

eolf-seq1
SEQUENCE LISTING

<110> PFIZER INC.
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Hoiseth, Susan K.
Jansen, Kathrin U.
Mark, Ruppen E.
Justin, Moran K.

<120> NEISSERIA MENINGITIDIS COMPOSITIONS AND METHODS THEREOF

<130> PC071917

<160> 81

<170> PatentIn version 3.5

<210> 1

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<212> DNA

<213> Neisseria meningitidis (group B)

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aaccccgaca aaatcgacag cctgataaac caacgctcct tccttgtcag cggtttgggc	420
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<213> Neisseria meningitidis (group B)

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gaagactcca tttcccaaaa cggaacactg accctgtcgg cacaagggtg ggaaaaaact	180
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 <213> *Neisseria meningitidis* (group B)

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 <213> *Neisseria meningitidis* (group B)

eof-seq1

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caaatcgaa tggacgggca gctcattacc ttggagagcg gagagttcca agtgtacaaa 300
caaagccatt ccgccttaac cgcccttcag accgagcaag aacaagatcc agagcattcc 360
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gatgccggcg gaaaactgac ctatactata gattttgctg ccaaacaggg acacggcaaa 540
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gatgaaaaac accatgccgt catcagcggc tccgtccttt acaatcaaga cgagaaaggc 660
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gaaaccgcaa acggcataca ccatatcggc cttgccgcca agcaataa 768
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eof-seq1

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 <213> *Neisseria meningitidis* (group B)

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gacagcctta atacgggcaa attgaagaac gacaaggtca gccgcttcga ctttatccgt	240
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 <213> *Neisseria meningitidis* (group B)

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eolf-seq1

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 <213> *Neisseria meningitidis* (group B)

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 <213> *Neisseria meningitidis* (group B)

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eof-seq1

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 gccaagcaat aa 792

<210> 12
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 <212> PRT
 <213> Neisseria meningitidis (group B)
 <400> 12

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 20 25 30

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

Thr Leu Ser Ala Gln Gly Ala Glu Lys Thr Phe Lys Ala Gly Asp Lys
 50 55 60

Asp Asn Ser Leu Asn Thr Gly Lys Leu Lys Asn Asp Lys Ile Ser Arg
 65 70 75 80

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

Ala Ser Gly Glu Phe Gln Ile Tyr Lys Gln Asp His Ser Ala Val Val
 100 105 110

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

Ile Asn Gln Arg Ser Phe Leu Val Ser Gly Leu Gly Gly Glu His Thr
 130 135 140

Ala Phe Asn Gln Leu Pro Gly Asp Lys Ala Glu Tyr His Gly Lys Ala
 145 150 155 160

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

Ala Ala Lys Gln Gly His Gly Lys Ile Glu His Leu Lys Thr Pro Glu
 180 185 190

Gln Asn Val Glu Leu Ala Ala Ala Glu Leu Lys Ala Asp Glu Lys Ser
 195 200 205

His Ala Val Ile Leu Gly Asp Thr Arg Tyr Gly Ser Glu Glu Lys Gly
 210 215 220

Thr Tyr His Leu Ala Leu Phe Gly Asp Arg Ala Gln Glu Ile Ala Gly
 225 230 235 240

Ser Ala Thr Val Lys Ile Gly Glu Lys Val His Glu Ile Gly Ile Ala
 245 250 255

Gly Lys Gln

<210> 13
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 <213> Neisseria meningitidis (group B)

<400> 13

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Gly Thr Gly Leu Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp
 20 25 30

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

Thr Leu Thr Leu Ser Ala Gln Gly Ala Glu Lys Thr Phe Lys Val Gly
 50 55 60

Asp Lys Asp Asn Ser Leu Asn Thr Gly Lys Leu Lys Asn Asp Lys Ile
 65 70 75 80

Ser Arg Phe Asp Phe Val Gln Lys Ile Glu Val Asp Gly Gln Thr Ile
 85 90 95

Thr Leu Ala Ser Gly Glu Phe Gln Ile Tyr Lys Gln Asp His Ser Ala
 100 105 110

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

Ser Leu Ile Asn Gln Arg Ser Phe Leu Val Ser Gly Leu Gly Gly Glu
 130 135 140

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His Thr Ala Phe Asn Gln Leu Pro Ser Gly Lys Ala Glu Tyr His Gly
 145 150 155 160

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

Asp Phe Ala Ala Lys Gln Gly His Gly Lys Ile Glu His Leu Lys Thr
 180 185 190

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

Lys Ser His Ala Val Ile Leu Gly Asp Thr Arg Tyr Gly Ser Glu Glu
 210 215 220

Lys Gly Thr Tyr His Leu Ala Leu Phe Gly Asp Arg Ala Gln Glu Ile
 225 230 235 240

Ala Gly Ser Ala Thr Val Lys Ile Arg Glu Lys Val His Glu Ile Gly
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Ile Ala Gly Lys Gln
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<210> 14
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 <212> PRT
 <213> Neisseria meningitidis (group B)

<400> 14

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 20 25 30

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 35 40 45

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

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

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

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Gln Ile Tyr Lys Gln Asn His Ser Ala Val Val Ala Leu Gln Ile Glu
100 105 110

Lys Ile Asn Asn Pro Asp Lys Ile Asp Ser Leu Ile Asn Gln Arg Ser
115 120 125

Phe Leu Val Ser Gly Leu Gly Gly Glu His Thr Ala Phe Asn Gln Leu
130 135 140

Pro Asp Gly Lys Ala Glu Tyr His Gly Lys Ala Phe Ser Ser Asp Asp
145 150 155 160

Pro Asn Gly Arg Leu His Tyr Ser Ile Asp Phe Thr Lys Lys Gln Gly
165 170 175

Tyr Gly Arg Ile Glu His Leu Lys Thr Pro Glu Gln Asn Val Glu Leu
180 185 190

Ala Ser Ala Glu Leu Lys Ala Asp Glu Lys Ser His Ala Val Ile Leu
195 200 205

Gly Asp Thr Arg Tyr Gly Gly Glu Glu Lys Gly Thr Tyr His Leu Ala
210 215 220

Leu Phe Gly Asp Arg Ala Gln Glu Ile Ala Gly Ser Ala Thr Val Lys
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Ile Arg Glu Lys Val His Glu Ile Gly Ile Ala Gly Lys Gln
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<210> 15
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<212> PRT
<213> Neisseria meningitidis (group B)

<400> 15

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20 25 30

Ser Leu Thr Leu Asp Gln Ser Val Arg Lys Asn Glu Lys Leu Lys Leu
35 40 45

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

eolf-seq1

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

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

Gln Ile Tyr Lys Gln Asp His Ser Ala Val Val Ala Leu Gln Ile Glu
100 105 110

Lys Ile Asn Asn Pro Asp Lys Ile Asp Ser Leu Ile Asn Gln Arg Ser
115 120 125

Phe Leu Val Ser Gly Leu Gly Gly Glu His Thr Ala Phe Asn Gln Leu
130 135 140

Pro Ser Gly Lys Ala Glu Tyr His Gly Lys Ala Phe Ser Ser Asp Asp
145 150 155 160

Ala Gly Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln Gly
165 170 175

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

Ala Ser Ala Glu Leu Lys Ala Asp Glu Lys Ser His Ala Val Ile Leu
195 200 205

Gly Asp Thr Arg Tyr Gly Gly Glu Glu Lys Gly Thr Tyr His Leu Ala
210 215 220

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Ile Arg Glu Lys Val His Glu Ile Gly Ile Ala Gly Lys Gln
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<210> 16
<211> 263
<212> PRT
<213> Neisseria meningitidis (group B)

<400> 16

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1 5 10 15

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

eolf-seq1

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Gly Thr₅₀ Leu Thr Leu Ser Ala₅₅ Gln Gly Ala Glu Arg Thr Phe Lys Ala

