala Met Ile Glu Tyr Ala Gly Val Gly Val Ala Met Asp Asn Ala
225 230 235 240

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

Glu Asp Gly Val Ala Phe Ala Ile Glu Lys Tyr Val Leu Asn
260 265 270

<210> 52
<211> 238
<212> PRT
<213> Escherichia coli

<400> 52

Met Arg Phe Tyr Arg Pro Leu Gly Arg Ile Ser Ala Leu Thr Phe Asp
1 5 10 15

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

Arg Glu Ala Leu Thr Phe Val Gln Asn Tyr His Pro Ala Leu Arg Ser
35 40 45

Phe Gln Asn Glu Asp Leu Gln Arg Leu Arg Gln Ala Val Arg Glu Ala
50 55 60

Glu Pro Glu Ile Tyr His Asp Val Thr Arg Trp Arg Phe Arg Ser Ile
65 70 75 80

Glu Gln Ala Met Leu Asp Ala Gly Leu Ser Ala Glu Glu Ala Ser Ala
85 90 95

Gly Ala His Ala Ala Met Ile Asn Phe Ala Lys Trp Arg Ser Arg Ile
100 105 110

eolf-seql

Asp Val Pro Gln Gln Thr His Asp Thr Leu Lys Gln Leu Ala Lys Lys
115 120 125

Trp Pro Leu Val Ala Ile Thr Asn Gly Asn Ala Gln Pro Glu Leu Phe
130 135 140

Gly Leu Gly Asp Tyr Phe Glu Phe Val Leu Arg Ala Gly Pro His Gly
145 150 155 160

Arg Ser Lys Pro Phe Ser Asp Met Tyr Phe Leu Ala Ala Glu Lys Leu
165 170 175

Asn Val Pro Ile Gly Glu Ile Leu His Val Gly Asp Asp Leu Thr Thr
180 185 190

Asp Val Gly Gly Ala Ile Arg Ser Gly Met Gln Ala Cys Trp Ile Arg
195 200 205

Pro Glu Asn Gly Asp Leu Met Gln Thr Trp Asp Ser Arg Leu Leu Pro
210 215 220

His Leu Glu Ile Ser Arg Leu Ala Ser Leu Thr Ser Leu Ile
225 230 235

<210> 53

<211> 199

<212> PRT

<213> Escherichia coli

<400> 53

Met Leu Tyr Ile Phe Asp Leu Gly Asn Val Ile Val Asp Ile Asp Phe
1 5 10 15

Asn Arg Val Leu Gly Ala Trp Ser Asp Leu Thr Arg Ile Pro Leu Ala
20 25 30

Ser Leu Lys Lys Ser Phe His Met Gly Glu Ala Phe His Gln His Glu
35 40 45

eolf-seql

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

Met Ala Leu Pro Leu Ser Tyr Glu Gln Phe Ser His Gly Trp Gln Ala
65 70 75 80

Val Phe Val Ala Leu Arg Pro Glu Val Ile Ala Ile Met His Lys Leu
85 90 95

Arg Glu Gln Gly His Arg Val Val Val Leu Ser Asn Thr Asn Arg Leu
100 105 110

His Thr Thr Phe Trp Pro Glu Glu Tyr Pro Glu Ile Arg Asp Ala Ala
115 120 125

Asp His Ile Tyr Leu Ser Gln Asp Leu Gly Met Arg Lys Pro Glu Ala
130 135 140

Arg Ile Tyr Gln His Val Leu Gln Ala Glu Gly Phe Ser Pro Ser Asp
145 150 155 160

Thr Val Phe Phe Asp Asp Asn Ala Asp Asn Ile Glu Gly Ala Asn Gln
165 170 175

Leu Gly Ile Thr Ser Ile Leu Val Lys Asp Lys Thr Thr Ile Pro Asp
180 185 190

Tyr Phe Ala Lys Val Leu Cys
195

<210> 54

<211> 222

<212> PRT

<213> Escherichia coli

<400> 54

Met Ser Thr Pro Arg Gln Ile Leu Ala Ala Ile Phe Asp Met Asp Gly
1 5 10 15

eolf-seq1

Leu Leu Ile Asp Ser Glu Pro Leu Trp Asp Arg Ala Glu Leu Asp Val
20 25 30

Met Ala Ser Leu Gly Val Asp Ile Ser Arg Arg Asn Glu Leu Pro Asp
35 40 45

Thr Leu Gly Leu Arg Ile Asp Met Val Val Asp Leu Trp Tyr Ala Arg
50 55 60

Gln Pro Trp Asn Gly Pro Ser Arg Gln Glu Val Val Glu Arg Val Ile
65 70 75 80

Ala Arg Ala Ile Ser Leu Val Glu Glu Thr Arg Pro Leu Leu Pro Gly
85 90 95

Val Arg Glu Ala Val Ala Leu Cys Lys Glu Gln Gly Leu Leu Val Gly
100 105 110

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

Phe Asp Leu Arg Asp Ser Phe Asp Ala Leu Ala Ser Ala Glu Lys Leu
130 135 140

Pro Tyr Ser Lys Pro His Pro Gln Val Tyr Leu Asp Cys Ala Ala Lys
145 150 155 160

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

Gly Met Ile Ala Ser Lys Ala Ala Arg Met Arg Ser Ile Val Val Pro
180 185 190

Ala Pro Glu Ala Gln Asn Asp Pro Arg Phe Val Leu Ala Asp Val Lys
195 200 205

Leu Ser Ser Leu Thr Glu Leu Thr Ala Lys Asp Leu Leu Gly
210 215 220

eolf-seql

<210> 55

<211> 188

<212> PRT

<213> Escherichia coli

<400> 55

Met Tyr Glu Arg Tyr Ala Gly Leu Ile Phe Asp Met Asp Gly Thr Ile
1 5 10 15

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

His Tyr Gly Leu Gln Tyr Asp Ile Gln Ala Met Ile Ala Leu Asn Gly
35 40 45

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

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

Ser Met Leu Leu Asp Ser Val Glu Pro Leu Pro Leu Val Asp Val Val
85 90 95

Lys Ser Trp His Gly Arg Arg Pro Met Ala Val Gly Thr Gly Ser Glu
100 105 110

Ser Ala Ile Ala Glu Ala Leu Leu Ala His Leu Gly Leu Arg His Tyr
115 120 125

Phe Asp Ala Val Val Ala Ala Asp His Val Lys His His Lys Pro Ala
130 135 140

Pro Asp Thr Phe Leu Leu Cys Ala Gln Arg Met Gly Val Gln Pro Thr
145 150 155 160

Gln Cys Val Val Phe Glu Asp Ala Asp Phe Gly Ile Gln Ala Ala Arg
165 170 175

Ala Ala Gly Met Asp Ala Val Asp Val Arg Leu Leu

eolf-seq1

180

185

<210> 56
 <211> 188
 <212> PRT
 <213> Escherichia coli

<400> 56

Met Ser Lys Ala Gly Ala Ser Leu Ala Thr Cys Tyr Gly Pro Val Ser
 1 5 10 15

Ala Asp Val Ile Ala Lys Ala Glu Asn Ile Arg Leu Leu Ile Leu Asp
 20 25 30

Val Asp Gly Val Leu Ser Asp Gly Leu Ile Tyr Met Gly Asn Asn Gly
 35 40 45

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

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

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

Gln Gly Gln Ser Asn Lys Leu Ile Ala Phe Ser Asp Leu Leu Glu Lys
 100 105 110

Leu Ala Ile Ala Pro Glu Asn Val Ala Tyr Val Gly Asp Asp Leu Ile
 115 120 125

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

Ala His Pro Leu Leu Ile Pro Arg Ala Asp Tyr Val Thr Arg Ile Ala
 145 150 155 160

Gly Gly Arg Gly Ala Val Arg Glu Val Cys Asp Leu Leu Leu Leu Ala
 165 170 175

eolf-seql

Gln Gly Lys Leu Asp Glu Ala Lys Gly Gln Ser Ile
180 185

<210> 57

<211> 223

<212> PRT

<213> Pseudomonas putida

<400> 57

Met Arg Leu Arg Ala Val Leu Phe Asp Met Asp Gly Thr Leu Leu Asp
1 5 10 15

Thr Ala Pro Asp Phe Ile Ala Ile Cys Gln Ala Met Leu Ala Glu Arg
20 25 30

Gly Leu Pro Ala Val Asp Asp Asn Leu Ile Arg Gly Val Ile Ser Gly
35 40 45

Gly Ala Arg Ala Met Val Ala Thr Ala Phe Ala Met Asp Pro Glu Ala
50 55 60

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

Asp Cys Ala Val His Ser Lys Leu Phe Glu Gly Met Ala Glu Leu Leu
85 90 95

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

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

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

Asp Pro Glu Pro Leu Ile Leu Ala Cys Lys Thr Leu Asn Leu Asp Pro
145 150 155 160

eolf-seql

Ala Ser Val Leu Phe Val Gly Asp Asp Leu Arg Asp Ile Glu Ser Gly
165 170 175

Arg Asp Ala Gly Thr Arg Thr Ala Ala Val Arg Tyr Gly Tyr Ile His
180 185 190

Pro Glu Asp Asn Pro Asn Asn Trp Gly Ala Asp Val Val Val Asp His
195 200 205

Pro Leu Glu Leu Arg Lys Val Ile Asp Ser Ala Leu Cys Gly Cys
210 215 220

<210> 58

<211> 432

<212> PRT

<213> Escherichia coli

<400> 58

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

Pro Gln Ser Ala Phe Ala Gln Ser Glu Pro Glu Leu Lys Leu Glu Ser
20 25 30

Val Val Ile Val Ser Arg His Gly Val Arg Ala Pro Thr Lys Ala Thr
35 40 45

Gln Leu Met Gln Asp Val Thr Pro Asp Ala Trp Pro Thr Trp Pro Val
50 55 60

Lys Leu Gly Trp Leu Thr Pro Arg Gly Gly Glu Leu Ile Ala Tyr Leu
65 70 75 80

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

Lys Gly Cys Pro Gln Ser Gly Gln Val Ala Ile Ile Ala Asp Val Asp
100 105 110

eolf-seq1

Glu Arg Thr Arg Lys Thr Gly Glu Ala Phe Ala Ala Gly Leu Ala Pro
115 120 125

Asp Cys Ala Ile Thr Val His Thr Gln Ala Asp Thr Ser Ser Pro Asp
130 135 140

Pro Leu Phe Asn Pro Leu Lys Thr Gly Val Cys Gln Leu Asp Asn Ala
145 150 155 160

Asn Val Thr Asp Ala Ile Leu Ser Arg Ala Gly Gly Ser Ile Ala Asp
165 170 175

Phe Thr Gly His Arg Gln Thr Ala Phe Arg Glu Leu Glu Arg Val Leu
180 185 190

Asn Phe Pro Gln Ser Asn Leu Cys Leu Lys Arg Glu Lys Gln Asp Glu
195 200 205

Ser Cys Ser Leu Thr Gln Ala Leu Pro Ser Glu Leu Lys Val Ser Ala
210 215 220

Asp Asn Val Ser Leu Thr Gly Ala Val Ser Leu Ala Ser Met Leu Thr
225 230 235 240

Glu Ile Phe Leu Leu Gln Gln Ala Gln Gly Met Pro Glu Pro Gly Trp
245 250 255

Gly Arg Ile Thr Asp Ser His Gln Trp Asn Thr Leu Leu Ser Leu His
260 265 270

Asn Ala Gln Phe Tyr Leu Leu Gln Arg Thr Pro Glu Val Ala Arg Ser
275 280 285

Arg Ala Thr Pro Leu Leu Asp Leu Ile Lys Thr Ala Leu Thr Pro His
290 295 300

Pro Pro Gln Lys Gln Ala Tyr Gly Val Thr Leu Pro Thr Ser Val Leu
305 310 315 320

eolf-seq1

Phe Ile Ala Gly His Asp Thr Asn Leu Ala Asn Leu Gly Gly Ala Leu
 325 330 335

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

Gly Glu Leu Val Phe Glu Arg Trp Arg Arg Leu Ser Asp Asn Ser Gln
 355 360 365

Trp Ile Gln Val Ser Leu Val Phe Gln Thr Leu Gln Gln Met Arg Asp
 370 375 380

Lys Thr Pro Leu Ser Leu Asn Thr Pro Pro Gly Glu Val Lys Leu Thr
 385 390 395 400

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

Gly Phe Thr Gln Ile Val Asn Glu Ala Arg Ile Pro Ala Cys Ser Leu
 420 425 430

<210> 59
 <211> 252
 <212> PRT
 <213> Escherichia coli

<400> 59

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

Thr Leu Val Asp Ser Ala Pro Gly Leu Ala Ala Ala Val Asp Met Ala
 20 25 30

Leu Tyr Ala Leu Glu Leu Pro Val Ala Gly Glu Glu Arg Val Ile Thr
 35 40 45

Trp Ile Gly Asn Gly Ala Asp Val Leu Met Glu Arg Ala Leu Thr Trp
 50 55 60

Ala Arg Gln Glu Arg Ala Thr Gln Arg Lys Thr Met Gly Lys Pro Pro

eolf-seql

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

<210> 60

<211> 322

<212> PRT

<213> Escherichia coli

eolf-seql

<400> 60

Met Pro Asn Ile Thr Trp Cys Asp Leu Pro Glu Asp Val Ser Leu Trp
1 5 10 15

Pro Gly Leu Pro Leu Ser Leu Ser Gly Asp Glu Val Met Pro Leu Asp
20 25 30

Tyr His Ala Gly Arg Ser Gly Trp Leu Leu Tyr Gly Arg Gly Leu Asp
35 40 45

Lys Gln Arg Leu Thr Gln Tyr Gln Ser Lys Leu Gly Ala Ala Met Val
50 55 60

Ile Val Ala Ala Trp Cys Val Glu Asp Tyr Gln Val Ile Arg Leu Ala
65 70 75 80

Gly Ser Leu Thr Ala Arg Ala Thr Arg Leu Ala His Glu Ala Gln Leu
85 90 95

Asp Val Ala Pro Leu Gly Lys Ile Pro His Leu Arg Thr Pro Gly Leu
100 105 110

Leu Val Met Asp Met Asp Ser Thr Ala Ile Gln Ile Glu Cys Ile Asp
115 120 125

Glu Ile Ala Lys Leu Ala Gly Thr Gly Glu Met Val Ala Glu Val Thr
130 135 140

Glu Arg Ala Met Arg Gly Glu Leu Asp Phe Thr Ala Ser Leu Arg Ser
145 150 155 160

Arg Val Ala Thr Leu Lys Gly Ala Asp Ala Asn Ile Leu Gln Gln Val
165 170 175

Arg Glu Asn Leu Pro Leu Met Pro Gly Leu Thr Gln Leu Val Leu Lys
180 185 190

Leu Glu Thr Leu Gly Trp Lys Val Ala Ile Ala Ser Gly Gly Phe Thr
195 200 205

eolf-seql

Phe Phe Ala Glu Tyr Leu Arg Asp Lys Leu Arg Leu Thr Ala Val Val
210 215 220

Ala Asn Glu Leu Glu Ile Met Asp Gly Lys Phe Thr Gly Asn Val Ile
225 230 235 240

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

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

Gly Ala Asn Asp Leu Pro Met Ile Lys Ala Ala Gly Leu Gly Ile Ala
275 280 285

Tyr His Ala Lys Pro Lys Val Asn Glu Lys Ala Glu Val Thr Ile Arg
290 295 300

His Ala Asp Leu Met Gly Val Phe Cys Ile Leu Ser Gly Ser Leu Asn
305 310 315 320

Gln Lys

<210> 61
<211> 250
<212> PRT
<213> Escherichia coli

<400> 61

Met Thr Ile Lys Asn Val Ile Cys Asp Ile Asp Gly Val Leu Met His
1 5 10 15

Asp Asn Val Ala Val Pro Gly Ala Ala Glu Phe Leu His Gly Ile Met
20 25 30

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

eolf-seql

Gly Gln Asp Leu Ala Asn Arg Phe Ala Thr Ala Gly Val Asp Val Pro
50 55 60

Asp Ser Val Phe Tyr Thr Ser Ala Met Ala Thr Ala Asp Phe Leu Arg
65 70 75 80

Arg Gln Glu Gly Lys Lys Ala Tyr Val Val Gly Glu Gly Ala Leu Ile
85 90 95

His Glu Leu Tyr Lys Ala Gly Phe Thr Ile Thr Asp Val Asn Pro Asp
100 105 110

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

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

Pro Asp Thr His Gly Arg Gly Phe Tyr Pro Ala Cys Gly Ala Leu Cys
145 150 155 160

Ala Gly Ile Glu Lys Ile Ser Gly Arg Lys Pro Phe Tyr Val Gly Lys
165 170 175

Pro Ser Pro Trp Ile Ile Arg Ala Ala Leu Asn Lys Met Gln Ala His
180 185 190

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

Ala Gly Phe Gln Ala Gly Leu Glu Thr Ile Leu Val Leu Ser Gly Val
210 215 220

Ser Ser Leu Asp Asp Ile Asp Ser Met Pro Phe Arg Pro Ser Trp Ile
225 230 235 240

Tyr Pro Ser Val Ala Glu Ile Asp Val Ile
245 250

eolf-seql

<210> 62
 <211> 272
 <212> PRT
 <213> Escherichia coli

<400> 62

Met Thr Thr Arg Val Ile Ala Leu Asp Leu Asp Gly Thr Leu Leu Thr
 1 5 10 15

Pro Lys Lys Thr Leu Leu Pro Ser Ser Ile Glu Ala Leu Ala Arg Ala
 20 25 30

Arg Glu Ala Gly Tyr Gln Leu Ile Ile Val Thr Gly Arg His His Val
 35 40 45

Ala Ile His Pro Phe Tyr Gln Ala Leu Ala Leu Asp Thr Pro Ala Ile
 50 55 60

Cys Cys Asn Gly Thr Tyr Leu Tyr Asp Tyr His Ala Lys Thr Val Leu
 65 70 75 80

Glu Ala Asp Pro Met Pro Val Ile Lys Ala Leu Gln Leu Ile Glu Met
 85 90 95

Leu Asn Glu His His Ile His Gly Leu Met Tyr Val Asp Asp Ala Met
 100 105 110

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

Gln Thr Leu Pro Pro Glu Gln Arg Pro Thr Phe Thr Gln Val Ala Ser
 130 135 140

Leu Ala Glu Thr Ala Gln Gln Val Asn Ala Val Trp Lys Phe Ala Leu
 145 150 155 160

Thr His Asp Asp Leu Pro Gln Leu Gln His Phe Gly Lys His Val Glu
 165 170 175

eolf-seql

His Glu Leu Gly Leu Glu Cys Glu Trp Ser Trp His Asp Gln Val Asp
180 185 190

Ile Ala Arg Gly Gly Asn Ser Lys Gly Lys Arg Leu Thr Lys Trp Val
195 200 205

Glu Ala Gln Gly Trp Ser Met Glu Asn Val Val Ala Phe Gly Asp Asn
210 215 220

Phe Asn Asp Ile Ser Met Leu Glu Ala Ala Gly Thr Gly Val Ala Met
225 230 235 240

Gly Asn Ala Asp Asp Ala Val Lys Ala Arg Ala Asn Ile Val Ile Gly
245 250 255

Asp Asn Thr Thr Asp Ser Ile Ala Gln Phe Ile Tyr Ser His Leu Ile
260 265 270

<210> 63
<211> 271
<212> PRT
<213> Escherichia coli

<400> 63

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

Asp Ala Lys Thr Tyr Asn Gln Pro Arg Phe Met Ala Gln Tyr Gln Glu
20 25 30

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

Tyr Gln Leu Ile Ser Phe Phe Pro Glu Leu Lys Asp Glu Ile Ser Phe
50 55 60

Val Ala Glu Asn Gly Ala Leu Val Tyr Glu His Gly Lys Gln Leu Phe
65 70 75 80

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

eolf-seql

85

90

95

Leu Lys Asp Lys Gln Leu Asn Phe Val Ala Cys Gly Leu Gln Ser Ala
 100 105 110

Tyr Val Ser Glu Asn Ala Pro Glu Ala Phe Val Ala Leu Met Ala Lys
 115 120 125

His Tyr His Arg Leu Lys Pro Val Lys Asp Tyr Gln Glu Ile Asp Asp
 130 135 140

Val Leu Phe Lys Phe Ser Leu Asn Leu Pro Asp Glu Gln Ile Pro Leu
 145 150 155 160

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

Thr Ser Gly Phe Gly Phe Ile Asp Leu Ile Ile Pro Gly Leu His Lys
 180 185 190

Ala Asn Gly Ile Ser Arg Leu Leu Lys Arg Trp Asp Leu Ser Pro Gln
 195 200 205

Asn Val Val Ala Ile Gly Asp Ser Gly Asn Asp Ala Glu Met Leu Lys
 210 215 220

Met Ala Arg Tyr Ser Phe Ala Met Gly Asn Ala Ala Glu Asn Ile Lys
 225 230 235 240

Gln Ile Ala Arg Tyr Ala Thr Asp Asp Asn Asn His Glu Gly Ala Leu
 245 250 255

Asn Val Ile Gln Ala Val Leu Asp Asn Thr Ser Pro Phe Asn Ser
 260 265 270

<210> 64

<211> 561

<212> PRT

<213> Escherichia coli

eolf-seql

<400> 64

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

Leu Phe Val Val Leu Ala Leu Gly Leu Cys Leu Gly Lys Leu Arg Leu
20 25 30

Gly Ser Ile Gln Leu Gly Asn Ser Ile Gly Val Leu Val Val Ser Leu
35 40 45

