

2015-02-23_UTI-5001-WO_Sequence_Listing_txt
SEQUENCE LISTING

<110> TAKEDA CALIFORNIA, INC.

<120> UTI FUSION PROTEINS

<130> UTI-5001-WO

<140>

<141>

<150> 61/943,617

<151> 2014-02-24

<160> 48

<170> PatentIn version 3.5

<210> 1

<211> 375

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic
polypeptide"

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Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Gly
130 135 140

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Ser Gly Gly Gly Gly Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
145 150 155 160

Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
165 170 175

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
180 185 190

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
195 200 205

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
210 215 220

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
225 230 235 240

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
245 250 255

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
260 265 270

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
275 280 285

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
290 295 300

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
305 310 315 320

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
325 330 335

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
340 345 350

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
355 360 365

Ser Leu Ser Leu Ser Pro Gly
370 375

<210> 2

<211> 1125

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 2

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cgg tacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg      180
ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc      240
gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc      300
gacgccgtga agggcaaagt cgtgctgttc ccctatggcg gctgccaggg aaatggaaac      360
aagttctact ccgagaaaga atgccgagag tactgtggcg tgccaggcga cggggatgag      420
gaactgctgg gatcaggcgg cggaggcgac aagaccata cctgtccacc ttgccctgcc      480
cccgagctgc tgggaggacc ttctgtgttc ctgttcccc caaagcccaa ggacaccctg      540
atgatctccc ggaccctga agtgacctgc gtggtggtgg atgtgtcca cgaggatccc      600
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aagaccacc cccctgtgct ggactccgac ggctcattct tcctgtactc caagctgaca     1020
gtggacaagt cccggtggca gcagggaac gtgttctcct gtcctgtgat gcacgaggcc     1080
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<210> 3

<211> 375

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 3

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2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
130 135 140

Glu Pro Lys Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
145 150 155 160

Pro Glu Leu Leu Gly Gly Ser Ser Val Phe Leu Phe Pro Pro Lys Pro
165 170 175

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
180 185 190

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
195 200 205

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
210 215 220

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
225 230 235 240

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
245 250 255

Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
260 265 270

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
275 280 285

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
290 295 300

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
305 310 315 320

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
325 330 335

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
340 345 350

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
355 360 365

Ser Leu Ser Leu Ser Pro Gly
370 375

<210> 4

<211> 1125

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 4

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aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc	120
cgggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg	180
ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc	240
gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc	300
gacgccgtga agggcaaata cgtgctgttc ccctatggcg gctgccaggg aaatggaaac	360
aagttctact ccgagaaaga atgccgagag tactgtggcg tgccaggcga cggggatgag	420
gaactgctgc gggagcccaa atcttccgac aagaccata cctgtccacc ttgccctgcc	480
cccgagctgc tgggaggatc ctctgtgttc ctgttcccc caaagcccaa ggacaccctg	540
atgatctccc ggaccctga agtgacctgc gtggtggtgg atgtgtcca cgaggatccc	600
gaagtgaagt tcaattggtg cgtggacggc gtggaagtgc acaacgcaa gaccaagccc	660

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

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ttctaccctt ccgatatcgc cgtggaatgg gagtccaacg gccagcctga gaacaactac	960
aagaccaccc cccctgtgct ggactccgac ggctcattct tcctgtactc caagctgaca	1020
gtggacaagt cccggtggca gcagggcaac gtgttctcct gctccgtgat gcacgaggcc	1080
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<210> 5

<211> 370

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 5

Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val	
1 5 10 15	

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala	
20 25 30	

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser	
35 40 45	

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn	
50 55 60	

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala	
65 70 75 80	

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln	
85 90 95	

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr	
100 105 110	

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys	
115 120 125	

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg	
130 135 140	

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Lys Ser Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly
 145 150 155 160
 Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
 165 170 175
 Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
 180 185 190
 Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Met Glu Val His
 195 200 205
 Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
 210 215 220
 Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys
 225 230 235 240
 Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu
 245 250 255
 Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
 260 265 270
 Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
 275 280 285
 Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
 290 295 300
 Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met
 305 310 315 320
 Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
 325 330 335
 Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
 340 345 350
 Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
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 Gly Lys
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<210> 6
 <211> 1110

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 6

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cggctacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg	180
ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc	240
gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc	300
gacgccgtga agggcaaagt cgtgctgttc ccctatggcg gctgccaggg aaatggaaac	360
aagttctact ccgagaaaga atgccgcgag tactgtggcg tgccaggcga cggggatgag	420
gaactgctgc ggaaatcctg tgtcagagtgc ccaccgtgcc cagcaccacc tgtggcagga	480
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tacgtggacg gcatggaggt gcataatgcc aagacaaagc cacgggagga gcagttcaac	660
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aaaaccaaag ggcagccccg agaaccacag gtgtacaccc tgcccccatc ccgggaggag	840
atgaccaaga accaggtcag cctgacctgc ctgggtcaaag gcttctaccc cagcgacatc	900
gccgtggagt gggagagcaa tgggcagccg gagaacaact acaagaccac acctcccatg	960
ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcaggtgg	1020
cagcagggga acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacaca	1080
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<210> 7