Gly₆₅ Asp Lys Asp Asn Ser₇₀ Leu Asn Thr Gly Lys₇₅ Leu Lys Asn Asp Lys₈₀

Ile Ser Arg Phe Asp₈₅ Phe Ile Arg Gln Ile₉₀ Glu Val Asp Gly Gln₉₅ Leu

Ile Thr Leu Glu₁₀₀ Ser Gly Glu Phe Gln₁₀₅ Val Tyr Lys Gln Ser₁₁₀ His Ser

Ala Leu Thr₁₁₅ Ala Leu Gln Thr Glu₁₂₀ Gln Val Gln Asp Ser₁₂₅ Glu His Ser

Gly Lys₁₃₀ Met Val Ala Lys Arg₁₃₅ Gln Phe Arg Ile Gly₁₄₀ Asp Ile Val Gly

Glu His Thr Ser Phe Asp₁₅₀ Lys Leu Pro Lys Asp₁₅₅ Val Met Ala Thr Tyr₁₆₀

Arg Gly Thr Ala Phe₁₆₅ Gly Ser Asp Asp Ala₁₇₀ Gly Gly Lys Leu Thr₁₇₅ Tyr

Thr Ile Asp Phe₁₈₀ Ala Ala Lys Gln Gly₁₈₅ His Gly Lys Ile Glu₁₉₀ His Leu

Lys Ser Pro₁₉₅ Glu Leu Asn Val Asp₂₀₀ Leu Ala Ala Ala Asp₂₀₅ Ile Lys Pro

Asp Glu₂₁₀ Lys His His Ala Val₂₁₅ Ile Ser Gly Ser Val₂₂₀ Leu Tyr Asn Gln

Ala Glu Lys Gly Ser Tyr₂₃₀ Ser Leu Gly Ile Phe₂₃₅ Gly Gly Gln Ala Gln₂₄₀

Glu Val Ala Gly Ser₂₄₅ Ala Glu Val Glu Thr₂₅₀ Ala Asn Gly Ile Arg₂₅₅ His

Ile Gly Leu Ala₂₆₀ Ala Lys Gln

<210> 17
 <211> 255
 <212> PRT

<213> Neisseria meningitidis (group B) eolf-seq1

<400> 17

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

eof-seq1

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

<210> 18
 <211> 255
 <212> PRT
 <213> Neisseria meningitidis (group B)

<400> 18

Cys Ser Ser Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Gly Leu
 1 5 10 15

Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Gly Leu Gln
 20 25 30

Ser Leu Thr Leu Asp Gln Ser Val Arg Lys Asn Glu Lys Leu Lys Leu
 35 40 45

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

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

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

Gln Val Tyr Lys Gln Ser His Ser Ala Leu Thr Ala Leu Gln Thr Glu
 100 105 110

Gln Val Gln Asp Ser Glu Asp Ser Gly Lys Met Val Ala Lys Arg Gln
 115 120 125

Phe Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu
 130 135 140

Pro Lys Gly Gly Ser Ala Thr Tyr Arg Gly Thr Ala Phe Gly Ser Asp
 145 150 155 160

Asp Ala Gly Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln
 165 170 175

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

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

eof-seq1

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

Gly Ile Phe Gly Gly Gln Ala Gln Glu Val Ala Gly Ser Ala Glu Val
225 230 235 240

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

<210> 19

<211> 255

<212> PRT

<213> Neisseria meningitidis (group B)

<400> 19

Cys Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Val Leu
1 5 10 15

Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Ser Leu Gln
20 25 30

Ser Leu Thr Leu Asp Gln Ser Val Arg Lys Asn Glu Lys Leu Lys Leu
35 40 45

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

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

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

Gln Val Tyr Lys Gln Ser His Ser Ala Leu Thr Ala Leu Gln Thr Glu
100 105 110

Gln Val Gln Asp Ser Glu His Ser Gly Lys Met Val Ala Lys Arg Gln
115 120 125

Phe Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu
130 135 140

Pro Glu Gly Gly Arg Ala Thr Tyr Arg Gly Thr Ala Phe Gly Ser Asp
145 150 155 160

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

eolf-seq1

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

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

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

Gly Ile Phe Gly Gly Gln Ala Gln Glu Val Ala Gly Ser Ala Glu Val
225 230 235 240

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

<210> 20

<211> 255

<212> PRT

<213> Neisseria meningitidis (group B)

<400> 20

Cys Ser Ser Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Gly Leu
1 5 10 15

Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Gly Leu Gln
20 25 30

Ser Leu Thr Leu Asp Gln Ser Val Arg Lys Asn Glu Lys Leu Lys Leu
35 40 45

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

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

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

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

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

Phe Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu
130 135 140

eof-seq1

Pro Glu Gly Gly Arg Ala Thr Tyr Arg Gly Thr Ala Phe Gly Ser Asp
145 150 155 160

Asp Ala Gly Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln
165 170 175

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

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

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

Gly Ile Phe Gly Gly Lys Ala Gln Glu Val Ala Gly Ser Ala Glu Val
225 230 235 240

Lys Thr Val Asn Gly Ile Arg His Ile Gly Leu Ala Ala Lys Gln
245 250 255

<210> 21
<211> 263
<212> PRT
<213> Neisseria meningitidis (group B)

<400> 21

Cys Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Val Ala Ala Asp
1 5 10 15

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

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

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

Gly Asp Lys Asp Asn Ser Leu Asn Thr Gly Lys Leu Lys Asn Asp Lys
65 70 75 80

Ile Ser Arg Phe Asp Phe Ile Arg Gln Ile Glu Val Asp Gly Gln Leu
85 90 95

Ile Thr Leu Glu Ser Gly Glu Phe Gln Val Tyr Lys Gln Ser His Ser
100 105 110

eolf-seq1

Ala Leu Thr Ala Leu Gln Thr Glu Gln Val Gln Asp Ser Glu His Ser
115 120 125

Gly Lys Met Val Ala Lys Arg Gln Phe Arg Ile Gly Asp Ile Val Gly
130 135 140

Glu His Thr Ser Phe Gly Lys Leu Pro Lys Asp Val Met Ala Thr Tyr
145 150 155 160

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

Thr Ile Asp Phe Ala Ala Lys Gln Gly His Gly Lys Ile Glu His Leu
180 185 190

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

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

Ala Glu Lys Gly Ser Tyr Ser Leu Gly Ile Phe Gly Gly Gln Ala Gln
225 230 235 240

Glu Val Ala Gly Ser Ala Glu Val Glu Thr Ala Asn Gly Ile Arg His
245 250 255

Ile Gly Leu Ala Ala Lys Gln
260

<210> 22
<211> 26
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence: Forward primer

<400> 22
tgccatatga gcagcggaag cggaag

26

<210> 23
<211> 27
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence: Reverse primer

<400> 23
cggatcccta ctgtttgccg gcgatgc

27

eolf-seq1

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<210> 24
<211> 49
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence: Forward primer

<400> 24
tttcttcccg ggaaggagat atacatatgt gcagcagcgg aggcggcgg 49

<210> 25
<211> 38
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence: Reverse primer

<400> 25
tttcttgctc agcattattg cttggcggca agaccgat 38

<210> 26
<211> 46
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence: Forward primer

<400> 26
tttcttcccg ggaaggagat atacatatga gcagcggagg cggcgg 46

<210> 27
<211> 38
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence: Reverse primer

<400> 27
tttcttgctc agcattattg cttggcggca agaccgat 38

<210> 28
<211> 36
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence

<400> 28
atgagctctg gaggtggagg aagcgggggc ggtgga 36

<210> 29

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eolf-seq1

<211> 12
<212> PRT
<213> Artificial

<220>
<223> Synthetic amino acid sequence

<400> 29

Met Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
1 5 10

<210> 30
<211> 33
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence

<400> 30
atgagctctg gaagcggaag cgggggcggt gga 33

<210> 31
<211> 11
<212> PRT
<213> Artificial

<220>
<223> Synthetic amino acid sequence

<400> 31

Met Ser Ser Gly Ser Gly Ser Gly Gly Gly Gly
1 5 10

<210> 32
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence

<400> 32
atgagctctg gaggtggagg a 21

<210> 33
<211> 7
<212> PRT
<213> Artificial

<220>
<223> Synthetic amino acid sequence

<400> 33

Met Ser Ser Gly Gly Gly Gly
1 5

eolf-seq1

<210> 34
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence

<400> 34
atgagcagcg ggggcggtgg a

21

<210> 35
<211> 28
<212> PRT
<213> Neisseria meningitidis (group B)