Leu Leu Gly Gln Gln His Phe Ser Ile Asn Thr Asp Ala Leu Asn Leu
50 55 60

Gly Phe Met Leu Phe Ile Phe Cys Val Gly Val Glu Ala Gly Pro Asn
65 70 75 80

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

Leu Val Met Val Gly Ser Ala Leu Val Ile Ala Leu Gly Leu Gly Lys
100 105 110

Leu Phe Gly Trp Asp Ile Gly Leu Thr Ala Gly Met Leu Ala Gly Ser
115 120 125

Met Thr Ser Thr Pro Val Leu Val Gly Ala Gly Asp Thr Leu Arg His
130 135 140

Ser Gly Met Glu Ser Arg Gln Leu Ser Leu Ala Leu Asp Asn Leu Ser
145 150 155 160

Leu Gly Tyr Ala Leu Thr Tyr Leu Ile Gly Leu Val Ser Leu Ile Val
165 170 175

Gly Ala Arg Tyr Leu Pro Lys Leu Gln His Gln Asp Leu Gln Thr Ser
180 185 190

Ala Gln Gln Ile Ala Arg Glu Arg Gly Leu Asp Thr Asp Ala Asn Arg
195 200 205

eolf-seql

Lys Val Tyr Leu Pro Val Ile Arg Ala Tyr Arg Val Gly Pro Glu Leu
210 215 220

Val Ala Trp Thr Asp Gly Lys Asn Leu Arg Glu Leu Gly Ile Tyr Arg
225 230 235 240

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

Asn Pro Asp Gly Asp Ala Val Leu Gln Met Gly Asp Glu Ile Ala Leu
260 265 270

Val Gly Tyr Pro Asp Ala His Ala Arg Leu Asp Pro Ser Phe Arg Asn
275 280 285

Gly Lys Glu Val Phe Asp Arg Asp Leu Leu Asp Met Arg Ile Val Thr
290 295 300

Glu Glu Val Val Val Lys Asn His Asn Ala Val Gly Lys Arg Leu Ala
305 310 315 320

Gln Leu Lys Leu Thr Asp His Gly Cys Phe Leu Asn Arg Val Ile Arg
325 330 335

Ser Gln Ile Glu Met Pro Ile Asp Asp Asn Val Val Leu Asn Lys Gly
340 345 350

Asp Val Leu Gln Val Ser Gly Asp Ala Arg Arg Val Lys Thr Ile Ala
355 360 365

Asp Arg Ile Gly Phe Ile Ser Ile His Ser Gln Val Thr Asp Leu Leu
370 375 380

Ala Phe Cys Ala Phe Phe Val Ile Gly Leu Met Ile Gly Met Ile Thr
385 390 395 400

Phe Gln Phe Ser Thr Phe Ser Phe Gly Met Gly Asn Ala Ala Gly Leu
405 410 415

eolf-seql

Leu Phe Ala Gly Ile Met Leu Gly Phe Met Arg Ala Asn His Pro Thr
 420 425 430

Phe Gly Tyr Ile Pro Gln Gly Ala Leu Ser Met Val Lys Glu Phe Gly
 435 440 445

Leu Met Val Phe Met Ala Gly Val Gly Leu Ser Ala Gly Ser Gly Ile
 450 455 460

Asn Asn Gly Leu Gly Ala Ile Gly Gly Gln Met Leu Ile Ala Gly Leu
 465 470 475 480

Ile Val Ser Leu Val Pro Val Val Ile Cys Phe Leu Phe Gly Ala Tyr
 485 490 495

Val Leu Arg Met Asn Arg Ala Leu Leu Phe Gly Ala Met Met Gly Ala
 500 505 510

Arg Thr Cys Ala Pro Ala Met Glu Ile Ile Ser Asp Thr Ala Arg Ser
 515 520 525

Asn Ile Pro Ala Leu Gly Tyr Ala Gly Thr Tyr Ala Ile Ala Asn Val
 530 535 540

Leu Leu Thr Leu Ala Gly Thr Ile Ile Val Met Val Trp Pro Gly Leu
 545 550 555 560

Gly

<210> 65
 <211> 199
 <212> PRT
 <213> Escherichia coli

<400> 65

Met Lys Gln Ser His Phe Phe Ala His Leu Ser Arg Leu Lys Leu Ile
 1 5 10 15

eolf-seql

Asn Arg Trp Pro Leu Met Arg Asn Val Arg Thr Glu Asn Val Ser Glu
20 25 30

His Ser Leu Gln Val Ala Met Val Ala His Ala Leu Ala Ala Ile Lys
35 40 45

Asn Arg Lys Phe Gly Gly Asn Val Asn Ala Glu Arg Ile Ala Leu Leu
50 55 60

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

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

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

Arg Asp Ile Phe Ala Pro Leu Ile Asp Glu His Ala Tyr Ser Asp Glu
115 120 125

Glu Lys Ser Leu Val Lys Gln Ala Asp Ala Leu Cys Ala Tyr Leu Lys
130 135 140

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

Thr Arg Leu Glu Ala Thr Leu Glu Ala Arg Arg Ser Gln Glu Met Asp
165 170 175

Tyr Phe Met Glu Ile Phe Val Pro Ser Phe His Leu Ser Leu Asp Glu
180 185 190

Ile Ser Gln Asp Ser Pro Leu
195

<210> 66
<211> 221
<212> PRT

eolf-seql

<213> Escherichia coli

<400> 66

Met Ser Arg Ile Glu Ala Val Phe Phe Asp Cys Asp Gly Thr Leu Val
1 5 10 15

Asp Ser Glu Val Ile Cys Ser Arg Ala Tyr Val Thr Met Phe Gln Glu
20 25 30

Phe Gly Ile Thr Leu Asp Pro Glu Glu Val Phe Lys Arg Phe Lys Gly
35 40 45

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

Thr Leu Ala Lys Thr Glu Ala Glu His Val Tyr Arg Ala Glu Val Ala
65 70 75 80

Arg Leu Phe Asp Ser Glu Leu Glu Ala Ile Glu Gly Ala Gly Ala Leu
85 90 95

Leu Ser Ala Ile Thr Ala Pro Met Cys Val Val Ser Asn Gly Pro Asn
100 105 110

Asn Lys Met Gln His Ser Met Gly Lys Leu Asn Met Leu His Tyr Phe
115 120 125

Pro Asp Lys Leu Phe Ser Gly Tyr Asp Ile Gln Arg Trp Lys Pro Asp
130 135 140

Pro Ala Leu Met Phe His Ala Ala Lys Ala Met Asn Val Asn Val Glu
145 150 155 160

Asn Cys Ile Leu Val Asp Asp Ser Val Ala Gly Ala Gln Ser Gly Ile
165 170 175

Asp Ala Gly Met Glu Val Phe Tyr Phe Cys Ala Asp Pro His Asn Lys
180 185 190

eolf-seql

Pro Ile Val His Pro Lys Val Thr Thr Phe Thr His Leu Ser Gln Leu
195 200 205

Pro Glu Leu Trp Lys Ala Arg Gly Trp Asp Ile Thr Ala
210 215 220

<210> 67

<211> 604

<212> PRT

<213> Escherichia coli

<400> 67

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

Asp Asn Phe Lys Gln Lys Ser Glu Val Leu Asn Thr Trp Arg Val Gly
20 25 30

Met Asn Asp Phe Ala Arg Ile Ala Gly Gly Gln Asp Asn Arg Arg Asn
35 40 45

Ile Leu Ser Pro Gly Ala Phe Leu Glu Phe Leu Ala Lys Ile Phe Thr
50 55 60

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

Met Met Ala His Ile Lys Ser Ser Ser Tyr Ser Lys Asp Thr Asn Gly
85 90 95

Asn Glu Lys Met Lys Phe Tyr Met Asn Asn Pro Val Gly Glu Arg Ala
100 105 110

Asp Ser Pro Lys Val Ile Ile Glu Ile Ser Leu Ser Thr Ile Thr Thr
115 120 125

Met Gly Thr Arg Gln Gly His Thr Ala Ile Ile Phe Pro Gln Pro Asp
130 135 140

Gly Ser Thr Asn Arg Tyr Glu Gly Lys Ser Phe Glu Arg Lys Asp Glu

eolf-seql

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

eolf-seql

355

360

365

Glu Thr Phe Ser Lys Ser Pro Tyr Ile Asn Asp Val Arg Ile Leu Asp
 370 375 380

Trp Cys Phe Asn Lys Ser Met Gln Tyr Phe Asp Asp Thr Lys Lys Ile
 385 390 395 400

Lys His Ala Cys Ser Val Ile Asn His Ile Asn Leu Arg Ser Asp Gln
 405 410 415

Ser Lys Ile Ala Glu Thr Leu Phe Phe Asn Leu Asp Lys Glu Pro Tyr
 420 425 430

Lys Asn Ser Pro Glu Leu Gln Gly Leu Ile Trp Asn Lys Leu Val Val
 435 440 445

Tyr Val Asn Glu Phe Asn Leu Ser Asn Arg Glu Lys Thr Asn Leu Ile
 450 455 460

Gln Arg Leu Phe Asp Asn Val Glu Ser Ile Phe Asn Glu Val Pro Val
 465 470 475 480

Ser Ile Leu Val Asn Asp Ile Phe Met Asn Asp Phe Phe Met Lys Asn
 485 490 495

Pro Glu Met Ile Asn Trp Tyr Phe Pro Gln Leu Leu Lys Ser Tyr Glu
 500 505 510

Gly Glu Lys Ile Tyr Phe Asp Asn Leu Lys Tyr Asp Leu Asn Asp Asn
 515 520 525

Asp Lys Glu Ser Asn Lys Glu Ile Leu Lys Asn Gln Pro Asp Asn Val
 530 535 540

Ile Lys Glu Lys Leu Asn Asn Glu Tyr Lys Leu Arg Phe Arg Met Met
 545 550 555 560

Gln Thr Ile Leu Gln Ser Arg Val Asn Val Leu Pro Tyr Ile Asn Glu

eolf-seql

565

570

575

Gln Arg Leu Asn Lys Leu Asn Pro Pro Glu Asn Leu Arg Ile Ala Ile
 580 585 590

Glu His Phe Gly Trp Lys Asn Arg Pro Ile Thr Ala
 595 600

<210> 68

<211> 225

<212> PRT

<213> Escherichia coli

<400> 68

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

Phe Asp Ser Phe Thr Gly Leu Gln Arg Met Phe Leu Asp Tyr Ser Val
 20 25 30

Thr Phe Thr Ala Glu Asp Phe Gln Asp Tyr Gln Ala Val Asn Lys Pro
 35 40 45

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

His Gly Arg Phe Glu Ser Trp Ala Glu Arg Leu Asn Val Glu Pro Gly
 65 70 75 80

Lys Leu Asn Glu Ala Phe Ile Asn Ala Met Ala Glu Ile Cys Thr Pro
 85 90 95

Leu Pro Gly Ala Val Ser Leu Leu Asn Ala Ile Arg Gly Asn Ala Lys
 100 105 110

Ile Gly Ile Ile Thr Asn Gly Phe Ser Ala Leu Gln Gln Val Arg Leu
 115 120 125

Glu Arg Thr Gly Leu Arg Asp Tyr Phe Asp Leu Leu Val Ile Ser Glu
 130 135 140

eolf-seql

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

Glu Gln Ala Gly Asn Pro Asp Arg Ser Arg Val Leu Met Val Gly Asp
165 170 175

Thr Ala Glu Ser Asp Ile Leu Gly Gly Ile Asn Ala Gly Leu Ala Thr
180 185 190

Cys Trp Leu Asn Ala His His Arg Glu Gln Pro Glu Gly Ile Ala Pro
195 200 205

Thr Trp Thr Val Ser Ser Leu His Glu Leu Glu Gln Leu Leu Cys Lys
210 215 220

His
225

<210> 69
<211> 222
<212> PRT
<213> Escherichia coli

<400> 69

Met His Ile Asn Ile Ala Trp Gln Asp Val Asp Thr Val Leu Leu Asp
1 5 10 15

Met Asp Gly Thr Leu Leu Asp Leu Ala Phe Asp Asn Tyr Phe Trp Gln
20 25 30

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

Glu Ala Met Glu Tyr Met Arg Gln Gln Tyr His Asp Val Gln His Thr
50 55 60

Leu Asn Trp Tyr Cys Leu Asp Tyr Trp Ser Glu Gln Leu Gly Leu Asp
65 70 75 80

eolf-seql

Ile Cys Ala Met Thr Thr Glu Met Gly Pro Arg Ala Val Leu Arg Glu
85 90 95

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

Ile Leu Leu Thr Asn Ala His Pro His Asn Leu Ala Val Lys Leu Glu
115 120 125

His Thr Gly Leu Asp Ala His Leu Asp Leu Leu Leu Ser Thr His Thr
130 135 140

Phe Gly Tyr Pro Lys Glu Asp Gln Arg Leu Trp His Ala Val Ala Glu
145 150 155 160

Ala Thr Gly Leu Lys Ala Glu Arg Thr Leu Phe Ile Asp Asp Ser Glu
165 170 175

Ala Ile Leu Asp Ala Ala Ala Gln Phe Gly Ile Arg Tyr Cys Leu Gly
180 185 190

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

Pro Ser Leu Asn Asp Tyr Arg Arg Leu Ile Pro Ser Leu Met
210 215 220

<210> 70

<211> 421

<212> PRT

<213> Escherichia coli

<400> 70

Met Ala Ser Thr Phe Thr Ser Asp Thr Leu Pro Ala Asp His Lys Ala
1 5 10 15

Ala Ile Arg Gln Met Lys His Ala Leu Arg Ala Gln Leu Gly Asp Val
20 25 30

eolf-seql

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

Glu Ile Asn Ala Leu Lys Ala Gln Gly Asp Ala Val Trp Pro Val Leu
50 55 60

Ser Tyr Ala Asp Ile Lys Ala Gly His Val Thr Ala Glu Gln Arg Glu
65 70 75 80

Gln Ile Lys Arg Arg Gly Cys Ala Val Ile Lys Gly His Phe Pro Arg
85 90 95

Glu Gln Ala Leu Gly Trp Asp Gln Ser Met Leu Asp Tyr Leu Asp Arg
100 105 110

Asn Arg Phe Asp Glu Val Tyr Lys Gly Pro Gly Asp Asn Phe Phe Gly
115 120 125

Thr Leu Ser Ala Ser Arg Pro Glu Ile Tyr Pro Ile Tyr Trp Ser Gln
130 135 140

Ala Gln Met Gln Ala Arg Gln Ser Glu Glu Met Ala Asn Ala Gln Ser
145 150 155 160

Phe Leu Asn Arg Leu Trp Thr Phe Glu Ser Asp Gly Lys Gln Trp Phe
165 170 175

Asn Pro Asp Val Ser Val Ile Tyr Pro Asp Arg Ile Arg Arg Arg Pro
180 185 190

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

Leu Glu Arg Trp Leu Leu Pro Ala Tyr Gln Arg Val Phe Ala Asn Val
210 215 220

Phe Asn Gly Asn Leu Ala Gln Tyr Asp Pro Trp His Ala Ala His Arg
225 230 235 240

eolf-seql

Thr Glu Val Glu Glu Tyr Thr Val Asp Asn Thr Thr Lys Cys Ser Val
245 250 255

Phe Arg Thr Phe Gln Gly Trp Thr Ala Leu Ser Asp Met Leu Pro Gly
260 265 270

Gln Gly Leu Leu His Val Val Pro Ile Pro Glu Ala Met Ala Tyr Val
275 280 285

Leu Leu Arg Pro Leu Leu Asp Asp Val Pro Glu Asp Glu Leu Cys Gly
290 295 300

Val Ala Pro Gly Arg Val Leu Pro Val Ser Glu Gln Trp His Pro Leu
305 310 315 320

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

Val Trp Trp His Cys Asp Val Ile His Ser Val Ala Pro Val Glu Asn
340 345 350

Gln Gln Gly Trp Gly Asn Val Met Tyr Ile Pro Ala Ala Pro Met Cys
355 360 365

Glu Lys Asn Leu Ala Tyr Ala His Lys Val Lys Ala Ala Leu Glu Lys
370 375 380

Gly Ala Ser Pro Gly Asp Phe Pro Arg Glu Asp Tyr Glu Thr Asn Trp
385 390 395 400

Glu Gly Arg Phe Thr Leu Ala Asp Leu Asn Ile His Gly Lys Arg Ala
405 410 415

Leu Gly Met Asp Val
420

<210> 71

<211> 246

<212> PRT

<213> Saccharomyces cerevisiae

eolf-seql

<400> 71

Met Ala Glu Phe Ser Ala Asp Leu Cys Leu Phe Asp Leu Asp Gly Thr
1 5 10 15

Ile Val Ser Thr Thr Val Ala Ala Glu Lys Ala Trp Thr Lys Leu Cys
20 25 30

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

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

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

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

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

Trp Ala Ile Val Thr Ser Gly Ser Pro Tyr Leu Ala Phe Ser Trp Phe
115 120 125

Glu Thr Ile Leu Lys Asn Val Gly Lys Pro Lys Val Phe Ile Thr Gly
130 135 140

Phe Asp Val Lys Asn Gly Lys Pro Asp Pro Glu Gly Tyr Ser Arg Ala
145 150 155 160

Arg Asp Leu Leu Arg Gln Asp Leu Gln Leu Thr Gly Lys Gln Asp Leu
165 170 175

Lys Tyr Val Val Phe Glu Asp Ala Pro Val Gly Ile Lys Ala Gly Lys
180 185 190

Ala Met Gly Ala Ile Thr Val Gly Ile Thr Ser Ser Tyr Asp Lys Ser

eolf-seql

195

200

205

Val Leu Phe Asp Ala Gly Ala Asp Tyr Val Val Cys Asp Leu Thr Gln
210 215 220

Val Ser Val Val Lys Asn Asn Glu Asn Gly Ile Val Ile Gln Val Asn
225 230 235 240

Asn Pro Leu Thr Arg Ala
245

<210> 72

<211> 272

<212> PRT

<213> Bacillus subtilis

<400> 72

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

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

Gly Ala Arg Glu Ala Ile Lys Thr Leu Arg Arg Met Gly Lys Lys Ile
35 40 45

Val Phe Leu Ser Asn Arg Gly Asn Ile Ser Arg Ala Met Cys Arg Lys
50 55 60

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

Ser Ser Ser Val Thr Ala Ala Phe Leu Lys Lys His Tyr Arg Phe Ser
85 90 95

Lys Val Trp Val Leu Gly Glu Gln Gly Leu Val Asp Glu Leu Arg Leu
100 105 110

Ala Gly Val Gln Asn Ala Ser Glu Pro Lys Glu Ala Asp Trp Leu Val
115 120 125

eolf-seql

Ile Ser Leu His Glu Thr Leu Thr Tyr Asp Asp Leu Asn Gln Ala Phe
130 135 140

Gln Ala Ala Ala Gly Gly Ala Arg Ile Ile Ala Thr Asn Lys Asp Arg
145 150 155 160

Ser Phe Pro Asn Glu Asp Gly Asn Ala Ile Asp Val Ala Gly Met Ile
165 170 175

Gly Ala Ile Glu Thr Ser Ala Gln Ala Lys Thr Glu Leu Val Val Gly
180 185 190

Lys Pro Ser Trp Leu Met Ala Glu Ala Ala Cys Thr Ala Met Gly Leu
195 200 205

Ser Ala His Glu Cys Met Ile Ile Gly Asp Ser Ile Glu Ser Asp Ile
210 215 220

Ala Met Gly Lys Leu Tyr Gly Met Lys Ser Ala Leu Val Leu Thr Gly
225 230 235 240

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

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

<210> 73

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Motif 1: hDxDx[TV]

<220>

<221> MISC_FEATURE

<222> (1)..(1)

<223> X is an hydrophobic amino acid (A, I, L, M, F, V, P or G)

eolf-seql

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> X can be any amino acid

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> X can be any amino acid

<220>
 <221> MISC_FEATURE
 <222> (6)..(6)
 <223> X can be T or V

<400> 73

Xaa Asp Xaa Asp Xaa Xaa
 1 5

<210> 74
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Motif 2: [GSTDE][DSEN]x[hP]x[DGTS]

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> X can be G, S, T, D or E

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> X can be D, S, E or N

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> X can be any amino acid

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> X can be a hydrophobic amino acid (A, I, L, M, F, V, P or G) or P

<220>
 <221> MISC_FEATURE

eolf-seql

<222> (5)..(5)

<223> X can be any amino acid

<220>

<221> MISC_FEATURE

<222> (6)..(6)

<223> X can be D, G, T or S

<400> 74

Xaa Xaa Xaa Xaa Xaa Xaa

1 5

<210> 75

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> [GSTDE][DSEN]xx[hP]x[DGTS]

<220>

<221> MISC_FEATURE

<222> (1)..(1)

<223> X can be G, S, T, D or E

<220>

<221> MISC_FEATURE

<222> (2)..(2)

<223> X can be D, S, E or N

<220>

<221> MISC_FEATURE

<222> (3)..(4)

<223> X can be any amino acid

<220>

<221> MISC_FEATURE

<222> (5)..(5)