<211> 370

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 7

Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
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2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
130 135 140

Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val Ala Gly
145 150 155 160

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
165 170 175

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
180 185 190

Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Met Glu Val His
195 200 205

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Phe Arg
210 215 220

Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn Gly Lys
225 230 235 240

Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Pro Ile Glu
245 250 255

Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
260 265 270

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
275 280 285

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
290 295 300

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Met
305 310 315 320

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
325 330 335

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
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Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
355 360 365

Gly Lys
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<210> 8
<211> 1110
<212> DNA
<213> Artificial Sequence

<220>
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gaggtcacgt gcgtgggtgt ggacgtgagc cacgaagacc ccgaggtcca gttcaactgg 600
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agcacgttcc gtgtgggtcag cgtcctcacc gtcgtgcacc aggactggct gaacggcaag 720

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

gagtacaagt gcaaggtctc caacaaaggc ctcccagccc ccatcgagaa aaccatctcc	780
aaaaccaaag ggcagccccg agaaccacag gtgtacaccc tgcccccatc ccgggaggag	840
atgaccaaga accaggtcag cctgacctgc ctgggtcaaag gcttctaccc cagcgacatc	900
gccgtggagt gggagagcaa tgggcagccg gagaacaact acaagaccac acctcccatg	960
ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcagggtgg	1020
cagcagggga acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacaca	1080
cagaagagcc tctccctgtc tccgggtaaa	1110

<210> 9
 <211> 375
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 9
 Ala Val Leu Pro Gln Glu Glu Glu Gly Ala Gly Gly Gly Gln Leu Val
 1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
 20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
 35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
 50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
 65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
 85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
 100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
 115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
 130 135 140

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Glu Pro Lys Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
145 150 155 160

Pro Glu Leu Leu Gly Gly Ser Ser Val Phe Leu Phe Pro Pro Lys Pro
165 170 175

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
180 185 190

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
195 200 205

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
210 215 220

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
225 230 235 240

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
245 250 255

Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
260 265 270

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
275 280 285

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
290 295 300

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
305 310 315 320

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
325 330 335

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
340 345 350

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
355 360 365

Ser Leu Ser Leu Ser Pro Gly
370 375

<210> 10
<211> 1125
<212> DNA

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 10

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cgggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg	180
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gacgccgtga agggcaaagt cgtgctgttc ccctatggcg gctgccaggg aaatggaaac	360
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gaactgctgc gggagcccaa atcttccgac aagaccata cctgtccacc ttgccctgcc	480
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aagaccaccc cccctgtgct ggactccgac ggctcattct tcctgtactc caagctgaca	1020
gtggacaagt cccggtggca gcagggcaac gtgttctcct gctccgtgat gcacgaggcc	1080
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<210> 11

<211> 353

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 11

Glu	Asp	Ser	Cys	Gln	Leu	Gly	Tyr	Ser	Ala	Gly	Pro	Cys	Met	Gly	Met
1				5					10					15	

Thr	Ser	Arg	Tyr	Phe	Tyr	Asn	Gly	Thr	Ser	Met	Ala	Cys	Glu	Thr	Phe
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

20

25

30

Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Val Thr Glu Lys
 35 40 45

Glu Cys Leu Gln Thr Cys Arg Thr Val Ala Ala Cys Asn Leu Pro Ile
 50 55 60

Val Arg Gly Pro Cys Arg Ala Phe Ile Gln Leu Trp Ala Phe Asp Ala
 65 70 75 80

Val Lys Gly Lys Cys Val Leu Phe Pro Tyr Gly Gly Cys Gln Gly Asn
 85 90 95

Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys Arg Glu Tyr Cys Gly Val
 100 105 110

Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg Glu Pro Lys Ser Ser Asp
 115 120 125

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
 130 135 140

Ser Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
 145 150 155 160

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
 165 170 175

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
 180 185 190

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
 195 200 205

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
 210 215 220

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Ser Ile Glu
 225 230 235 240

