

Sequence_Listing

SEQUENCE LISTING

<110> ALTRAVAX, INC.

<120> HEPATITIS B VIRUS VACCINES

<130> 30699-0009wo1

<150> US 61/785,838

<151> 2013-03-14

<160> 67

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 846

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic nucleic acid

<400> 1

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aattgcacct gtattcccat cccatcatcc tgggctttcg gaaaattcct atgggagtgg 660
gcctcagccc gtttctcctg gctcagttta ctagtccat ttgttcagtg gttcgtaggg 720
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<210> 2

<211> 281

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic polypeptide

<400> 2

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20      25      30
Asn Pro Val Leu Thr Thr Ala Ser Pro Leu Ser Ser Ile Phe Ser Arg
35      40      45
Ile Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
50      55      60
Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Arg Ile
65      70      75      80
Leu Thr Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe
85      90      95
Leu Gly Gly Thr Thr Val Cys Leu Gly Gln Asn Ser Gln Ser Pro Thr
100     105     110
Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
115     120     125
Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu

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Sequence_Listing

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	Arg	Thr	Cys	Met	Thr	Thr	Ala	Gln	Gly	Thr	Ser	Met	Tyr	Pro	Ser	Cys
	Cys	Cys	Thr	Lys	Pro	Ser	Asp	Gly	Asn	Cys	Thr	Cys	Ile	Pro	Ile	Pro
	Ser	Ser	Trp	Ala	Phe	Gly	Lys	Phe	Leu	Trp	Glu	Trp	Ala	Ser	Ala	Arg
	Phe	Ser	Trp	Leu	Ser	Leu	Leu	Val	Pro	Phe	Val	Gln	Trp	Phe	Val	Gly
	Leu	Ser	Pro	Thr	Val	Trp	Leu	Ser	Val	Ile	Trp	Met	Met	Trp	Tyr	Trp
	Gly	Pro	Ser	Leu	Tyr	Ser	Ile	Leu	Ser	Pro	Phe	Leu	Pro	Leu	Leu	Pro
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<220>
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	accacatcgt	caagcttctc	gacgactggg	gtccctgtca	gcaccatgga	catcacttca	180
	tcaggattcc	taggaccctc	tctcgcatta	caggcgggtg	ttttcttggt	gacaaaaatc	240
	ctcacaatgc	cacagagtct	agactcgttg	tggaacttctc	tcaattttct	agggggaaca	300
	ccagcgtgtc	ctggcctaaa	ttcgcagtc	ccaacctcca	gtcactcacc	aacctgctgt	360
	ccaccgactt	gtcctgggta	tcgctgggatg	tgtttgccgc	gttctatcat	cttcctcttc	420
	atcctgcttc	tatgcctcat	cttcttggtg	gttcttctgg	actaccaagg	tatggtgccc	480
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<210> 4
 <211> 283
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

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	Asn	Pro	Val	Pro	Thr	Thr	Ala	Ser	Thr	Thr	Ser	Ser	Ser	Phe	Ser	Thr
	Thr	Gly	Val	Pro	Val	Ser	Thr	Met	Asp	Ile	Thr	Ser	Ser	Gly	Phe	Leu
	Gly	Pro	Leu	Leu	Ala	Leu	Gln	Ala	Val	Phe	Phe	Leu	Leu	Thr	Lys	Ile
	Leu	Thr	Met	Pro	Gln	Ser	Leu	Asp	Ser	Leu	Trp	Thr	Ser	Leu	Asn	Phe
	Leu	Gly	Gly	Thr	Pro	Ala	Cys	Pro	Gly	Leu	Asn	Ser	Gln	Ser	Pro	Thr

Sequence_Listing

Ser	Ser	His	100	Ser	Pro	Thr	Cys	Cys	105	Pro	Pro	Thr	Cys	Pro	110	Gly	Tyr	Arg
Trp	Met	Cys	115	Leu	Arg	Arg	Ser	Ile	120	Ile	Phe	Leu	Phe	Ile	125	Leu	Leu	Leu
Cys	Leu	Ile	130	Phe	Leu	Leu	Val	Leu	135	Leu	Asp	Tyr	Gln	Gly	Met	Leu	Pro	
Val	Cys	Pro	145	Leu	Leu	Pro	Thr	Val	150	Thr	Gly	Thr	Thr	Thr	Thr	Thr	Gly	
Pro	Cys	Arg	165	Thr	Cys	Thr	Pro	Ile	170	Val	Pro	Gly	Ile	Ser	Ser	Tyr	Pro	
Ser	Cys	Cys	180	Cys	Thr	Lys	Pro	Thr	185	Asp	Gly	Asn	Cys	Thr	Cys	Ile	Pro	
Ile	Pro	Ser	195	Ser	Trp	Ala	Phe	Ala	200	Lys	Phe	Leu	Trp	Asp	Trp	Ala	Leu	
Ala	Arg	Phe	210	Ser	Trp	Leu	Asn	Ser	215	Leu	Leu	Pro	Phe	Val	Gln	Trp	Phe	
Ala	Gly	Leu	225	Ser	Pro	Thr	Val	Trp	230	Leu	Leu	Val	Ile	Trp	Met	Met	Trp	
Phe	Trp	Gly	245	Pro	Ser	Leu	Phe	Ser	250	Ile	Leu	Ser	Pro	Phe	Leu	Pro	Leu	
Leu	Pro	Leu	260	Phe	Phe	Trp	Leu	Trp	265	Val	Tyr	Ile						
			275						280									

<210> 5
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<220>
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 cacatctcgt caatctccgc gaggactggg gaccctgtga cgaacatgtc accatcaagt 180
 ctccctaggac tcctcgcagg attacagggt gtgtatttct tgtggacaaa aatcctaaca 240
 atagctcaga atctagattg gtggtggact tctctcagtt ttccaggggg cataccagag 300
 tgcactggcc aaaattcgca gttccaaact tgcaaacact tgccaacctc ctgtccacca 360
 acttgcaatg gctttcggtg gatgtatctg cggcgtttta tcatatacct attagtcctg 420
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 cctcttcaac ccacaacaga aacaacagtc aattgcagac aatgcacaat ctctgcacaa 540
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 tggcccatcc ctcatcatg ggcttttagga aattacctat gggagtgggc cttagcccgt 660
 ttctcttggc tcaatttact agtgcccttg cttcaatggt taggaggaat ttccctcatt 720
 gcgtggtttt tgcttatatg gatgatttgg ttttgggggc ccgcacttct gagcatctta 780
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<210> 6
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 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 6
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 20 25 30
 Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
 35 40 45
 Thr Gly Asp Pro Val Thr Asn Met Ser Pro Ser Ser Leu Leu Gly Leu
 50 55 60
 Leu Ala Gly Leu Gln Val Val Tyr Phe Leu Trp Thr Lys Ile Leu Thr
 65 70 75 80

Sequence_Listing

Ile Ala Gln Asn 85 Leu Asp Trp Trp Trp Thr Ser Leu Ser Phe 95 Pro Gly
 Gly Ile Pro Glu 100 Cys Thr Gly Gln Asn 105 Ser Gln Phe Gln Thr 110 Cys Lys
 His Leu Pro Thr 115 Ser Cys Pro Pro 120 Thr Cys Asn Gly Phe Arg Trp Met
 Tyr Leu Arg Arg Phe Ile Ile Tyr Leu Leu Val 140 Leu Leu Cys Leu
 Ile Phe Leu Leu Val 150 Leu Leu Asp Trp Lys Gly 155 Leu Ile Pro Val Cys
 145 160
 Pro Leu Gln Pro Thr Thr Glu Thr Thr Val Asn Cys Arg Gln Cys Thr
 165 175
 Ile Ser Ala Gln Asp Met Tyr Thr Pro Tyr Cys Cys Cys Leu Lys
 180 185 190
 Pro Thr Ala Gly Asn Cys Thr Cys Trp Pro Ile Pro Ser Ser Trp Ala
 195 200 205
 Leu Gly Asn Tyr Leu Trp Glu Trp Ala Leu Ala Arg Phe Ser Trp Leu
 210 215 220
 Asn Leu Leu Val Pro Leu Leu Gln Trp Leu Gly Ile Ser Leu Ile
 225 230 235 240
 Ala Trp Phe Leu Leu Ile Trp Met Ile Trp Phe Trp Gly Pro Ala Leu
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<210> 7

<211> 846

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic nucleic acid

<400> 7

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cacatctcgt	cagtcttctc	gacgactggg	gaccctgcac	cgaacatgga	gaacatcaca	180
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ctcacaatac	cacagagtct	agactcgtgg	tggacttctc	tcaattttct	agggggagca	300
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<210> 8

<211> 281

<212> PRT

<213> Artificial Sequence

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<223> synthetic polypeptide

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 Asn Pro Val Pro Asn Thr Ala Ser His Ile Ser Ser Val Phe Ser Thr
 35 40 45

Sequence_Listing

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65					70					75					80
Leu	Thr	Ile	Pro	Gln	Ser	Leu	Asp	Ser	Trp	Trp	Thr	Ser	Leu	Asn	Phe
				85					90					95	
Leu	Gly	Gly	Ala	Pro	Val	Cys	Pro	Gly	Gln	Asn	Ser	Gln	Ser	Pro	Thr
			100					105					110		
Ser	Asn	His	Ser	Pro	Thr	Ser	Cys	Pro	Pro	Ile	Cys	Pro	Gly	Tyr	Arg
		115					120					125			
Trp	Met	Cys	Leu	Arg	Arg	Phe	Ile	Ile	Phe	Leu	Phe	Ile	Leu	Leu	Leu
	130					135					140				
Cys	Leu	Ile	Phe	Leu	Leu	Val	Leu	Leu	Asp	Tyr	Gln	Gly	Met	Leu	Pro
145					150					155					160
Val	Cys	Pro	Leu	Leu	Pro	Gly	Ser	Ser	Thr	Thr	Ser	Thr	Gly	Pro	Cys
				165					170					175	
Lys	Thr	Cys	Thr	Ile	Pro	Ala	Gln	Gly	Thr	Ser	Leu	Ile	Pro	Ser	Cys
			180					185					190		
Cys	Cys	Thr	Lys	Pro	Ser	Asp	Gly	Asn	Cys	Thr	Cys	Ile	Pro	Ile	Pro
		195					200					205			
Ser	Ser	Trp	Ala	Phe	Ala	Lys	Phe	Leu	Trp	Glu	Trp	Ala	Ser	Val	Arg
		210				215					220				
Phe	Ser	Trp	Leu	Ser	Leu	Leu	Ala	Pro	Phe	Val	Gln	Trp	Phe	Ala	Gly
225					230					235					240
Leu	Ser	Pro	Thr	Ala	Trp	Leu	Leu	Ala	Ile	Trp	Ile	Ile	Trp	Tyr	Trp
				245					250					255	
Gly	Pro	Asn	Leu	Tyr	Asn	Ile	Leu	Asn	Pro	Phe	Ile	Pro	Leu	Leu	Pro
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 <212> DNA
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<220>
 <223> synthetic nucleic acid