<223> X can be a hydrophobic amino acid (A, I, L, M, F, V, P or G) or P

<220>

<221> MISC_FEATURE

<222> (6)..(6)

<223> X can be any amino acid

<220>

<221> MISC_FEATURE

<222> (7)..(7)

<223> X can be D, G, T or S

eolf-seql

<400> 75

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

<210> 76

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> [GSTDE][DSEN]x[hP]xx[DGTS]

<220>

<221> MISC_FEATURE

<222> (1)..(1)

<223> X can be G, S, T, D or E

<220>

<221> MISC_FEATURE

<222> (2)..(2)

<223> X can be D, S, E or N

<220>

<221> MISC_FEATURE

<222> (3)..(3)

<223> X can be any amino acid

<220>

<221> MISC_FEATURE

<222> (4)..(4)

<223> X can be a hydrophobic amino acid (A, I, L, M, F, V, P or G) or P

<220>

<221> MISC_FEATURE

<222> (5)..(6)

<223> X can be any amino acid

<220>

<221> MISC_FEATURE

<222> (7)..(7)

<223> X can be D, G, T or S

<400> 76

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

eolf-seql

<210> 77
 <211> 8
 <212> PRT
 <213> Artificial Sequence
 <220>
 <223> [GSTDE][DSEN]xx[hP]xx[DGTS]

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> X can be G, S, T, D or E

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> X can be D, S, E or N

<220>
 <221> MISC_FEATURE
 <222> (3)..(4)
 <223> X can be any amino acid

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> X can be a hydrophobic amino acid (A, I, L, M, F, V, P or G) or P