<400> 35

Cys Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Val Thr Ala Asp
1 5 10 15

Ile Gly Thr Gly Leu Ala Asp Ala Leu Thr Ala Pro
20 25

<210> 36
<211> 28
<212> PRT
<213> Neisseria meningitidis (group B)

<400> 36

Cys Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Val Ala Ala Asp
1 5 10 15

Ile Gly Ala Gly Leu Ala Asp Ala Leu Thr Ala Pro
20 25

<210> 37
<211> 27
<212> PRT
<213> Neisseria meningitidis (group B)

<400> 37

Cys Ser Ser Gly Ser Gly Ser Gly Gly Gly Gly Val Ala Ala Asp Ile
1 5 10 15

Gly Thr Gly Leu Ala Asp Ala Leu Thr Ala Pro
20 25

<210> 38
<211> 23
<212> PRT
<213> Neisseria meningitidis (group B)

eo1f-seq1

<400> 38

Cys Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Gly Leu
1 5 10 15

Ala Asp Ala Leu Thr Ala Pro
20

<210> 39

<211> 23

<212> PRT

<213> Neisseria meningitidis (group B)

<400> 39

Cys Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Val Leu
1 5 10 15

Ala Asp Ala Leu Thr Ala Pro
20

<210> 40

<211> 23

<212> PRT

<213> Neisseria meningitidis (group B)

<400> 40

Cys Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Gly Leu
1 5 10 15

Ala Asp Ala Leu Thr Ala Pro
20

<210> 41

<211> 15

<212> PRT

<213> Artificial

<220>

<223> Synthetic amino acid sequence

<220>

<221> MISC_FEATURE

<222> (15)..(15)

<223> X is G or V

<400> 41

Met Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Xaa
1 5 10 15

<210> 42

<211> 45

eolf-seq1

<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence

<400> 42
atgagcagcg gaggcggcgg tgtcgccgcc gacatcggcg cgggg 45

<210> 43
<211> 789
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence

<400> 43
agctctggag gtggaggaag cgggggagggt ggagttgcag cagacattgg agcaggatta 60
gcagatgcac tgacggcacc gttggatcat aaagacaaag gcttgaaatc gcttacctta 120
gaagattcta tttcacaaaa tggcaccctt accttgtccg cgcaaggcgc tgaacgtact 180
tttaaagccg gtgacaaaga taatagctta aatacaggta aactcaaaaa tgataaaatc 240
tcgcgttttg atttcattcg tcaaatcgaa gtagatggcc aacttattac attagaaagc 300
ggtgaattcc aagtatataa acaatcccat tcagcactta cagcattgca aaccgaacag 360
gtccaagact cagaacattc cggcaaaatg gtagctaaac gtcaattccg catcggtgac 420
attgtcggtg aacatacaag cttcggaataa ttaccaaaag atgtgatggc gacctatcgc 480
ggtacggcat ttggatcaga tgatgcaggc ggtaaattaa cttatacaat tgactttgca 540
gcaaaacaag gacatggcaa aattgaacat ttaaaatctc ccgaacttaa cgtagatctc 600
gcagcagcag atattaaacc agatgaaaaa caccacgcag tcatttcagg ttcagtttta 660
tacaatcagg cagaaaaaagg ttcgtactct ttaggtatatt ttggcgggca agctcaagaa 720
gttgacaggta gcgcagaagt agaaacggca aatggcattc gtcacattgg gttagcggcg 780
aaacaataa 789

<210> 44
<211> 262
<212> PRT
<213> Artificial

<220>
<223> Synthetic amino acid sequence

<400> 44
Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Val Ala Ala Asp Ile
1 5 10 15

Gly Ala Gly Leu Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp

eof-seq1

<210> 45
<211> 780
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence

<400> 45
agctctggag gtggaggaag cgggggcggt ggagttgcag cagacattgg agcaggatta 60
gcagatgcac tgacggcacc gttggatcat aaagacaaag gcttgcagtc gcttacctta 120
gatcagtctg tcaggaaaaa tgagaaactt aagttggcgg cgcaaggcgc tgaaaaaact 180
tatggaaacg gtgacagctt aaatacaggt aaactcaaaa atgataaaagt ctcgcgtttt 240
gatttcattc gtcaaatcga agtagatggc aagcttatta cattagaaaag cgggtgaattc 300
caagtatata aacaatccca ttcagcactt acagcattgc aaaccgaaca ggtccaagac 360
tcagaagatt ccggcaaaaat ggtagctaaa cgtcaattcc gcatcgggtga cattgcgggt 420
gaacatacaa gcttcgacaa attacaaaaa ggcggcagtg cgacctatcg cgggtacggca 480
tttggatcag atgatgcagg cggtaaatta acttatacaa ttgactttgc agcaaaacaa 540
ggacatggca aaattgaaca tttaaaatct cccgaactta acgtagagct cgcaaccgca 600
tatattaaac cagatgaaaa acgccacgca gtcatttcag gttcagtttt atacaatcag 660
gacgaaaaag gttcgtactc tttaggtatt tttggcgggc aagctcaaga agttgcagg 720
agcgcagaag tagaaacggc aaatggcatt caccacattg ggtagcggc gaaacaataa 780

<210> 46
<211> 765
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence

<400> 46
agctctggag gtggaggagt tgcagcagac attggagcag gattagcaga tgcactgacg 60
gcaccgttgg atcataaaga caaaggcttg cagtcgctta ccttagatca gtctgtcagg 120
aaaaatgaga aacttaagtt ggcggcgcaa ggcgctgaaa aaacttatgg aaacggtgac 180
agcttaaata caggtaaact caaaaatgat aaagtctcgc gttttgattt cattcgtcaa 240
atcgaagtag atggcaagct tattacatta gaaagcggtg aattccaagt atataaacia 300
tcccattcag cacttacagc attgcaaacc gaacagggtcc aagactcaga agattccggc 360
aaaatggtag ctaaactgta attccgcac ggtgacattg cgggtgaaca tacaagcttc 420
gacaaattac caaaaggcgg cagtgcgacc tatcgcggta cggcatttgg atcagatgat 480
gcaggcggta aattaactta tacaattgac tttgcagcaa aacaaggaca tggcaaaatt 540

eolf-seq1

gaacatttaa aatctcccga acttaacgta gagctcgcaa ccgcatatat taaaccagat	600
gaaaaacgcc acgcagtcac ttccaggttca gttttataca atcaggacga aaaagggttcg	660
tactcttttag gtattttttgg cgggcaagct caagaagttg caggtagcgc agaagtagaa	720
acggcaaatg gcattcacca cattgggtta gcggcgaaac aataa	765

<210> 47
 <211> 765
 <212> DNA
 <213> Artificial

<220>
 <223> Synthetic nucleotide sequence

<400> 47	
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gcaccgttgg atcataaaga caaaggcttg cagtcgctta ccttagatca gtctgtcagg	120
aaaaatgaga aacttaagtt ggcggcgcaa ggcgctgaaa aaacttatgg aaacgggtgac	180
agcttaaata caggtaaact caaaaatgat aaagtctcgc gttttgattt cattcgtcaa	240
atcgaagtag atggcaagct tattacatta gaaagcgggtg aattccaagt atataaacia	300
tcccattcag cacttacagc attgcaaacc gaacagggtcc aagactcaga agattccggc	360
aaaatggtag ctaaactgta attccgcacg ggtgacattg cgggtgaaca tacaagcttc	420
gacaaattac caaaaggcgg cagtgcgacc tatcgcggta cggcatttgg atcagatgat	480
gcaggcggta aattaactta tacaattgac tttgcagcaa aacaaggaca tggcaaaatt	540
gaacatttaa aatctcccga acttaacgta gagctcgcaa ccgcatatat taaaccagat	600
gaaaaacgcc acgcagtcac ttccaggttca gttttataca atcaggacga aaaagggttcg	660
tactcttttag gtattttttgg cgggcaagct caagaagttg caggtagcgc agaagtagaa	720
acggcaaatg gcattcacca cattgggtta gcggcgaaac aataa	765