<400> 9

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<210> 10
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 10

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Sequence_Listing

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

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<220>
 <223> synthetic nucleic acid

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 ccagcgtgtc ttggccaaaa ttcgcagtcc ccaacctcca atcactcacc aacctcttgt 360
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 atcctgctgc tatgcctcat cttcttggtg gttcttcttg actatcgagg tatgttgccc 480
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 gcctcagccc gtttctcctg gctcagttta ctagtccat ttgttcagcg gttcgcaggg 720
 ctttctcca ctgcttggtt ttcagttata tggatgatgt ggtattgggg accaagtctg 780
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<210> 12
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

Sequence_Listing

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

```

```

<210> 13
<211> 846
<212> DNA
<213> Artificial Sequence

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```

<220>
<223> synthetic nucleic acid

```

```

<400> 13
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tatctccctg ctggtggctc cagttcagga acagtaaacc ctgctccgaa tattgcctct 120
cacatctcgt caatctccgc gaggactggg gaccctgcac cgaacatgga gaacatcaca 180
tcaggattcc taggaccctt gctcgtgtta caggcgggtg ttttcttggt gacaagaatc 240
ctcacaatac cgcagagtct agactcgtgg tggactttct tcaattttct agggggaact 300
accgtgtgtc ctggcctaaa ttgcagttcc ccaacctcca atcactcacc aacctcttgt 360
cctccaactt gtcctgggta tcgctggatg tgtctgcggc gttttatcat atacctatta 420
gtcctgctgc tgtgcctcat ctctctgttg gttcttcttg actatcaagg tatgttgccc 480
gtttgtcctc taattccagg atcctcaaca accagcacgg gaccatgcaa aacctgtatg 540
actaccgctc aaggaacctc tatgtatccc tcatgttggt gtacaaaacc ttcggaacga 600
aattgcactt gtattcccat cccatcatcc tgggctttcg gaaaattcct atgggagtgg 660
gcctcagccc gtttctcctg gctcagttta ctagtcccat ttgttcagcg gttcgcaggg 720
ctttcccca ctgtttggct ttcagttata tggatgattt gggtttgggg gccaaagtctg 780
tacagcatct tgagtccctt tttaccgctg ttaccaattt tcttttgtct ttgggtatac 840
atttaa
846

```

```

<210> 14
<211> 281
<212> PRT

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Sequence_Listing

<213> Artificial Sequence

<220>

<223> synthetic polypeptide

<400> 14

Met	Gln	Trp	Asn	Ser	Thr	Ala	Phe	His	Gln	Thr	Leu	Gln	Asp	Pro	Arg
1				5					10					15	
Val	Arg	Gly	Leu	Tyr	Leu	Pro	Ala	Gly	Gly	Ser	Ser	Ser	Gly	Thr	Val
			20					25					30		
Asn	Pro	Ala	Pro	Asn	Ile	Ala	Ser	His	Ile	Ser	Ser	Ile	Ser	Ala	Arg
		35					40					45			
Thr	Gly	Asp	Pro	Ala	Pro	Asn	Met	Glu	Asn	Ile	Thr	Ser	Gly	Phe	Leu
	50					55					60				
Gly	Pro	Leu	Leu	Val	Leu	Gln	Ala	Val	Phe	Phe	Leu	Leu	Thr	Arg	Ile
65					70				75						80
Leu	Thr	Ile	Pro	Gln	Ser	Leu	Asp	Ser	Trp	Trp	Thr	Ser	Leu	Asn	Phe
				85					90					95	
Leu	Gly	Gly	Thr	Val	Cys	Pro	Gly	Gln	Asn	Ser	Gln	Ser	Pro	Thr	
			100				105					110			
Ser	Asn	His	Ser	Pro	Thr	Ser	Cys	Pro	Pro	Thr	Cys	Pro	Gly	Tyr	Arg
		115					120					125			
Trp	Met	Cys	Leu	Arg	Arg	Phe	Ile	Ile	Tyr	Leu	Leu	Val	Leu	Leu	Leu
	130					135					140				
Cys	Leu	Ile	Phe	Leu	Leu	Val	Leu	Leu	Asp	Tyr	Gln	Gly	Met	Leu	Pro
145					150					155					160
Val	Cys	Pro	Leu	Ile	Pro	Gly	Ser	Ser	Thr	Thr	Ser	Thr	Gly	Pro	Cys
				165					170					175	
Lys	Thr	Cys	Met	Thr	Thr	Ala	Gln	Gly	Thr	Ser	Met	Tyr	Pro	Ser	Cys
			180					185					190		
Cys	Cys	Thr	Lys	Pro	Ser	Asp	Gly	Asn	Cys	Thr	Cys	Ile	Pro	Ile	Pro
		195					200					205			
Ser	Ser	Trp	Ala	Phe	Gly	Lys	Phe	Leu	Trp	Glu	Trp	Ala	Ser	Ala	Arg
		210				215					220				
Phe	Ser	Trp	Leu	Ser	Leu	Leu	Val	Pro	Phe	Val	Gln	Arg	Phe	Ala	Gly
225					230					235					240
Leu	Ser	Pro	Thr	Val	Trp	Leu	Ser	Val	Ile	Trp	Met	Ile	Trp	Phe	Trp
				245					250					255	
Gly	Pro	Ser	Leu	Tyr	Ser	Ile	Leu	Ser	Pro	Phe	Leu	Pro	Leu	Leu	Pro
			260					265					270		
Ile	Phe	Phe	Cys	Leu	Trp	Val	Tyr	Ile							
		275					280								

<210> 15

<211> 846

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic nucleic acid

<400> 15

atgcagtggga	attctacaac	cttccacca	actctgcagg	atcccagagt	caggggtctg	60
tatcttcctg	ctgggtggctc	cagttcagga	acagtaaacc	ctgctccgaa	tattgcctct	120
cacatctcgt	caatctccgc	gaggactggg	gaccctgcgc	tgaacatgga	gaacatcaca	180
tcaggattcc	taggaccctt	tctcgtgtta	caggcgggg	ttttcttggt	gacaagaatc	240
ctcacaatac	cacagagtct	agactcgtgg	tggaacttct	tcaattttct	agggggaact	300
accgtgtgtc	ttggcctaaa	ttcgcagtcc	ccaacctcca	atcactcacc	aacctcttgt	360
cctccaactt	gtcctgggta	tcgctgggat	tgtctgcggc	gttttatcat	cttcctcttc	420
atcctgcttc	tatgcctcat	cttcttggtg	gttcttctgg	actatcaagg	tatgttgccc	480
gtttgtcccc	taattccagg	atcctcaaca	accagcacgg	gaccatgcaa	aacctgtatg	540
actacccttc	aaggaacctc	tatgtatccc	tcattgttgc	gtaccaaacc	ttcggacgga	600
aattgcacct	gtattcccat	cccatcatcc	tgggctttcg	gaaaattcct	atgggagtg	660
gcctcagccc	gtttctcctg	gctcagttta	ctagtgccat	ttgttcagtg	gttcgtagg	720
ctttcccca	ctgcttggtc	tttggtata	tggatcatct	ggtattgggg	gccaaatctg	780
tacaacatct	tgaatccctt	tttaccgctg	ttaccaat	tcttttgtct	ttgggtatac	840
atttaa						846

Sequence_Listing

<210> 16
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 16
 Met Gln Trp Asn Ser Thr Thr Phe His Gln Thr Leu Gln Asp Pro Arg
 1 5 10 15
 Val Arg Gly Leu Tyr Leu Pro Ala Gly Ser Ser Ser Gly Thr Val
 20 25 30
 Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
 35 40 45
 Thr Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
 50 55 60
 Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Arg Ile
 65 70 75 80
 Leu Thr Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe
 85 90 95
 Leu Gly Gly Thr Thr Val Cys Leu Gly Leu Asn Ser Gln Ser Pro Thr
 100 105 110
 Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
 115 120 125
 Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu
 130 135 140
 Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Gln Gly Met Leu Pro
 145 150 155 160
 Val Cys Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys
 165 170 175
 Lys Thr Cys Met Thr Thr Pro Gln Gly Thr Ser Met Tyr Pro Ser Cys
 180 185 190
 Cys Cys Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro
 195 200 205
 Ser Ser Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg
 210 215 220
 Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val Gly
 225 230 235 240
 Leu Ser Pro Thr Ala Trp Leu Leu Ala Ile Trp Ile Ile Trp Tyr Trp
 245 250 255
 Gly Pro Asn Leu Tyr Asn Ile Leu Asn Pro Phe Leu Pro Leu Leu Pro
 260 265 270
 Ile Phe Phe Cys Leu Trp Val Tyr Ile
 275 280

<210> 17
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

<400> 17
 atgcagtgga attccactgc cttccaccaa actctgcagg atcccagagt caggggtctg 60
 tatcttcctg ctggtggctc cagctcagga acagtaaacc ctgctccgaa tattgcctct 120
 cacatctcgt caatctccgc gaggattggg gaccctgcgc tgaacatgga gaacatcaca 180
 tcaggattcc taggaccctt tctcgatta caggcggtgt ttttcttggt gacaaaaatc 240
 ctacaaatgc cacagagtct agactcgtgg tggacttctc tcaattttct agggggaact 300
 accgtgtgtc ttggccaaaa ttcgcagtcc ccaacctcca atcactcacc aacctcttgt 360
 cctccaactt gtcctgggta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
 atcctgctgc tatgcctcat cttcttggtg gttcttcttg actatcgagg tatgttgccc 480
 gtttgctcct taattccagg atcctcaaca accagcacgg gaccatgcaa aacctgtatg 540
 actaccgctc aaggaacctc tatgtatccc tcattgtgtt gtacaaaacc ttcggacgga 600
 aattgcacct gtattcccat cccatcatcc tgggctttcg caaaattcct atgggagtgg 660

Sequence_Listing

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gcctcagccc gtttctcctg gctcagttta ctagtccat ttgttcagtg gttcgtaggg 720
ctttccccc ctgtttggct ttcagttata tggatgatgt ggtattgggg gccaagtctg 780
ttcagcatct tgagtcctt cttgcctctg ttaccaattt tcttttgtct ttgggtatac 840
atttaa 846
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<210> 18
<211> 281
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic polypeptide