<220>
 <221> MISC_FEATURE
 <222> (6)..(7)
 <223> X can be any amino acid

<220>
 <221> MISC_FEATURE
 <222> (8)..(8)
 <223> X can be a D, G, T or S

<400> 77

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5

<210> 78
 <211> 272
 <212> PRT
 <213> Shigella flexneri

<400> 78

eolf-seql

Met Ala Arg Leu Ala Ala Phe Asp Met Asp Gly Thr Leu Leu Met Pro
1 5 10 15

Asp His His Leu Gly Glu Lys Thr Leu Ser Thr Leu Ala Arg Leu Arg
20 25 30

Glu Arg Asp Ile Thr Leu Thr Phe Ala Thr Gly Arg His Ala Leu Glu
35 40 45

Met Gln His Ile Leu Gly Ala Leu Ser Leu Asp Ala Tyr Leu Ile Thr
50 55 60

Gly Asn Gly Thr Arg Val His Ser Leu Glu Gly Glu Leu Leu His Arg
65 70 75 80

Asp Asp Leu Pro Ala Asp Val Ala Glu Leu Val Leu Tyr Gln Gln Trp
85 90 95

Asp Thr Arg Ala Ser Met His Ile Phe Asn Asp Asp Gly Trp Phe Thr
100 105 110

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

Arg Tyr Gln Ile Ile Asp Val Lys Lys Met Pro Leu Gly Ser Val Thr
130 135 140

Lys Ile Cys Phe Cys Gly Asp His Asp Asp Leu Thr Arg Leu Gln Ile
145 150 155 160

Gln Leu Tyr Glu Ala Leu Gly Glu Arg Ala His Leu Cys Phe Ser Ala
165 170 175

Thr Asp Cys Leu Glu Val Leu Pro Val Gly Cys Asn Lys Gly Ala Ala
180 185 190

Leu Thr Val Leu Thr Gln His Leu Asp Leu Ser Leu Arg Asp Cys Met
195 200 205

eolf-seql

Ala Phe Gly Asp Ala Met Asn Asp Arg Glu Met Leu Val Ser Val Gly
210 215 220

Ser Gly Phe Ile Met Gly Asn Ala Met Pro Gln Leu Arg Ala Glu Leu
225 230 235 240

Pro His Leu Pro Val Ile Gly His Cys Arg Asn Gln Ala Val Ser His
245 250 255

Tyr Leu Thr His Trp Leu Asp Tyr Pro His Leu Pro Tyr Ser Pro Glu
260 265 270

<210> 79

<211> 272

<212> PRT

<213> Shigella boydii

<400> 79

Met Ala Arg Leu Ala Ala Phe Asp Met Asp Gly Thr Leu Leu Met Pro
1 5 10 15

Asp His His Leu Gly Glu Lys Thr Leu Ser Thr Leu Ala Arg Leu Arg
20 25 30

Glu Arg Asp Ile Thr Leu Thr Phe Ala Thr Gly Arg His Ala Leu Glu
35 40 45

Met Gln His Ile Leu Gly Ala Leu Ser Leu Asp Ala Tyr Leu Ile Thr
50 55 60

Gly Asn Gly Thr Arg Val His Ser Leu Glu Gly Glu Leu Leu His Arg
65 70 75 80

Asp Asp Leu Pro Ala Asp Val Ala Glu Leu Val Leu Tyr Gln Gln Trp
85 90 95

Asp Thr Arg Ala Ser Met His Ile Phe Asn Asp Asp Gly Trp Phe Thr
100 105 110

Gly Lys Glu Ile Pro Ala Leu Leu Gln Ala Phe Val Tyr Asn Gly Phe

eolf-seql

115

120

125

Arg Tyr Gln Ile Ile Asp Val Lys Lys Met Pro Leu Gly Ser Val Thr
130 135 140

Lys Ile Cys Phe Cys Gly Asp His Asp Asp Leu Thr Arg Leu Gln Ile
145 150 155 160

Gln Leu Tyr Glu Ala Leu Gly Glu Arg Ala His Leu Cys Phe Ser Ala
165 170 175

Thr Asp Cys Leu Glu Val Leu Pro Val Gly Cys Asn Lys Gly Ala Ala
180 185 190

Leu Thr Val Leu Thr Gln His Leu Gly Leu Ser Leu Arg Asp Cys Met
195 200 205

Ala Phe Gly Asp Ala Met Asn Asp Arg Glu Met Leu Gly Ser Val Gly
210 215 220

Ser Gly Phe Ile Met Gly Asn Ala Met Pro Gln Leu Arg Ala Glu Leu
225 230 235 240

Pro His Leu Pro Val Ile Gly His Cys Arg Asn Gln Ala Val Ser His
245 250 255

Tyr Leu Thr His Trp Leu Asp Tyr Pro His Leu Pro Tyr Ser Pro Glu
260 265 270

<210> 80

<211> 272

<212> PRT

<213> Escherichia fergusonii

<400> 80

Met Ala Arg Leu Ala Ala Phe Asp Met Asp Gly Thr Leu Leu Met Pro
1 5 10 15

Asp His His Leu Gly Glu Lys Thr Leu Ser Thr Leu Ala Arg Leu Arg
20 25 30

eolf-seql

Glu Arg Asp Ile Thr Leu Thr Phe Ala Thr Gly Arg His Ala Leu Glu
35 40 45

Met Gln His Ile Leu Gly Ala Leu Ser Leu Asp Ala Tyr Leu Ile Thr
50 55 60

Gly Asn Gly Thr Arg Val His Ser Leu Glu Gly Glu Leu Leu His Arg
65 70 75 80

Asp Asp Leu Pro Ala Asp Val Ala Glu Leu Val Leu Tyr Gln Gln Trp
85 90 95

Asp Thr Arg Ala Ser Met His Ile Phe Asn Asp Asp Gly Trp Phe Thr
100 105 110

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

Arg Tyr Gln Ile Ile Asp Val Lys Lys Met Pro Leu Asp Arg Val Thr
130 135 140

Lys Ile Cys Phe Cys Gly Asp His Asp Asp Leu Thr Arg Leu Gln Ile
145 150 155 160

Gln Leu His Glu Ala Leu Gly Glu Arg Ala His Leu Cys Phe Ser Ala
165 170 175

Thr Asp Cys Leu Glu Val Leu Pro Val Gly Cys Asn Lys Gly Ala Ala
180 185 190

Leu Thr Val Leu Thr Gln His Leu Gly Leu Ser Leu Arg Glu Cys Met
195 200 205

Ala Phe Gly Asp Ala Met Asn Asp Arg Glu Met Leu Gly Ser Val Gly
210 215 220

Ser Gly Phe Ile Met Gly Asn Ala Met Pro Gln Leu Arg Ala Glu Leu
225 230 235 240

eolf-seql

Pro His Leu Pro Val Ile Gly His Cys Arg Asn Gln Ala Val Ser His
245 250 255

Tyr Leu Thr His Trp Leu Asp Tyr Pro His Leu Pro Tyr Ser Pro Glu
260 265 270

<210> 81

<211> 245

<212> PRT

<213> Staphylococcus aureus

<400> 81

Met Ala Arg Leu Ala Ala Phe Asp Met Asp Gly Thr Leu Leu Val Pro
1 5 10 15

Asp His His Leu Gly Glu Lys Thr Leu Ser Thr Leu Ala Arg Leu Arg
20 25 30

Glu Arg Asp Ile Thr Leu Thr Phe Ala Thr Gly Arg His Ala Leu Glu
35 40 45

Met Gln His Ile Leu Gly Ala Leu Ser Leu Asp Ala Tyr Leu Ile Thr
50 55 60

Gly Asn Gly Thr Arg Val His Ser Leu Glu Gly Glu Leu Leu His Arg
65 70 75 80

Asp Asp Leu Pro Ala Asp Val Ala Glu Leu Val Leu Tyr Gln Gln Trp
85 90 95

Asp Thr Arg Ala Ser Met His Ile Phe Asn Asp Asp Gly Trp Phe Thr
100 105 110

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

Arg Tyr Gln Ile Ile Asp Val Lys Lys Met Pro Leu Gly Ser Val Thr
130 135 140

eolf-seql

Lys Ile Cys Phe Cys Gly Asp His Asp Asp Leu Thr Arg Leu Gln Ile
145 150 155 160

Gln Leu Tyr Glu Ala Leu Gly Glu Arg Ala His Leu Cys Phe Ser Ala
165 170 175

Thr Asp Cys Leu Glu Val Leu Pro Val Gly Cys Asn Lys Gly Ala Ala
180 185 190

Leu Thr Val Leu Thr Gln His Leu Gly Leu Ser Leu Arg Asp Cys Thr
195 200 205

Ala Phe Gly Asp Ala Met Asn Asp Arg Glu Met Leu Val Ser Val Gly
210 215 220

Ser Gly Phe Ile Met Gly Asn Ala Met Pro Gln Leu Arg Ala Glu Leu
225 230 235 240

Pro His Leu Pro Val
245

<210> 82
<211> 272
<212> PRT
<213> unknown

<220>
<223> Escherichia albertii

<400> 82

Met Ala Arg Leu Ala Ala Phe Asp Met Asp Gly Thr Leu Leu Met Pro
1 5 10 15

Asp His His Leu Gly Glu Lys Thr Leu Ser Thr Leu Ala Arg Leu Arg
20 25 30

Asp Arg Asp Ile Thr Leu Thr Phe Ala Thr Gly Arg His Ala Leu Glu
35 40 45

Met Arg His Ile Leu Gly Thr Phe Ala Leu Asp Ala Tyr Leu Ile Thr

eolf-seql

50

55

60

Gly Asn Gly Thr Arg Val His Ser Gln Glu Gly Asp Leu Leu Tyr Arg
65 70 75 80

Asp Asp Leu Pro Ala Asp Val Ala Glu Arg Val Leu His Gln Lys Trp
85 90 95

Asp Thr Gln Ala Ser Met His Ile Phe Asn Asp Asp Gly Trp Phe Thr
100 105 110

Gly Gln Glu Met Pro Ser Leu Leu Gln Ala Phe Val Tyr Ser Gly Phe
115 120 125

Arg Tyr Gln Ile Ile Asp Val Lys Lys Met Pro Leu Asp Arg Val Thr
130 135 140

Lys Ile Cys Phe Cys Gly Asp His Asp Asp Leu Thr Arg Leu Gln Ile
145 150 155 160

Gln Leu Asn Glu Ala Leu Gly Asp Arg Ala His Leu Cys Phe Ser Ala
165 170 175

Ile Asn Cys Leu Glu Val Leu Pro Val Gly Cys Asn Lys Gly Ala Ala
180 185 190

Leu Ala Val Leu Ala Asp Tyr Leu Gly Phe Ser Leu Arg Asp Cys Met
195 200 205

Ala Phe Gly Asp Ala Met Asn Asp Arg Glu Met Leu Gly Ser Val Gly
210 215 220

Asn Gly Phe Ile Met Gly Asn Ala Met Pro Gln Leu Leu Ala Glu Leu
225 230 235 240

Pro His Leu Pro Val Ile Gly His Cys Arg Asn Gln Ala Val Ser His
245 250 255

Tyr Leu Thr His Trp Leu Asp Asn Pro His Leu Pro Tyr Ser Pro Glu

eolf-seql

260

265

270

<210> 83
 <211> 272
 <212> PRT
 <213> *Citrobacter amalonaticus*

<400> 83

Met Ala Arg Leu Ala Ala Phe Asp Met Asp Gly Thr Leu Leu Met Pro
 1 5 10 15

Asn His Leu Leu Gly Asp Glu Thr Leu Ser Thr Leu Ala Arg Leu Arg
 20 25 30

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

Met Arg His Ile Leu Gly Thr Phe Ser Leu Asp Ala Phe Leu Ile Thr
 50 55 60

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

Gln Asp Leu Glu Pro Ala Val Ala Glu Ile Val Leu His Gln Arg Trp
 85 90 95

Asp Thr Gln Ala Ser Met His Ile Phe Asn Asp Asn Gly Trp Phe Thr
 100 105 110

Gly Gln Glu Ile Pro Glu Met Leu His Ala His Val Tyr Ser Gly Phe
 115 120 125

Arg Tyr Gln Ile Val Asp Val Ala Arg Ile Pro Ala Asp Arg Val Thr
 130 135 140

Lys Val Cys Phe Cys Gly Asp His Asp Asp Leu Thr Arg Leu Lys Ile
 145 150 155 160

Gln Leu Glu Glu Val Leu Gly Ala Arg Ala His Leu Cys Phe Ser Ala
 165 170 175

eolf-seql

Val Asp Cys Leu Glu Val Leu Pro Val Gly Cys Asn Lys Gly Ser Ala
180 185 190

Leu Glu Val Leu Ser Gly His Leu Gly Leu Ser Leu Ala Glu Cys Met
195 200 205

Ala Phe Gly Asp Ala Met Asn Asp Arg Glu Met Leu Gly Ser Val Gly
210 215 220

Arg Gly Leu Ile Met Gly Asn Ala Met Pro Gln Leu Ile Ala Glu Leu
225 230 235 240

Pro His Leu Pro Val Ile Gly His Cys Arg Asn Gln Ala Val Ser His
245 250 255

Phe Leu Thr His Trp Leu Asp Tyr Pro Asn Leu Pro Tyr Ser Pro Glu
260 265 270

<210> 84

<211> 272

<212> PRT

<213> Salmonella enterica

<400> 84

Met Ala Arg Leu Ala Ala Phe Asp Met Asp Gly Thr Leu Leu Met Pro
1 5 10 15

Asp His His Leu Gly Lys Glu Thr Leu Ala Thr Leu Ala Arg Leu Arg
20 25 30

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

Met Arg His Ile Leu Gly Thr Leu Ser Leu Asp Ala Tyr Leu Ile Thr
50 55 60

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

eolf-seql

Gln Asp Leu Asp Pro Gln Val Ala Asp Thr Val Met His His Ala Trp
85 90 95

Asp Thr Arg Ala Ser Met His Val Phe Asn Asp Asn Gly Trp Phe Thr
100 105 110

Gly Gln Glu Ile Pro Ala Leu Leu Gln Ala His Val Tyr Ser Gly Phe
115 120 125

Arg Tyr Gln Val Ile Asp Ile Lys Ser Ile Pro Ala His Gln Val Thr
130 135 140

Lys Ile Cys Phe Cys Gly Asp His Asp Asp Leu Ile Arg Leu Arg Ile
145 150 155 160

Gln Leu Asn Glu Ala Leu Glu Glu Arg Ala His Leu Cys Phe Ser Ala
165 170 175

Val Asp Cys Leu Glu Val Leu Pro Leu Gly Cys Asn Lys Gly Ser Ala
180 185 190

Leu Ala Val Leu Ser Asn His Leu Gly Leu Ser Leu Ala Asp Cys Met
195 200 205

Ala Phe Gly Asp Ala Met Asn Asp Arg Glu Met Leu Gly Ser Val Gly
210 215 220

Arg Gly Leu Ile Met Gly Asn Ala Met Pro Gln Leu Ile Ala Ala Leu
225 230 235 240

Pro His Leu Ser Val Ile Gly His Cys Gly Asn Gln Ala Val Ser His
245 250 255

Phe Leu Thr His Trp Leu Asp Asn Pro His Leu Pro Tyr Ser Pro Glu
260 265 270

<210> 85
<211> 220
<212> PRT

eolf-seql

<213> Escherichia coli

<400> 85

Leu Gly Ala Leu Ser Leu Asp Ala Tyr Leu Ile Thr Gly Asn Gly Thr
 1 5 10 15

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

Ala Asp Val Ala Glu Leu Val Leu Tyr Gln Gln Trp Asp Thr Arg Ala
 35 40 45

Ser Met His Ile Phe Asn Asp Asp Gly Trp Phe Thr Gly Lys Glu Ile
 50 55 60

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

Ile Asp Val Lys Lys Met Pro Leu Gly Ser Val Thr Lys Ile Cys Phe
 85 90 95

Cys Gly Asp His Asp Asp Leu Thr Arg Leu Gln Ile Gln Leu Tyr Glu
 100 105 110

Ala Leu Gly Glu Arg Ala His Leu Cys Phe Ser Ala Thr Asp Cys Leu
 115 120 125

Glu Val Leu Pro Val Gly Cys Asn Lys Gly Ala Ala Leu Thr Val Leu
 130 135 140

Thr Gln His Leu Gly Leu Ser Leu Arg Asp Cys Met Ala Phe Gly Asp
 145 150 155 160

Ala Met Asn Asp Arg Glu Met Leu Gly Ser Val Gly Ser Gly Phe Ile
 165 170 175

Met Gly Asn Ala Met Pro Gln Leu Arg Ala Glu Leu Pro His Leu Pro
 180 185 190

eolf-seql

Val Ile Gly His Cys Arg Asn Gln Ala Val Ser His Tyr Leu Thr His
 195 200 205

Trp Leu Asp Tyr Pro His Leu Pro Tyr Ser Pro Glu
 210 215 220

<210> 86

<211> 355

<212> PRT

<213> Shigella flexneri

<400> 86

Met Ser Gln Lys Tyr Leu Phe Ile Asp Arg Asp Gly Thr Leu Ile Ser
 1 5 10 15

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

Glu Pro Gly Val Ile Pro Glu Leu Leu Lys Leu Gln Lys Ala Gly Tyr
 35 40 45

Lys Leu Val Met Ile Thr Asn Gln Asp Gly Leu Gly Thr Gln Ser Phe
 50 55 60

Pro Gln Ala Asp Phe Asp Gly Pro His Asn Leu Met Met Gln Ile Phe
 65 70 75 80

Thr Ser Gln Gly Val Gln Phe Asp Glu Val Leu Ile Cys Pro His Leu
 85 90 95

Pro Ala Asp Glu Cys Asp Cys Arg Lys Pro Lys Val Lys Leu Val Glu
 100 105 110

Arg Tyr Leu Ala Glu Gln Ala Met Asp Arg Ala Asn Ser Tyr Val Ile
 115 120 125

Gly Asp Arg Ala Thr Asp Ile Gln Leu Ala Glu Asn Met Gly Ile Thr
 130 135 140

Gly Leu Arg Tyr Asp Arg Glu Thr Leu Asn Trp Pro Met Ile Gly Glu

eolf-seql

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

eolf-seql

355

<210> 87
 <211> 355
 <212> PRT
 <213> Escherichia albertii

<400> 87

Met Ser Gln Lys Tyr Leu Phe Ile Asp Arg Asp Gly Thr Leu Ile Ser
 1 5 10 15

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

Glu Pro Gly Val Ile Pro Glu Leu Leu Lys Leu Gln Lys Ala Gly Tyr
 35 40 45

Lys Leu Val Met Ile Thr Asn Gln Asp Gly Leu Gly Thr Gln Ser Phe
 50 55 60

Pro Gln Ala Asp Phe Asp Gly Pro His Asn Leu Met Met Gln Ile Phe
 65 70 75 80

Thr Ser Gln Gly Val Gln Phe Asp Glu Val Leu Ile Cys Pro His Leu
 85 90 95

Pro Ala Asp Glu Cys Asp Cys Arg Lys Pro Lys Val Lys Leu Val Glu
 100 105 110

Arg Tyr Leu Ala Glu Gln Ala Met Asp Arg Ala Asn Ser Tyr Val Ile
 115 120 125

Gly Asp Arg Ala Thr Asp Ile Gln Leu Ala Glu Asn Met Gly Ile Thr
 130 135 140

Gly Leu Arg Tyr Asp Arg Glu Thr Leu Asn Trp Pro Met Ile Gly Glu
 145 150 155 160

Gln Leu Thr Lys Arg Asp Arg Tyr Ala His Val Val Arg Asn Thr Lys
 165 170 175

eolf-seql

Glu Thr Gln Ile Asp Val Gln Val Trp Leu Asp Arg Glu Gly Asp Ser
180 185 190

Lys Ile Asn Thr Gly Val Gly Phe Phe Asp His Met Leu Asp Gln Ile
195 200 205

Ala Thr His Gly Gly Phe Arg Met Glu Ile Asn Val Lys Gly Asp Leu
210 215 220

Tyr Ile Asp Asp His His Thr Val Glu Asp Thr Gly Leu Ala Leu Gly
225 230 235 240

Glu Ala Leu Lys Ile Ala Leu Gly Asp Lys Arg Gly Ile Cys Arg Phe
245 250 255

Gly Phe Val Leu Pro Met Asp Glu Cys Leu Ala Arg Cys Ala Met Asp
260 265 270

Ile Ser Gly Arg Pro His Leu Glu Tyr Lys Ala Glu Phe Thr Tyr Gln
275 280 285

Arg Val Gly Asp Leu Ser Thr Glu Met Ile Glu His Phe Phe Arg Ser
290 295 300

Leu Ser Tyr Thr Met Gly Val Thr Leu His Leu Lys Thr Lys Gly Lys
305 310 315 320

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

Leu Arg Gln Ala Ile Arg Val Glu Gly Asp Thr Leu Pro Ser Ser Lys
340 345 350

Gly Val Leu
355

<210> 88

<211> 355

eolf-seql

<212> PRT

<213> *Shigella flexneri*

<400> 88

Met Ser Gln Lys Tyr Leu Phe Ile Asp Arg Asp Gly Thr Leu Ile Ser
1 5 10 15

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

Glu Pro Gly Val Ile Pro Glu Leu Leu Lys Leu Gln Lys Ala Gly Tyr
35 40 45

Lys Leu Val Met Ile Thr Asn Gln Asp Gly Leu Gly Thr Gln Ser Phe
50 55 60

Pro Gln Ala Asp Phe Asp Gly Pro His Asn Leu Met Met Gln Ile Phe
65 70 75 80

Thr Ser Gln Gly Val Gln Phe Asp Glu Val Leu Ile Cys Pro His Leu
85 90 95

Pro Ala Asp Glu Cys Asp Cys Arg Lys Pro Lys Val Lys Leu Val Glu
100 105 110

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

Gly Asp Arg Ala Thr Asp Ile Gln Leu Ala Glu Asn Met Gly Ile Asn
130 135 140

Gly Leu Arg Tyr Asp Arg Glu Thr Leu Asn Trp Pro Met Ile Gly Glu
145 150 155 160

Gln Leu Thr Lys Arg Asp Arg Tyr Ala His Val Val Arg Asn Thr Lys
165 170 175

Glu Thr Gln Ile Asp Val Gln Val Trp Leu Asp Arg Glu Gly Gly Ser
180 185 190

eolf-seql

Lys Ile Asn Thr Gly Val Gly Phe Phe Asp His Met Leu Asp Gln Ile
 195 200 205

Ala Thr His Gly Gly Phe Arg Met Glu Ile Asn Val Lys Gly Asp Leu
 210 215 220

Tyr Ile Asp Asp His His Thr Val Glu Asp Thr Gly Leu Ala Leu Gly
 225 230 235 240

Glu Ala Leu Lys Ile Ala Leu Gly Asp Lys Arg Gly Ile Cys Arg Phe
 245 250 255

Gly Phe Val Leu Pro Met Asp Glu Cys Leu Ala Arg Cys Ala Leu Asp
 260 265 270

Ile Ser Gly Arg Pro His Leu Glu Tyr Lys Ala Glu Phe Thr Tyr Gln
 275 280 285

Arg Val Gly Asp Leu Ser Thr Glu Met Ile Glu His Phe Phe Arg Ser
 290 295 300

Leu Ser Tyr Thr Met Gly Val Thr Leu His Leu Lys Thr Lys Gly Lys
 305 310 315 320

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

Leu Arg Gln Ala Leu Arg Val Glu Gly Asp Thr Leu Pro Ser Ser Lys
 340 345 350

Gly Val Leu
 355

<210> 89
 <211> 355
 <212> PRT
 <213> Shigella sonnei

<400> 89

eolf-seql

Met Ser Gln Lys Tyr Leu Phe Ile Asp Arg Asp Gly Thr Leu Ile Ser
1 5 10 15

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

Glu Pro Gly Val Ile Pro Glu Leu Leu Lys Leu Gln Lys Ala Gly Tyr
35 40 45

Lys Leu Val Met Ile Thr Asn Gln Asp Gly Leu Gly Thr Gln Ser Phe
50 55 60

Pro Gln Ala Asp Phe Asp Gly Pro His Asn Leu Met Met Gln Ile Phe
65 70 75 80

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

Pro Ala Asp Glu Cys Asp Cys Arg Lys Pro Lys Val Lys Leu Val Glu
100 105 110

Arg Tyr Leu Ala Glu Gln Ala Met Asp Arg Ala Asn Ser Tyr Val Ile
115 120 125

Gly Asp Arg Ala Thr Asp Ile Gln Leu Ala Glu Asn Met Gly Ile Asn
130 135 140

Gly Leu Arg Tyr Asp Arg Glu Ile Leu Asn Trp Pro Met Ile Gly Glu
145 150 155 160

Gln Leu Thr Lys Arg Asp Arg Tyr Ala His Val Val Arg Asn Thr Lys
165 170 175

Glu Thr Gln Ile Asp Val Gln Val Trp Leu Asp Arg Glu Gly Gly Ser
180 185 190

Lys Ile Asn Thr Gly Val Gly Phe Phe Asp His Met Leu Asp Gln Ile
195 200 205

eolf-seql

Ala Thr His Gly Gly Phe Arg Met Glu Ile Asn Val Lys Gly Asp Leu
210 215 220

Tyr Ile Asp Asp His His Thr Val Glu Asp Thr Gly Leu Ala Leu Gly
225 230 235 240

Glu Ala Leu Lys Met Ala Leu Gly Asp Lys Arg Gly Ile Cys Arg Phe
245 250 255

Gly Phe Val Leu Pro Met Asp Glu Cys Leu Ala Arg Cys Ala Leu Asp
260 265 270

Ile Ser Gly Arg Pro His Leu Glu Tyr Lys Ala Glu Phe Thr Tyr Gln
275 280 285

Arg Val Gly Asp Leu Ser Thr Glu Met Ile Glu His Phe Phe Arg Ser
290 295 300

Leu Ser Tyr Thr Met Gly Val Thr Leu His Leu Lys Thr Lys Gly Lys
305 310 315 320

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

Leu Arg Gln Ala Ile Arg Val Glu Gly Asp Thr Leu Pro Ser Ser Lys
340 345 350

Gly Val Leu
355

<210> 90
<211> 355
<212> PRT
<213> Escherichia coli

<400> 90

Met Ser Gln Lys Tyr Leu Phe Ile Asp Arg Asp Gly Thr Leu Ile Ser
1 5 10 15

Glu Pro Pro Ser Asp Phe Gln Val Asp Arg Phe Asp Lys Leu Ala Phe

eolf-seql

20

25

30

Glu Pro Gly Val Ile Pro Gln Leu Leu Lys Leu Gln Lys Ala Gly Tyr
 35 40 45

Lys Leu Val Met Ile Thr Asn Gln Asp Gly Leu Gly Thr Gln Ser Phe
 50 55 60

Pro Gln Ala Asp Phe Asp Gly Pro His Asn Leu Met Met Gln Ile Phe
 65 70 75 80

Thr Ser Gln Gly Val Gln Phe Asp Glu Val Leu Ile Cys Pro His Leu
 85 90 95

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

Arg Tyr Leu Ala Glu Gln Ala Met Asp Arg Ala Asn Ser Tyr Val Ile
 115 120 125

Gly Asp Arg Ala Thr Asp Ile Gln Leu Ala Glu Asn Met Gly Ile Asn
 130 135 140

Gly Leu Arg Tyr Asp Arg Glu Thr Leu Asn Trp Pro Met Ile Gly Glu
 145 150 155 160

Gln Leu Ile Lys Arg Asp Arg Tyr Ala His Val Val Arg Asn Thr Lys
 165 170 175

Glu Thr Gln Ile Asp Val Gln Val Trp Leu Asp Arg Glu Gly Gly Ser
 180 185 190

Lys Ile Asn Thr Gly Val Gly Phe Phe Asp His Met Leu Asp Gln Ile
 195 200 205

Ala Thr His Gly Gly Phe Arg Met Glu Ile Asn Val Lys Gly Asp Leu
 210 215 220

Tyr Ile Asp Asp His His Thr Val Glu Asp Thr Gly Leu Ala Leu Gly

eolf-seql

Lys Leu Val Met Ile Thr Asn Gln Asp Gly Leu Gly Thr Gln Ser Phe
50 55 60

Pro Gln Ala Asp Phe Asp Gly Pro His Asn Leu Met Met Gln Ile Phe
65 70 75 80

Thr Ser Gln Gly Val Gln Phe Asp Glu Val Leu Ile Cys Pro His Leu
85 90 95

Pro Ala Asp Glu Cys Asp Cys Arg Lys Pro Lys Val Lys Leu Val Glu
100 105 110

Arg Tyr Leu Ala Glu Gln Ala Met Asp Arg Ala Asn Ser Tyr Val Ile
115 120 125

Gly Asp Arg Ala Thr Asp Ile Gln Leu Ala Glu Asn Met Gly Ile Asn
130 135 140

Gly Leu Arg Tyr Asp Cys Glu Ile Leu Ser Trp Pro Met Ile Gly Glu
145 150 155 160

Gln Leu Thr Lys Arg Asp Arg Tyr Ala His Val Val Arg Asn Thr Lys
165 170 175

Glu Thr Gln Ile Asp Val Arg Val Trp Leu Asp Arg Glu Gly Gly Ser
180 185 190

Lys Ile Asn Thr Gly Val Gly Phe Phe Asp His Met Leu Asp Gln Ile
195 200 205

Ala Thr His Gly Gly Phe Arg Met Glu Ile Asn Val Lys Gly Asp Leu
210 215 220

Tyr Ile Asp Asp His His Thr Val Glu Asp Thr Gly Leu Ala Leu Gly
225 230 235 240

Glu Ala Leu Lys Met Ala Leu Gly Asp Lys Arg Gly Ile Cys Arg Phe
245 250 255

eolf-seql

Gly Phe Val Leu Pro Met Asp Glu Cys Leu Ala Arg Cys Ala Leu Asp
 260 265 270

Ile Ser Gly Arg Pro His Leu Glu Tyr Lys Ala Glu Phe Thr Tyr Gln
 275 280 285

Arg Val Gly Asp Leu Ser Thr Glu Met Ile Glu His Phe Phe Arg Ser
 290 295 300

Leu Ser Tyr Thr Met Gly Val Thr Leu His Leu Lys Thr Lys Gly Lys
 305 310 315 320

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

Leu Arg Gln Ala Ile Arg Val Glu Gly Asp Thr Leu Pro Ser Ser Lys
 340 345 350

Gly Val Leu
 355

<210> 92
 <211> 355
 <212> PRT
 <213> Escherichia marmotae

<400> 92

Met Ser Gln Lys Tyr Leu Phe Ile Asp Arg Asp Gly Thr Leu Ile Ser
 1 5 10 15

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

Glu Pro Gly Val Ile Pro Glu Leu Leu Lys Leu Gln Lys Ala Gly Tyr
 35 40 45

Lys Leu Val Met Ile Thr Asn Gln Asp Gly Leu Gly Thr Gln Arg Phe
 50 55 60

eolf-seql

Pro Gln Ala Asp Phe Asp Gly Pro His Asn Leu Met Met Gln Ile Phe
65 70 75 80

Thr Ser Gln Gly Val Gln Phe Asp Glu Val Leu Ile Cys Pro His Leu
85 90 95

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

Arg Tyr Leu Ala Glu Gln Ala Met Asp Arg Ala Ser Ser Tyr Val Ile
115 120 125

Gly Asp Arg Ala Thr Asp Ile Gln Leu Ala Glu Asn Met Gly Ile Asn
130 135 140

Gly Leu Arg Tyr Asn Arg Glu Thr Leu Asn Trp Pro Met Ile Gly Glu
145 150 155 160

Gln Leu Thr Lys Arg Asn Arg Tyr Ala His Val Val Arg Asn Thr Lys
165 170 175

Glu Thr Gln Ile Asp Val Gln Val Trp Leu Asp Arg Glu Gly Gly Ser
180 185 190

Lys Ile Asn Thr Gly Val Gly Phe Phe Asp His Met Leu Asp Gln Ile
195 200 205

