

Untitled_ST25.txt
SEQUENCE LISTING

<110> WYETH LLC
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Jansen, Kathrin U.
Ruppen, Mark E.
Moran, Justin K.

<120> NON-LIPIDATED VARIANTS OF NEISSERIA MENINGITIDIS ORF2086 ANTIGENS

<130> PC063885

<150> US61/381837
<151> 2010-09-10

<160> 64

<170> PatentIn version 3.4

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<213> *Neisseria meningitidis* (group B)

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 <213> Neisseria meningitidis (group B)

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 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
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 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
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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
Page 9

Untitled_ST25.txt

85 90 95

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
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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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 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
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Gly Asp Lys Asp Asn Ser Leu Asn Thr Gly Lys Leu Lys Asn Asp Lys					
	65		70		75
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					
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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 Asp Lys Leu Pro Lys Asp Val Met Ala Thr Tyr					
			150		155
Arg Gly Thr Ala Phe Gly Ser Asp Asp Ala Gly Gly Lys Leu Thr Tyr					
			165		170
Thr Ile Asp Phe Ala Ala Lys Gln Gly His Gly Lys Ile Glu His Leu					
			180		185
Lys Ser Pro Glu Leu Asn Val Asp Leu Ala Ala Ala Asp Ile Lys Pro					
			195		200
Asp Glu Lys His His Ala Val Ile Ser Gly Ser Val Leu Tyr Asn Gln					
			210		215
Ala Glu Lys Gly Ser Tyr Ser Leu Gly Ile Phe Gly Gly Gln Ala Gln					
			225		230
Glu Val Ala Gly Ser Ala Glu Val Glu Thr Ala Asn Gly Ile Arg His					
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Ile Gly Leu Ala Ala Lys Gln					
			260		

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<213> Neisseria meningitidis (group B)

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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 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

Untitled_ST25.txt

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

<210> 18

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<213> Neisseria meningitidis (group B)

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 1 5 10 15

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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 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

Untitled_ST25.txt

Leu Ala Thr Ala Tyr Ile Lys Pro Asp Glu Lys Arg 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

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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

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

Untitled_ST25.txt

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
 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 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

Untitled_ST25.txt

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 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 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

Untitled_ST25.txt

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

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
 Page 18

Untitled_ST25.txt

<400> 23
cgatcccta ctgtttgccg gcgatgc 27

<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
tttctgtctc 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
tttctgtctc agcattattg cttggcggca agaccgat 38

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

<220>
<223> Synthetic nucleotide sequence

<400> 28
atgagctctg gaggtggagg aagcgggggc ggtgga 36

Untitled_ST25.txt

<210> 29
 <211> 12
 <212> PRT
 <213> Artificial

<220>
 <223> Synthetic amino acid sequence

<400> 29

Met Ser Ser Gly Gly Gly Ser 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
 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

Untitled_ST25.txt

Met Ser Ser Gly Gly Gly Gly
1 5

<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

Untitled_ST25.txt

<211> 23

<212> PRT

<213> Neisseria meningitidis (group B)

<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

Untitled_ST25.txt

<210> 42
 <211> 45
 <212> DNA
 <213> Artificial

<220>
 <223> Synthetic nucleotide sequence

<400> 42
 atgagcagcg gaggcggcgg tgcgccgcc gacatcggcg cgggg 45

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

<220>
 <223> Synthetic nucleotide sequence

<400> 43
 agctctggag gtggaggaag cgggggcggt 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 cttcggaaaa 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 cagaaaaagg ttcgtactct ttaggtatctt ttggcgggca agctcaagaa 720
 gttgcaggta 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