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<400> 18
Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
 1      5      10      15
Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
 20      25      30
Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
 35      40      45
Ile Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
 50      55      60
Gly Pro Leu Leu Ala Leu Gln Ala Val Phe Phe Leu Leu Thr Lys Ile
 65      70      75      80
Leu Thr Met Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe
 85      90      95
Leu Gly Gly Thr Thr Val Cys Leu Gly Gln Asn Ser Gln Ser Pro Thr
100      105      110
Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
115      120      125
Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu
130      135      140
Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Arg Gly Met Leu Pro
145      150      155      160
Val Cys Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys
165      170      175
Lys Thr Cys Met Thr Thr Ala Gln Gly Thr Ser Met Tyr Pro Ser Cys
180      185      190
Cys Cys Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro
195      200      205
Ser Ser Trp Ala Phe Ala Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg
210      215      220
Phe Ser Trp Leu Ser Leu Val Pro Phe Val Gln Trp Phe Val Gly
225      230      235      240
Leu Ser Pro Thr Val Trp Leu Ser Val Ile Trp Met Met Trp Tyr Trp
245      250      255
Gly Pro Ser Leu Phe Ser Ile Leu Ser Pro Phe Leu Pro Leu Leu Pro
260      265      270
Ile Phe Phe Cys Leu Trp Val Tyr Ile
275      280
```

<210> 19
<211> 846
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic nucleic acid

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<400> 19
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tatttccctg ctgggtggctc cagttcagga acagtaaacc ctgttctgac tactgcctct 120
cccttatcgt caatcttctc gaggattggg gaccctgcgc tgaacatgga gaacatcaca 180
tcaggattcc taggaccctt tctcgtgtta caggcggggg ttttcttgtt gacaagaatc 240
ctcacaatac cgagagtcct agactcgttg tggacttctc tcagttttcc agggggcata 300
ccagagtgca ctggcctaaa ttgcgagtc ccaacctcca atcactcacc aacctcttgt 360
cctccaactt gtcctgggta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
```

Sequence_Listing

```

atcctgctgc tatgcctcat cttcttgttg gttcttcttg actatcgagg tatgttgccc 480
gtttgtccctc tacttccagg atcctcaaca accagcacgg gaccctgcag gacctgtatg 540
actaccgctc aaggaacctc tatgtatccc tcatgttgct gtaccaaacc ttcggacgga 600
aattgcacct gtattcccat cccatcatcc tgggctttcg caaaattcct atgggagtgg 660
gcctcagccc gtttctcctg gctcagttta ctagtgccat ttgttcagtg gttcgtaggg 720
ctttcccca ctgtttggct ttcagttata tggatcatct ggtattgggg gccaaatctg 780
tacaacatct tgaatccatt tataccgctg ttaccaattt tcttttgtct ttgggtatac 840
atttaa

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<210> 20
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

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<400> 20
Met Gln Trp Asn Ser Thr Thr Phe His Gln Thr Leu Gln Asp Pro Arg
1      5      10      15
Val Arg Gly Leu Tyr Phe Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
20     25     30
Asn Pro Val Leu Thr Thr Ala Ser Pro Leu Ser Ser Ile Phe Ser Arg
35     40     45
Ile Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
50     55     60
Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Arg Ile
65     70     75     80
Leu Thr Ile Pro Gln Ser Leu Asp Ser Leu Trp Thr Ser Leu Ser Phe
85     90     95
Pro Gly Gly Ile Pro Glu Cys Thr Gly Gln Asn Ser Gln Ser Pro Thr
100    105    110
Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
115    120    125
Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu
130    135    140
Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Arg Gly Met Leu Pro
145    150    155    160
Val Cys Pro Leu Leu Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys
165    170    175
Arg Thr Cys Met Thr Thr Ala Gln Gly Thr Ser Met Tyr Pro Ser Cys
180    185    190
Cys Cys Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro
195    200    205
Ser Ser Trp Ala Phe Ala Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg
210    215    220
Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val Gly
225    230    235    240
Leu Ser Pro Thr Val Trp Leu Ser Val Ile Trp Ile Ile Trp Tyr Trp
245    250    255
Gly Pro Asn Leu Tyr Asn Ile Leu Asn Pro Phe Ile Pro Leu Leu Pro
260    265    270
Ile Phe Phe Cys Leu Trp Val Tyr Ile
275    280

```

<210> 21
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

```

<400> 21
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tatcttcttg ctgggtggctc cagttcagga acagtaaacc ctgctccgaa tattgcctct 120
cccttatcgt caatcttctc gacgactggg gaccctgcac cgaacatgga gaacatcaca 180

```

Sequence_Listing

```

tcaggattcc taggaccctt tctcgtgtta caggcggggt ttttcttggt gacaagaatc 240
ctcacaatac cgcagagtct agactcgtgg tggacttctc tcaattttct aggggggagca 300
cccgtgtgtc ttggccaaaa ttcgcagtc ccaacctcca atcactcacc aacctcttgt 360
cctccaactt gtcctgggta tcgctggatg cgtctgcggc gttttatcat cttcctcttc 420
atcctgctgc tatgcctcat cttcttggtg gttcttctgg actatcgagg tatgttgccc 480
gtttgtcctc taattccagg atcctcaaca accggcacgg gaccctgcag gacctgtatg 540
actactgctc aaggaacctc tatgtatccc tcatgttggt gtacaaaacc ttcggacgga 600
aattgcactt gtattcccat cccatcatcc tgggctttcg gaaaattcct atgggagtgg 660
gcctcagccc gtttctcctg gctcagttta ctagtgccat ttgttcagtg gttcgtaggg 720
ctttcccccg ctgtatggct ttcagttata tggatgatgt ggtattgggg gccaaagtctg 780
tacagcatct tgagtcctct tttaccgctg ttaccaattt tcttttggtt ttgggtatac 840
atttaa

```

<210> 22
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 22
 Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
 1 5 10 15
 Val Arg Gly Leu Tyr Leu Pro Ala Gly Ser Ser Ser Gly Thr Val
 20 25 30
 Asn Pro Ala Pro Asn Ile Ala Ser Pro Leu Ser Ser Ile Phe Ser Thr
 35 40 45
 Thr Gly Asp Pro Ala Pro Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
 50 55 60
 Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Arg Ile
 65 70 75 80
 Leu Thr Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe
 85 90 95
 Leu Gly Gly Ala Pro Val Cys Leu Gly Gln Asn Ser Gln Ser Pro Thr
 100 105 110
 Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
 115 120 125
 Trp Met Arg Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu
 130 135 140
 Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Arg Gly Met Leu Pro
 145 150 155 160
 Val Cys Pro Leu Ile Pro Gly Ser Ser Thr Thr Gly Thr Gly Pro Cys
 165 170 175
 Arg Thr Cys Met Thr Thr Ala Gln Gly Thr Ser Met Tyr Pro Ser Cys
 180 185 190
 Cys Cys Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro
 195 200 205
 Ser Ser Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg
 210 215 220
 Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val Gly
 225 230 235 240
 Leu Ser Pro Ala Val Trp Leu Ser Val Ile Trp Met Met Trp Tyr Trp
 245 250 255
 Gly Pro Ser Leu Tyr Ser Ile Leu Ser Pro Phe Leu Pro Leu Leu Pro
 260 265 270
 Ile Phe Phe Trp Leu Trp Val Tyr Ile
 275 280

<210> 23
 <211> 840
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

Sequence_Listing

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<400> 23
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cacatctcgt caatctccgc gaggactggg gaccctgtga cgaacatgtc accatcaagt 180
ctcctaggac tcctcgcagg attacaggtg gtgtatttct tgtggacaaa aatcctaaca 240
ataccgcaga gtctagactc gtgggtggact tctctcaatt ttctaggggg agcaccctg 300
tgtcctggcc aaaattcgca gtccccaacc tccaatcact caccaacctc ttgtcctcca 360
atttgcctg gttatcgctg gatgtgtctg cggcgtttta tcattcttct cttcatcctg 420
cttctatgcc tcatcttctt gttggttctt ctggactatc aaggatatgt gcccgtttgt 480
cctctaattc caggatcatc gaccaccagc acgggacat gcaaaacctg tatgactacc 540
cctcaaggaa cctctatgta tccctcatgt tgttgtagca aaccttcgga cggaatttgc 600
acctgtattc ccatcccatc atcctgggct ttcggaaaat tcctatggga gtgggcctca 660
gtccgtttct cctggctcag tttactagct ccatttgttc agcggttcgt agggctttcc 720
cccactgttt ggctttcagt tatatggatg atgtggttct gggggccaag tctgttcagc 780
atcttgagtc ctttcttgcc tctgttagca cttttctttt ggctttgggt atacatttaa 840

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<210> 24
<211> 279
<212> PRT
<213> Artificial Sequence

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<220>
<223> synthetic polypeptide

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<400> 24
Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
1      5      10      15
Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
20      25      30
Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
35      40      45
Thr Gly Asp Pro Val Thr Asn Met Ser Pro Ser Ser Leu Leu Gly Leu
50      55      60
Leu Ala Gly Leu Gln Val Val Tyr Phe Leu Trp Thr Lys Ile Leu Thr
65      70      75      80
Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe Leu Gly
85      90      95
Gly Ala Pro Val Cys Pro Gly Gln Asn Ser Gln Ser Pro Thr Ser Asn
100     105     110
His Ser Pro Thr Ser Cys Pro Pro Ile Cys Pro Gly Tyr Arg Trp Met
115     120     125
Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Cys Leu
130     135     140
Ile Phe Leu Leu Val Leu Leu Asp Tyr Gln Gly Met Leu Pro Val Cys
145     150     155     160
Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys Lys Thr
165     170     175
Cys Met Thr Thr Pro Gln Gly Thr Ser Met Tyr Pro Ser Cys Cys
180     185     190
Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro Ser Ser
195     200     205
Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser Val Arg Phe Ser
210     215     220
Trp Leu Ser Leu Leu Ala Pro Phe Val Gln Arg Phe Val Gly Leu Ser
225     230     235
Pro Thr Val Trp Leu Ser Val Ile Trp Met Met Trp Phe Trp Gly Pro
245     250     255
Ser Leu Phe Ser Ile Leu Ser Pro Phe Leu Pro Leu Leu Pro Leu Phe
260     265     270
Phe Trp Leu Trp Val Tyr Ile
275

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<210> 25
<211> 840
<212> DNA
<213> Artificial Sequence