Ala Thr His Gly Gly Phe Arg Met Glu Ile Asn Val Lys Gly Asp Leu
210 215 220

Tyr Ile Asp Asp His His Thr Val Glu Asp Thr Gly Leu Ala Leu Gly
225 230 235 240

Glu Ala Leu Lys Ile Ala Leu Gly Asp Lys Arg Gly Ile Cys Arg Phe
245 250 255

Gly Phe Val Leu Pro Met Asp Glu Cys Leu Ala Arg Cys Ala Leu Asp
260 265 270

eolf-seql

Ile Ser Gly Arg Pro His Leu Glu Tyr Lys Ala Glu Phe Thr Tyr Gln
275 280 285

Arg Val Gly Asp Leu Ser Thr Glu Met Ile Glu His Phe Phe Arg Ser
290 295 300

Leu Ser Tyr Thr Met Gly Val Thr Leu His Leu Lys Thr Lys Gly Lys
305 310 315 320

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

Leu Arg Gln Ala Ile Arg Val Glu Gly Asp Thr Leu Pro Ser Ser Lys
340 345 350

Gly Val Leu
355

<210> 93
<211> 355
<212> PRT
<213> Salmonella bongori

<400> 93

Met Ser Gln Lys Tyr Leu Phe Ile Asp Arg Asp Gly Thr Leu Ile Ser
1 5 10 15

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

Glu Pro Glu Val Ile Pro Val Leu Leu Lys Leu Gln Lys Ala Gly Phe
35 40 45

Lys Leu Val Met Ile Thr Asn Gln Asp Gly Leu Gly Thr Gln Ser Phe
50 55 60

Pro Gln Ala Asp Phe Asp Gly Pro His Asn Leu Met Met Gln Val Phe
65 70 75 80

eolf-seql

Thr Ser Gln Gly Val His Phe Asp Glu Val Leu Ile Cys Pro His Leu
85 90 95

Pro Ala Asp Glu Cys Asp Cys Arg Lys Pro Lys Ile Lys Leu Val Glu
100 105 110

Arg Tyr Leu Ala Glu Gln Ala Met Asp Ser Ala Asn Ser Tyr Val Ile
115 120 125

Gly Asp Arg Ala Thr Asp Val Gln Leu Ala Asp Asn Met Gly Ile Thr
130 135 140

Gly Leu Arg Tyr His Arg Glu Thr Leu Asn Trp Ser Met Ile Gly Glu
145 150 155 160

Gln Leu Thr Lys Arg Asp Arg Tyr Ala His Val Ile Arg Asn Thr Lys
165 170 175

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

Lys Ile Asn Thr Gly Val Gly Phe Phe Asp His Met Leu Asp Gln Ile
195 200 205

Ala Thr His Gly Gly Phe Arg Met Asp Val Thr Val Lys Gly Asp Leu
210 215 220

Tyr Ile Asp Asp His His Thr Val Glu Asp Thr Gly Leu Ala Leu Gly
225 230 235 240

Glu Ala Leu Lys Leu Ala Leu Gly Asp Lys Arg Gly Ile Cys Arg Phe
245 250 255

Gly Phe Val Leu Pro Met Asp Glu Cys Leu Ala Arg Cys Ala Leu Asp
260 265 270

Ile Ser Gly Arg Pro His Leu Glu Tyr Lys Ala Glu Phe Thr Tyr Gln
275 280 285

eolf-seql

Arg Val Gly Asp Leu Ser Thr Glu Met Ile Glu His Phe Phe Arg Ser
290 295 300

Leu Ser Tyr Thr Met Gly Val Thr Leu His Leu Lys Thr Lys Gly Lys
305 310 315 320

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

Leu Arg Gln Ala Ile Arg Val Glu Gly Asp Thr Leu Pro Ser Ser Lys
340 345 350

Gly Val Leu
355

<210> 94

<211> 266

<212> PRT

<213> Shigella sonnei

<400> 94

Met Thr Glu Pro Leu Thr Glu Thr Pro Glu Leu Ser Ala Lys Tyr Ala
1 5 10 15

Trp Phe Phe Asp Leu Asp Gly Thr Leu Ala Glu Ile Lys Pro His Pro
20 25 30

Asp Gln Val Val Val Pro Asp Asn Ile Leu Gln Gly Leu Gln Leu Leu
35 40 45

Ala Thr Ala Ser Asp Gly Ala Leu Ala Leu Ile Ser Gly Arg Ser Met
50 55 60

Val Glu Leu Asp Ala Leu Ala Lys Pro Tyr Arg Phe Pro Leu Ala Gly
65 70 75 80

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

His Leu Pro Asp Ala Ile Ala Arg Asp Ile Ser Val Gln Leu His Thr

eolf-seql

100

105

110

Val Ile Ala Gln Tyr Pro Gly Ala Glu Leu Glu Ala Lys Gly Met Ala
 115 120 125

Phe Ala Leu His Tyr Arg Gln Ala Pro Gln His Glu Asp Ala Leu Met
 130 135 140

Thr Leu Ala Gln Arg Ile Thr Gln Ile Trp Pro Gln Met Ala Leu Gln
 145 150 155 160

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

Glu Ala Ile Ala Ala Phe Met Gln Glu Ala Pro Phe Ile Gly Arg Thr
 180 185 190

Pro Val Phe Leu Gly Asp Asp Leu Thr Asp Glu Ser Gly Phe Ala Val
 195 200 205

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

Gln Ala Ser Trp Arg Leu Ala Gly Val Pro Asp Val Trp Ser Trp Leu
 225 230 235 240

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

Asp Asp Tyr Glu Ser Phe Ser Arg Ser Ile
 260 265

<210> 95

<211> 266

<212> PRT

<213> Escherichia coli

<400> 95

Met Thr Glu Pro Leu Thr Glu Thr Pro Glu Leu Ser Ala Lys Tyr Ala
 1 5 10 15

eolf-seql

Trp Phe Phe Asp Leu Asp Gly Thr Leu Ala Glu Ile Lys Pro His Pro
20 25 30

Asp Gln Val Val Val Pro Asp Asn Ile Leu Gln Gly Leu Gln Leu Leu
35 40 45

Ala Thr Ala Ser Asp Gly Ala Leu Ala Leu Ile Ser Gly Arg Ser Met
50 55 60

Val Glu Leu Asp Ala Leu Ala Lys Pro Tyr Arg Phe Pro Leu Ala Gly
65 70 75 80

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

His Leu Pro Asp Ala Ile Ala Arg Asp Ile Ser Val Gln Leu His Thr
100 105 110

Val Ile Ala Gln Tyr Pro Gly Ala Glu Leu Glu Ala Lys Gly Met Ala
115 120 125

Phe Ala Leu His Tyr Arg Gln Ala Pro Gln His Glu Asp Ala Leu Met
130 135 140

Thr Leu Ala Gln Arg Ile Thr Gln Ile Trp Pro Gln Met Ala Leu Gln
145 150 155 160

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

Glu Ala Ile Ala Ala Phe Met Gln Glu Ala Pro Phe Ile Gly Arg Thr
180 185 190

Pro Val Phe Leu Gly Asp Asp Leu Thr Asp Glu Ser Gly Phe Ala Val
195 200 205

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

eolf-seql

Gln Ala Ser Trp Arg Leu Ala Gly Val Pro Asp Val Trp Ser Trp Leu
225 230 235 240

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

Asp Asp Tyr Glu Ser Phe Ser Arg Ser Ile
260 265

<210> 96

<211> 266

<212> PRT

<213> Shigella flexneri

<400> 96

Met Thr Glu Pro Leu Thr Glu Thr Pro Glu Leu Ser Ala Lys Tyr Ala
1 5 10 15

Trp Phe Phe Asp Leu Asp Gly Thr Leu Ala Glu Ile Lys Pro His Pro
20 25 30

Asp Gln Val Val Val Pro Asp Asn Ile Leu Gln Gly Leu Gln Leu Leu
35 40 45

Ala Thr Ala Ser Asp Gly Ala Leu Ala Leu Ile Ser Gly Arg Ser Met
50 55 60

Val Glu Leu Asp Ala Leu Ala Lys Pro Tyr Arg Phe Pro Leu Ala Gly
65 70 75 80

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

His Leu Pro Asp Ala Ile Ala Arg Asp Ile Ser Val Gln Leu His Thr
100 105 110

Val Ile Ala Gln Tyr Pro Gly Ala Glu Leu Glu Ala Lys Gly Met Ala
115 120 125

eolf-seql

Phe Ala Leu His Tyr Arg Gln Ala Pro Gln His Glu Asp Ala Leu Met
130 135 140

Thr Leu Ala Gln Arg Ile Thr Gln Ile Trp Pro Gln Met Ala Leu Gln
145 150 155 160

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

Glu Ala Ile Ala Ala Phe Met Gln Glu Ala Pro Phe Ile Gly Arg Thr
180 185 190

Pro Val Phe Leu Gly Asp Asp Leu Thr Asp Glu Ser Gly Phe Ala Val
195 200 205

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

Gln Ala Ser Trp Arg Leu Ala Gly Val Pro Asp Val Trp Ser Trp Leu
225 230 235 240

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

Asp Asp Tyr Glu Ser Phe Ser Arg Ser Ile
260 265

<210> 97
<211> 265
<212> PRT
<213> Escherichia albertii

<400> 97

Met Thr Glu Pro Leu Thr Ala Leu Pro Glu Leu Ser Ala Lys Tyr Ala
1 5 10 15

Trp Phe Phe Asp Leu Asp Gly Thr Leu Ala Glu Ile Lys Pro His Pro
20 25 30

eolf-seql

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

Ala Thr Ile Ser His Gly Ala Leu Ala Leu Ile Ser Gly Arg Ser Met
50 55 60

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

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

His Leu Pro Lys Ala Met Ala Arg Asp Ile Cys Val Gln Leu His Met
100 105 110

Ala Ile Ala Arg Phe Pro Gly Ala Glu Leu Glu Glu Lys Gly Met Ala
115 120 125

Phe Ala Leu His Tyr Arg Gln Val Pro Gln Tyr Glu Asp Ala Leu Leu
130 135 140

Thr Leu Ala Arg His Ile Thr Gln Thr Trp Pro Gln Met Val Leu Gln
145 150 155 160

Gln Gly Lys Cys Val Val Glu Ile Lys Pro Gly Gly Thr Ser Lys Gly
165 170 175

Glu Ala Ile Val Ala Phe Met Gln Glu Thr Pro Phe Ile Gly Arg Lys
180 185 190

Pro Val Phe Leu Gly Asp Asp Leu Thr Asp Glu Ser Gly Phe Ala Val
195 200 205

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

Gln Ala Ser Trp Arg Met Ala Gly Val Pro Asp Val Trp Arg Trp Leu
225 230 235 240

eolf-seql

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

Asn Asp Glu Pro Phe Ser Arg Ser Ile
 260 265

<210> 98

<211> 267

<212> PRT

<213> Escherichia fergusonii

<400> 98

Met Thr Lys Pro Leu Thr Glu Ala Pro Glu Leu Ser Ala Lys Tyr Ala
 1 5 10 15

Trp Phe Phe Asp Leu Asp Gly Thr Leu Ala Glu Ile Lys Pro His Pro
 20 25 30

Asp Gln Val Ala Ile Pro Asp Ala Ile Leu Gln Gly Leu Gln Gln Leu
 35 40 45

Ala Val His Ser Asp Gly Ala Leu Ala Leu Ile Ser Gly Arg Ser Met
 50 55 60

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

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

Arg Leu Pro Asp Ala Met Val Arg Asp Ile Ser Val Gln Leu His Thr
 100 105 110

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

Phe Ala Leu His Tyr Arg Gln Ala Pro Gln His Glu Ala Leu Leu Phe
 130 135 140

Thr Leu Ala Gln Arg Ile Thr Gln Ile Trp Pro Gln Met Ala Leu Gln

eolf-seql

145 150 155 160

Gln Gly Lys Cys Val Val Glu Ile Lys Pro Arg Gly Thr Cys Lys Gly
 165 170 175

Asp Ala Ile Ala Glu Phe Met Gln Glu Thr Pro Phe Val Gly Arg Ile
 180 185 190

Pro Ile Phe Trp Gly Asp Asp Leu Thr Asp Glu Ser Gly Phe Ala Val
 195 200 205

Val Asn Gln Ala Gly Gly Ile Ser Val Lys Ile Gly Ala Gly Glu Thr
 210 215 220

Gln Ala Lys Trp Arg Leu Ala Gly Val Pro Asp Val Trp Arg Trp Leu
225 230 235 240

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

Ser Asp Asp Tyr Glu Ser Phe Ser Arg Ser Ile
 260 265

<210> 99

<211> 191

<212> PRT

<213> Escherichia fergusonii

<400> 99

Met Ala Lys Ser Val Pro Ala Ile Phe Leu Asp Arg Asp Gly Thr Ile
1 5 10 15

Asn Val Asp His Gly Tyr Val His Glu Ile Asp Asn Phe Glu Phe Ile
 20 25 30

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

Leu Val Val Val Thr Asn Gln Ser Gly Ile Ala Arg Gly Lys Phe Thr
 50 55 60

eolf-seql

Glu Ala Gln Phe Glu Thr Leu Thr Glu Trp Met Asp Trp Ser Leu Ala
65 70 75 80

Asp Arg Asp Val Asp Leu Asp Gly Ile Tyr Tyr Cys Pro His His Pro
85 90 95

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

His Pro Gly Met Leu Leu Ser Ala Arg Asp Tyr Leu His Ile Asp Met
115 120 125

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

Thr Ala Ala Asn Val Gly Thr Lys Val Leu Val Arg Thr Gly Lys Pro
145 150 155 160

Ile Thr Pro Glu Ala Glu Asn Ala Ala Asp Trp Val Leu Asn Ser Leu
165 170 175

Ala Asp Leu Pro Gln Ala Ile Lys Lys Gln Gln Lys Pro Ala Gln
180 185 190

<210> 100
<211> 191
<212> PRT
<213> Shigella sonnei

<400> 100

Met Ala Lys Ser Val Pro Ala Ile Phe Leu Asp Arg Asp Gly Thr Ile
1 5 10 15

Asn Val Asp His Gly Tyr Val His Glu Ile Asp Asn Phe Glu Phe Ile
20 25 30

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

eolf-seql

Leu Val Val Val Thr Asn Gln Ser Gly Ile Ala Arg Gly Lys Phe Thr
50 55 60

Glu Ala Gln Phe Glu Thr Leu Thr Glu Trp Met Asp Trp Ser Leu Ala
65 70 75 80

Asp Arg Asp Val Asp Leu Asp Gly Ile Tyr Tyr Cys Pro His His Pro
85 90 95

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

His Pro Gly Met Leu Leu Ser Ala Arg Asp Tyr Leu His Ile Asp Met
115 120 125

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

Val Ala Ala Asn Val Gly Thr Lys Val Leu Val Arg Thr Gly Lys Pro
145 150 155 160

Ile Thr Pro Glu Ala Glu Asn Ala Ala Asp Trp Met Leu Asn Ser Leu
165 170 175

Ala Asp Leu Pro Gln Ala Ile Lys Lys Gln Gln Lys Pro Ala Gln
180 185 190

<210> 101

<211> 191

<212> PRT

<213> Escherichia coli

<400> 101

Met Ala Lys Ser Val Pro Ala Ile Phe Leu Asp Arg Asp Gly Thr Ile
1 5 10 15

Asn Val Asp His Gly Tyr Val His Glu Ile Asp Asn Phe Glu Phe Ile
20 25 30

eolf-seql

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

Leu Val Val Val Thr Asn Gln Ser Gly Ile Ala Arg Gly Lys Phe Thr
50 55 60

Glu Ala Gln Phe Glu Thr Leu Thr Glu Trp Met Asp Trp Ser Leu Ala
65 70 75 80

Asp Arg Asp Val Asp Leu Asp Gly Ile Tyr Tyr Cys Pro His His Pro
85 90 95

Gln Gly Ser Val Glu Glu Phe Arg Gln Leu Cys Asp Cys Arg Lys Pro
100 105 110

His Pro Gly Met Leu Leu Ser Ala Arg Asp Tyr Leu His Ile Asp Met
115 120 125

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

Val Ala Ala Asn Val Gly Thr Lys Val Leu Val Arg Thr Gly Lys Pro
145 150 155 160

Ile Thr Pro Glu Ala Glu Asn Ala Ala Asp Trp Val Leu Asn Ser Leu
165 170 175

Ala Asp Leu Pro Gln Ala Ile Lys Lys Gln Gln Lys Pro Ala Arg
180 185 190

<210> 102

<211> 188

<212> PRT

<213> Escherichia albertii

<400> 102

Met Ala Lys Ser Val Pro Ala Ile Phe Leu Asp Arg Asp Gly Thr Ile
1 5 10 15

Asn Val Asp His Gly Tyr Val His Glu Ile Asp Asn Phe Glu Phe Ile

eolf-seql

20

25

30

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

Leu Val Val Val Thr Asn Gln Ser Gly Ile Ala Arg Gly Lys Phe Thr
 50 55 60

Glu Ala Gln Phe Glu Thr Leu Thr Glu Trp Met Asp Trp Ser Leu Ala
 65 70 75 80

Asp Arg Asp Val Asp Leu Asp Gly Ile Tyr Tyr Cys Pro His His Pro
 85 90 95

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

His Pro Gly Met Leu Ile Ser Ala Arg Asp Tyr Leu His Ile Asp Met
 115 120 125

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

Ser Ala Ala Asn Val Gly Thr Lys Val Leu Val Arg Thr Gly Lys Pro
 145 150 155 160

Val Thr Pro Glu Ala Glu Asp Ala Ala Asp Trp Val Leu Asn Ser Leu
 165 170 175

Ala Asp Leu Pro Gln Ala Ile Lys Lys Gln Gln Lys
 180 185

<210> 103

<211> 188

<212> PRT

<213> Kluyvera intermedia

<400> 103

Met Ala Lys Ser Val Pro Ala Ile Phe Leu Asp Arg Asp Gly Thr Ile
 1 5 10 15

eolf-seql

Asn Val Asp His Gly Tyr Val His Glu Ile Asp Asn Phe Glu Phe Ile
20 25 30

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

Leu Val Val Val Thr Asn Gln Ser Gly Ile Ala Arg Gly Lys Phe Thr
50 55 60

Glu Ala Gln Phe Glu Thr Leu Thr Glu Trp Met Asp Trp Ser Leu Ala
65 70 75 80

Asp Arg Asp Val Asp Leu Asp Gly Ile Tyr Tyr Cys Pro His His Pro
85 90 95

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

His Pro Gly Met Leu Ile Ser Ala Arg Asp Tyr Leu His Ile Asp Met
115 120 125

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

Ala Ala Ala Asp Val Gly Thr Lys Val Leu Val Arg Thr Gly Lys Pro
145 150 155 160

Val Thr Pro Glu Ala Glu Asn Ala Ala Asp Trp Val Ile Asn Ser Leu
165 170 175

Ala Asp Leu Pro Ala Ala Ile Lys Lys Gln Gln Lys
180 185

<210> 104

<211> 188

<212> PRT

<213> Citrobacter koseri

<400> 104

eolf-seql

Met Ala Lys Ser Val Pro Ala Ile Phe Leu Asp Arg Asp Gly Thr Ile
1 5 10 15

Asn Val Asp His Gly Tyr Val His Glu Ile Asp Glu Phe Glu Phe Ile
20 25 30

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

Leu Val Val Val Thr Asn Gln Ser Gly Ile Ala Arg Gly Lys Phe Thr
50 55 60

Glu Ala Gln Phe Glu Thr Leu Thr Glu Trp Met Asp Trp Ser Leu Ala
65 70 75 80

Asp Arg Asp Val Asp Leu Asp Gly Ile Tyr Tyr Cys Pro His His Pro
85 90 95

Gln Gly Ser Val Glu Glu Phe Arg Gln Ala Cys Asp Cys Arg Lys Pro
100 105 110

His Pro Gly Met Leu Ile Ser Ala Arg Asp Phe Leu His Ile Asp Met
115 120 125

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

Ala Ala Ala Asn Val Gly Thr Lys Val Leu Val Arg Thr Gly Lys Pro
145 150 155 160

Val Thr Pro Glu Ala Glu Asn Ala Ala Asp Trp Val Leu Asn Ser Leu
165 170 175

Ala Asp Leu Pro Ser Ala Ile Arg Lys Gln Gln Lys
180 185

<210> 105

<211> 188

<212> PRT

eolf-seql

<213> Kosakonia arachidis

<400> 105

Met Thr Lys Ser Val Pro Ala Ile Phe Leu Asp Arg Asp Gly Thr Ile
 1 5 10 15

Asn Val Asp His Gly Tyr Val His Glu Ile Asp Asn Phe Glu Phe Ile
 20 25 30

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

Leu Val Leu Val Thr Asn Gln Ser Gly Ile Ala Arg Gly Lys Phe Thr
 50 55 60

Glu Ala Gln Phe Glu Thr Leu Thr Glu Trp Met Asp Trp Ser Leu Ala
 65 70 75 80

Asp Arg Gly Val Asp Leu Asp Gly Ile Tyr Tyr Cys Pro His His Pro
 85 90 95

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

His Pro Gly Met Leu Ile Ser Ala Arg Asp Phe Leu His Ile Asp Met
 115 120 125

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

Gln Ala Ala Gln Val Gly Thr Lys Val Leu Val Arg Thr Gly Lys Pro
 145 150 155 160

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

Ala Glu Leu Pro Leu Ala Ile Lys Lys His Gln Lys
 180 185

eolf-seql

<210> 106
 <211> 187
 <212> PRT
 <213> Kluyvera cryocrescens

<400> 106

Met Ala Lys Ser Val Pro Ala Ile Phe Leu Asp Arg Asp Gly Thr Ile
 1 5 10 15

Asn Val Asp His Gly Tyr Val His Glu Ile Asp Asp Phe Glu Phe Ile
 20 25 30

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

Leu Val Leu Val Thr Asn Gln Ser Gly Ile Ala Arg Gly Lys Phe Thr
 50 55 60

Glu Ala Gln Phe Glu Thr Leu Thr Glu Trp Met Asp Trp Ser Leu Ala
 65 70 75 80

Asp Arg Gly Val Asp Leu Asp Gly Ile Tyr Phe Cys Pro His His Pro
 85 90 95

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

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

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

Ala Ala Ala Asn Val Gly Thr Lys Val Leu Val Arg Thr Gly Lys Pro
 145 150 155 160

Val Thr Glu Asp Ala Glu Lys Ala Ala Asp Trp Val Ile Asn Ser Leu
 165 170 175

Ala Asp Leu Pro Ala Met Ile Lys Lys Gln Lys

eolf-seql

180

185

<210> 107
 <211> 188
 <212> PRT
 <213> Leclercia adecarboxylata

<400> 107

Met Ala Lys Ser Val Pro Ala Ile Phe Leu Asp Arg Asp Gly Thr Ile
 1 5 10 15

Asn Val Asp His Gly Tyr Val His Glu Ile Asp Glu Phe Glu Phe Ile
 20 25 30

Glu Gly Val Ile Glu Ala Met Arg Glu Leu Lys Glu Met Gly Phe Ala
 35 40 45

Leu Val Val Val Thr Asn Gln Ser Gly Ile Ala Arg Gly Lys Phe Thr
 50 55 60

Glu Ala Gln Phe Glu Thr Leu Thr Glu Trp Met Asp Trp Ser Leu Ala
 65 70 75 80

Asp Arg Gly Val Asp Leu Asp Gly Ile Tyr Tyr Cys Pro His His Pro
 85 90 95

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

His Pro Gly Met Phe Ile Ser Ala Gln Glu Phe Leu His Ile Asp Met
 115 120 125

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

Ala Ala Ala Gly Val Gly His Lys Ile Leu Val Arg Thr Gly Lys Pro
 145 150 155 160

Val Thr Pro Glu Ala Glu Asn Ala Ala Asp Cys Val Ile Asn Ser Leu
 165 170 175

eolf-seql

Ala Ala Leu Pro Glu Thr Ile Lys Lys Gln Gln Lys
180 185

<210> 108
<211> 219
<212> PRT
<213> Shigella sonnei

<400> 108

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

Thr Ala His Leu His Phe Gln Ala Trp Gln Gln Ile Ala Ala Glu Ile
20 25 30

Gly Ile Ser Ile Asp Ala Gln Phe Asn Glu Ser Leu Lys Gly Ile Ser
35 40 45

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

Asp Phe Asn Ser Gln Glu Arg Ala Gln Leu Ala Tyr Arg Lys Asn Leu
65 70 75 80

Leu Tyr Val His Ser Leu Arg Glu Leu Thr Val Asn Ala Val Leu Pro
85 90 95

Gly Ile Arg Ser Leu Leu Ala Asp Leu Arg Ala Gln Gln Ile Ser Val
100 105 110

Gly Leu Ala Ser Val Ser Leu Asn Ala Pro Thr Ile Leu Ala Ala Leu
115 120 125

Glu Leu Arg Lys Phe Phe Thr Phe Cys Ala Asp Ala Ser Gln Leu Lys
130 135 140

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

eolf-seql

Gly Val Pro Pro Gln Ala Cys Ile Gly Ile Glu Asp Ala Gln Ala Gly
165 170 175

Ile Asp Ala Ile Asn Ala Ser Gly Met Arg Ser Val Gly Ile Gly Ala
180 185 190

Gly Leu Thr Gly Ala Gln Leu Leu Leu Pro Ser Thr Glu Ser Leu Thr
195 200 205

Trp Pro Arg Leu Ser Ala Phe Trp Gln Asn Val
210 215

<210> 109

<211> 219

<212> PRT

<213> Escherichia coli

<400> 109

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

Thr Ala His Leu His Phe Lys Ala Trp Gln Gln Ile Ala Ala Glu Ile
20 25 30

Gly Ile Ser Ile Asp Ala Gln Phe Asn Glu Ser Leu Lys Gly Ile Ser
35 40 45

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

Asp Phe Asn Pro Gln Glu Arg Ala Gln Leu Ala Tyr Arg Lys Asn Leu
65 70 75 80

Leu Tyr Val His Ser Leu Arg Glu Leu Thr Val Asn Ala Val Leu Pro
85 90 95

Gly Ile Arg Asn Leu Leu Ala Asp Leu Arg Ala Gln Gln Ile Pro Val
100 105 110

eolf-seql

Gly Leu Ala Ser Val Ser Leu Asn Ala Pro Thr Ile Leu Ala Ala Leu
115 120 125

Glu Leu Arg Glu Phe Phe Thr Phe Cys Ala Asp Ala Ser Gln Leu Lys
130 135 140

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

Gly Val Pro Pro Gln Ala Cys Ile Gly Ile Glu Asp Ala Gln Ala Gly
165 170 175

Ile Asp Ala Ile Asn Ala Ser Gly Met Arg Ser Val Gly Ile Gly Ala
180 185 190

Gly Leu Thr Gly Ala Gln Leu Leu Leu Pro Ser Thr Asp Ser Leu Thr
195 200 205

Trp Pro Arg Leu Ser Ala Phe Trp Gln Asn Val
210 215

<210> 110
<211> 219
<212> PRT
<213> Escherichia coli

<400> 110

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

Thr Ala His Leu His Phe Gln Ala Trp Gln Gln Ile Ala Ala Glu Ile
20 25 30

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

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

Asp Phe Asn Val Gln Glu Arg Ala Gln Leu Ala Tyr Arg Lys Asn Leu

eolf-seql

65		70		75		80
Leu Tyr Val His Ser Leu Arg Glu Leu Thr Val Asn Ala Val Leu Pro						
		85		90		95
Gly Ile Arg Pro Leu Leu Ala Asp Leu Arg Ala Gln Gly Ile Pro Val						
		100		105		110
Gly Leu Ala Ser Val Ser Leu Asn Ala Pro Thr Ile Leu Ala Ala Leu						
		115		120		125
Glu Leu Arg Glu Phe Phe Thr Phe Cys Ala Asp Ala Ser Gln Leu Lys						
		130		135		140
His Ser Lys Pro Asp Pro Glu Ile Phe Leu Ala Ala Cys Ala Gly Leu						
		145		150		155
Gly Val Pro Pro Gln Ala Cys Ile Gly Ile Glu Asp Ala Gln Ala Gly						
		165		170		175
Ile Asp Ala Ile Asn Ala Ser Gly Met Arg Ser Val Gly Ile Gly Thr						
		180		185		190
Ser Leu Thr Gly Ala Gln Leu Leu Leu Pro Ser Thr Glu Ser Leu Thr						
		195		200		205
Trp Pro Arg Leu Ser Ala Phe Trp Gln Asn Val						
		210		215		
<210> 111						
<211> 208						
<212> PRT						
<213> Shigella flexneri						
<400> 111						
Met Lys Leu Gln Gly Val Ile Phe Asp Leu Asp Gly Val Ile Thr Asp						
1		5		10		15
Thr Ala His Leu His Phe Gln Ala Trp Gln Gln Ile Ala Ala Glu Ile						
		20		25		30