<210> 48
 <211> 765
 <212> DNA
 <213> Artificial

<220>
 <223> Synthetic nucleotide sequence

<400> 48	
agcagcggag ggggcgggtg cgccgccgac atcgggtgcgg ggcttgccga tgcactaacc	60
gcaccgctcg accataaaga caaagggtttg cagtctttta cactggatca gtccgtcagg	120
aaaaacgaga aactgaagct ggcggcaca ggtgcggaaa aaacttatgg aaacggcgac	180
agccttaata cgggcaaatt gaagaacgac aagggtcagc gcttcgactt tatccgtcaa	240
atcgaagtgg acgggaagct cattaccttg gagagcggag agttccaagt gtacaaacia	300

eolf-seq1

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agccattccg ccttaaccgc cttcagacc gagcaagtac aagactcgga ggattccggg      360
aagatggttg cgaaacgcca gttcagaatc ggcgacatag cgggcgaaca tacatctttt      420
gacaagcttc ccaaaggcgg cagtgcgaca tatcgcggga cggcgttcgg ttcagacgat      480
gctggcgga aactgaccta tactatagat ttcgccgcca agcagggaca cggcaaaatc      540
gaacatttga aatcgcccga actcaatgtc gagcttgcca ccgcctatat caagccggat      600
gaaaaacgcc atgccgttat cagcggttcc gtcctttaca accaagacga gaaaggcagt      660
tactccctcg gtatcttttg cgggcaagcc caggaagttg ccggcagcgc ggaagtggaa      720
accgcaaacg gcatacacca tatcgggtctt gccgccaagc agtaa                      765

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<210> 49

<211> 254

<212> PRT

<213> Artificial

<220>

<223> Synthetic amino acid sequence

<400> 49

Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Gly Leu Ala
1 5 10 15

Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Gly Leu Gln Ser
20 25 30

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

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

Gly Lys Leu Lys Asn Asp Lys Val Ser Arg Phe Asp Phe Ile Arg Gln
65 70 75 80

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

Val Tyr Lys Gln Ser His Ser Ala Leu Thr Ala Leu Gln Thr Glu Gln
100 105 110

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

Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu Pro
130 135 140

eo1f-seq1

Lys Gly Gly Ser Ala Thr Tyr Arg Gly Thr Ala Phe Gly Ser Asp Asp
145 150 155 160

Ala Gly Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln Gly
165 170 175

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

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

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

Ile Phe Gly Gly Gln Ala Gln Glu Val Ala Gly Ser Ala Glu Val Glu
225 230 235 240

Thr Ala Asn Gly Ile His His Ile Gly Leu Ala Ala Lys Gln
245 250

<210> 50

<211> 259

<212> PRT

<213> Artificial

<220>

<223> Synthetic amino acid sequence

<400> 50

Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Val Ala Ala Asp Ile
1 5 10 15

Gly Ala Gly Leu Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp
20 25 30

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

Lys Leu Lys Leu Ala Ala Gln Gly Ala Glu Lys Thr Tyr Gly Asn Gly
50 55 60

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

Asp Phe Ile Arg Gln Ile Glu Val Asp Gly Lys Leu Ile Thr Leu Glu
85 90 95

eolf-seq1

Ser Gly Glu Phe Gln Val Tyr Lys Gln Ser His Ser Ala Leu Thr Ala
100 105 110

Leu Gln Thr Glu Gln Val Gln Asp Ser Glu Asp Ser Gly Lys Met Val
115 120 125

Ala Lys Arg Gln Phe Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser
130 135 140

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

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

Ala Ala Lys Gln Gly His Gly Lys Ile Glu His Leu Lys Ser Pro Glu
180 185 190

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

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

Ser Tyr Ser Leu Gly Ile Phe Gly Gly Gln Ala Gln Glu Val Ala Gly
225 230 235 240

Ser Ala Glu Val Glu Thr Ala Asn Gly Ile His His Ile Gly Leu Ala
245 250 255

Ala Lys Gln

<210> 51
<211> 789
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleotide sequence

<400> 51
agcagcgag gcggcggaag cggaggcggc ggtgtcgccg ccgacatcgg cgcggggctt 60
gccgatgcac taaccgcacc gctcgaccat aaagacaaag gtttgaaatc cctgacattg 120
gaagactcca tttcccaaaa cggaacactg accctgtcgg cacaagggtc ggaaagaact 180
ttcaaagccg gcgacaaaaga caacagtctc aacacaggca aactgaagaa cgacaaaatc 240
agccgcttcg actttatccg tcaaatcgaa gtggacgggc agctcattac cttggagagc 300

eolf-seq1

ggagagttcc aagtgtacaa acaaagccat tccgccttaa ccgcccttca gaccgagcaa	360
gtacaagact cggagcattc cgggaagatg gttgcgaaac gccagttcag aatcggcgac	420
atagtgggcg aacatacatc ttttggcaag cttcccaaag acgtcatggc gacatatcgc	480
gggacggcgt tcggttcaga cgatgccggc ggaaaactga cctacaccat agatttcgcc	540
gccaagcagg gacacggcaa aatcgaacat ttgaaatcgc cagaactcaa tgttgacctg	600
gccgccgccg atatcaagcc ggatgaaaaa caccatgccg tcatcagcgg ttccgtcctt	660
tacaaccaag ccgagaaaagg cagttactct ctaggcatct ttggcgggca agcccaggaa	720
gttgccggca gcgcggaagt ggaaaccgca aacggcatac gccatatcgg tcttgccgcc	780
aagcaataa	789

<210> 52
 <211> 45
 <212> DNA
 <213> Artificial

<220>
 <223> Synthetic nucleotide sequence

<400> 52	
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<210> 53
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<220>
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<400> 53	
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<210> 54
 <211> 783
 <212> DNA
 <213> Artificial

<220>
 <223> Synthetic nucleotide sequence

<400> 54	
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gatgcactaa ctgcgccgct cgaccataaa gacaaagggt tgaaatccct gacattggaa	120
gactccattt cccaaaacgg aacactgacc ctgtcggcac aaggtgcgga aaaaactttc	180
aaagtcggcg acaaagacaa cagtctcaat acaggcaaat tgaagaacga caaaatcagc	240
cgcttcgact ttgtgcaaaa aatcgaagtg gacggacaaa ccatcacgct ggcaagcggc	300
gaatttcaaa tatacaaaaca ggaccactcc gccgtcgttg ccctacagat tgaaaaaatc	360

eolf-seq1

```

aacaacccccg acaaaatcga cagcctgata aaccaacgct ccttccttgt cagcggtttg      420
ggcgggagaac ataccgcctt caaccaactg cccagcggca aagccgagta tcacggcaaaa      480
gcattcagct cgcacgatgc cggcggaaaa ctgacctata ccatagattt tgccgcaaaa      540
cagggacacg gcaaaatcga acacctgaaa acacccgagc agaatgtcga gcttgcttcc      600
gccgaactca aagcagatga aaaatcacac gccgtcattt tgggcgacac gcgctacggc      660
agcgaagaaa aaggcactta ccacctcgct cttttcggcg accgagccca agaaatcgcc      720
ggctcggcaa ccgtgaagat aagggaaaag gttcacgaaa tcggcatcgc cggcaaacag      780
tag                                                                    783

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<210> 55
<211> 260
<212> PRT
<213> Artificial

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<220>
<223> Synthetic amino acid sequence

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<400> 55

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Ser Ser Gly Ser Gly Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly
1      5      10      15

```

```

Thr Gly Leu Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys
20      25      30

```

```

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

```

```

Leu Thr Leu Ser Ala Gln Gly Ala Glu Lys Thr Phe Lys Val Gly Asp
50      55      60

```

```

Lys Asp Asn Ser Leu Asn Thr Gly Lys Leu Lys Asn Asp Lys Ile Ser
65      70      75      80

```

```

Arg Phe Asp Phe Val Gln Lys Ile Glu Val Asp Gly Gln Thr Ile Thr
85      90      95

```

```

Leu Ala Ser Gly Glu Phe Gln Ile Tyr Lys Gln Asp His Ser Ala Val
100     105     110