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Sequence_Listing

<220>

<223> synthetic nucleic acid

<400> 25

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cacatctcgt caatctccgc gaggactggg gacctgtga cgaacatgtc accatcaagt 180
ctcctaggac tcctcgagg attacagggt gtgtatttct tgtggacaaa aatcctaaca 240
ataccgcaga gtctagactc gtgggtggact tctctcaatt ttctaggggg agcaccctgt 300
tgtcctggcc aaaattcgca gtccccaacc tccaatcact caccaacctc ttgtcctcca 360
atttgtcctg gttatcgctg gatgtgtctg cggcgtttta tcatcttcct cttcatcctg 420
cttctatgcc tcatcttctt gttggttctt ctggactatc aaggtatgtt gcccgtttgt 480
cctctaattc caggatcatc gaccaccagc acgggaccat gcaaaacctg tatgactacc 540
cctcaaggaa cctctatgta tccctcatgt tgtgtacca aaccttcgga cggaattgc 600
acctgtattc ccatcccatc atcctgggct ttcggaanaa tcctatggga gtgggcctca 660
gtccgtttct cctggctcag tttactagct ccatttggtc agcggttcgt agggctttcc 720
cccactgttt ggctttcagt tatatggatg atgtggttct gggggccaag tctgttcagc 780
atcttgagtc ctttcttgcc tctgtttacca cttttctttt ggctttgggt atacatttaa 840

```

<210> 26

<211> 279

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic polypeptide

<400> 26

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Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
1      5      10      15
Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
20     25     30
Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
35     40     45
Thr Gly Asp Pro Val Thr Asn Met Ser Pro Ser Ser Leu Leu Gly Leu
50     55     60
Leu Ala Gly Leu Gln Val Val Tyr Phe Leu Trp Thr Lys Ile Leu Thr
65     70     75     80
Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe Leu Gly
85     90     95
Gly Ala Pro Val Cys Pro Gly Gln Asn Ser Gln Ser Pro Thr Ser Asn
100    105    110
His Ser Pro Thr Ser Cys Pro Pro Ile Cys Pro Gly Tyr Arg Trp Met
115    120    125
Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu Cys Leu
130    135    140
Ile Phe Leu Leu Val Leu Leu Asp Tyr Gln Gly Met Leu Pro Val Cys
145    150    155    160
Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys Lys Thr
165    170    175
Cys Met Thr Thr Pro Gln Gly Thr Ser Met Tyr Pro Ser Cys Cys Cys
180    185    190
Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro Ser Ser
195    200    205
Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser Val Arg Phe Ser
210    215    220
Trp Leu Ser Leu Leu Ala Pro Phe Val Gln Arg Phe Val Gly Leu Ser
225    230    235    240
Pro Thr Val Trp Leu Ser Val Ile Trp Met Met Trp Phe Trp Gly Pro
245    250    255
Ser Leu Phe Ser Ile Leu Ser Pro Phe Leu Pro Leu Leu Pro Leu Phe
260    265    270
Phe Trp Leu Trp Val Tyr Ile
275

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Sequence_Listing

<210> 27
<211> 846
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic nucleic acid

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<400> 27
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cccttatcgt caatcttctc gaggattggg gaccctgcgc tgaacatgga gaacatcaca 180
tcaggattcc taggaccctt gctcgtgtta caggcggggg ttttcttggt gacaaaagtc 240
ctcacaatac cgcagagcct agactcgtgg tggacttctc tcaattttct agggggaact 300
accgtgtgtc ttggccaaaa ttgcgagtc ccaacctcca atcactcacc aacctcttgt 360
cctccaactt gtcctgggta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
atcctgctgc tatgcctcat cttcttggtg gttcttctgg actatcgagg tatgttgccc 480
gtttgtcctc taattccagg atcctcaaca accagcacgg gaccctgcag gacctgtatg 540
actaccgctc aaggaacctc tatgtatccc tcatgttggt gtacaaaacc ttcggacgga 600
aattgcactt gtattcccat cccatcatcc tgggctttcg gaaaattcct atgggagtgg 660
gcctcagccc gtttctcctg gctcagttta ctagtccat ttgttcagtg gttcgtaggg 720
ctttccccc ctgcttggtt tttagctata tggatcatct ggtattgggg gccaaatctg 780
tacaacatct tgaatccatt tataccgctg ttaccaattt tcttttgtct ttgggtatac 840
atttaa
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<210> 28
<211> 281
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic polypeptide

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<400> 28
Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
1      5      10      15
Val Arg Gly Leu Tyr Phe Pro Val Gly Ser Ser Ser Gly Thr Val
20      25      30
Asn Pro Ala Pro Asn Ile Ala Ser Pro Leu Ser Ser Ile Phe Ser Arg
35      40      45
Ile Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
50      55      60
Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Lys Val
65      70      75      80
Leu Thr Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe
85      90      95
Leu Gly Gly Thr Thr Val Cys Leu Gly Gln Asn Ser Gln Ser Pro Thr
100     105     110
Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
115     120     125
Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu
130     135     140
Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Arg Gly Met Leu Pro
145     150     155     160
Val Cys Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys
165     170     175
Arg Thr Cys Met Thr Thr Ala Gln Gly Thr Ser Met Tyr Pro Ser Cys
180     185     190
Cys Cys Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro
195     200     205
Ser Ser Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg
210     215     220
Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val Gly
225     230     235     240
Leu Ser Pro Thr Ala Trp Leu Leu Ala Ile Trp Ile Ile Trp Tyr Trp
245     250     255
Gly Pro Asn Leu Tyr Asn Ile Leu Asn Pro Phe Ile Pro Leu Pro
260     265     270
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Ile Phe Phe Cys Leu Trp Val Tyr Ile
 275 280 Sequence_Listing

<210> 29
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

<400> 29
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 tatcttcctg ctggtggctc cagctcagga acagtaaacc ctgctccgaa tattgcctct 120
 cacatctcgt caatctccgc gaggattggg gaccctgcgc tgaacatggg gaacatcaca 180
 tcaggattcc taggaccctt tctcgtgtta caggcggggg ttttcttgat gacaaaaatc 240
 ctacaaatgc cgcagagtct agactcgtgg tggacttctc tcaattttct agggggaact 300
 accgtgcgtc ctggccaaaa ttcgcagtcc ccaacctcca atcactcacc aacctcttgt 360
 cctccaactt gtcctgggta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
 atcctgctgc tatgcctcat cttcttggtg gttcttctgg actatcgagg tatgttgccc 480
 gtttgcctc tacttccagg gtcctcaaca accagcacgg gaccctgcag gacctgtatg 540
 actaccgctc aaggaacctc tatgtatccc tcatgttgct gtaccaaacc ttcggacgga 600
 aattgcaccc gtattcccat cccatcatcc tgggctttcg caaaattcct atgggagtg 660
 gcctcagccc gtttctcctg gctcagttta ctagtccat ttgttcagtg gttcgtaggg 720
 ctttcccca ctgtttggct ttcagttata tggatcatct ggtattgggg gccaaatctg 780
 tacaacatct tgaatccatt tataccgctg ttaccaattt tcttttgtct ttgggtatac 840
 atttaa 846

<210> 30
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

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

Sequence_Listing

Leu	Ser	Pro	Thr	Val	Trp	Leu	Ser	Val	Ile	Trp	Ile	Ile	Trp	Tyr	Trp
				245				250						255	
Gly	Pro	Asn	Leu	Tyr	Asn	Ile	Leu	Asn	Pro	Phe	Ile	Pro	Leu	Leu	Pro
			260					265					270		
Ile	Phe	Phe	Cys	Leu	Trp	Val	Tyr	Ile							
		275					280								

<210> 31
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

<400> 31

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cacatctcgt	caatctccgc	gaggattagg	gacctgcgc	tgaacatgga	gaacatcgca	180
tcaggattcc	taggaccctt	tctcgcatta	caggcgggtg	ttttcttggt	gacaaaaatc	240
ctcacaatgc	cacagagtct	agactcgtgg	tggacttctc	tcaattttct	agggggaact	300
accgtgtgtc	ttggccaaaa	ttcgcagtc	ccaacctcca	atcactcacc	aacctcttgt	360
cctccaactt	gtcctgggta	tcgctggatg	tgtctgcggc	gttttatcat	cttcctcttc	420
atcctgtctg	tatgcctcat	cttcttggtg	gttcttctgg	actatcgagg	tatgttgccc	480
gtttgtcctc	taattccagg	atcctcaaca	accagcacgg	gaccatgcaa	aacctgtatg	540
actaccgctc	aaggaacctc	tatgtatccc	tcattgtgtt	gtacaaaacc	ttcggacgga	600
aattgcacct	gtattcccat	cccatcatcc	tgggctttcg	caaaattcct	atgggagtgg	660
gcctcagccc	gtttctcctg	gctcagttta	ctagtgccat	ttgttcagtg	gttcgtaggg	720
ctttcccca	ctgtttggct	ttcagttata	tggatgatgt	gggtattggg	accaagtctg	780
tacagcatct	tgagtcctt	cttgccctctg	ttaccacttt	tcttttggt	ttgggtatac	840
atttaa						846

<210> 32
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 32

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

Sequence_Listing

Ser Ser Trp Ala Phe Ala Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg
 210 215 220
 Phe Ser Trp Leu Ser Leu Val Pro Phe Val Gln Trp Phe Val Gly
 225 230 235 240
 Leu Ser Pro Thr Val Trp Leu Ser Val Ile Trp Met Met Trp Tyr Trp
 245 250 255
 Gly Pro Ser Leu Tyr Ser Ile Leu Ser Pro Phe Leu Pro Leu Pro
 260 270
 Leu Phe Phe Trp Leu Trp Val Tyr Ile
 275 280

<210> 33
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

<400> 33
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 cacatctcgt caatctccgc gaggactggg gaccctgcgc tgaacatgga gaacatcaca 180
 tcaggattcc taggaccctt tctcgtgtta caggcggggg ttttcttggt gacaagaatc 240
 ctacaatac cacagagtct agactcgtgg tggacttctc tcaattttct agggggagca 300
 cccgtgtgtc ctggccaaaa ttcgcagtcc ccaacctcca atcactcacc aacctcttgt 360
 cctccgattt gtcctggcta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
 atcctgctgc tatgcctcat cttcttggtg gttcttctgg actatcgagg tatgttgccc 480
 gtttgtcctc tacttccagg atcctcaaca accagcacgg gaccatgccg gacctgcatg 540
 actaccgctc aaggaacctc tatgtatccc tcatgttgct gtaccaaacc ttcggacgga 600
 agctgcactt gtattcccat cccatcatcc tgggctttcg caaaattcct atgggagtgg 660
 gcctcagccc gtttctcctg gctcagttta ctagtccat ttgttcagtg gttcgtaggg 720
 ctttcccccg ctgtatggct ttcagttata tggatgattt gggtttgggg gccaaagtctg 780
 tacagcatct tgagtcctt tttaccgctg ttaccaattt tcttttgtct ttgggtatac 840
 atttaa 846

<210> 34
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 34
 Met Gln Trp Asn Ser Thr Thr Phe His Gln Thr Leu Gln Asp Pro Arg
 1 5 10 15
 Val Arg Gly Leu Tyr Leu Pro Ala Gly Ser Ser Ser Gly Thr Val
 20 25 30
 Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
 35 40 45
 Thr Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
 50 55 60
 Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Arg Ile
 65 70 75 80
 Leu Thr Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe
 85 90 95
 Leu Gly Gly Thr Thr Val Cys Leu Gly Leu Asn Ser Gln Ser Pro Thr
 100 105 110
 Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
 115 120 125
 Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu
 130 135 140
 Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Gln Gly Met Leu Pro
 145 150 155 160
 Val Cys Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys
 165 170 175

Sequence_Listing

Lys	Thr	Cys	Met	Thr	Thr	Pro	Gln	Gly	Thr	Ser	Met	Tyr	Pro	Ser	Cys
			180					185				190			
Cys	Cys	Thr	Lys	Pro	Ser	Asp	Gly	Asn	Cys	Thr	Cys	Ile	Pro	Ile	Pro
		195					200					205			
Ser	Ser	Trp	Ala	Phe	Gly	Lys	Phe	Leu	Trp	Glu	Trp	Ala	Ser	Ala	Arg
		210				215					220				
Phe	Ser	Trp	Leu	Ser	Leu	Val	Pro	Phe	Val	235	Gln	Trp	Phe	Val	Gly
225					230										240
Leu	Ser	Pro	Thr	Ala	Trp	Leu	Leu	Ala	Ile	Trp	Ile	Ile	Trp	Tyr	Trp
			245						250					255	
Gly	Pro	Asn	Leu	Tyr	Asn	Ile	Leu	Asn	Pro	Phe	Leu	Pro	Leu	Leu	Pro
		260						265					270		
Ile	Phe	Phe	Cys	Leu	Trp	Val	Tyr	Ile							
		275					280								

<210> 35
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

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 cacatctcgt caatctccgc gaggactggg gaccctgcgc tgaacatgga gaacatcaca 180
 tcaggattcc taggaccctt tctcgtgtta caggcggggg ttttcttggt gacaagaatc 240
 ctcaacaatac cacagagtct agactcgtgg tggacttctc tcaattttct agggggaact 300
 accgtgtgtc ttggcctaaa ttcgcagtcc ccaacctcca atcactcacc aacctcttgt 360
 cctccaactt gtcctgggta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
 atcctgcttc tatgcctcat cttcttggtg gttcttctgg actatcaagg tatgttgccc 480
 gtttgtcccc taattccagg atcctcaaca accagcacgg gaccatgcaa aacctgtatg 540
 actacccttc aaggaacctc tatgtatccc tcatgttgct gtaccaaacc ttcggacgga 600
 aattgcacct gtattcccat cccatcatcc tgggctttcg gaaaattcct atgggagtg 660
 gcctcagccc gtttctcctg gctcagttta ctagtgccat ttgttcagtg gttcgtagg 720
 ctttcccca ctgcttggct tttggctata tggatcatct ggtattgggg gccaaatctg 780
 tacaacatct tgaatccctt tttaccgctg ttaccaattt tcttttgtct ttgggtatac 840
 atttaa 846

<210> 36
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 36
 Met Gln Trp Asn Ser Thr Thr Phe His Gln Thr Leu Gln Asp Pro Arg
 1 5 10 15
 Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
 20 25 30
 Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
 35 40 45
 Thr Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
 50 55 60
 Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Arg Ile
 65 70 75 80
 Leu Thr Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe
 85 90 95
 Leu Gly Gly Thr Thr Val Cys Leu Gly Leu Asn Ser Gln Ser Pro Thr
 100 105 110
 Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
 115 120 125
 Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu
 130 135 140

Sequence_Listing

Cys 145	Leu	Ile	Phe	Leu 150	Val	Leu	Leu	Asp	Tyr 155	Gln	Gly	Met	Leu	Pro 160
Val	Cys	Pro	Leu 165	Ile	Pro	Gly	Ser	Ser	Thr 170	Thr	Ser	Thr	Gly	Pro 175
Lys	Thr	Cys	Met 180	Thr	Thr	Pro	Gln	Gly 185	Thr	Ser	Met	Tyr	Pro 190	Ser Cys
Cys	Cys	Thr 195	Lys	Pro	Ser	Asp	Gly 200	Asn	Cys	Thr	Cys	Ile 205	Pro	Ile Pro
Ser	Ser 210	Trp	Ala	Phe	Gly	Lys 215	Phe	Leu	Trp	Glu	Trp 220	Ala	Ser	Ala Arg
Phe 225	Ser	Trp	Leu	Ser	Leu 230	Leu	Val	Pro	Phe	Val 235	Gln	Trp	Phe	Val Gly
Leu	Ser	Pro	Thr	Ala 245	Trp	Leu	Leu	Ala	Ile 250	Trp	Ile	Ile	Trp	Tyr 255
Gly	Pro	Asn	Leu 260	Tyr	Asn	Ile	Leu	Asn 265	Pro	Phe	Leu	Pro	Leu 270	Leu Pro
Ile	Phe	Phe 275	Cys	Leu	Trp	Val	Tyr 280	Ile						

<210> 37
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

<400> 37
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 cacatctcgt cagtccttc cagcactggg gaccctgcac cgaacatgga gaacatcaca 180
 tcaggattcc taggaccctt gctcgtgtta caggcggggg ttttcttggt gacaaaaatc 240
 ctcaaatgc cacagagtct agactcgttg tggacttctc tcaattttct agggggaaca 300
 ccagcgtgtc ttggccaaaa ttcgcagtc ccaaccccca atcactcacc aacctcttgc 360
 cctccaactt gtcttggtta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
 atcctgtctc tatgcctcat cttcttggtg gttcttcttg actatcgagg tatgttgccc 480
 gtttgtcctc taattccagg atcctcaaca accagcacgg gaccatgcaa aacctgtatg 540
 actacccctc aaggaacctc tatgtatccc tcatgttgct gtaccaaacc ttcggacgga 600
 aattgcacct gtattcccat cccatcatcc tgggctttcg gaaaattcct atgggagtgg 660
 gccacagccc gtttctcctg gctcagttta ctagtccat ttgttcagtg gttcgtaggg 720
 ctttcccca ctgcttggtc tttggctata tggatcatct ggtattgggg gccaaatctg 780
 tacaacatct tgaatccctt tttaccgctg ttaccaattt tcttttgtct ttgggtatac 840
 atttaa

<210> 38
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 38
 Met Gln Trp Asn Ser Thr Thr Phe His Gln Thr Leu Gln Asp Pro Arg
 1 5 10 15
 Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
 20 25 30