eolf-seql

Gly Ile Ser Ile Asp Ala Gln Phe Asn Glu Ser Leu Lys Gly Ile Ser
35 40 45

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

Asp Phe Asn Pro Gln Glu Arg Ala Gln Leu Ala Tyr Arg Lys Asn Leu
65 70 75 80

Leu Tyr Val His Ser Leu Arg Glu Leu Thr Val Asn Ala Val Leu Pro
85 90 95

Gly Ile Arg Asn Leu Leu Ala Glu Leu Arg Ala Gln Gln Ile Pro Val
100 105 110

Gly Leu Ala Ser Val Ser Leu Asn Ala Pro Thr Ile Leu Ala Ala Leu
115 120 125

Glu Leu Arg Glu Phe Phe Thr Phe Cys Ala Asp Ala Ser Gln Leu Lys
130 135 140

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

Gly Val Pro Pro Gln Ala Cys Ile Gly Ile Glu Asp Ala Gln Ala Gly
165 170 175

Ile Asp Ala Ile Asn Ala Ser Gly Met Arg Ser Val Gly Ile Gly Ala
180 185 190

Gly Leu Thr Gly Ala Gln Leu Leu Leu Pro Ser Thr Asp Ser Leu Thr
195 200 205

<210> 112
<211> 216
<212> PRT
<213> Shigella sonnei

<400> 112

eolf-seql

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

Ser Leu Pro Ala Val Glu Arg Ala Trp Ser Asn Trp Ser Arg Arg His
20 25 30

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

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

Ala Ala Glu Phe Thr Arg Leu Glu His Ile Glu Ala Thr Glu Thr Glu
65 70 75 80

Gly Ile Thr Ala Leu Pro Gly Ala Ile Ala Leu Leu Ser His Leu Asn
85 90 95

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

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

Val Thr Ala Glu Arg Val Lys Arg Gly Lys Pro Glu Pro Asp Ala Tyr
130 135 140

Leu Leu Gly Ala Gln Leu Leu Gly Leu Ala Pro Gln Glu Cys Val Val
145 150 155 160

Val Glu Asp Ala Pro Ala Gly Val Leu Ser Gly Leu Ala Ala Gly Cys
165 170 175

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

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

eolf-seql

Pro Asn Gly Asp Val Ile Ile Gln
210 215

<210> 113
<211> 215
<212> PRT
<213> Citrobacter werkmanii NBRC 105721

<400> 113

Met Gln Cys Lys Gly Phe Leu Phe Asp Leu Asp Gly Thr Leu Val Asp
1 5 10 15

Ser Leu Pro Ala Val Glu Arg Ala Trp Cys Asn Trp Ala Asp Arg Phe
20 25 30

Gly Leu Asp His Ala Glu Val Leu Gly Phe Ile His Gly Lys Gln Ala
35 40 45

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

Ala Ala Glu Phe Thr Arg Leu Glu Gln Ile Glu Ala Thr Glu Thr Ala
65 70 75 80

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

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

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

Val Thr Ala Glu Arg Val Lys Arg Gly Lys Pro Glu Pro Asp Ala Tyr
130 135 140

Leu Leu Gly Ala Gln Leu Leu Gly Leu Ala Pro Gln Glu Cys Ala Val
145 150 155 160

eolf-seql

Val Glu Asp Ala Pro Ala Gly Val Leu Ser Gly Leu Ala Ala Gly Cys
165 170 175

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

Val Asp Phe Ser Leu Thr Ser Leu Glu Gln Ile Ser Val Thr Lys Gln
195 200 205

Pro Asn Gly Asn Val Val Val
210 215

<210> 114
<211> 215
<212> PRT
<213> *Citrobacter freundii*

<400> 114

Met Gln Cys Lys Gly Phe Leu Phe Asp Leu Asp Gly Thr Leu Val Asp
1 5 10 15

Ser Leu Pro Ala Val Glu Arg Ala Trp Cys Asn Trp Ala Asp Arg Phe
20 25 30

Gly Leu Asp His Ala Glu Val Leu Gly Phe Ile His Gly Lys Gln Ala
35 40 45

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

Ala Ala Glu Phe Thr Arg Leu Glu Gln Ile Glu Ala Thr Glu Thr Ala
65 70 75 80

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

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

Ala Arg Ala Arg His Arg Val Ala Gly Leu Pro Ala Pro Glu Val Phe

eolf-seql

115

120

125

Val Thr Ala Glu Arg Val Lys Arg Gly Lys Pro Glu Pro Asp Ala Tyr
130 135 140

Leu Leu Gly Ala Gln Leu Leu Gly Val Ala Pro Gln Glu Cys Ala Val
145 150 155 160

Val Glu Asp Ala Pro Ala Gly Val Leu Ser Gly Leu Ala Ala Gly Cys
165 170 175

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

Val Asp Phe Ser Leu Thr Ser Leu Glu His Ile Ser Val Thr Lys Gln
195 200 205

Pro Asn Gly Asn Val Val Val
210 215

<210> 115
<211> 215
<212> PRT
<213> *Citrobacter amalonaticus*

<400> 115

Met Gln Cys Lys Gly Phe Leu Phe Asp Leu Asp Gly Thr Leu Val Asp
1 5 10 15

Ser Leu Pro Ala Val Glu Arg Ala Trp Cys Asn Trp Ala Asp Arg Phe
20 25 30

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

Ile Thr Ser Leu Arg His Phe Met Ala Gly Lys Pro Glu Ala Glu Ile
50 55 60

Val Ala Glu Phe Thr Arg Leu Glu Lys Ile Glu Ala Thr Glu Thr Ala
65 70 75 80

eolf-seql

Gly Ile Thr Ala Leu Pro Gly Ala Val Ala Leu Leu Asn His Leu Asn
85 90 95

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

Ala Arg Ala Arg His Gln Val Ala Asn Leu Pro Ala Pro Glu Val Phe
115 120 125

Val Thr Ala Glu Arg Val Lys Arg Gly Lys Pro Glu Pro Asp Ala Tyr
130 135 140

Leu Leu Gly Ala Gln Leu Leu Gly Leu Ser Pro His Glu Cys Val Val
145 150 155 160

Val Glu Asp Ala Pro Ala Gly Val Leu Ser Gly Leu Ala Ala Gly Cys
165 170 175

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

Val Asp Phe Val Leu Thr Ser Leu Glu Gln Leu Ser Val Thr Lys Gln
195 200 205

Pro Asn Gly Asp Val Val Val
210 215

<210> 116
<211> 215
<212> PRT
<213> Salmonella enterica

<400> 116

Val Gln Cys Lys Gly Phe Leu Phe Asp Leu Asp Gly Thr Leu Val Asp
1 5 10 15

Ser Leu Pro Ala Val Glu Arg Ala Trp Cys Ser Trp Ala Asp Arg Phe
20 25 30

eolf-seql

Asn Leu Ala His Asp Glu Val Leu Gly Phe Ile His Gly Lys Gln Ala
 35 40 45

Ile Thr Ser Leu Arg His Phe Met Ala Gly Lys Ser Glu Ala Glu Ile
 50 55 60

Ala Ala Glu Phe Thr Arg Leu Glu Gln Ile Glu Ala Thr Glu Thr Ala
 65 70 75 80

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

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

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

Val Thr Ala Glu Arg Val Lys Arg Gly Lys Pro Glu Pro Asp Ala Tyr
 130 135 140

Leu Leu Gly Ala Gln Leu Leu Gly Leu Val Pro Gln Glu Cys Val Val
 145 150 155 160

Val Glu Asp Ala Pro Ala Gly Val Leu Ser Gly Leu Ala Ala Gly Cys
 165 170 175

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

Val Asp Phe Ala Leu Asn Ser Leu Thr Gln Leu Ser Val Ala Lys Gln
 195 200 205

Pro Asn Gly Asp Val Val Val
 210 215

<210> 117

<211> 216

<212> PRT

eolf-seql

<213> *Escherichia fergusonii*

<400> 117

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

Ser Leu Pro Ala Val Glu Arg Ala Trp Cys Asn Trp Ala Asp Arg Phe
 20 25 30

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

Ile Thr Ser Leu Arg His Phe Met Pro Gly Arg Pro Glu Glu Glu Ile
 50 55 60

Leu Ala Glu Phe Thr Arg Leu Glu Gln Ile Glu Ala Thr Gln Thr Glu
 65 70 75 80

Gly Ile Thr Ala Leu Pro Gly Ala Ile Glu Leu Leu Thr His Leu Asn
 85 90 95

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

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

Val Thr Ala Glu Arg Val Lys Arg Gly Lys Pro Glu Pro Asp Ala Tyr
 130 135 140

Leu Leu Gly Ala Gln Leu Leu Gly Leu Glu Pro Lys Glu Cys Val Val
 145 150 155 160

Val Glu Asp Ala Pro Ala Gly Val Leu Ser Gly Leu Ala Ala Gly Cys
 165 170 175

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

eolf-seql

Val Asp Phe Val Leu Thr Ser Leu Gln Gln Ile Thr Val Thr Lys Gln
195 200 205

Pro Asn Gly Glu Val Ile Ile Gln
210 215

<210> 118

<211> 215

<212> PRT

<213> Salmonella enterica subsp. enterica serovar Hadar

<400> 118

Val Gln Cys Lys Gly Phe Leu Phe Asp Leu Asp Gly Thr Leu Val Asp
1 5 10 15

Ser Leu Pro Ala Val Glu Arg Ala Trp Cys Ser Trp Ala Asp Arg Phe
20 25 30

Asn Leu Ala His Asp Glu Val Leu Gly Phe Ile His Gly Lys Gln Ala
35 40 45

Ile Thr Ser Leu Arg His Phe Met Ala Gly Lys Ser Glu Ala Glu Ile
50 55 60

Ala Ala Glu Phe Thr Arg Leu Glu Gln Ile Glu Ala Thr Glu Thr Ala
65 70 75 80

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

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

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

Val Thr Ala Glu Arg Val Lys Arg Gly Lys Pro Glu Pro Asp Ala Tyr
130 135 140

Leu Leu Gly Ala Gln Leu Leu Gly Leu Ser Pro Gln Glu Cys Val Val

eolf-seql

145 150 155 160

Val Glu Asp Ala Pro Ala Gly Val Leu Ser Gly Leu Ala Ala Gly Cys
 165 170 175

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

Val Asp Phe Ala Leu Asp Ser Leu Thr Gln Leu Ser Val Ala Lys Gln
 195 200 205

Pro Asn Gly Asp Val Val Val
 210 215

<210> 119
<211> 270
<212> PRT
<213> Escherichia coli

<400> 119

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

Pro Asp His Thr Ile Ser Pro Ala Val Lys Asn Ala Ile Ala Ala Ala
 20 25 30

Arg Ala Arg Gly Val Asn Val Val Leu Thr Thr Gly Arg Pro Tyr Ala
 35 40 45

Gly Val His Asn Tyr Leu Lys Glu Leu His Met Glu Gln Pro Gly Asp
 50 55 60

Tyr Cys Ile Thr Tyr Asn Gly Ala Leu Val Gln Lys Ala Ala Asp Gly
65 70 75 80

Ser Thr Val Ala Gln Thr Ala Leu Ser Tyr Asp Asp Tyr Arg Phe Leu
 85 90 95

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

eolf-seql

Thr Thr Leu Tyr Thr Ala Asn Arg Asp Ile Ser Tyr Tyr Thr Val His
115 120 125

Glu Ser Phe Val Ala Thr Ile Pro Leu Val Phe Cys Glu Ala Glu Lys
130 135 140

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

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

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

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

Gly Ile Lys Pro Glu Glu Ile Met Ala Ile Gly Asp Gln Glu Asn Asp
210 215 220

Ile Ala Met Ile Glu Tyr Ala Gly Ile Gly Val Ala Met Asp Asn Ala
225 230 235 240

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

Glu Asp Gly Val Ala Phe Ala Ile Glu Lys Tyr Val Leu Asn
260 265 270

<210> 120
<211> 270
<212> PRT
<213> Escherichia fergusonii

<400> 120

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

eolf-seql

Pro Asp His Thr Ile Ser Pro Ala Val Lys Asn Ala Ile Ala Ala Ala
20 25 30

Arg Ala Arg Gly Val Asn Val Val Leu Thr Thr Gly Arg Pro Tyr Ala
35 40 45

Gly Val His Asn Tyr Leu Lys Glu Leu His Met Glu Gln Pro Gly Asp
50 55 60

Tyr Cys Ile Thr Tyr Asn Gly Ala Leu Val Gln Lys Ala Ala Asp Gly
65 70 75 80

Ser Thr Val Ala Gln Thr Ala Leu Ser Tyr Glu Asp Tyr Arg Phe Leu
85 90 95

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

Thr Thr Leu Tyr Thr Ala Asn Arg Asp Ile Ser Tyr Tyr Thr Val His
115 120 125

Glu Ser Phe Val Ala Thr Ile Pro Leu Val Phe Cys Glu Ala Glu Lys
130 135 140

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

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

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

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

Gly Ile Lys Pro Glu Glu Ile Met Ala Ile Gly Asp Gln Glu Asn Asp
210 215 220

eolf-seql

Ile Ala Met Ile Glu Tyr Ala Gly Val Gly Val Ala Met Asp Asn Ala
225 230 235 240

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

Glu Asp Gly Val Ala Phe Ala Ile Glu Lys Tyr Val Leu Asn
260 265 270

<210> 121

<211> 270

<212> PRT

<213> Shigella sonnei

<400> 121

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

Pro Asp His Thr Ile Ser Pro Ala Val Lys Asn Ala Ile Ala Ala Ala
20 25 30

Arg Ala Arg Gly Val Asn Val Val Leu Thr Thr Gly Arg Pro Tyr Ala
35 40 45

Gly Val His Asn Tyr Leu Lys Glu Leu His Met Glu Leu Pro Gly Asp
50 55 60

Tyr Cys Ile Thr Tyr Asn Gly Ala Leu Val Gln Lys Ala Ala Asp Gly
65 70 75 80

Ser Thr Val Ala Gln Thr Ala Leu Ser Tyr Asp Asp Tyr Arg Phe Leu
85 90 95

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

Thr Thr Leu Tyr Thr Ala Asn Arg Asp Ile Ser Tyr Tyr Thr Val His
115 120 125

eolf-seql

Glu Ser Phe Val Ala Thr Ile Pro Leu Val Phe Cys Glu Ala Glu Lys
130 135 140

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

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

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

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

Gly Ile Lys Pro Glu Glu Ile Met Ala Ile Gly Asp Gln Glu Asn Asp
210 215 220

Ile Ala Met Ile Glu Tyr Ala Gly Val Gly Val Ala Met Asp Asn Ala
225 230 235 240

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

Glu Asp Gly Val Ala Phe Ala Ile Glu Lys Tyr Val Leu Asn
260 265 270

<210> 122
<211> 269
<212> PRT
<213> *Trabulsiella guamensis*

<400> 122

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

Pro Asp His Thr Ile Ser Pro Ala Val Lys Asn Ala Ile Ala Ala Ala
20 25 30

Arg Met Arg Gly Val Asn Val Val Leu Thr Thr Gly Arg Pro Tyr Ala

eolf-seql

35

40

45

Gly Val His His Tyr Leu Lys Glu Leu His Met Glu Gln Pro Gly Asp
 50 55 60

Tyr Cys Ile Thr Tyr Asn Gly Ala Leu Val Gln Lys Ala Ser Asp Gly
 65 70 75 80

Ser Thr Val Ala Gln Thr Ala Leu Ser Tyr Asp Asp Tyr Arg Phe Leu
 85 90 95

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

Asn Thr Leu Tyr Thr Ala Asn Arg Asp Ile Ser Tyr Tyr Thr Val His
 115 120 125

Glu Ser Tyr Val Ala Thr Ile Pro Leu Val Phe Cys Glu Ala Glu Lys
 130 135 140

Met Asp Pro Ala Thr Gln Phe Leu Lys Val Met Met Ile Asp Glu Pro
 145 150 155 160

Val Val Leu Asp Lys Ala Ile Ala Arg Ile Pro Ala Glu Val Lys Glu
 165 170 175

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

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

Gly Ile Gln Pro Asp Glu Ile Met Ala Ile Gly Asp Gln Glu Asn Asp
 210 215 220

Ile Ala Met Ile Glu Tyr Ala Gly Val Gly Val Ala Met Asp Asn Ala
 225 230 235 240

Ile Pro Ser Val Lys Glu Val Ala Asn Phe Ile Thr Lys Ser Asn Leu

eolf-seql

245

250

255

Glu Asp Gly Val Ala Tyr Ala Ile Glu Lys Tyr Val Leu
 260 265

<210> 123

<211> 270

<212> PRT

<213> *Citrobacter amalonaticus*

<400> 123

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

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

Arg Glu Lys Gly Val Asn Val Val Leu Thr Thr Gly Arg Pro Tyr Ala
 35 40 45

Gly Val His Ser Tyr Leu Lys Glu Leu His Met Glu Gln Pro Gly Asp
 50 55 60

Tyr Cys Ile Thr Tyr Asn Gly Ala Leu Val Gln Lys Ala Gly Asp Gly
 65 70 75 80

Ser Thr Val Ala Gln Thr Ala Leu Ser Tyr Asp Asp Tyr Arg Tyr Leu
 85 90 95

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

Thr Thr Leu Tyr Thr Ala Asn Arg Asp Ile Ser Tyr Tyr Thr Val His
 115 120 125

Glu Ser Tyr Val Ala Thr Ile Pro Leu Val Phe Cys Glu Ala Glu Lys
 130 135 140

Met Asp Pro Lys Thr Gln Phe Leu Lys Val Met Met Ile Asp Glu Pro
 145 150 155 160

eolf-seql

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

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

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

Gly Ile Lys Pro Glu Glu Ile Met Ala Ile Gly Asp Gln Glu Asn Asp
210 215 220

Ile Ala Met Ile Glu Tyr Ala Gly Leu Gly Val Ala Met Asp Asn Ala
225 230 235 240

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

Glu Asp Gly Val Ala Tyr Ala Ile Glu Gln His Val Leu Lys
260 265 270

<210> 124
<211> 269
<212> PRT
<213> Klebsiella pneumoniae

<400> 124

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

Pro Asp His Thr Ile Ser Pro Ala Val Lys Thr Ala Ile Ala Ala Ala
20 25 30

Arg Glu Arg Gly Val Asn Val Val Leu Thr Thr Gly Arg Pro Tyr Ala
35 40 45

Gly Val His Ser Tyr Leu Lys Glu Leu His Met Glu Gln Pro Gly Asp
50 55 60

eolf-seql

Tyr Cys Ile Thr Tyr Asn Gly Ala Leu Val Gln Lys Ala Gly Asp Gly
65 70 75 80

Ser Thr Val Ala Gln Thr Ala Leu Ser Tyr Asp Asp Tyr Arg Phe Leu
85 90 95

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

Asn Thr Leu Tyr Thr Ala Asn Arg Asp Ile Ser Tyr Tyr Thr Val His
115 120 125

Glu Ser Tyr Val Ala Thr Ile Pro Leu Val Phe Cys Glu Ala Glu Lys
130 135 140

Met Asp Pro Glu Ile Gln Leu Leu Lys Val Met Met Ile Asp Glu Pro
145 150 155 160

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

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

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

Gly Ile Lys Pro Glu Glu Ile Met Ala Ile Gly Asp Gln Glu Asn Asp
210 215 220

Ile Ala Met Ile Glu Phe Ala Gly Val Gly Val Ala Met Asp Asn Ala
225 230 235 240

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

Glu Asp Gly Val Ala Phe Ala Ile Glu Lys Tyr Val Leu
260 265

eolf-seql

<210> 125
 <211> 269
 <212> PRT
 <213> Trabulsiella odontotermis

<400> 125

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

Pro Asp His Thr Ile Ser Pro Ala Val Lys Asn Ala Ile Ala Ala Ala
 20 25 30

Arg Met Arg Gly Val Asn Val Val Leu Thr Thr Gly Arg Pro Tyr Ala
 35 40 45

Gly Val His His Tyr Leu Lys Glu Leu His Met Glu Gln Pro Gly Asp
 50 55 60

Tyr Cys Ile Thr Tyr Asn Gly Ala Leu Val Gln Lys Ala Ser Asp Gly
 65 70 75 80

Ser Thr Val Ala Gln Thr Ala Leu Ser Tyr Asp Asp Tyr Arg Tyr Leu
 85 90 95

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

Asn Thr Leu Tyr Thr Ala Asn Arg Asp Ile Ser Tyr Tyr Thr Val His
 115 120 125

Glu Ser Tyr Val Ala Thr Ile Pro Leu Val Phe Cys Glu Ala Glu Lys
 130 135 140

Met Asp Pro Ala Thr Gln Phe Leu Lys Val Met Met Ile Asp Glu Pro
 145 150 155 160

Val Val Leu Asp Lys Ala Ile Ala Arg Ile Pro Ala Glu Val Lys Glu
 165 170 175

eolf-seql

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

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

Gly Ile Gln Pro Asp Glu Ile Met Ala Ile Gly Asp Gln Glu Asn Asp
210 215 220

Ile Ala Met Ile Glu Tyr Ala Gly Val Gly Val Ala Met Asp Asn Ala
225 230 235 240

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

Glu Asp Gly Val Ala Tyr Ala Ile Glu Lys Tyr Val Leu
260 265

<210> 126