```

```

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

```

```

Leu Ile Asn Gln Arg Ser Phe Leu Val Ser Gly Leu Gly Gly Glu His
130     135     140

```

eolf-seq1

Thr Ala Phe Asn Gln Leu Pro Ser Gly Lys Ala Glu Tyr His Gly Lys
145 150 155 160

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

Phe Ala Ala Lys Gln Gly His Gly Lys Ile Glu His Leu Lys Thr Pro
180 185 190

Glu Gln Asn Val Glu Leu Ala Ser Ala Glu Leu Lys Ala Asp Glu Lys
195 200 205

Ser His Ala Val Ile Leu Gly Asp Thr Arg Tyr Gly Ser Glu Glu Lys
210 215 220

Gly Thr Tyr His Leu Ala Leu Phe Gly Asp Arg Ala Gln Glu Ile Ala
225 230 235 240

Gly Ser Ala Thr Val Lys Ile Arg Glu Lys Val His Glu Ile Gly Ile
245 250 255

Ala Gly Lys Gln
260

<210> 56
<211> 5
<212> PRT
<213> Artificial

<220>
<223> Synthetic amino acid sequence

<400> 56

Ser Gly Gly Gly Gly
1 5

<210> 57
<211> 259
<212> PRT
<213> Artificial

<220>
<223> Synthetic amino acid sequence

<400> 57

Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Val Thr Ala Asp Ile
1 5 10 15

Gly Thr Gly Leu Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp
20 25 30

eolf-seq1

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

<210> 58

eof-seq1

<211> 260

<212> PRT

<213> Neisseria meningitidis (group B)

<400> 58

Cys Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Val Thr Ala Asp
1 5 10 15

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

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

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

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

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

Glu Ser Gly Glu Phe Gln Val Tyr Lys Gln Ser His Ser Ala Leu Thr
100 105 110

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

Val Ala Lys Arg Arg Phe Arg Ile Gly Asp Ile Ala Gly Glu His Thr
130 135 140

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

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

Phe Ala Ala Lys Gln Gly His Gly Lys Ile Glu His Leu Lys Ser Pro
180 185 190

Glu Leu Asn Val Asp Leu Ala Val Ala Tyr Ile Lys Pro Asp Glu Lys
195 200 205

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

Gly Ser Tyr Ser Leu Gly Ile Phe Gly Glu Lys Ala Gln Glu Val Ala

eolf-seql
225 230 235 240

Gly Ser Ala Glu Val Glu Thr Ala Asn Gly Ile His His Ile Gly Leu
245 250 255

Ala Ala Lys Gln
260

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<210> 59
<211> 255
<212> PRT
<213> Neisseria meningitidis (group B)
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<400> 59

Cys Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Gly Leu
1 5 10 15

Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Gly Leu Gln
20 25 30

Ser Leu Ile Leu Asp Gln Ser Val Arg Lys Asn Glu Lys Leu Lys Leu

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

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

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

Gln Val Tyr Lys Gln Ser His Ser Ala Leu Thr Ala Leu Gln Thr Glu
100 105 110

Gln Val Gln Asp Ser Glu His Ser Gly Lys Met Val Ala Lys Arg Gln
115 120 125

Phe Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu
130 135 140

Pro Glu Gly Gly Arg Ala Thr Tyr Arg Gly Thr Ala Phe Ser Ser Asp
145 150 155 160

Asp Ala Gly Gly Lys Leu Ile Tyr Thr Ile Asp Phe Ala Ala Lys Gln
165 170 175

Gly His Gly Lys Ile Glu His Leu Lys Ser Pro Glu Leu Asn Val Asp
Page 35

eof-seq1

180

185

190

Leu Ala Ala Ala Asp Ile Lys Pro Asp Glu Lys His His Ala Val Ile
195 200 205

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

Gly Ile Phe Gly Gly Lys Ala Gln Glu Val Ala Gly Ser Ala Glu Val
225 230 235 240

Lys Thr Val Asn Gly Ile Arg His Ile Gly Leu Ala Ala Lys Gln
245 250 255

<210> 60

<211> 255

<212> PRT

<213> Neisseria meningitidis (group B)

<400> 60

Cys Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Gly Leu
1 5 10 15

Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Ser Leu Gln
20 25 30

Ser Leu Thr Leu Asp Gln Ser Val Arg Lys Asn Glu Lys Leu Lys Leu
35 40 45

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

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

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

Gln Val Tyr Lys Gln Ser His Ser Ala Leu Thr Ala Leu Gln Thr Glu
100 105 110

Gln Val Gln Asp Ser Glu His Ser Gly Lys Met Val Ala Lys Arg Gln
115 120 125

Phe Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu
130 135 140

Pro Glu Gly Gly Arg Ala Thr Tyr Arg Gly Thr Ala Phe Gly Ser Asp

eolf-seq1

145	150	155	160
Asp Ala Ser Gly	Lys ₁₆₅ Leu Thr Tyr Thr	Ile ₁₇₀ Asp Phe Ala Ala	Lys ₁₇₅ Gln
Gly His Gly	Lys ₁₈₀ Ile Glu His Leu	Lys ₁₈₅ Ser Pro Glu Leu	Asn ₁₉₀ Val Asp
Leu Ala Ala	Ser Asp Ile Lys	Pro ₂₀₀ Asp Lys Lys Arg	His ₂₀₅ Ala Val Ile
Ser Gly	Ser Val Leu Tyr	Asn ₂₁₅ Gln Ala Glu	Lys ₂₂₀ Gly Ser Tyr Ser Leu
Gly ₂₂₅ Ile Phe Gly	Gly Gln Ala Gln Glu	Val ₂₃₅ Ala Gly Ser Ala	Glu ₂₄₀ Val
Glu Thr Ala Asn	Gly ₂₄₅ Ile Arg His Ile	Gly ₂₅₀ Leu Ala Ala Lys	Gln ₂₅₅

<210> 61
 <211> 768
 <212> DNA
 <213> Artificial

<220>
 <223> Synthetic nucleic acid sequence

<400>	61	ggcagcagcg gaggcggcgg tgctcgccgcc gacatcggcg cggtgcttgc cgatgcacta	60
		accgcaccgc tcgaccataa agacaaaagt ttgcagtctt tgacgctgga tcagtccgtc	120
		aggaaaaacg agaaactgaa gctggcggca caaggtgcgg aaaaaactta tggaaacggc	180
		gacagcctca atacgggcaa attgaagaac gacaaggta gccgcttcga ctttatccgt	240
		caaatcgaag tggacgggca gctcattacc ttggagagcg gagagttcca agtgtacaaa	300
		caaagccatt ccgccttaac cgcccttcag accgagcaag tacaagattc ggagcattca	360
		gggaagatgg ttgcgaaacg ccagttcaga atcggcgata tagcgggtga acatacatct	420
		tttgacaagc ttcccgaagg cggcaggcg acatatcgcg ggacggcatt cggttcagac	480
		gatgccagtg gaaaactgac ctacaccata gatttcgccg ccaagcaggg acacggcaaa	540
		atcgaacatt tgaaatcgcc agaactcaat gttgacctgg ccgcctccga tatcaagccg	600
		gataaaaaaac gccatgccgt catcagcggg tccgtccttt acaaccaagc cgagaaaaggc	660
		agttactctc taggcatctt tggcgggcaa gccaggaag ttgccggcag cgcagaagtg	720
		gaaaccgcaa acggcatacg ccatatcggg cttgccgcca agcagtaa	768