 Asn Pro Ala Pro Asn Thr Ala Ser His Ile Ser Ser Val Phe Ser Thr
 35 40 45
 Thr Gly Asp Pro Ala Pro Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
 50 55 60
 Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Lys Ile
 65 70 75 80
 Leu Thr Met Pro Gln Ser Leu Asp Ser Leu Trp Thr Ser Leu Asn Phe
 85 90 95
 Leu Gly Gly Thr Pro Ala Cys Leu Gly Gln Asn Ser Gln Ser Pro Thr
 100 105 110

Sequence_Listing

Pro	Asn	His	Ser	Pro	Thr	Ser	Cys	Pro	Pro	Thr	Cys	Pro	Gly	Tyr	Arg
		115					120					125			
Trp	Met	Cys	Leu	Arg	Arg	Phe	Ile	Ile	Phe	Leu	Phe	Ile	Leu	Leu	Leu
	130					135					140				
Cys	Leu	Ile	Phe	Leu	Leu	Val	Leu	Leu	Asp	Tyr	Arg	Gly	Met	Leu	Pro
145					150					155					160
Val	Cys	Pro	Leu	Ile	Pro	Gly	Ser	Ser	Thr	Thr	Ser	Thr	Gly	Pro	Cys
				165					170					175	
Lys	Thr	Cys	Met	Thr	Thr	Pro	Gln	Gly	Thr	Ser	Met	Tyr	Pro	Ser	Cys
			180					185					190		
Cys	Cys	Thr	Lys	Pro	Ser	Asp	Gly	Asn	Cys	Thr	Cys	Ile	Pro	Ile	Pro
		195					200					205			
Ser	Ser	Trp	Ala	Phe	Gly	Lys	Phe	Leu	Trp	Glu	Trp	Ala	Ser	Ala	Arg
		210				215					220				
Phe	Ser	Trp	Leu	Ser	Leu	Leu	Val	Pro	Phe	Val	Gln	Trp	Phe	Val	Gly
225					230					235					240
Leu	Ser	Pro	Thr	Ala	Trp	Leu	Leu	Ala	Ile	Trp	Ile	Ile	Trp	Tyr	Trp
				245					250					255	
Gly	Pro	Asn	Leu	Tyr	Asn	Ile	Leu	Asn	Pro	Phe	Leu	Pro	Leu	Leu	Pro
			260					265					270		
Ile	Phe	Phe	Cys	Leu	Trp	Val	Tyr	Ile							
		275					280								

<210> 39
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

<400> 39
 atgcagtgga attccactgc cttccaccaa actctgcagg atcccagagt caggggtctg 60
 tatctccctg ctggtggctc cagttcagga acagtaaacc ctgctccgaa tattgcctct 120
 cacatctcgt caatctccgc gaggactggg gaccctgcac cgaacatgga gaacatcaca 180
 tcaggattcc taggaccctt gctcgtgtta caggcgggtg ttttcttggt gacaagaatc 240
 ctcaacaata cgcagagtct agactcgtgg tggacttctc tcaattttct agggggaaca 300
 cccgtgtgtc ctggccaaaa ttcgcagtcc ccaacctcca atcactcacc aacctcttgt 360
 cctccaactt gtcctgggta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
 atcctgcttc tatgcctcat cttcttggtg gttcttctg actatcaagg tatgttgccc 480
 gtttgtcccc taattccagg atcctcaaca accagcacgg gaccatgcaa aacctgtatg 540
 actacccttc aaggaacctc tatgtatccc tcattgttgc gtaccaaacc ttcggacgga 600
 aattgcacct gtattcccat cccatcatcc tgggctttcg gaaaattcct atgggagtgg 660
 gcctcagccc gtttctcctg gctcagttta ctagtccat ttgttcagcg gttcgcaggg 720
 ctttcccca ctgtttggct ttcagttata tggatgattt ggttttgggg gccaaagtctg 780
 tacagcatct tgagtcctt tttaccgctg ttaccaattt tcttttgtct ttgggtatac 840
 atttaa 846

<210> 40
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 40
 Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
 1 5 10 15
 Val Arg Gly Leu Tyr Leu Pro Ala Gly Ser Ser Ser Gly Thr Val
 20 25 30
 Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
 35 40 45
 Thr Gly Asp Pro Ala Pro Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
 50 55 60
 Gly Pro Leu Leu Val Leu Gln Ala Val Phe Phe Leu Leu Thr Arg Ile
 65 70 75 80

Sequence_Listing

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

<210> 41
<211> 846
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic nucleic acid

<400> 41
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cccgtatcgt caatcttctc gaggattggg gaccctgcgc tgaacatgga gaacatcaca 180
tcaggattcc taggaccctt tctcgtgtta caggcggggg ttttcttggt gacaagaatc 240
ctcacaatac cgcagagtct agactcgttg tggacttctc tcagttttcc aaggggcata 300
ccagagtgca ctggccaaaa ttgcagatcc ccaacctcca atcactcacc aacctcttgt 360
cctccaactt gtcctgggta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
atcctgctgc tatgcctcat cttcttggtg gttcttcttg actatcgagg tatgttgccc 480
gtttgtcctc tacttccagg atcctcaaca accagcacgg gaccctgcag gacctgtatg 540
actaccgctc aaggaacctc tatgtatccc tcatgttgct gtaccaaacc ttcggacgga 600
aattgcacct gtattcccat cccatcatcc tgggctttcg caaaattcct atgggagtg 660
gcctcagccc gtttctcctg gctcagttta ctatgccaat ttgttcagtg gttcgtagg 720
ctttcccca ctgtttggct ttcagttata tggatcatct ggtattgggg gccaaatctg 780
tacaacatct tgaatccatt tataccgctg ttaccaattt tcttttgtct ttgggtatac 840
atttaa 846

<210> 42
<211> 281
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic polypeptide

<400> 42
Met Gln Trp Asn Ser Thr Thr Phe His Gln Thr Leu Gln Asp Pro Arg
1 5 10 15
Val Arg Gly Leu Tyr Phe Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
20 25 30
Asn Pro Val Leu Thr Thr Ala Ser Pro Val Ser Ser Ile Phe Ser Arg
35 40 45

Sequence_Listing

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

<210> 43
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

<400> 43

atgcagtggga	attccacaac	cttccacca	actctgcaag	atcccagagt	gagaggcctg	60
tatttccctg	ctggtggctc	cagttcagga	acagtaaacc	ctgttctgac	tactgcctct	120
cccttatcgt	caatcttctc	gaggattggg	gaccctgcgc	tgaacatgga	gaacatcaca	180
tcaggattcc	taggaccctc	tctcgtgtta	caggcggggg	ttttcttggt	gacaagaatc	240
ctcacaatac	cgcagagtct	agactcgttg	tggacctctc	tcagttttcc	agggggcata	300
ccagagtgca	ctggccaaaa	ttcgcagtc	ccaacctcca	atcactcacc	aacctcttgt	360
cctccaactt	gtcctgggta	tcgctgggat	tgtctgcggc	gttttatcat	cttcctcttc	420
atcctgctgc	tatgcctcat	cttcttggtg	gttcttctgg	actatcgagg	tatggtgccc	480
gtttgtcctc	tacttccagg	atcctcaaca	accagcacgg	gaccctgcag	gacctgtatg	540
actaccgctc	aaggaacctc	tatgtatccc	tcatgttgct	gtaccaaacc	ttcggacgga	600
aattgcacct	gtattcccat	cccacatcc	tgggctttcg	gaaaattcct	atgggagtg	660
gcctcagtc	gtttctcctg	gctcagttta	ctagctccat	ttgttcagcg	gttcgtagg	720
ctttcccca	ctgtttggct	ttcagttata	tggatgatgt	ggttctgggg	gccaagtctg	780
ttcagcatct	tgagtcctt	cttgcctctg	ttaccacttt	tcttttggt	ttgggtatac	840
atttaa						846

<210> 44
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 44

Met	Gln	Trp	Asn	Ser	Thr	Thr	Phe	His	Gln	Thr	Leu	Gln	Asp	Pro	Arg
1				5					10					15	

Sequence_Listing

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

<210> 45
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

<400> 45
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 cacatctcgt caatctccgc gaggattggg gaccctgcgc tgaacatgga gaacatcaca 180
 tcaggattcc taggaccctt tctcgatta caggcgggtg ttttcttggt gacaaaaatc 240
 ctacaatgc cacagagtct agactcgtgg tggacttctc tcaattttct agggggaact 300
 accgtgtgtc ttggcctaaa ttcgcagtcc ccaacctcca atcactcacc aacctcttgt 360
 cctccaactt gtcctgggta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
 atcctgctgc tgtgcctcat cttcttggtg gttcttcttg actatcgagg tatgttgccc 480
 gtttgcctc tacttccagg atcctcaaca accagcacgg gaccatgccg gacctgcatg 540
 actaccgctc aaggaacctc tatgtatccc tcatgttgct gtaccaaacc ttcggacgga 600
 agctgcactt gtattcccat cccctcatcc tgggctttcg gaaaattcct atgggagtg 660
 gcctcagtcc gtttctcctg gctcagttta ctagtccat ttgttcagtg gttcgcaggg 720
 ctttcccca ctgtatggct tttagttata tggatgatgt gggtctgggg gccagtgctg 780
 ttcagcatct tgagtcctt cttgcctctg ttaccaattt tcttttgtct ttgggtatac 840
 atttaa 846

<210> 46
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

Sequence_Listing

<400> 46

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Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
 1      5      10      15
Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
      20      25      30
Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
      35      40      45
Ile Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
      50      55      60
Gly Pro Leu Leu Ala Leu Gln Ala Val Phe Phe Leu Leu Thr Lys Ile
      65      70      75      80
Leu Thr Met Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe
      85      90      95
Leu Gly Gly Thr Thr Val Cys Leu Gly Leu Asn Ser Gln Ser Pro Thr
      100      105      110
Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
      115      120      125
Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu
      130      135      140
Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Arg Gly Met Leu Pro
      145      150      155      160
Val Cys Pro Leu Leu Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys
      165      170      175
Arg Thr Cys Met Thr Thr Ala Gln Gly Thr Ser Met Tyr Pro Ser Cys
      180      185      190
Cys Cys Thr Lys Pro Ser Asp Gly Ser Cys Thr Cys Ile Pro Ile Pro
      195      200      205
Ser Ser Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser Val Arg
      210      215      220
Phe Ser Trp Leu Ser Leu Val Pro Phe Val Gln Trp Phe Ala Gly
      225      230      235      240
Leu Ser Pro Thr Val Trp Leu Leu Val Ile Trp Met Met Trp Phe Trp
      245      250      255
Gly Pro Ser Leu Phe Ser Ile Leu Ser Pro Phe Leu Pro Leu Leu Pro
      260      265      270
Ile Phe Phe Cys Leu Trp Val Tyr Ile
      275      280

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<210> 47

<211> 846

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic nucleic acid

<400> 47

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cccttatcgt caatcttctc gacgactggg gaccctgcgc tgaacatgga gaacatcaca 180
tcaggattcc taggaccctt tctcgtgtta caggcggggt ttttcttggt gacaagaatc 240
ctcacaatac cgcagagtct agactcgtgg tggacttctc tcaattttct agggggagca 300
cccgtgtgtc ttggcctaaa ttgcagttcc ccaacctcca atcactcacc aacctcttgt 360
cctccaactt gtcctgggta tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
atcctgctgc tatgcctcat ctctctgttg gttcttcttg actatcgagg tatgttgccc 480
gtttgtcctc taattccagg atcctcaaca accagcacgg gaccctgcag gacctgtatg 540
actgccgctc aaggaacctc tatgtatccc tcatgttgct gtaccaaacc ttcggacgga 600
aattgcacct gtattcccat cccatcatcc tgggctttcg caaaattcct atgggagtgg 660
gcctcagccc gttctcctg gctcagttta ctagtgccat ttgttcagtg gttcgtaggg 720
ctttcccca ctgtttggct ttcagttata tggatcatct ggtattgggg gccaaatctg 780
tacaacatct tgaatccatt tataccgctg ttaccaattt tcttttgtct ttgggtatac 840
atttaa                                           846

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<210> 48

<211> 281

<212> PRT

Sequence_Listing

<213> Artificial Sequence

<220>

<223> synthetic polypeptide

<400> 48

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1				5					10					15	
Val	Arg	Gly	Leu	Tyr	Leu	Pro	Ala	Gly	Gly	Ser	Ser	Ser	Gly	Thr	Val
			20					25					30		
Asn	Pro	Ala	Pro	Asn	Ile	Ala	Ser	Pro	Leu	Ser	Ser	Ile	Phe	Ser	Thr
		35					40					45			
Thr	Gly	Asp	Pro	Ala	Leu	Asn	Met	Glu	Asn	Ile	Thr	Ser	Gly	Phe	Leu
	50					55					60				
Gly	Pro	Leu	Leu	Val	Leu	Gln	Ala	Gly	Phe	Phe	Leu	Leu	Thr	Arg	Ile
65					70					75					80
Leu	Thr	Ile	Pro	Gln	Ser	Leu	Asp	Ser	Trp	Trp	Thr	Ser	Leu	Asn	Phe
				85					90					95	
Leu	Gly	Gly	Ala	Pro	Val	Cys	Leu	Gly	Gln	Asn	Ser	Gln	Ser	Pro	Thr
			100					105					110		
Ser	Asn	His	Ser	Pro	Thr	Ser	Cys	Pro	Pro	Thr	Cys	Pro	Gly	Tyr	Arg
		115					120					125			
Trp	Met	Cys	Leu	Arg	Arg	Phe	Ile	Ile	Phe	Leu	Phe	Ile	Leu	Leu	Leu
	130					135					140				
Cys	Leu	Ile	Phe	Leu	Leu	Val	Leu	Leu	Asp	Tyr	Arg	Gly	Met	Leu	Pro
145					150					155					160
Val	Cys	Pro	Leu	Ile	Pro	Gly	Ser	Ser	Thr	Thr	Ser	Thr	Gly	Pro	Cys
				165					170					175	
Arg	Thr	Cys	Met	Thr	Ala	Ala	Gln	Gly	Thr	Ser	Met	Tyr	Pro	Ser	Cys
			180					185					190		
Cys	Cys	Thr	Lys	Pro	Ser	Asp	Gly	Asn	Cys	Thr	Cys	Ile	Pro	Ile	Pro
		195					200					205			
Ser	Ser	Trp	Ala	Phe	Ala	Lys	Phe	Leu	Trp	Glu	Trp	Ala	Ser	Ala	Arg
		210				215					220				
Phe	Ser	Trp	Leu	Ser	Leu	Leu	Val	Pro	Phe	Val	Gln	Trp	Phe	Val	Gly
225					230					235					240
Leu	Ser	Pro	Thr	Val	Trp	Leu	Ser	Val	Ile	Trp	Ile	Ile	Trp	Tyr	Trp
				245					250					255	
Gly	Pro	Asn	Leu	Tyr	Asn	Ile	Leu	Asn	Pro	Phe	Ile	Pro	Leu	Leu	Pro
			260					265					270		
Ile	Phe	Phe	Cys	Leu	Trp	Val	Tyr	Ile							
		275					280								

<210> 49

<211> 846

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic nucleic acid

<400> 49

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cacatctcgt	cagtcttctc	gacgactggg	gaccctgcac	cgaacatgga	gaacatcaca	180
tcaggattcc	taggaccctt	gctcgtgtta	caggcggggg	ttttcttggt	gacaaaaatc	240
ctcacaatgc	cacagagtct	agactcgttg	tggaacttctc	tcaattttct	agggggaaca	300
ccagcgtgtc	ttggccaaaa	ttcgcagtcc	ccaacctcca	atcactcacc	aacctcttgt	360
cctccaactt	gtcctgggtca	tcgctgggatg	tgtctgcggc	gttttatcat	cttcctcttc	420
atcctgctgc	tatgcctcat	cttcttggtg	gttcttctgg	actatcgagg	tatgttgccc	480
gtttgtcctc	taattccagg	atcctcaaca	accagcacgg	gaccatgcaa	aacctgtatg	540
actacccttc	aaggaacctc	tatgtatccc	tcattgttgc	gtaccaaacc	ttcggacgga	600
aattgcacct	gtattcccat	cccatcatcc	tgggctttcg	gaaaattcct	atgggagtg	660
gcctcagccc	gtttctcctg	gctcagttta	ctagtgccat	ttgttcagtg	gttcgtagg	720
ctttcccca	ctgcttggtc	tttggtcata	tggatcatct	ggtattgggg	gccaaatctg	780
tacaacatct	tgaatccctt	tttaccgctg	ttaccaat	tcttttgtct	ttgggtatac	840
atttaa						846

Sequence_Listing

<210> 50
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 50
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 20 25 30
 Asn Pro Ala Pro Asn Thr Ala Ser His Ile Ser Ser Val Phe Ser Thr
 35 40 45
 Thr Gly Asp Pro Ala Pro Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
 50 55 60
 Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Lys Ile
 65 70 75 80
 Leu Thr Met Pro Gln Ser Leu Asp Ser Leu Trp Thr Ser Leu Asn Phe
 85 90 95
 Leu Gly Gly Thr Pro Ala Cys Leu Gly Gln Asn Ser Gln Ser Pro Thr
 100 105 110
 Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly His Arg
 115 120 125
 Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu
 130 135 140
 Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Arg Gly Met Leu Pro
 145 150 155 160
 Val Cys Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys
 165 170 175
 Lys Thr Cys Met Thr Thr Pro Gln Gly Thr Ser Met Tyr Pro Ser Cys
 180 185 190
 Cys Cys Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro
 195 200 205
 Ser Ser Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg
 210 215 220
 Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val Gly
 225 230 235 240
 Leu Ser Pro Thr Ala Trp Leu Leu Ala Ile Trp Ile Ile Trp Tyr Trp
 245 250 255
 Gly Pro Asn Leu Tyr Asn Ile Leu Asn Pro Phe Leu Pro Leu Pro
 260 265 270
 Ile Phe Phe Cys Leu Trp Val Tyr Ile
 275 280

<210> 51
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

<400> 51
 atgcagtgga attccacaac cttccaccaa actctgcagg atcccagagt caggggtctg 60
 tatcttcctg ctggtggctc cagttcagga acagtaaacc ctgctccgaa tactgcctct 120
 cacatctcgt cagcttcttc gacgactggg gaccctgcac cgaacatgga gaacatcaca 180
 tcaggattcc taggaccctt gctcgtgtta caggcggggt ttttcttggt gacaaaaatc 240
 ctcaaatgc cacagagtct agactcgttg tggacttctc tcaattttct agggggaaca 300
 ccagcgtgtc ttggccaaaa ttcgcagtcc ccaacctcca atcactcacc aacctcttgt 360
 cctccaactt gtcctgggtca tcgctggatg tgtctgcggc gttttatcat cttcctcttc 420
 atcctgctgc tatgcctcat cttcttggtg gttcttcttg actatcgagg tatgttgccc 480
 gtttgcttc taattccagg atcctcaaca accagcacgg gaccatgcaa aacctgtatg 540
 actaccctc aaggaacctc tatgtatccc tcattgttgc gtaccaaacc ttcggacgga 600
 aattgcacct gtattcccat cccatcatcc tgggctttcg gaaaattcct atgggagtgg 660

Sequence_Listing