<211> 270
<212> PRT
<213> Enterobacter kobei

<400> 126

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

Pro Asp His Thr Ile Ser Pro Ala Val Lys Lys Ala Ile Ala Ala Ala
20 25 30

Arg Glu Lys Gly Val Asn Val Val Leu Thr Thr Gly Arg Pro Tyr Ala
35 40 45

Gly Val His Asn Tyr Leu Arg Glu Leu His Met Asp Lys Pro Gly Asp
50 55 60

Tyr Cys Ile Thr Tyr Asn Gly Ala Leu Val Gln Lys Ala Ser Asp Gly
65 70 75 80

Ser Thr Val Ala Gln Thr Thr Leu Ser Tyr Asp Asp Tyr Arg Tyr Leu

eolf-seql

85

90

95

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

Asn Thr Leu Tyr Thr Ala Asn Arg Asp Ile Ser Tyr Tyr Thr Val His
 115 120 125

Glu Ser Tyr Val Ala Thr Ile Pro Leu Val Phe Cys Glu Ala Glu Lys
 130 135 140

Met Asp Pro Ala Ile Gln Leu Leu Lys Val Met Met Ile Asp Glu Pro
 145 150 155 160

Ala Ile Leu Asp Lys Ala Ile Ala Arg Ile Pro Ala Glu Val Lys Glu
 165 170 175

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

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

Gly Ile Thr Pro Asp Glu Ile Met Thr Leu Gly Asp Gln Glu Asn Asp
 210 215 220

Ile Ala Met Ile Glu Tyr Ala Gly Leu Gly Val Ala Met Asp Asn Ala
 225 230 235 240

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

Glu Asp Gly Val Ala Tyr Ala Ile Glu Lys Phe Val Leu Asn
 260 265 270

<210> 127

<211> 238

<212> PRT

<213> Shigella sonnei

eolf-seql

<400> 127

Met Arg Phe Tyr Arg Pro Leu Gly Arg Ile Ser Ala Leu Thr Phe Asp
 1 5 10 15

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

Arg Glu Ala Leu Thr Phe Val Gln Asn Tyr His Pro Ala Leu Arg Ser
 35 40 45

Phe Gln Asn Glu Asp Leu Gln Arg Leu Arg Gln Ala Val Arg Glu Ala
 50 55 60

Glu Pro Glu Ile Tyr His Asp Val Thr Arg Trp Arg Phe Arg Ser Ile
 65 70 75 80

Glu Gln Ala Met Leu Asp Ala Gly Leu Ser Ala Glu Glu Ala Ser Ala
 85 90 95

Gly Ala His Ala Ala Met Ile Asn Phe Ala Lys Trp Arg Ser Arg Ile
 100 105 110

Asp Val Pro Gln Gln Thr His Asp Thr Leu Lys Gln Leu Ala Lys Lys
 115 120 125

Trp Pro Leu Val Ala Ile Thr Asn Gly Asn Ala Gln Pro Glu Leu Phe
 130 135 140

Gly Leu Gly Asp Tyr Phe Glu Phe Val Leu Arg Ala Gly Pro His Gly
 145 150 155 160

Arg Ser Lys Pro Phe Ser Asp Met Tyr Phe Leu Ala Ala Glu Lys Leu
 165 170 175

Asn Val Pro Ile Gly Glu Ile Leu His Val Gly Asp Asp Leu Thr Thr
 180 185 190

Asp Val Gly Gly Ala Ile Arg Ser Gly Met Gln Ala Cys Trp Ile Lys
 195 200 205

eolf-seql

Pro Glu Asn Gly Asp Leu Met Gln Thr Trp Asp Ser Arg Leu Leu Pro
 210 215 220

His Leu Glu Ile Ser Arg Leu Ala Ser Leu Thr Ser Leu Ile
 225 230 235

<210> 128
 <211> 223
 <212> PRT
 <213> Shigella sonnei

<400> 128

Met Arg Phe Tyr Arg Pro Leu Gly Arg Ile Ser Ala Leu Thr Phe Asp
 1 5 10 15

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

Arg Glu Ala Leu Thr Phe Val Gln Asn Tyr His Pro Ala Leu Arg Ser
 35 40 45

Phe Gln Asn Glu Asp Leu Gln Arg Leu Arg Gln Ala Val Arg Glu Ala
 50 55 60

Glu Pro Glu Ile Tyr His Asp Val Thr Arg Trp Arg Phe Arg Ser Ile
 65 70 75 80

Glu Gln Ala Met Leu Asp Ala Gly Leu Ser Ala Glu Glu Ala Ser Ala
 85 90 95

Gly Ala His Ala Ala Met Ile Asn Phe Ala Lys Trp Arg Ser Arg Ile
 100 105 110

Asp Val Pro Gln Gln Thr His Asp Thr Leu Lys Gln Leu Ala Lys Lys
 115 120 125

Trp Pro Leu Val Ala Ile Thr Asn Gly Asn Ala Gln Pro Glu Leu Phe
 130 135 140

eolf-seql

Gly Leu Gly Asp Tyr Phe Glu Phe Val Leu Arg Ala Gly Pro His Gly
145 150 155 160

Arg Ser Lys Pro Phe Ser Asp Met Tyr Phe Leu Ala Ala Glu Lys Leu
165 170 175

Asn Val Pro Ile Gly Glu Ile Leu His Val Gly Asp Asp Leu Thr Thr
180 185 190

Asp Val Gly Gly Ala Ile Arg Ser Gly Met Gln Ala Cys Trp Ile Arg
195 200 205

Pro Glu Asn Gly Asp Leu Met Gln Thr Trp Asp Ser Arg Leu Leu
210 215 220

<210> 129
<211> 238
<212> PRT
<213> Salmonella enterica

<400> 129

Met Arg Phe Tyr Arg Pro Leu Gly Arg Ile Ala Ala Leu Thr Phe Asp
1 5 10 15

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

Gln Glu Ala Leu Ala Phe Met Gln Asn Tyr His Pro Ser Leu Arg Ser
35 40 45

Phe Gln Asn Val Asp Leu Gln Arg Ile Arg Gln Ala Val Arg Glu Ala
50 55 60

Glu Pro Glu Ile Tyr His Asp Val Thr Arg Trp Arg His Arg Ala Ile
65 70 75 80

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

eolf-seql

Gly Ala Asn Ala Ala Met Met His Phe Ala Lys Trp Arg Ser Gln Ile
 100 105 110

Glu Val Pro Gln Ala Thr His Glu Thr Leu Gln Gln Leu Ala Lys Lys
 115 120 125

Trp Pro Leu Val Ala Ile Thr Asn Gly Asn Ala Gln Pro Glu Leu Phe
 130 135 140

Gly Leu Gly Asp Tyr Phe Lys Phe Val Leu Arg Ala Gly Pro Asp Gly
 145 150 155 160

Arg Ser Lys Pro Phe Ser Asp Met Tyr Phe Leu Val Ala Glu Lys Leu
 165 170 175

His Val Pro Ile Gly Glu Ile Leu His Val Gly Asp Asp Leu Thr Thr
 180 185 190

Asp Val Ala Gly Ala Ile Arg Cys Gly Met Gln Ala Cys Trp Ile Lys
 195 200 205

Pro Glu Asn Ala Asp Leu Met Arg Thr Gln Asp Ser Arg Leu Leu Pro
 210 215 220

His Ile Glu Ile Ser Arg Leu Ala Ser Leu Thr Ser Leu Ile
 225 230 235

<210> 130
 <211> 238
 <212> PRT
 <213> Citrobacter braakii

<400> 130

Met Arg Phe Tyr Arg Pro Leu Gly Arg Ile Ser Ala Leu Thr Phe Asp
 1 5 10 15

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

Gln Glu Ala Leu Ala Phe Val Gln Asn Tyr His Pro Ala Leu Asn Ser

eolf-seql

35

40

45

Leu Gln Asn Ser Asp Leu Gln Arg Leu Arg Gln Ala Val Arg Asp Ala
 50 55 60

Glu Pro Glu Ile Tyr His Asp Val Thr Gln Trp Arg His Arg Ala Val
 65 70 75 80

Glu Arg Ala Met Leu Glu Ala Gly Leu Ser Glu Ala Glu Ala Lys Met
 85 90 95

Gly Ala Asn Ala Ala Met Met Asn Phe Ala Lys Trp Arg Ser Arg Ile
 100 105 110

Asp Val Pro Gln Ser Thr His Asp Thr Leu Lys Thr Leu Ala Arg Lys
 115 120 125

Trp Pro Leu Val Ala Ile Thr Asn Gly Asn Ala Gln Pro Glu Leu Phe
 130 135 140

Gly Leu Gly Asp Tyr Phe Glu Phe Val Leu Arg Ala Gly Pro Asp Gly
 145 150 155 160

Arg Ser Lys Pro Phe Ser Asp Met Tyr Ala Leu Ala Ala Glu Lys Leu
 165 170 175

Lys Met Pro Val Gly Glu Ile Leu His Val Gly Asp Asp Leu Thr Thr
 180 185 190

Asp Val Ala Gly Ala Ile Arg Cys Gly Met Gln Ala Cys Trp Ile Lys
 195 200 205

Pro Glu Asn Ala Asp Leu Met Gln Thr Ala Asp Ser Arg Leu Leu Pro
 210 215 220

His Ile Glu Ile Ser Gln Leu Ala Ser Leu Thr Ser Leu Ile
 225 230 235

<210> 131

eolf-seql

<211> 238
 <212> PRT
 <213> Enterobacter hormaechei

<400> 131

Met Arg Phe Tyr Arg Pro Leu Gly Gln Ile Ser Ala Leu Thr Phe Asp
 1 5 10 15

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

Gln Glu Ser Leu Ala Phe Val Gln Asn Tyr His Pro Ala Leu Lys Thr
 35 40 45

Met Gln Asn Lys Asp Phe Gln Lys Leu Arg Gln Ser Leu Arg Glu Thr
 50 55 60

Glu Pro Asp Ile Tyr His Asp Val Thr Glu Trp Arg Arg Arg Ala Val
 65 70 75 80

Glu Gln Ala Met Leu Asn Val Gly Leu Ser Ser Gln Asp Ala Ala Ile
 85 90 95

Gly Ala Glu Ala Ala Met Glu Asn Phe Ala Lys Trp Arg Ser Arg Val
 100 105 110

Asp Val Pro Gln Glu Thr His Asp Thr Leu Ala Lys Leu Ala Glu Lys
 115 120 125

Trp Pro Leu Val Ala Ile Thr Asn Gly Asn Ala Gln Pro Glu Leu Phe
 130 135 140

Gly Leu Gly Asp Tyr Phe Glu Phe Val Leu Arg Ala Gly Pro His Gly
 145 150 155 160

Arg Ser Lys Pro Phe Ser Asp Met Tyr His Leu Ala Ala Glu Lys Leu
 165 170 175

Asn Leu Pro Leu Gly Glu Ile Leu His Val Gly Asp Asp Leu Thr Thr
 180 185 190

eolf-seql

Asp Val Ala Gly Ala Ile Arg Cys Gly Met Gln Ala Cys Trp Ile Lys
195 200 205

Pro Glu Asn Ala Ser Leu Met Thr Thr Pro Asp Ser Arg Leu Leu Pro
210 215 220

His Leu Glu Ile Ser Arg Leu Ala Ser Leu Thr Thr Leu Ile
225 230 235

<210> 132
<211> 238
<212> PRT
<213> Lelliottia amnigena

<400> 132

Met Arg Phe Tyr Arg Pro Leu Gly Gln Ile Ser Ala Leu Thr Phe Asp
1 5 10 15

Leu Asp Asp Thr Leu Tyr Asp Asn Arg Gln Val Ile Leu Arg Thr Glu
20 25 30

Gln Glu Ala Leu Ala Phe Val Gln Asn Tyr His Pro Ser Leu Lys Thr
35 40 45

Leu Gln Asn Thr Asp Phe Gln Arg Leu Arg Gln Ala Leu Arg Glu Thr
50 55 60

Glu Pro Asp Ile Tyr His Asp Val Thr Glu Trp Arg Arg Arg Ala Val
65 70 75 80

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

Gly Ala Glu Ala Ser Met Ala Asn Phe Ala Lys Trp Arg Ser Arg Ile
100 105 110

Asp Val Pro Gln Glu Thr His Asp Thr Leu Ala Lys Leu Ala Glu Lys
115 120 125

eolf-seql

Trp Pro Leu Val Ala Ile Thr Asn Gly Asn Ala Gln Pro Glu Leu Phe
130 135 140

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

Arg Ser Lys Pro Phe Ser Asp Met Tyr His Leu Ala Ala Glu Lys Leu
165 170 175

Asp Leu Pro Leu Gly Glu Ile Leu His Val Gly Gly Asp Leu Thr Thr
180 185 190

Asp Val Ala Gly Ala Ile Arg Cys Gly Met Gln Ala Cys Trp Ile Lys
195 200 205

Pro Glu Asn Ala Asp Leu Met His Thr Ile Asp Ser Arg Leu Leu Pro
210 215 220

His Val Glu Ile Ser Arg Leu Ala Ser Leu Thr Thr Leu Ile
225 230 235

<210> 133
<211> 238
<212> PRT
<213> Leclercia adecarboxylata

<400> 133

Met Arg Phe Tyr Arg Pro Leu Gly Gln Ile Ser Ala Leu Thr Phe Asp
1 5 10 15

Leu Asp Asp Thr Leu Tyr Asp Asn Arg Gln Val Ile Leu Arg Thr Glu
20 25 30

Gln Glu Ala Leu Thr Phe Val Gln Asn Tyr His Pro Ala Leu Lys Thr
35 40 45

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

eolf-seql

Glu Pro Glu Ile Tyr His Asp Val Thr Glu Trp Arg Arg Arg Ala Val
65 70 75 80

Glu Leu Ala Met Leu Asn Ala Gly Leu Thr Ala Ala Glu Ala Ala Leu
85 90 95

Gly Ala Glu Ala Ser Met Ala His Phe Ala Gln Trp Arg Ser Arg Ile
100 105 110

Asp Val Pro Gln Glu Thr His Asp Thr Leu Ala Ala Leu Ala Glu Lys
115 120 125

Trp Pro Leu Val Ala Ile Thr Asn Gly Asn Ala Gln Pro Glu Leu Phe
130 135 140

Gly Leu Gly Asp Tyr Phe Gln Phe Val Leu Arg Ala Gly Pro His Gly
145 150 155 160

Arg Ser Lys Pro Phe Asn Asp Met Tyr His Leu Ala Ala Glu Lys Leu
165 170 175

Ser Leu Pro Leu Gly Gln Ile Leu His Val Gly Asp Asp Leu Thr Thr
180 185 190

Asp Val Ala Gly Ala Ile Arg Cys Gly Met Gln Ala Cys Trp Ile Lys
195 200 205

Pro Glu Asn Ala Asp Leu Met Gln Thr Ala Asp Ser Arg Leu Leu Pro
210 215 220

His Ile Glu Ile Ser Arg Leu Ala Ser Leu Thr Thr Leu Ile
225 230 235

<210> 134
<211> 190
<212> PRT
<213> Shigella flexneri

<400> 134

Met Ser Thr Pro Arg Gln Ile Leu Ala Ala Ile Phe Asp Met Asp Gly

eolf-seql

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1              5              10              15

Leu Leu Ile Asp Ser Glu Pro Leu Trp Asp Arg Ala Glu Leu Asp Val
    20              25              30

Met Ala Ser Leu Gly Val Asp Ile Ser Arg Arg Asn Glu Leu Pro Asp
    35              40              45

Thr Leu Gly Leu Arg Ile Asp Met Val Val Asp Leu Trp Tyr Ala Arg
    50              55              60

Gln Pro Trp Asn Gly Pro Ser Arg Gln Glu Val Val Glu Arg Val Ile
    65              70              75              80

Ala Arg Ala Ile Ser Leu Val Glu Glu Thr Arg Pro Leu Leu Pro Gly
    85              90              95

Val Arg Glu Ala Val Ala Leu Cys Lys Glu Gln Gly Leu Leu Val Gly
    100             105             110

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

Phe Asp Leu Arg Asp Ser Phe Asp Ala Leu Ala Ser Ala Glu Lys Leu
    130             135             140

Pro Tyr Ser Lys Pro His Pro Gln Val Tyr Leu Asp Cys Ala Ala Lys
    145             150             155             160

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

Gly Met Ile Ala Ser Lys Ala Ala Arg Met Arg Ser Ile Val
    180             185             190

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<210> 135
<211> 222
<212> PRT
<213> Kosakonia sacchari

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eolf-seql

<400> 135

Met Thr Thr Pro Arg Gln Ile Leu Ala Ala Ile Phe Asp Met Asp Gly
1 5 10 15

Leu Leu Ile Asp Ser Glu Pro Leu Trp Asp Arg Ala Glu Leu Glu Val
20 25 30

Val Ala Ser Leu Gly Val Asp Ile Thr Arg Arg His Glu Leu Pro Asp
35 40 45

Thr Leu Gly Leu Arg Ile Asp Met Val Val Glu Leu Trp Tyr Ala Gln
50 55 60

Gln Pro Trp Asn Gly Pro Asp Arg Gln Glu Val Thr Glu Cys Ile Ile
65 70 75 80

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

Val Arg Glu Ala Ile Ala Leu Cys Lys Ala Asn Gly Leu Leu Val Gly
100 105 110

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

Phe Glu Leu Arg Asp Ser Phe Asp Ala Leu Ala Ser Ala Glu Lys Leu
130 135 140

Pro Tyr Ser Lys Pro His Pro Gln Val Tyr Leu Asp Cys Ala Ala Lys
145 150 155 160

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

Gly Met Ile Ala Ser Lys Ala Ala Arg Met Arg Ser Ile Val Val Pro
180 185 190

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

eolf-seql

Leu Thr Ser Leu Glu Gln Leu Thr Leu Ala His Pro Ile Gly
 210 215 220

<210> 136
 <211> 222
 <212> PRT
 <213> Enterobacter mori

<400> 136

Met Ser Thr Pro Arg Gln Ile Leu Ala Ala Ile Phe Asp Met Asp Gly
 1 5 10 15

Leu Leu Ile Asp Ser Glu Pro Leu Trp Asp Arg Ala Glu Leu Asp Val
 20 25 30

Met Ala Ser Leu Gly Val Asp Ile Ser Arg Arg Asn Glu Leu Pro Asp
 35 40 45

Thr Leu Gly Leu Arg Ile Asp Met Val Val Asp Leu Trp Tyr Ala His
 50 55 60

Gln Pro Trp Val Gly Pro Gly Arg Asp Glu Val Ile Ala Arg Ile Ile
 65 70 75 80

Asn Arg Ala Ile Thr Leu Val Glu Glu Gln Lys Pro Leu Leu Pro Gly
 85 90 95

Val Arg Asp Ala Ile Ala Leu Cys Lys Ala Gln Gly Leu Lys Val Gly
 100 105 110

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

Phe Glu Leu Arg Asp Ser Phe Asp Ala Leu Ala Ser Ala Glu Lys Leu
 130 135 140

Pro Tyr Ser Lys Pro His Pro Gln Val Tyr Met Asp Cys Ala Ala Lys
 145 150 155 160

eolf-seql

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

Gly Met Val Ala Ser Lys Ala Ala Arg Met Arg Ser Ile Val Val Pro
180 185 190

Ala Glu Glu Gly Arg His Asp Pro Arg Phe Ala Leu Ala Asp Val Lys
195 200 205

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

<210> 137
<211> 222
<212> PRT
<213> Lelliottia amnigena

<400> 137

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

Leu Leu Ile Asp Ser Glu Pro Leu Trp Asp Arg Ala Glu Leu Asp Val
20 25 30

Met Glu Ser Leu Gly Val Asp Ile Arg Arg Arg Asn Glu Leu Pro Asp
35 40 45

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

Gln Pro Trp Asn Gly Pro Ser Arg Gln Glu Val Thr Asp Arg Ile Ile
65 70 75 80

Ser Arg Ala Leu Thr Leu Val Glu Ala Ser Arg Pro Leu Leu Pro Gly
85 90 95

Val Arg Glu Ala Val Ala Leu Cys Lys Ala Gln Gly Leu Lys Val Gly
100 105 110

eolf-seql

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

Phe Asp Leu Arg Glu Ser Phe Asp Ala Leu Ala Ser Ala Glu Lys Leu
130 135 140

Pro Tyr Ser Lys Pro His Pro Gln Val Tyr Met Asp Cys Ala Ala Lys
145 150 155 160

Leu Gly Val Asp Thr Leu Ala Cys Val Ala Leu Glu Asp Ser Val Asn
165 170 175

Gly Met Ile Ala Ser Lys Ala Ala Arg Met Arg Ser Val Val Val Pro
180 185 190

Ala Glu Glu Gly Gln His Asp Pro Arg Phe Ala Leu Ala Asp Val Lys
195 200 205

Leu Ala Thr Leu Ala Asp Leu Thr Pro Ala His Leu Arg Gly
210 215 220

<210> 138
<211> 222
<212> PRT
<213> Enterobacter sp. 638

<400> 138

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

Leu Leu Ile Asp Ser Glu Pro Leu Trp Asp Arg Ala Glu Leu Asp Val
20 25 30

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

Thr Leu Gly Leu Arg Ile Asp Met Val Val Glu Leu Trp Phe Ala His
50 55 60

Gln Pro Trp Ser Gly Pro Ser Arg Glu Glu Val Thr Ala Arg Val Ile

eolf-seql

65		70		75		80									
Ser	Arg	Ala	Ile	Ala	Leu	Val	Glu	Glu	Lys	Arg	Pro	Leu	Leu	Pro	Gly
			85						90					95	
Ala	Arg	Glu	Ala	Ile	Ala	Leu	Cys	Lys	Ala	Gln	Gly	Leu	Lys	Val	Gly
			100					105					110		
Leu	Ala	Ser	Ala	Ser	Pro	Leu	His	Met	Leu	Glu	Lys	Val	Leu	Glu	Met
		115					120					125			
Phe	Asp	Leu	Arg	Asp	Ser	Phe	Asp	Ala	Leu	Ala	Ser	Ala	Glu	Lys	Leu
	130					135					140				
Pro	Tyr	Ser	Lys	Pro	His	Pro	Gln	Val	Tyr	Met	Asp	Cys	Ala	Ala	Lys
145					150					155					160
Leu	Gly	Val	Asp	Pro	Leu	Ala	Cys	Val	Ala	Leu	Glu	Asp	Ser	Val	Asn
				165					170					175	
Gly	Met	Val	Ala	Ser	Lys	Ala	Ala	Arg	Met	Arg	Ser	Ile	Val	Val	Pro
			180					185					190		
Ala	Glu	Glu	Gly	Gln	His	Asp	Pro	Arg	Phe	Ala	Leu	Ala	Asn	Ala	Lys
		195					200					205			
Leu	Thr	Ser	Leu	Val	Asp	Leu	Thr	Pro	Ala	His	Leu	Phe	Gly		
	210					215					220				
<210>	139														
<211>	222														
<212>	PRT														
<213>	Kosakonia radicincitans														
<400>	139														
Met	Thr	Ala	Pro	Arg	Gln	Ile	Leu	Ala	Ala	Ile	Phe	Asp	Met	Asp	Gly
1				5					10					15	
Leu	Leu	Ile	Asp	Ser	Glu	Pro	Leu	Trp	Asp	Arg	Ala	Glu	Leu	Glu	Val
			20					25					30		

eolf-seql

Val Ala Ser Leu Gly Val Asp Ile Asn Arg Arg His Glu Leu Pro Asp
35 40 45

Thr Leu Gly Leu Arg Ile Asp Met Val Val Glu Leu Trp Tyr Ala Gln
50 55 60

Gln Pro Trp Asn Gly Pro Asp Arg Lys Glu Val Thr Glu Arg Ile Ile
65 70 75 80

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

Val Arg Glu Ala Ile Ala Leu Cys Lys Ala Asn Gly Leu Leu Val Gly
100 105 110

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

Phe Glu Leu Arg Asp Ser Phe Asp Ala Leu Ala Ser Ala Glu Asn Leu
130 135 140

Pro Tyr Ser Lys Pro His Pro Gln Val Tyr Leu Asp Cys Ala Ala Lys
145 150 155 160

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

Gly Met Ile Ala Ser Lys Ala Ala Arg Met Arg Ser Ile Val Val Pro
180 185 190

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

Leu Thr Ser Leu Glu Gln Leu Thr Leu Ala His Leu Ile Gly
210 215 220

<210> 140

<211> 209

eolf-seql

<212> PRT

<213> Salmonella enterica subsp. enterica serovar Newport str.