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

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
 260 265 270

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
275 280 285

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
290 295 300

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
305 310 315 320

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
325 330 335

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
340 345 350

Gly

<210> 12

<211> 1059

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 12

gaggactcct gccagctggg ctactctgcc ggcccttgta tgggcatgac ctcccggtag	60
ttctacaacg gcacctccat ggcctgcgag acattccagt acggcggtg catgggcaac	120
ggcaacaact ttgtgacaga gaaagagtgc ctgcagacct gcagaaccgt ggccgcctgt	180
aacctgccta tcgtgcgggg accctgtcgg gcctttatcc agctgtgggc cttcgacgcc	240
gtgaagggca aatgcgtgct gttcccctat ggcggctgcc agggaaatgg aaacaagttc	300
tactccgaga aagaatgccg cgagtactgt ggcgtgccag gcgacgggga tgaggaactg	360
ctgcgggagc ccaaattctt cgacaagacc catacctgtc caccttgccc tgcccccgag	420
ctgctgggag gatcctctgt gttcctgttc ccccaaagc ccaaggacac cctgatgac	480
tcccggaacc ctgaagtgc ctgcgtggtg gtggatgtgt ccacgagga tcccgaagt	540
aagttcaatt ggtacgtgga cggcgtggaa gtgcacaacg ccaagaccaa gcccagagag	600
gaacagtaca actccaccta ccgggtggtg tccgtgctga ccgtgctgca ccaggattgg	660
ctgaacggca aagagtacaa gtgcaagggtg tccaacaagg ccctgcctgc ctccatcgaa	720
aagaccatct ccaaggccaa gggccagccc cgggaacccc aggtgtacac actgccccct	780
agccgggaag agatgacaaa gaaccaggtg tccctgacct gtctcgtgaa gggattctac	840

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ccctccgata tcgccgtgga atgggagtc aacggccagc ctgagaacaa ctacaagacc 900
 accccccctg tgctggactc cgacggctca ttcttcctgt actccaagct gacagtggac 960
 aagtcccggg ggcagcaggg caacgtgttc tctgtctccg tgatgcacga ggccctgcac 1020
 aaccactaca cccagaagtc cctgtccctg agccccggc 1059

<210> 13
 <211> 253
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 13
 Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
 1 5 10 15

Thr Glu Val Thr Lys Lys Glu Pro Lys Ser Ser Asp Lys Thr His Thr
 20 25 30

Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Ser Ser Val Phe
 35 40 45

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
 50 55 60

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
 65 70 75 80

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
 85 90 95

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
 100 105 110

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
 115 120 125

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

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
 145 150 155 160

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
 165 170 175

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

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

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
210 215 220

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
225 230 235 240

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
245 250

<210> 14
<211> 759
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 14
gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc 60
aagaaagagc ccaaattcttc cgacaagacc catacctgtc caccttgccc tgcccccgag 120
ctgctgggag gatcctctgt gttcctgttc ccccaaagc ccaaggacac cctgatgatc 180
tcccggaccc ctgaagtgac ctgctgtggtg gtggatgtgt cccacgagga tcccgaagtg 240
aagttcaatt ggtacgtgga cggcgtggaa gtgcacaacg ccaagaccaa gccagagag 300
gaacagtaca actccaccta ccgggtggtg tccgtgctga ccgtgctgca ccaggattgg 360
ctgaacggca aagagtacaa gtgcaagggtg tccaacaagg ccctgcctgc ctccatcgaa 420
aagaccatct ccaaggccaa gggccagccc cggaacccc aggtgtacac actgccccct 480
agccgggaag agatgacaaa gaaccagggtg tccctgacct gtctcgtgaa gggattctac 540
ccctccgata tcgccgtgga atgggagtcc aacggccagc ctgagaacaa ctacaagacc 600
acccccctg tgctggactc cgacggctca ttcttctgt actccaagct gacagtggac 660
aagtcccggt ggcagcaggg caacgtgttc tctgtctcg tgatgcacga ggccctgcac 720
aaccactaca cccagaagtc cctgtccctg agccccggc 759

<210> 15
<211> 384
<212> PRT
<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 15

Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Gly
130 135 140

Gly Gly Gly Ser Gly Gly Gly Gly Ser Glu Pro Lys Ser Ser Asp Lys
145 150 155 160

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Ser
165 170 175

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
180 185 190

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
195 200 205

Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
210 215 220

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Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
225 230 235 240

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
245 250 255

Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Ser Ile Glu Lys
260 265 270

Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
275 280 285

Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr
290 295 300

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
305 310 315 320

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
325 330 335

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
340 345 350

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
355 360 365

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
370 375 380

<210> 16

<211> 1152

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 16

gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc	60
aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc	120
cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg	180
ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc	240
gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc	300
gacgccgtga agggcaaata cgtgctgttc ccctatggcg gctgccaggg aaatggaaac	360