```
gcctcagccc gtttctcctg gctcagttta ctagtccat ttgttcagtg gttcgtaggg 720
ctttccccc ctgcttggct tttggctata tggatcatct ggtattgggg gccaaatctg 780
tacaacatct tgaatccctt tttaccgctg ttaccaatct tcttttgtct ttgggtatac 840
atttaa 846
```

<210> 52
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

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<400> 52
Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
 1      5      10      15
Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
 20      25      30
Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
 35      40      45
Ile Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
 50      55      60
Gly Pro Leu Leu Ala Leu Gln Ala Val Phe Phe Leu Leu Thr Lys Ile
 65      70      75
Leu Thr Met Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe
 85      90      95
Leu Gly Gly Thr Thr Val Cys Leu Gly Gln Asn Ser Gln Ser Pro Thr
100      105      110
Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
115      120      125
Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu
130      135      140
Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Arg Gly Met Leu Pro
145      150      155
Val Cys Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys
165      170      175
Lys Thr Cys Met Thr Thr Ala Gln Gly Thr Ser Met Tyr Pro Ser Cys
180      185      190
Cys Cys Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro
195      200      205
Ser Ser Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg
210      215      220
Phe Ser Trp Leu Ser Leu Ala Pro Phe Val Gln Arg Phe Ala Gly
225      230      235
Leu Ser Pro Thr Ala Trp Leu Leu Ala Ile Trp Ile Ile Trp Tyr Trp
245      250      255
Gly Pro Asn Leu Tyr Asn Ile Met Asn Pro Phe Leu Pro Leu Leu Pro
260      265      270
Ile Phe Phe Cys Leu Trp Val Tyr Ile
275      280
```