Untitled_ST25.txt

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

260

Untitled_ST25.txt

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

<220>
 <223> Artificial nucleotide sequence

<400> 45
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 gcagatgcac tgacggcacc gttggatcat aaagacaaag gcttgCAGTC gcttacctta 120
 gatcagtctg tcaggaaaaa tgagaaactt aagttggcgg cgcaaggcgc tgaaaaaact 180
 tatggaaacg gtgacagctt aaatacaggt aaactcaaaa atgataaagt CTCGCTTTT 240
 gatttcattc gtcaaatcga agtagatggc aagcttatta cattagaaag cgggtgaattc 300
 caagtatata aacaatccca ttcagcactt acagcattgc aaaccgaaca ggtccaagac 360
 tcagaagatt cgggcaaaat ggtagctaaa cgtcaattcc gcatcgggtga cattgcgggt 420
 gaacatacaa gcttcgacaa attaccaaaa 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 agttgcaggT 720
 agcgCagaag tagaaacggc aaatggcatt caccacattg ggttagcggc gaaacaataa 780

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

<220>
 <223> Artificial 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
 tcccatcag cacttacagc attgcaaacc gaacaggTcc aagactcaga agattccggc 360
 aaaatggtag ctaaacgtca attccgcatc ggtgacattg cgggtgaaca tacaagcttc 420
 gacaaattac caaaggcggc cagtgcgacc tatcgcggtG cggcatttgg atcagatgat 480

Untitled_ST25.txt

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gcaggcggta aattaactta tacaattgac tttgcagcaa aacaaggaca tggcaaaatt 540
gaacatttaa aatctcccga acttaacgta gagctcgcaa ccgcataatat taaaccagat 600
gaaaaacgcc acgcagtcac ttcagggtta gttttataca atcaggacga aaaagggttcg 660
tactcttttag gtatTTTTTg cgggcaagct caagaagttg caggtagcgc agaagtagaa 720
acggcaaatg gcattcacca cattgggtta gcggcgaaac aataa 765
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<210> 47
 <211> 765
 <212> DNA
 <213> Artificial

<220>
 <223> Artificial nucleotide sequence

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<400> 47
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gcaccgttgg atcataaaga caaaggcttg cagtcgctta ccttagatca gtctgtcagg 120
aaaaatgaga aacttaagtt ggcggcgcaa ggcgctgaaa aaacttatgg aaacggtgac 180
agcttaaata caggtaaact caaaaatgat aaagtctcgc gttttgattt cattcgtcaa 240
atcgaagtag atggcaagct tattacatta gaaagcgggtg aattccaagt atataaacia 300
tccattcag cacttacagc attgcaaacc gaacagggtcc aagactcaga agattccggc 360
aaaaatggtag ctaaacgtca attccgcacg ggtgacattg cgggtgaaca tacaagcttc 420
gacaaattac caaaaggcgg cagtgcgacc tatcgcggtg cggcatttgg atcagatgat 480
gcaggcggta aattaactta tacaattgac tttgcagcaa aacaaggaca tggcaaaatt 540
gaacatttaa aatctcccga acttaacgta gagctcgcaa ccgcataatat taaaccagat 600
gaaaaacgcc acgcagtcac ttcagggtta gttttataca atcaggacga aaaagggttcg 660
tactcttttag gtatTTTTTg cgggcaagct caagaagttg caggtagcgc agaagtagaa 720
acggcaaatg gcattcacca cattgggtta gcggcgaaac aataa 765
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<210> 48
 <211> 765
 <212> DNA
 <213> Artificial

<220>
 <223> Artificial nucleotide sequence

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<400> 48
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gcaccgctcg accataaaga caaagggttg cagtctttta cactggatca gtccgtcagg 120
aaaaacgaga aactgaagct ggcggcacia ggtgcggaaa aaacttatgg aaacggcgac 180
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Untitled_ST25.txt