eolf-seq1

<210> 62

<211> 255

<212> PRT

<213> Artificial

<220>

<223> Synthetic amino acid sequence

<400> 62

Gly Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Val Leu
1 5 10 15

Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Ser Leu Gln
20 25 30

Ser Leu Thr Leu Asp Gln Ser Val Arg Lys Asn Glu Lys Leu Lys Leu
35 40 45

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

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

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

Gln Val Tyr Lys Gln Ser His Ser Ala Leu Thr Ala Leu Gln Thr Glu
100 105 110

Gln Val Gln Asp Ser Glu His Ser Gly Lys Met Val Ala Lys Arg Gln
115 120 125

Phe Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu
130 135 140

Pro Glu Gly Gly Arg Ala Thr Tyr Arg Gly Thr Ala Phe Gly Ser Asp
145 150 155 160

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

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

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

Ser Gly Ser Val Leu Tyr Asn Gln Ala Glu Lys Gly Ser Tyr Ser Leu

eo1f-seq1
220

210

215

Gly Ile Phe Gly Gly Gln Ala Gln Glu Val Ala Gly Ser Ala Glu Val
225 230 235 240

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

<210> 63
<211> 765
<212> DNA
<213> Artificial

<220>
<223> Synthetic nucleic acid sequence

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aggaaaaacg agaaactgaa gctggcgga caaggtgcgg aaaaaactta tggaaacggc 180
gacagcctca atacgggcaa attgaagaac gacaaggta gccgcttcga ctttatccgt 240
caaatcgaag tggacgggca gctcattacc ttggagagcg gagagttcca aatatacaaa 300
caggaccact ccgccgtcgt tgccctacag attgaaaaaa tcaacaaccc cgacaaaatc 360
gacagcctga taaaccaacg ctcccttcctt gtcagcggtt tgggtggaga acataccgcc 420
ttcaaccaac tgccagcgg caaagccgag tatcacggca aagcattcag ctccgacgat 480
gctggcgga aactgaccta taccatagat ttgccgccca aacagggaca cggcaaaaatc 540
gaacacttga aaacacccga gcaaaatgtc gagcttgctt ccgccgaact caaagcagat 600
gaaaaatcac acgccgtcat ttggggcgac acgcgctacg gcggcgaaga aaaaggcact 660
taccacctcg cccttttcgg cgaccgcgcc caagaaatcg ccggctcggc aaccgtgaag 720
ataagggaaa aggttcacga aatcggcatc gccggcaaac agtaa 765

<210> 64
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic amino acid sequence

<400> 64

Gly Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Gly Leu
1 5 10 15

Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Ser Leu Gln
20 25 30

eolf-seq1

Ser Leu Thr Leu Asp Gln Ser Val Arg Lys Asn Glu Lys Leu Lys Leu
35 40 45

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

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

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

Gln Ile Tyr Lys Gln Asp His Ser Ala Val Val Ala Leu Gln Ile Glu
100 105 110

Lys Ile Asn Asn Pro Asp Lys Ile Asp Ser Leu Ile Asn Gln Arg Ser
115 120 125

Phe Leu Val Ser Gly Leu Gly Gly Glu His Thr Ala Phe Asn Gln Leu
130 135 140

Pro Ser Gly Lys Ala Glu Tyr His Gly Lys Ala Phe Ser Ser Asp Asp
145 150 155 160

Ala Gly Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln Gly
165 170 175

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

Ala Ser Ala Glu Leu Lys Ala Asp Glu Lys Ser His Ala Val Ile Leu
195 200 205

Gly Asp Thr Arg Tyr Gly Gly Glu Glu Lys Gly Thr Tyr His Leu Ala
210 215 220

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

Ile Arg Glu Lys Val His Glu Ile Gly Ile Ala Gly Lys Gln
245 250

<210> 65
<211> 786
<212> DNA
<213> Artificial Sequence

eolf-seq1

<220>

<223> Synthetic nucleic acid sequence

<400> 65

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gaagattcta tttcacaaaa tggcaccctt accttgtccg cgcaaggcgc tgaaaaaact      180
tttaaagtcg gtgacaaaaga taatagctta aatacaggta aactcaaaaa tgataaaatc      240
tcgcgttttg atttcgtgca aaaaatcgaa gtagatggcc aaaccattac attagcaagc      300
ggtgaattcc aaatatataa acaagaccat tcagcagtcg ttgcattgca aattgaaaaa      360
atcaacaacc ccgacaaaat cgacagcctg ataaaccaac gttccttcct tgtcagcggg      420
ttgggcggtg aacatacagc cttcaaccaa ttaccaagcg gcaaagcgga gtatcacggg      480
aaagcattta gctcagatga tgcaggcggg aaattaactt atacaattga ctttgcagca      540
aaacaaggac atggcaaaat tgaacattta aaaacaccgg aacagaacgt agagctcgca      600
tccgcagaac tcaaagcaga tgaaaaatca cacgcagtca ttttgggtga cacgcgctac      660
ggcagcgaag aaaaaggtag ttaccactta gctctttttg gcgaccgagc tcaagaaatc      720
gcaggtagcg caaccgtaaa gataagggaa aagggttcacg aaattgggat cgcgggcaaa      780
caataa                                           786