<210> 53
 <211> 846
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

```
<400> 53
atgcagtggg attccactgc cttccacca actctgcagg atcccagagt caggggtctg 60
tatcttctct ctgggtggctc cagttcagga acagtaaacc ctgctccgaa tactgcctct 120
cacatctcgt cagtcttctc gacgactggg gaccctgcac cgaacatgga gaacatcaca 180
tcaggattcc taggaccctt gctcgtgtta caggcggggt ttttcttgtt gacaaaaatc 240
ctcacaatgc cacagagtct agactcgttg tggacttctc tcaattttct agggggaaca 300
ccagcgtgtc ttggccaaaa ttcgcagtc ccaacctcca atcactcacc aacctcttgt 360
cctccaactt gtcttggtta tcactggatg tgtctgcggc gttttatcat cttctcttct 420
```

Sequence_Listing

```

atcctgctgc tatgcctcat cttcttgttg gttcttctgg actatcgagg tatgttgccc 480
gtttgtcctc tacttccagg atcatcgacc accagcacgg gaccatgcaa aacctgcacg 540
atccctgctc aaggaacctc tttgattccc tcatgttggt gtacaaaacc ttcggacgga 600
aattgcactt gtattcccat cccatcgtct tgggctttcg caaaattcct atgggagtgg 660
gcctcagccc gtttctcctg gctcagttta ctagtgccat ttgttcagcg gttcgcaggg 720
ctttcccca ctgtttggct ttcagttata tggatgattt ggttttgggg gccaaagtctg 780
tacagcatct tgagtcacct tttaccgctg ttaccaattt tcttttgtct ttgggtatac 840
atttaa
846

```

<210> 54
 <211> 281
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic polypeptide

<400> 54

Met	Gln	Trp	Asn	Ser	Thr	Ala	Phe	His	Gln	Thr	Leu	Gln	Asp	Pro	Arg
1				5					10				15		
Val	Arg	Gly	Leu	Tyr	Leu	Pro	Ala	Gly	Gly	Ser	Ser	Ser	Gly	Thr	Val
			20					25					30		
Asn	Pro	Ala	Pro	Asn	Thr	Ala	Ser	His	Ile	Ser	Ser	Val	Phe	Ser	Thr
		35					40					45			
Thr	Gly	Asp	Pro	Ala	Pro	Asn	Met	Glu	Asn	Ile	Thr	Ser	Gly	Phe	Leu
	50					55					60				
Gly	Pro	Leu	Leu	Val	Leu	Gln	Ala	Gly	Phe	Phe	Leu	Leu	Thr	Lys	Ile
65					70				75					80	
Leu	Thr	Met	Pro	Gln	Ser	Leu	Asp	Ser	Leu	Trp	Thr	Ser	Leu	Asn	Phe
				85					90					95	
Leu	Gly	Gly	Thr	Pro	Ala	Cys	Leu	Gly	Gln	Asn	Ser	Gln	Ser	Pro	Thr
			100					105					110		
Ser	Asn	His	Ser	Pro	Thr	Ser	Cys	Pro	Pro	Thr	Cys	Pro	Gly	Tyr	His
		115					120					125			
Trp	Met	Cys	Leu	Arg	Arg	Phe	Ile	Ile	Phe	Leu	Phe	Ile	Leu	Leu	Leu
	130					135					140				
Cys	Leu	Ile	Phe	Leu	Leu	Val	Leu	Leu	Asp	Tyr	Arg	Gly	Met	Leu	Pro
145					150				155						160
Val	Cys	Pro	Leu	Leu	Pro	Gly	Ser	Ser	Thr	Thr	Ser	Thr	Gly	Pro	Cys
				165					170					175	
Lys	Thr	Cys	Thr	Ile	Pro	Ala	Gln	Gly	Thr	Ser	Leu	Ile	Pro	Ser	Cys
			180					185					190		
Cys	Cys	Thr	Lys	Pro	Ser	Asp	Gly	Asn	Cys	Thr	Cys	Ile	Pro	Ile	Pro
		195					200					205			
Ser	Ser	Trp	Ala	Phe	Ala	Lys	Phe	Leu	Trp	Glu	Trp	Ala	Ser	Ala	Arg
		210				215					220				
Phe	Ser	Trp	Leu	Ser	Leu	Leu	Val	Pro	Phe	Val	Gln	Arg	Phe	Ala	Gly
225					230					235					240
Leu	Ser	Pro	Thr	Val	Trp	Leu	Ser	Val	Ile	Trp	Met	Ile	Trp	Phe	Trp
				245					250					255	
Gly	Pro	Ser	Leu	Tyr	Ser	Ile	Leu	Ser	Pro	Phe	Leu	Pro	Leu	Leu	Pro
			260					265					270		
Ile	Phe	Phe	Cys	Leu	Trp	Val	Tyr	Ile							
		275					280								