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agccttaata cgggcaaatt gaagaacgac aaggtcagcc gcttcgactt tatccgtcaa 240
atcgaagtgg acgggaagct cattaccttg gagagcggag agttccaagt gtacaaacaa 300
agccattccg ccttaaccgc cttcagacc gagcaagtac aagactcgga ggattccggg 360
aagatggttg cgaaacgcca gttcagaatc ggcgacatag cgggcgaaca tacatctttt 420
gacaagcttc ccaaaggcgg cagtgcgaca tatcgcgga cggcggttcgg ttcagacgat 480
gctggcggaa aactgaccta tactatagat ttcgccgcca agcagggaca cggcaaaatc 540
gaacatttga aatcgcccga actcaatgtc gagcttgcca ccgcctatat caagccggat 600
gaaaaacgcc atgccgttat cagcggttcc gtcctttaca accaagacga gaaaggcagt 660
tactccctcg gtatctttgg 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> Artificial 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

Untitled_ST25.txt

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

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> Artificial 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
 Page 28

[illegible]

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

<220>
<223> Artificial nucleotide sequence

<400>	51								
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gccgatgcac	taaccgcacc	gctcgaccat	aaagacaaag	gtttgaaatc	cctgacattg				120
gaagactcca	tttcccaaaa	cggaacactg	accctgtcgg	cacaagggtgc	ggaaagaact				180
ttcaaagccg	gcgacaaaaga	caacagtctc	aacacaggca	aactgaagaa	cgacaaaatc				240
			Page 29						

Untitled_ST25.txt

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agccgcttcg actttatccg tcaaatcgaa gtggacgggc agctcattac cttggagagc 300
ggagagttcc aagtgtacaa acaaagccat tccgccttaa ccgcccttca gaccgagcaa 360
gtacaagact cggagcattc cgggaagatg gttgcgaaac gccagttcag aatcggcgac 420
atagtgggcg aacatacatc ttttggaag cttcccaaag acgtcatggc gacatatcgc 480
gggacggcgt tcggttcaga cgatgccggc ggaaaactga cctacaccat agatttcgcc 540
gccaaagcagg gacacggcaa aatcgaacat ttgaaatcgc cagaactcaa tgttgacctg 600
gccgccgccc atatcaagcc ggatgaaaaa caccatgccg tcatcagcgg ttccgtcctt 660
tacaaccaag ccgagaaaag cagttactct ctaggcatct ttggcgggca agcccaggaa 720
gttgccggca gcgcggaagt ggaaaccgca aacggcatac gccatatcgg tcttgccgcc 780
aagcaataa 789

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

<220>
 <223> Artificial nucleotide sequence

<400> 52
 atgagcagcg gaggcggcgg tgtcgccgcc gacatcggcg cggtg 45

<210> 53
 <211> 45
 <212> DNA
 <213> Artificial

<220>
 <223> Artificial nucleotide sequence

<400> 53
 atgagcagcg gagggggcgg tgtcgccgcc gacatcggcg cgggg 45

<210> 54
 <211> 783
 <212> DNA
 <213> Artificial

<220>
 <223> Artificial nucleotide sequence

<400> 54
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 gatgcactaa ctgcgccgct cgaccataaa gacaaagggt tgaaatccct gacattggaa 120
 gactccattt cccaaaacgg aacactgacc ctgtcggcac aagggtcgga aaaaactttc 180
 aaagtcggcg acaaagacaa cagtctcaat acaggcaaat tgaagaacga caaatcagc 240