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<210> 66

<211> 258

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic amino acid sequence

<400> 66

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

```

eolf-seq1

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

Ser Gly Glu Phe Gln Ile Tyr Lys Gln Asn His Ser Ala Val Val Ala
100 105 110

Leu Gln Ile Glu Lys Ile Asn Asn Pro Asp Lys Ile Asp Ser Leu Ile
115 120 125

Asn Gln Arg Ser Phe Leu Val Ser Gly Leu Gly Gly Glu His Thr Ala
130 135 140

Phe Asn Gln Leu Pro Asp Gly Lys Ala Glu Tyr His Gly Lys Ala Phe
145 150 155 160

Ser Ser Asp Asp Pro Asn Gly Arg Leu His Tyr Ser Ile Asp Phe Thr
165 170 175

Lys Lys Gln Gly Tyr Gly Arg Ile Glu His Leu Lys Thr Pro Glu Gln
180 185 190

Asn Val Glu Leu Ala Ser Ala Glu Leu Lys Ala Asp Glu Lys Ser His
195 200 205

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

Tyr His Leu Ala Leu Phe Gly Asp Arg Ala Gln Glu Ile Ala Gly Ser
225 230 235 240

Ala Thr Val Lys Ile Arg Glu Lys Val His Glu Ile Gly Ile Ala Gly
245 250 255

Lys Gln

<210> 67
<211> 780
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleic acid sequence

<400> 67
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ttagcagatg cactgacggc accgttggat cataaagaca aaagtttgca gtcgcttacc 120
ttagatcagt ctgtcaggaa aaatgagaaa cttaagtgg cggcgcaagg cgctgaaaaa 180

eolf-seq1

acttatggaa acggtgacag cttaaataca ggtaaactca aaaatgataa agtctcgcgt	240
tttgatttca ttcgtcaa at cgaagtagat ggccaaacca ttacattagc aagcggtgaa	300
ttccaaatat ataaacaaaa ccattcagca gtcgttgc at tgcaaattga aaaaatcaac	360
aaccccgaca aaatcgacag cctgataaac caacgttcct tccttgtcag cggtttgggc	420
ggtgaacata cagccttcaa ccaattacca gacggcaaag cggagtatca cggtaaagca	480
tttagctcag atgatccgaa cggtagggtta cactattcca ttgactttac caaaaaacaa	540
ggatacggca gaattgaaca tttaaaaacg cccgaacaga acgtagagct cgcattccgca	600
gaactcaaag cagatgaaaa atcacacgca gtcattttgg gtgacacgcg ctacggcggc	660
gaagaaaaag gtacttacca cttagccctt tttggcgacc gcgctcaaga aatcgcaggt	720
agcgcaaccg taaagataag ggaaaagggt cacgaaattg ggatcgcggg caaacaataa	780

<210> 68
 <211> 253
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic amino acid sequence

<400> 68

Ser	Ser	Gly	Gly	Gly	Gly	Val	Ala	Ala	Asp	Ile	Gly	Ala	Gly	Leu	Ala
1				5					10					15	

Asp	Ala	Leu	Thr	Ala	Pro	Leu	Asp	His	Lys	Asp	Lys	Ser	Leu	Gln	Ser
			20					25					30		

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

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

Gly	Lys	Leu	Lys	Asn	Asp	Lys	Val	Ser	Arg	Phe	Asp	Phe	Ile	Arg	Gln
65				70						75				80	

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

Ile	Tyr	Lys	Gln	Asp	His	Ser	Ala	Val	Val	Ala	Leu	Gln	Ile	Glu	Lys
			100					105					110		

Ile	Asn	Asn	Pro	Asp	Lys	Ile	Asp	Ser	Leu	Ile	Asn	Gln	Arg	Ser	Phe
		115					120					125			

eolf-seq1

Leu Val Ser Gly Leu Gly Gly Glu His Thr Ala Phe Asn Gln Leu Pro
130 135 140

Ser Gly Lys Ala Glu Tyr His Gly Lys Ala Phe Ser Ser Asp Asp Ala
145 150 155 160

Gly Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln Gly His
165 170 175

Gly Lys Ile Glu His Leu Lys Thr Pro Glu Gln Asn Val Glu Leu Ala
180 185 190

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

Asp Thr Arg Tyr Gly Gly Glu Glu Lys Gly Thr Tyr His Leu Ala Leu
210 215 220

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

Arg Glu Lys Val His Glu Ile Gly Ile Ala Gly Lys Gln
245 250

<210> 69
<211> 765
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic nucleic acid sequence

<400> 69
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aggaaaaatg agaaacttaa gttggcggcg caaggcgctg aaaaaactta tggaaacggt 180
gacagcttaa atacaggtaa actcaaaaat gataaagtct cgcgttttga tttcattcgt 240
caaatcgaag tagatggcca acttattaca ttagaaagcg gtgaattcca aatatataaa 300
caagaccatt cagcagtcgt tgcattgcaa attgaaaaaa tcaacaaccc cgacaaaatc 360
gacagcctga taaaccaacg ttccttcctt gtcagcggtt tgggcggtga acatacagcc 420
ttcaaccaat taccaagcgg caaagcggag tatcacggta aagcatttag ctcatgatgat 480
gcaggcggtg aattaactta tacaattgac tttgcagcaa aacaaggaca tggcaaaatt 540
gaacatttaa aaacacccga acagaacgta gagctcgcat cgcagaact caaagcagat 600
gaaaaatcac acgcagtcatt tttgggtgac acgcgctacg gcggcgaaga aaaaggtact 660

eolf-seq1

taccacttag ctcttttttg	cgaccgagct caagaaatcg caggtagcgc aaccgtaaag	720
ataagggaaa aggttcacga aattgggatc gcgggcaaac aataa		765

<210> 70
 <211> 255
 <212> PRT
 <213> *Neisseria meningitidis* (group B)

<400> 70

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 1 5 10 15

Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Gly Leu Gln
 20 25 30

Ser Leu Thr Leu Asp Gln Ser Val Arg Lys Asn Glu Lys Leu Lys Leu
 35 40 45

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

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

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

Gln Val Tyr Lys Gln Ser His Ser Ala Leu Thr Ala Leu Gln Thr Glu
 100 105 110

Gln Val Gln Asp Ser Glu Asp Ser Gly Lys Met Val Ala Lys Arg Gln
 115 120 125

Phe Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu
 130 135 140

Pro Lys Gly Gly Ser Ala Thr Tyr Arg Gly Thr Ala Phe Gly Ser Asp
 145 150 155 160

Asp Ala Gly Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln
 165 170 175

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

Leu Ala Ser Ala Glu Leu Lys Ala Asp Glu Lys Ser His Ala Val Ile
 195 200 205

eo1f-seq1

Leu Gly Asp Thr Arg Tyr Gly Gly Glu Glu Lys Gly Thr Tyr His Leu
210 215 220

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

Lys Ile Arg Glu Lys Val His Glu Ile Gly Ile Ala Gly Lys Gln
245 250 255

<210> 71
<211> 254
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic amino acid sequence

<400> 71

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20 25 30

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

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

Gly Lys Leu Lys Asn Asp Lys Val Ser Arg Phe Asp Phe Ile Arg Gln
65 70 75 80

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

Val Tyr Lys Gln Ser His Ser Ala Leu Thr Ala Leu Gln Thr Glu Gln
100 105 110

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

Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu Pro
130 135 140

Lys Gly Gly Ser Ala Thr Tyr Arg Gly Thr Ala Phe Gly Ser Asp Asp
145 150 155 160

eolf-seq1
 Ala Gly Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln Gly
 165 170 175
 His Gly Lys Ile Glu His Leu Lys Thr Pro Glu Gln Asn Val Glu Leu
 180 185 190
 Ala Ser Ala Glu Leu Lys Ala Asp Glu Lys Ser His Ala Val Ile Leu
 195 200 205
 Gly Asp Thr Arg Tyr Gly Gly Glu Glu Lys Gly Thr Tyr His Leu Ala
 210 215 220
 Leu Phe Gly Asp Arg Ala Gln Glu Ile Ala Gly Ser Ala Thr Val Lys
 225 230 235 240
 Ile Arg Glu Lys Val His Glu Ile Gly Ile Ala Gly Lys Gln
 245 250

<210> 72
 <211> 768
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic nucleic acid sequence

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 aggaaaaacg agaaactgaa gctggcggca caaggctgcg aaaaaactta tggaaacggc 180
 gacagcctta atacgggcaa attgaagaac gacaagggtca gccgcttcga ctttatccgt 240
 caaatcgaag tggacgggaa gctcattacc ttggagagcg gagagttcca agtgtacaaa 300
 caaagccatt ccgccttaac cgcccttcag accgagcaag tacaagactc ggaggattcc 360
 gggaagatgg ttgcgaaacg ccagttcaga atcggcgaca tagcggggcg acatacatct 420
 tttgacaagc ttcccaaagg cggcagtgcg acatatcgcg ggacggcggtt cggttcagac 480
 gatgctggcg gaaaactgac ctatactata gatttcgccg ccaaacaggg acacggcaaa 540
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 gatgaaaaat cacacgccgt cattttgggc gacacgcgct acggcggcgga agaaaaaggc 660
 acttaccacc tcgccctttt cggcgaccgc gcccaagaaa tcgccggctc ggcaaccgtg 720
 aagataaggg aaaagggtca cgaaatcggc atcgccggca aacagtaa 768

<210> 73
 <211> 786
 <212> DNA

eof-seq1

<213> Artificial Sequence

<220>

<223> Synthetic nucleic acid sequence

<400> 73

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gaagattcta tctcgcaaaa tggactctc actctttcag cccaaggcgc agaaaaaaca      180
tttaaagtag gcgataaaga taactcctta aatacaggta aattaaaaaa tgacaaaatc      240
tcacgggttg atttcgttca gaaaattgaa gtagatggac aaacgattac attagcaagc      300
ggcgaattcc aaatttataa acaagaccat tcagcagtag tagcattaca aatcgaaaaa      360
attaacaacc cggacaaaat tgattctctt attaaccaac gctcttttct cgtatcagga      420
cttggtggtg aacatacagc gtttaatcaa ctgccgtcag gaaaagcaga atatcatggt      480
aaagcatttt catcagacga cgcagggtggc aaactgacct atactattga ctttgcagca      540
aacaggggac atggaaaaat tgaacattta aaaacacccg aacagaacgt agaactggcc      600
tcagcagaat tgaaagctga tgaaaaatcc catgcagtaa ttttaggcga tacacgttac      660
ggtagcgaag aaaaaggtag atatcactta gctctttttg gcgatcgtgc tcaagaaatt      720
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<210> 74

<211> 262

<212> PRT

<213> Neisseria meningitidis (group B)