<400> 140

Met Asp Gly Leu Leu Ile Asp Ser Glu Pro Leu Trp Asp Arg Ala Glu
1 5 10 15

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

Leu Pro Asp Thr Leu Gly Leu Arg Ile Asp Met Val Val Asp Leu Trp
35 40 45

Phe Ala Gln Gln Pro Trp Asn Gly Pro Asp Arg Gln Glu Val Thr Asn
50 55 60

Arg Val Ile Ala Arg Ala Ile Thr Leu Ile Glu Glu Thr Arg Pro Leu
65 70 75 80

Leu Pro Gly Val Arg Glu Ala Val Ala Leu Cys Lys Ala Gln Gly Leu
85 90 95

Leu Val Gly Leu Ala Ser Ala Ser Pro Leu His Met Leu Glu Lys Val
100 105 110

Leu Thr Met Phe Glu Leu Arg Asp Ser Phe Asp Ala Leu Ala Ser Ala
115 120 125

Glu Lys Leu Pro Tyr Ser Lys Pro His Pro Gln Val Tyr Leu Asp Cys
130 135 140

Ala Ala Lys Leu Gly Val Asp Pro Leu Thr Cys Val Ala Leu Glu Asp
145 150 155 160

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

Val Val Pro Ala Glu Glu Asn Gln His Asp Pro Arg Phe Ala Leu Ala
180 185 190

eolf-seql

Asn Val Lys Leu Asn Ser Leu Thr Glu Leu Thr Ala Ala His Leu Leu
 195 200 205

Gly

<210> 141
 <211> 188
 <212> PRT
 <213> *Shigella flexneri*

<400> 141

Met Tyr Glu Arg Tyr Ala Gly Leu Ile Phe Asp Met Asp Gly Thr Ile
 1 5 10 15

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

His Tyr Gly Leu Gln Tyr Asp Val Gln Ala Met Ile Ala Leu Asn Gly
 35 40 45

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

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

Ser Met Leu Leu Asp Ser Val Glu Pro Leu Pro Leu Val Glu Val Val
 85 90 95

Lys Ser Trp His Gly Arg Arg Pro Met Ala Val Gly Thr Gly Ser Glu
 100 105 110

Ser Ala Ile Ala Glu Ala Leu Leu Ala His Leu Gly Leu Arg Arg Tyr
 115 120 125

Phe Asp Ala Val Val Ala Ala Asp His Val Lys His His Lys Pro Ala
 130 135 140

eolf-seql

Pro Asp Thr Phe Leu Leu Cys Ala Gln Arg Met Gly Val Gln Pro Thr
145 150 155 160

Gln Cys Val Val Phe Glu Asp Ala Asp Phe Gly Ile Gln Ala Ala Arg
165 170 175

Ala Ala Gly Met Asp Ala Val Asp Ile Arg Leu Leu
180 185

<210> 142
<211> 188
<212> PRT
<213> Escherichia albertii

<400> 142

Met Tyr Glu Arg Tyr Ala Gly Leu Ile Phe Asp Met Asp Gly Thr Ile
1 5 10 15

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

Arg Tyr Gly Leu Arg Tyr Asn Val Gln Ala Met Ile Ala Leu Asn Gly
35 40 45

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

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

Ser Met Leu Leu Asp Ser Val Glu Pro Leu Pro Leu Val Glu Val Val
85 90 95

Lys Ser Trp Tyr Gly Arg Arg Pro Met Ala Val Gly Thr Gly Ser Glu
100 105 110

Ser Ala Ile Ala Glu Ala Leu Leu Thr His Leu Gly Leu Arg Arg Tyr
115 120 125

Phe Asp Thr Val Val Ala Ala Asp His Val Lys His His Lys Pro Ala

eolf-seql

130

135

140

Pro Asp Thr Phe Leu Leu Cys Ala Gln His Met Gly Val Gln Pro Ala
 145 150 155 160

Gln Cys Val Val Phe Glu Asp Ala Asp Phe Gly Ile Gln Ala Ala Arg
 165 170 175

Ala Ala Gly Met Asp Ala Val Asp Val Arg Leu Leu
 180 185

<210> 143

<211> 188

<212> PRT

<213> Salmonella enterica

<400> 143

Met Tyr Ala Arg Tyr Ala Gly Leu Ile Phe Asp Met Asp Gly Thr Leu
 1 5 10 15

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

His Tyr Gly Leu Arg Phe Asp Glu Gln Ala Met Val Ala Leu Asn Gly
 35 40 45

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

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

Ser Ile Leu Leu Asp Cys Val Glu Pro Leu Pro Leu Val Glu Val Val
 85 90 95

Lys Ala Trp His Gly Arg Arg Pro Met Ser Val Gly Thr Gly Ser Glu
 100 105 110

Ser Ala Ile Ala Glu Ala Leu Leu Ala His Leu Gly Leu Arg Arg Tyr
 115 120 125

eolf-seql

Phe Asp Ala Val Val Ala Ala Asp His Val Gln His His Lys Pro Ala
130 135 140

Pro Asp Thr Phe Leu Leu Cys Ala Gln Arg Met Gly Val Met Pro Thr
145 150 155 160

Gln Cys Val Val Phe Glu Asp Ala Asp Phe Gly Leu Gln Ala Ala Arg
165 170 175

Ala Ala Gly Met Asp Ala Val Asp Val Arg Leu Leu
180 185

<210> 144
<211> 188
<212> PRT
<213> Kluyvera intermedia

<400> 144

Met Tyr Glu Arg Tyr Asp Gly Leu Ile Phe Asp Met Asp Gly Thr Ile
1 5 10 15

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

His Tyr Gly Leu Arg Tyr Asp Ile Gln Ala Met Ile Ala Leu Asn Gly
35 40 45

Ser Pro Thr Trp Arg Ile Ala Gln Ser Val Ile Glu Leu Asn Gln Ala
50 55 60

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

Ala Met Leu Leu Asp Thr Val Arg Pro Leu Pro Leu Ile Asp Val Val
85 90 95

Lys Ala Trp Tyr Gly Arg Arg Pro Leu Ser Val Gly Thr Gly Ser Glu
100 105 110

eolf-seql

Ser Ala Ile Ala Glu Ala Leu Leu Ser His Leu Gly Leu Arg His Tyr
115 120 125

Phe Ala Ala Val Val Ala Ala Glu His Val Lys Asn His Lys Pro Ala
130 135 140

Pro Asp Thr Phe Leu Leu Cys Ala Glu Lys Met Gly Val Ala Pro Gln
145 150 155 160

Lys Cys Val Val Phe Glu Asp Ala Asp Phe Gly Leu Gln Ala Ala Arg
165 170 175

Ser Ala Gly Met Asp Ala Val Asp Val Arg Leu Leu
180 185

<210> 145
<211> 188
<212> PRT
<213> Trabulsiella odontotermis

<400> 145

Met Tyr Glu Arg Tyr Ala Gly Leu Ile Phe Asp Met Asp Gly Thr Ile
1 5 10 15

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

Arg Tyr Gly Ile Arg Phe Asp Glu Gln Ser Ile Ile Ala Leu Asn Gly
35 40 45

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

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

Ile Met Leu Leu Asp Ser Val Gln Pro Leu Pro Leu Ile Asp Val Val
85 90 95

eolf-seql

Lys Ala Trp His Gly Arg Arg Pro Met Ser Val Gly Thr Gly Ser Glu
100 105 110

Ser Ala Ile Ala Glu Ala Leu Leu Ala His Leu Gly Leu Arg His Tyr
115 120 125

Phe Ser Ala Val Val Ala Ala Asp His Val Arg His His Lys Pro Ala
130 135 140

Pro Asp Thr Phe Leu Leu Cys Ala Glu Arg Met Gly Val Glu Pro Ala
145 150 155 160

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

Ser Ala Gly Met Asp Val Val Asp Val Arg Leu Leu
180 185

<210> 146
<211> 188
<212> PRT
<213> Yokenella regensburgei

<400> 146

Met Tyr Glu Arg Tyr Ala Gly Leu Ile Phe Asp Met Asp Gly Thr Ile
1 5 10 15

Leu Asp Thr Glu Pro Thr His Cys Lys Ala Trp His Asp Val Leu Gly
20 25 30

Arg Tyr Gly Met His Phe Asp Glu Gln Ala Met Thr Ala Leu Asn Gly
35 40 45

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

Thr Leu Asp Pro His Gln Leu Ala Arg Glu Lys Thr Asp Ala Val Lys
65 70 75 80

Ala Met Leu Leu Asp Thr Val Arg Pro Leu Pro Leu Ile Asp Val Val

eolf-seql

85

90

95

Lys Ala Trp His Gly Arg Arg Pro Met Ala Val Gly Thr Gly Ser Glu
 100 105 110

Ser Ala Ile Ala Glu Ala Leu Leu Ala His Leu Gly Leu Arg Glu Tyr
 115 120 125

Phe Thr Ala Val Val Ala Ala Asp His Val Lys His His Lys Pro Ala
 130 135 140

Pro Asp Thr Phe Leu Leu Cys Ala Glu Leu Met Gly Val Ala Ala Asn
 145 150 155 160

Gln Cys Val Val Phe Glu Asp Ala Asp Phe Gly Leu Gln Ala Ala Arg
 165 170 175

Ser Ala Gly Met Asp Val Val Asp Val Arg Leu Leu
 180 185

<210> 147

<211> 188

<212> PRT

<213> Raoultella terrigena

<400> 147

Met Tyr Glu Arg Tyr Ala Gly Leu Ile Phe Asp Met Asp Gly Thr Ile
 1 5 10 15

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

Arg Tyr Gly Met Arg Phe Asp Glu Gln Ala Met Val Ala Leu Asn Gly
 35 40 45

Ser Pro Thr Trp Arg Ile Ala Gln Val Ile Ile Glu Leu Asn Gln Ala
 50 55 60

Asp Leu Asp Pro His Arg Leu Ala Leu Glu Lys Thr Asn Ala Val Lys
 65 70 75 80

eolf-seql

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

Lys Glu Trp His Gly Arg Arg Pro Met Ser Val Gly Thr Gly Ser Glu
100 105 110

Ser Ala Val Ala Glu Ala Leu Leu Ala His Leu Gly Leu Arg His Tyr
115 120 125

Phe Ser Ala Val Ile Ala Ala Asp His Val Thr Asn His Lys Pro Ala
130 135 140

Pro Asp Thr Phe Leu Leu Cys Ala Glu Arg Met Gly Val Ala Pro Glu
145 150 155 160

Lys Cys Val Val Phe Glu Asp Ala Asp Phe Gly Leu Gln Ala Ala Arg
165 170 175

Arg Ala Gly Met Asp Ala Val Asp Val Arg Leu Leu
180 185

<210> 148
<211> 188
<212> PRT
<213> Klebsiella pneumoniae

<400> 148

Met Tyr Glu Gly Tyr Ala Gly Leu Ile Phe Asp Met Asp Gly Thr Ile
1 5 10 15

Leu Asp Thr Glu Pro Thr His Arg Gln Ala Trp Asn Glu Val Leu Gly
20 25 30

Arg Tyr Gly Met Arg Phe Asp Glu Gln Ala Met Val Ala Leu Asn Gly
35 40 45

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

eolf-seql

Asp Leu Asp Pro His Arg Leu Ala Gln Glu Lys Thr Gln Ala Val Lys
65 70 75 80

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

Lys Ala Trp His Gly Cys Arg Pro Met Ser Val Gly Thr Gly Ser Glu
100 105 110

Ser Ala Val Ala Glu Ala Leu Leu Ala His Leu Gly Leu Arg His Tyr
115 120 125

Phe Ser Ala Val Val Ala Ala Asp His Val Val Asn His Lys Pro Ala
130 135 140

Pro Asp Thr Phe Leu Leu Cys Ala Glu Arg Met Gly Val Ala Pro Glu
145 150 155 160

Lys Cys Val Val Phe Glu Asp Ala Asp Phe Gly Leu Gln Ala Ala Lys
165 170 175

Arg Ala Gly Met Asp Ala Val Asp Val Arg Leu Leu
180 185

<210> 149
<211> 223
<212> PRT
<213> Pseudomonas putida

<400> 149

Met Arg Leu Arg Ala Val Leu Phe Asp Met Asp Gly Thr Leu Leu Asp
1 5 10 15

Thr Ala Pro Asp Phe Ile Ala Ile Cys Gln Ala Met Leu Ala Asp Arg
20 25 30

Gly Leu Pro Ala Ile Asp Asp Ala Arg Ile Arg Glu Val Ile Ser Gly
35 40 45

eolf-seql

Gly Ala Arg Ala Met Val Ala Ala Thr Phe Ala Met Asn Pro Glu Ala
50 55 60

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

Asp Cys Ala Val His Ser Lys Leu Phe Asp Gly Met Pro Glu Leu Leu
85 90 95

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

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

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

Asp Pro Glu Pro Leu Ile Leu Ala Cys Lys Thr Leu Gly Leu Asp Pro
145 150 155 160

Ala Ser Val Leu Phe Val Gly Asp Asp Leu Arg Asp Ile Glu Ser Gly
165 170 175

Arg Asp Ala Gly Thr Arg Thr Ala Ala Val Arg Tyr Gly Tyr Ile His
180 185 190

Pro Glu Asp Asn Pro Asn Asn Trp Gly Ala Asp Val Val Val Asp His
195 200 205

Pro Leu Glu Leu Arg Lys Val Ile Asp Ser Ala Leu Cys Gly Cys
210 215 220

<210> 150
<211> 223
<212> PRT
<213> Pseudomonas sp. GM84

<400> 150

Met Arg Leu Arg Ala Val Leu Phe Asp Met Asp Gly Thr Leu Leu Asp

eolf-seql

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

eolf-seql

210

215

220

<210> 151

<211> 223

<212> PRT

<213> Pseudomonas entomophila

<400> 151

Met Arg Leu Arg Ala Val Leu Phe Asp Met Asp Gly Thr Leu Leu Asp
 1 5 10 15

Thr Ala Pro Asp Phe Ile Ala Ile Cys Gln Ala Met Leu Thr Asp Arg
 20 25 30

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

Gly Ala Arg Ala Met Val Ala Ala Thr Phe Ala Met Asp Pro Asp Ala
 50 55 60

Glu Gly Phe Glu Ala Leu Arg Leu Glu Phe Leu Glu Arg Tyr Gln Arg
 65 70 75 80

Asp Cys Ala Val His Ser Lys Leu Phe Asp Gly Met Pro Glu Leu Leu
 85 90 95

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

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

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

Asp Pro Glu Pro Leu Ile Leu Ala Cys Lys Thr Leu Asp Leu Asp Pro
 145 150 155 160

Ala Ser Val Leu Phe Val Gly Asp Asp Leu Arg Asp Ile Glu Ser Gly
 165 170 175

eolf-seql

Arg Asp Ala Gly Thr Arg Thr Ala Ala Val Arg Tyr Gly Tyr Ile His
180 185 190

Pro Glu Asp Asn Pro Asn Asn Trp Gly Ala Asp Val Val Val Asp His
195 200 205

Pro Leu Glu Leu Arg Lys Val Ile Asp Ser Ala Leu Cys Gly Cys
210 215 220

<210> 152

<211> 223

<212> PRT

<213> Pseudomonas vranovensis

<400> 152

Met Arg Leu Arg Ala Val Leu Phe Asp Met Asp Gly Thr Leu Leu Asp
1 5 10 15

Thr Ala Pro Asp Phe Ile Ala Ile Cys Gln Ala Met Leu Ala Asp Arg
20 25 30

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

Gly Ala Arg Ala Met Val Glu Val Thr Phe Gly Ile Thr Pro Glu Val
50 55 60

Ala Glu Phe Glu Ala Leu Arg Leu Glu Phe Leu Glu Arg Tyr Gln Arg
65 70 75 80

Asp Cys Ala Val His Ser Lys Leu Phe Asp Gly Met Ala Glu Leu Leu
85 90 95

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

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

eolf-seql

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

Asp Pro Glu Pro Leu Ile Leu Ala Cys Lys Thr Leu Asn Leu Asp Pro
145 150 155 160

Ala Ser Val Leu Phe Val Gly Asp Asp Leu Arg Asp Ile Glu Ser Gly
165 170 175

Arg Asp Ala Gly Thr Arg Thr Ala Ala Val Arg Tyr Gly Tyr Ile His
180 185 190

Pro Glu Asp Asn Pro Asn Asn Trp Gly Ala Asp Val Val Val Asp His
195 200 205

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

<210> 153
<211> 223
<212> PRT
<213> Pseudomonas cannabina

<400> 153

Met Arg Leu Arg Ala Val Leu Phe Asp Met Asp Gly Thr Leu Leu Asp
1 5 10 15

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

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

Gly Ala Lys Ala Met Val Ala Ala Ala Phe Ala Leu Ser Pro Glu Ala
50 55 60

Pro Glu Phe Glu Ala Leu Arg Leu Glu Phe Leu Glu Arg Tyr Gln Arg
65 70 75 80

eolf-seql

Asp Cys Ala Thr His Ser Arg Leu Phe Asn Gly Met Pro Glu Leu Leu
85 90 95

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

Pro Val Arg Phe Ala Gln Pro Ile Met Glu Gln Leu Lys Leu Ala Glu
115 120 125

Arg Ser Ala Val Leu Ile Cys Pro Asp His Val Thr His Ser Lys Pro
130 135 140

His Pro Glu Pro Met Ile Leu Ala Cys Lys Leu Leu Asp Leu Asp Pro
145 150 155 160

Ala Ser Val Leu Phe Val Gly Asp Asp Leu Arg Asp Ile Glu Ser Gly
165 170 175

Arg Asp Ala Gly Thr Lys Thr Ala Ala Val Arg Tyr Gly Tyr Ile His
180 185 190

Pro Asp Asp Asn Pro Asp His Trp Gly Ala Asp Val Val Val Asp His
195 200 205

Pro Leu Glu Leu Arg Lys Val Leu Asp Asn Ala Leu Cys Ser Cys
210 215 220

<210> 154
<211> 223
<212> PRT
<213> *Pseudomonas monteilii*

<400> 154

Met Arg Leu Arg Ala Val Leu Phe Asp Met Asp Gly Thr Leu Leu Asp
1 5 10 15

Thr Ala Pro Asp Phe Ile Ala Ile Cys Gln Ala Met Leu Ala Glu Arg
20 25 30

Gly Leu Pro Ala Ile Asp Asp Gln Ala Ile Arg Asp Val Ile Ser Gly

eolf-seql

35

40

45

Gly Ala Arg Ala Met Val Ala Ala Thr Phe Ala Met Asn Pro Glu Asp
 50 55 60

Glu Gly Phe Glu Ala Leu Arg Leu Glu Phe Leu Glu Arg Tyr Gln Arg
 65 70 75 80

Asp Cys Ala Val His Ser Lys Leu Phe Asp Gly Met Gly Glu Leu Leu
 85 90 95

Ala Asp Leu Glu Lys Gly Lys Leu Leu Trp Gly Val Val Thr Asn Lys
 100 105 110

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

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

Asp Pro Glu Pro Leu Ile Leu Ala Cys Lys Thr Leu Asn Leu Asp Pro
 145 150 155 160

Ala Ser Val Leu Phe Val Gly Asp Asp Leu Arg Asp Ile Glu Ser Gly
 165 170 175

Arg Asp Ala Gly Thr Arg Thr Ala Ala Val Arg Tyr Gly Tyr Ile His
 180 185 190

Pro Asp Asp Asn Pro Asn His Trp Gly Ala Asp Val Val Val Asp His
 195 200 205

Pro Leu Glu Leu Arg Lys Val Ile Asp Ser Ala Leu Cys Gly Cys
 210 215 220