Untitled_ST25.txt

```

cgcttcgact ttgtgcaaaa aatcgaagtg gacggacaaa ccatcacgct ggcaagcggc 300
gaatttcaaa tatacaaaca ggaccactcc gccgtcgttg ccctacagat tgaaaaaatc 360
aacaaccccg acaaaatcga cagcctgata aaccaacgct ccttccttgt cagcggtttg 420
ggcggagaac ataccgcctt caaccaactg cccagcggca aagccgagta tcacggcaaa 480
gcattcagct ccgacgatgc cggcggaaaa ctgacctata ccatagattt tgccgcaaaa 540
cagggacacg gcaaaatcga acacctgaaa acacccgagc agaatgtcga gcttgcctcc 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

<220>
 <223> Artificial amino acid sequence

<400> 55

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

Untitled_ST25.txt

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

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> Artificial amino acid sequence

<400> 56

Ser Gly Gly Gly Gly
 1 5

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

<220>
 <223> Artificial 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

Untitled_ST25.txt

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 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

Untitled_ST25.txt

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<210> 58
<211> 260
<212> PRT
<213> Neisseria meningitidis (group B)

<400> 58
Cys Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Val Thr Ala Asp
1      5      10
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

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Untitled_ST25.txt

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

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

<400> 59

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 Ile 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 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

Untitled_ST25.txt

Gly His 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 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

Untitled_ST25.txt

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

<220>
 <223> Artificial nucleic acid sequence

<400> 61
 ggcagcagcg gaggcggcgg tgctgccgcc gacatcggcg cggtgcttgc cgatgcacta 60
 accgcaccgc tcgaccataa agacaaaagt ttgcagtctt tgacgctgga tcagtccgtc 120
 aggaaaaacg agaaactgaa gctggcggca caaggtgcgg aaaaaactta tggaaacggc 180
 gacagcctca atacggggcaa attgaagaac gacaagggtca gccgcttcga ctttatccgt 240
 caaatcgaag tggacgggca gctcattacc ttggagagcg gagagttcca agtgtacaaa 300
 caaagccatt cgccttaac cgcccttcag accgagcaag tacaagattc ggagcattca 360
 gggaagatgg ttgcgaaacg ccagttcaga atcggcgata tagcgggtga acatacatct 420
 tttgacaagc ttcccgaagg cggcagggcg acatatcgcg ggacggcatt cggttcagac 480
 gatgccagtg gaaaactgac ctacaccata gatttcgccg ccaagcaggg acacggcaaa 540
 atcgaacatt tgaaatcgcc agaactcaat gttgacctgg ccgcctccga tatcaagccg 600
 gataaaaaac gccatgccgt catcagcggg tccgtccttt acaaccaagc cgagaaaggc 660
 agttactctc taggcattct tggcgggcaa gccaggaag ttgccggcag cgcagaagtg 720

gaaaccgcaa acggcatatcg ccatatcggt cttgcccga agcagtaa

Untitled_ST25.txt

768

<210> 62
<211> 255
<212> PRT
<213> Artificial

<220>
<223> Artificial 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

Untitled_ST25.txt

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

<220>
 <223> Artificial nucleic acid sequence

<400> 63
 ggcagcagcg gaggcggcgg tgctgccgcc gacatcggcg cggggcttgc cgatgcacta 60
 accgcaccgc tcgaccataa agacaaaagt ttgcagtctt tgacgctgga tcagtccgtc 120
 aggaaaaacg agaaactgaa gctggcggca caaggtgcgg aaaaaactta tggaaacggc 180
 gacagcctca atacgggcaa attgaagaac gacaaggcca gccgcttcga ctttatccgt 240
 caaatcgaag tggacgggca gctcattacc ttggagagcg gagagtcca aatatacaaa 300
 caggaccact ccgccgtcgt tgccctacag attgaaaaaa tcaacaaccc cgacaaaatc 360
 gacagcctga taaaccaacg ctcttctctt gtcagcgggt tgggtggaga acataccgcc 420
 ttcaaccaac tgcccagcgg caaagccgag tatcacggca aagcattcag ctccgacgat 480
 gctggcggaa aactgaccta taccatagat ttgccgccca aacagggaca cggcaaaatc 540
 gaacacttga aaacacccga gcaaaatgtc gagcttgctt ccgccgaact caaagcagat 600
 gaaaaatcac acgccgtcat tttgggcgac acgcgctacg gcggcgaaga aaaaggcact 660
 taccacctcg cctttttcgg cgaccgcgcc caagaaatcg ccggctcggc aaccgtgaag 720
 ataagggaaa aggttcacga aatcggcatc gccggcaaac agtaa 765

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

<220>
 <223> Artificial 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

Untitled_ST25.txt

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 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