<400> 74

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20          25          30
Asp Lys Gly Leu Lys Ser Leu Thr Leu Glu Asp Ser Ile Pro Gln Asn
35          40          45
Gly Thr Leu Thr Leu Ser Ala Gln Gly Ala Glu Lys Thr Phe Lys Ala
50          55          60
Gly Asp Lys Asp Asn Ser Leu Asn Thr Gly Lys Leu Lys Asn Asp Lys
65          70          75          80
Ile Ser Arg Phe Asp Phe Val Gln Lys Ile Glu Val Asp Gly Gln Thr

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85 eolf-seq1 95

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

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

Asp Ser Leu Ile Asn Gln Arg Ser Phe Leu Val Ser Gly Leu Gly Gly
130 135 140

Glu His Thr Ala Phe Asn Gln Leu Pro Gly Asp Lys Ala Glu Tyr His
145 150 155 160

Gly Lys Ala Phe Ser Ser Asp Asp Pro Asn Gly Arg Leu His Tyr Thr
165 170 175

Ile Asp Phe Thr Asn Lys Gln Gly Tyr Gly Arg Ile Glu His Leu Lys
180 185 190

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

Glu Lys Ser His Ala Val Ile Leu Gly Asp Thr Arg Tyr Gly Ser Glu
210 215 220

Glu Lys Gly Thr Tyr His Leu Ala Leu Phe Gly Asp Arg Ala Gln Glu
225 230 235 240

Ile Ala Gly Ser Ala Thr Val Lys Ile Gly Glu Lys Val His Glu Ile
245 250 255

Gly Ile Ala Gly Lys Gln
260

<210> 75
<211> 254
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic amino acid sequence

<400> 75

Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Val Leu Ala
1 5 10 15

Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Ser Leu Gln Ser
20 25 30

eolf-seq1

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

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

Gly Lys Leu Lys Asn Asp Lys Val Ser Arg Phe Asp Phe Ile Arg Gln
65 70 75 80

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

Val Tyr Lys Gln Ser His Ser Ala Leu Thr Ala Leu Gln Thr Glu Gln
100 105 110

Val Gln Asp Ser Glu His Ser Gly Lys Met Val Ala Lys Arg Gln Phe
115 120 125

Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu Pro
130 135 140

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

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

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

Ala Ala Ser Asp Ile Lys Pro Asp Lys Lys Arg His Ala Val Ile Ser
195 200 205

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

Ile Phe Gly Gly Gln Ala Gln Glu Val Ala Gly Ser Ala Glu Val Glu
225 230 235 240

Thr Ala Asn Gly Ile Arg His Ile Gly Leu Ala Ala Lys Gln
245 250

<210> 76
<211> 258
<212> PRT
<213> Artificial Sequence

eof-seq1

<220>

<223> Synthetic amino acid sequence

<400> 76

Cys Gly Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Thr Gly
1 5 10 15

Leu Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Gly Leu
20 25 30

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

Leu Ser Ala Gln Gly Ala Glu Lys Thr Phe Lys Val Gly Asp Lys Asp
50 55 60

Asn Ser Leu Asn Thr Gly Lys Leu Lys Asn Asp Lys Ile Ser Arg Phe
65 70 75 80

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

Ser Gly Glu Phe Gln Ile Tyr Lys Gln Asp His Ser Ala Val Val Ala
100 105 110

Leu Gln Ile Glu Lys Ile Asn Asn Pro Asp Lys Ile Asp Ser Leu Ile
115 120 125

Asn Gln Arg Ser Phe Leu Val Ser Gly Leu Gly Gly Glu His Thr Ala
130 135 140

Phe Asn Gln Leu Pro Ser Gly Lys Ala Glu Tyr His Gly Lys Ala Phe
145 150 155 160

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

Ala Lys Gln Gly His Gly Lys Ile Glu His Leu Lys Thr Pro Glu Gln
180 185 190

Asn Val Glu Leu Ala Ser Ala Glu Leu Lys Ala Asp Glu Lys Ser His
195 200 205

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

Tyr His Leu Ala Leu Phe Gly Asp Arg Ala Gln Glu Ile Ala Gly Ser
225 230 235 240

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Ala Thr Val Lys Ile Arg Glu Lys Val His Glu Ile Gly Ile Ala Gly
245 250 255

Lys Gln

<210> 77
<211> 257
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic amino acid sequence

<400> 77

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

Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Gly Leu Lys
20 25 30

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

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

Ser Leu Asn Thr Gly Lys Leu Lys Asn Asp Lys Ile Ser Arg Phe Asp
65 70 75 80

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

Gly Glu Phe Gln Ile Tyr Lys Gln Asp His Ser Ala Val Val Ala Leu
100 105 110

Gln Ile Glu Lys Ile Asn Asn Pro Asp Lys Ile Asp Ser Leu Ile Asn
115 120 125

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

Asn Gln Leu Pro Ser Gly Lys Ala Glu Tyr His Gly Lys Ala Phe Ser
145 150 155 160

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

eolf-seq1

Lys Gln Gly His Gly Lys Ile Glu His Leu Lys Thr Pro Glu Gln Asn
180 185 190

Val Glu Leu Ala Ser Ala Glu Leu Lys Ala Asp Glu Lys Ser His Ala
195 200 205

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

His Leu Ala Leu Phe Gly Asp Arg Ala Gln Glu Ile Ala Gly Ser Ala
225 230 235 240

Thr Val Lys Ile Arg Glu Lys Val His Glu Ile Gly Ile Ala Gly Lys
245 250 255

Gln

<210> 78
<211> 255
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic amino acid sequence

<400> 78

Cys Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Gly Leu
1 5 10 15

Ala Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Gly Leu Gln
20 25 30

Ser Leu Thr Leu Asp Gln Ser Val Arg Lys Asn Glu Lys Leu Lys Leu
35 40 45

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

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

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

Gln Ile Tyr Lys Gln Ser His Ser Ala Leu Val Ala Leu Gln Thr Glu
100 105 110

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

Phe Arg Ile Ser Gly Ile Ala Gly Glu His Thr Ala Phe Asn Gln Leu
 130 135 140

Pro Lys Gly Gly Lys Ala Thr Tyr Arg Gly Thr Ala Phe Ser Ser Asp
 145 150 155 160

Asp Ala Gly Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln
 165 170 175

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

Leu Ala Ser Ala Glu Leu Lys Ala Asp Glu Lys Ser His Ala Val Ile
 195 200 205

Leu Gly Asp Thr Arg Tyr Gly Gly Glu Glu Lys Gly Thr Tyr His Leu
 210 215 220

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

Lys Ile Arg Glu Lys Val His Glu Ile Gly Ile Ala Gly Lys Gln
 245 250 255

<210> 79
 <211> 254
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic amino acid sequence

<400> 79

Ser Ser Gly Gly Gly Gly Val Ala Ala Asp Ile Gly Ala Gly Leu Ala
 1 5 10 15

Asp Ala Leu Thr Ala Pro Leu Asp His Lys Asp Lys Gly Leu Gln Ser
 20 25 30

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

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

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

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

Gly Lys Leu Lys Asn Asp Lys Val Ser Arg Phe Asp Phe Ile Arg Gln
65 70 75 80

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

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

Ile Gln Asp Ser Glu His Ser Gly Lys Met Val Ala Lys Arg Gln Phe
115 120 125

Arg Ile Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu Pro
130 135 140

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

Ala Gly Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln Gly
165 170 175

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

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

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

Ile Phe Gly Gly Lys Ala Gln Glu Val Ala Gly Ser Ala Glu Val Lys
225 230 235 240

Thr Val Asn Gly Ile Arg His Ile Gly Leu Ala Ala Lys Gln
245 250

<210> 81
<211> 252
<212> PRT
<213> Artificial Sequence

eof-seq1

<220>

<223> Synthetic amino acid sequence

<400> 81

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20 25 30

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

Gly Ala Glu Lys Thr Tyr Gly Asn Gly Asp Ser Leu Asn Thr Gly Lys
50 55 60

Leu Lys Asn Asp Lys Val Ser Arg Phe Asp Phe Ile Arg Gln Ile Glu
65 70 75 80

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

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

Asp Ser Glu His Ser Gly Lys Met Val Ala Lys Arg Gln Phe Arg Ile
115 120 125

Gly Asp Ile Ala Gly Glu His Thr Ser Phe Asp Lys Leu Pro Glu Gly
130 135 140

Gly Arg Ala Thr Tyr Arg Gly Thr Ala Phe Gly Ser Asp Asp Ala Gly
145 150 155 160

Gly Lys Leu Thr Tyr Thr Ile Asp Phe Ala Ala Lys Gln Gly Asn Gly
165 170 175

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

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

Val Leu Tyr Asn Gln Ala Glu Lys Gly Ser Tyr Ser Leu Gly Ile Phe
210 215 220

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

eo1f-seq1

Asn	Gly	Ile	Arg	His	Ile	Gly	Leu	Ala	Ala	Lys	Gln
				245					250		