<210> 55
 <211> 840
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> synthetic nucleic acid

<400> 55

atgcagtggg	attctactgc	cttccacca	actctgcagg	atcccagagt	caggggtctg	60
tatcttcttg	ctgggtggct	cagttcagga	acagtaaacc	ctgctccgaa	tattgcctct	120
cacatctcgt	caatctccgc	gaggactggg	gaccctgtga	cgaacatgtc	accatcaagt	180

Sequence_Listing

```

ctcctaggac tcctagcagg attacaggtg gtgtatttct tgtggacaaa aatcctaaca 240
ataccgcaga gtctagactc gtggtggact tctctcaatt ttctaggggg agcaccctgt 300
tgtcctggcc aaaattcgca gcccacaacc cccaatcact caccaacctc ttgtccttca 360
acttgtcctg ggtatcgctg gatgcgtctg tggcgtttta tcatcttctt cttcatcctg 420
ctgctatgcc tcatcttctt gttggttctt ctggactatc gaggtgtgtt gcccgtttgt 480
cctccaattc caggatcctc aacaaccagc acgggaccat gcaaaacctg tatgactacc 540
gctcaaggaa cctctatgta tccctcatgt tgtgtacaa aaccttcgga cggaaattgc 600
acctgtattc ccatcccatc atcctgggct ttcggaaaat tcctatggga gtgggcctca 660
gcccgtttct cctggctcag ttactagtgt ccatttgttc agtggttcgt agggccttcc 720
cccactgctt ggcttttggc tacatggatc atctgggtatt gggggccaaa tctgtacaac 780
atcttgaatc cttttttacc gctgttacca attttctttt gtctttgggt atacatttaa 840

```

<210> 56
<211> 279
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic polypeptide

```

<400> 56
Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
 1      5      10      15
Val Arg Gly Leu Tyr Leu Pro Ala Gly Ser Ser Ser Gly Thr Val
 20      25      30
Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
 35      40      45
Thr Gly Asp Pro Val Thr Asn Met Ser Pro Ser Ser Leu Leu Gly Leu
 50      55      60
Leu Ala Gly Leu Gln Val Val Tyr Phe Leu Trp Thr Lys Ile Leu Thr
 65      70      75      80
Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe Leu Gly
 85      90      95
Gly Ala Pro Val Cys Pro Gly Gln Asn Ser Gln Pro Pro Thr Pro Asn
100      105      110
His Ser Pro Thr Ser Cys Pro Ser Thr Cys Pro Gly Tyr Arg Trp Met
115      120      125
Arg Leu Trp Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu Cys Leu
130      135      140
Ile Phe Leu Leu Val Leu Leu Asp Tyr Arg Gly Val Leu Pro Val Cys
145      150      155      160
Pro Pro Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys Lys Thr
165      170      175
Cys Met Thr Thr Ala Gln Gly Thr Ser Met Tyr Pro Ser Cys Cys Cys
180      185      190
Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro Ser Ser
195      200      205
Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg Phe Ser
210      215      220
Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val Gly Leu Ser
225      230      235      240
Pro Thr Ala Trp Leu Leu Ala Thr Trp Ile Ile Trp Tyr Trp Gly Pro
245      250      255
Asn Leu Tyr Asn Ile Leu Asn Pro Phe Leu Pro Leu Leu Pro Ile Phe
260      265      270
Phe Cys Leu Trp Val Tyr Ile
275

```

<210> 57
<211> 840
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic nucleic acid

Sequence_Listing

```

<400> 57
atgcagtggga attctactgc cttccaccaaa actctgcagg atcccagagt caggggtctg 60
tatcttcctg ctgggtggctc cagttcagga acagtaaacc ctgctccgaa tattgcctct 120
cacatctcgt caatctccgc gaggactggg gaccctgtga cgaacatgtc accatcaagt 180
ctcctaggac tcctcgcagg attacagggtg gtgtatttct tgtggacaaa aatcctaaca 240
ataccgcaga gtctagactc gtgggtggact tctctcaatt ttctaggggg agcaccctg 300
tgtcctggcc aaaattcgca gtccccaacc tccaatcact caccaacctc ttgtcctcca 360
acttgcctg gttatcgctg gatgtgtctg cggcgtttta tcattcttct cttcatcctg 420
ctgctatgcc tcatcttctt gttggttctt ctggactatc gaggtatgtt gcccgtttgt 480
cctctacttc caggatcctc aacaaccagc acgggacctt gcaggacctg tatgactacc 540
gctcaaggaa cctctatgta tccctcatgt tgctgtacca aaccttcgga cggaatttgc 600
acctgtattc ccatcccatc atcctgggct ttcgcaaaat tcctatggga gtgggcctca 660
gcccgtttct cctggctcag tttactagtg ccatttgttc agtggttcgt agggctttcc 720
cccactgttt ggctttcagt tatatggatc atctgggtatt gggggccaaa tctgtacaac 780
atcttgagtc catttatacc gctgttacca attttctttt gtctttgggt atacatttaa 840

```

```

<210> 58
<211> 279
<212> PRT
<213> Artificial Sequence

```

```

<220>
<223> synthetic polypeptide

```

```

<400> 58
Met Gln Trp Asn Ser Thr Ala Phe His Gln Thr Leu Gln Asp Pro Arg
1      5      10      15
Val Arg Gly Leu Tyr Leu Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
20      25      30
Asn Pro Ala Pro Asn Ile Ala Ser His Ile Ser Ser Ile Ser Ala Arg
35      40      45
Thr Gly Asp Pro Val Thr Asn Met Ser Pro Ser Ser Leu Leu Gly Leu
50      55      60
Leu Ala Gly Leu Gln Val Val Tyr Phe Leu Trp Thr Lys Ile Leu Thr
65      70      75      80
Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe Leu Gly
85      90      95
Gly Ala Pro Val Cys Pro Gly Gln Asn Ser Gln Ser Pro Thr Ser Asn
100     105     110
His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg Trp Met
115     120     125
Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Cys Leu
130     135     140
Ile Phe Leu Leu Val Leu Leu Asp Tyr Arg Gly Met Leu Pro Val Cys
145     150     155     160
Pro Leu Leu Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys Arg Thr
165     170     175
Cys Met Thr Thr Ala Gln Gly Thr Ser Met Tyr Pro Ser Cys Cys
180     185     190
Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro Ser Ser
195     200     205
Trp Ala Phe Ala Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg Phe Ser
210     215     220
Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val Gly Leu Ser
225     230     235
Pro Thr Val Trp Leu Ser Val Ile Trp Ile Ile Trp Tyr Trp Gly Pro
240     245     250     255
Asn Leu Tyr Asn Ile Leu Ser Pro Phe Ile Pro Leu Leu Pro Ile Phe
260     265     270
Phe Cys Leu Trp Val Tyr Ile
275

```

```

<210> 59
<211> 280
<212> PRT
<213> hepatitis

```

Sequence_Listing

```

<400> 59
Met Gln Trp Asn Ser Thr Thr Phe His Gln Thr Leu Gln Asp Pro Arg
 1      5      10      15
Val Arg Gly Leu Tyr Phe Pro Ala Gly Gly Ser Ser Ser Gly Thr Val
 20      25      30
Asn Pro Val Leu Thr Thr Ala Ser Pro Leu Ser Ser Ile Phe Ser Arg
 35      40      45
Ile Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly Phe Leu
 50      55      60
Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr Arg Ile
 65      70      75
Leu Thr Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu Asn Phe
 85      90      95
Leu Gly Gly Thr Thr Val Cys Leu Gly Gln Asn Ser Gln Ser Pro Thr
100      105      110
Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly Tyr Arg
115      120      125
Trp Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu Leu Leu Cys
130      135      140
Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Gln Gly Met Leu Pro Val
145      150      155
Cys Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly Pro Cys Arg
165      170      175
Thr Cys Met Thr Thr Ala Gln Gly Thr Ser Met Tyr Pro Ser Cys Cys
180      185      190
Cys Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro Ile Pro Ser
195      200      205
Ser Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser Ala Arg Phe
210      215      220
Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe Val Gly Leu
225      230      235
Ser Pro Thr Val Trp Leu Ser Val Ile Trp Met Met Trp Tyr Trp Gly
245      250      255
Pro Ser Leu Tyr Ser Ile Leu Ser Pro Phe Leu Pro Leu Leu Pro Ile
260      265      270
Phe Phe Cys Leu Trp Val Tyr Ile
275      280

```

```

<210> 60
<211> 30
<212> DNA
<213> hepatitis

```

```

<400> 60
tatgactacc gctcaaggaa cctctatgta 30

```

```

<210> 61
<211> 59
<212> DNA
<213> hepatitis

```

```

<400> 61
accatgcaaa cctgtatgac taccgctcaa ggaacctcta tgtatccctc atgttggtg 59

```

```

<210> 62
<211> 60
<212> DNA
<213> hepatitis

```

```

<400> 62
accctgcagg acctgtatga ctaccgctca aggaacctct atgtatccct catgttgctg 60

```

```

<210> 63
<211> 60
<212> DNA
<213> hepatitis

```

Sequence_Listing

<400> 63
caattgcaga caatgtatga ctaccgctca aggaacctct atgtatcctt actgttggtg 60

<210> 64
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> vector

<400> 64
gcagctcctt gtcctaaca g 21

<210> 65
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> vector

<400> 65
gtatcacgag gccctttcgt c 21

<210> 66
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> vector

<400> 66
gctgacagac taacagactg 20

<210> 67
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> vector

<400> 67
aacagatggc tggcaactag 20