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```

aagttctact ccgagaaaga atgccgag tactgtggcg tgccaggcga cggggatgag 420
gaactgctgg gaggtggtgg atcaggtggc ggaggatcag agcccaaadc ttccgacaag 480
accatacct gtccaccttg ccctgcccc gagctgctgg gaggatcctc tgtgttcctg 540
ttccccccaa agcccaaagga caccctgatg atctcccga cccctgaagt gacctgcgtg 600
gtggtggatg tgtcccacga ggatcccgaa gtgaagttca attggtacgt ggacggcgtg 660
gaagtgcaca acgccaagac caagcccaga gaggaacagt acaactccac ctaccgggtg 720
gtgtccgtgc tgaccgtgct gcaccaggat tggctgaacg gcaaagagta caagtgcaag 780
gtgtccaaca aggccctgcc tgcctccatc gaaaagacca tctccaaggc caagggccag 840
ccccgggaac ccaggtgta cacactgccc cctagccggg aagagatgac aaagaaccag 900
gtgtccctga cctgtctcgt gaagggattc taccctccg atatcgccgt ggaatgggag 960
tccaacggcc agcctgagaa caactacaag accaccccc ctgtgctgga ctccgacggc 1020
tcattcttcc tgtactccaa gctgacagtg gacaagtccc ggtggcagca gggcaacgtg 1080
ttctcctgct ccgtgatgca cgaggccctg cacaaccact acaccagaa gtccctgtcc 1140
ctgagccccg gc 1152

```

```

<210> 17
<211> 365
<212> PRT
<213> Artificial Sequence

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```

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
        polypeptide"

```

```

<400> 17
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1          5          10          15

```

```

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20          25          30

```

```

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35          40          45

```

```

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50          55          60

```

```

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65          70          75          80

```

```

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85          90          95

```

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

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
355 360 365

<210> 18
<211> 1095
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

```
<400> 18
gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc      60
aagaaagagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc      120
cgg tacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg      180
ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc      240
gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc      300
gacgccgtga agggcaaagt cgtgctgttc ccctatggcg gctgccaggg aaatggaaac      360
aagttctact ccgagaaaga atgccgagag tactgtggcg tgccaggcga cggggatgag      420
gaactgctgc ggtgtccacc ttgccctgcc cccgagctgc tgggaggatc ctctgtgttc      480
ctgttcccc caaagcccaa ggacaccctg atgatctccc ggaccctga agtgacctgc      540
gtggtggtgg atgtgtccca cgaggatccc gaagtgaagt tcaattggta cgtggacggc      600
gtggaagtgc acaacgcaa gaccaagccc agagaggaac agtacaactc cacctaccgg      660
gtggtgtccg tgctgaccgt gctgcaccag gattggctga acggcaaaga gtacaagtgc      720
aaggtgtcca acaaggccct gcctgcctcc atcgaagaaga ccatctccaa ggccaagggc      780
cagccccggg aacccaggt gtacacactg cccctagcc gggaagagat gacaaagaac      840
caggtgtccc tgacctgtct cgtgaaggga ttctaccct cccgatatcg cgtggaatgg      900
gagtccaacg gccagcctga gaacaactac aagaccaccc cccctgtgct ggactccgac      960
ggctcattct tcctgtactc caagctgaca gtggacaagt cccggtggca gcagggaac      1020
gtgttctcct gtcctgtgat gcacgaggcc ctgcacaacc actacacca gaagtcctg      1080
tccctgagcc ccggc                                         1095
```

<210> 19
<211> 343
<212> PRT
<213> Artificial Sequence

<220>
<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 19

Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
115 120 125

Arg Glu Tyr Cys Gly Val Ser Ser Val Phe Leu Phe Pro Pro Lys Pro
130 135 140

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
145 150 155 160

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
165 170 175

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
180 185 190

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
195 200 205

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
210 215 220

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

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
245 250 255

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
260 265 270

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
275 280 285

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
290 295 300

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
305 310 315 320

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
325 330 335

Ser Leu Ser Leu Ser Pro Gly
340

<210> 20

<211> 1029

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 20

gctgtgctgc ctcaggaaga ggaaggctct ggcggaggcc agctcgtgac cgaagtgacc	60
aagaaagagg actcctgcc a gctgggctac tctgccggcc cttgtatggg catgacctcc	120
cggctacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg	180
ggcaacggca acaactttgt gacagagaaa gagtgccctgc agacctgcag aaccgtggcc	240
gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc	300
gacgccgtga agggcaa atg cgtgctgttc ccctatggcg gctgccaggg aaatggaaac	360
aagttctact ccgagaaaga atgccgcgag tactgtggcg tgcctctgtgt gttcctgttc	420
cccccaaagc ccaaggacac cctgatgatc tcccggaccc ctgaagtgac ctgcgtggtg	480
gtggatgtgt cccacgagga tcccgaagtg aagttcaatt ggtacgtgga cggcgtggaa	540
gtgcacaacg ccaagaccaa gccagagag gaacagtaca actccaccta ccgggtggtg	600
tccgtgctga ccgtgctgca ccaggattgg ctgaacggca aagagtacaa gtgcaagggtg	660
tccaacaagg ccctgcctgc ctccatcgaa aagaccatct ccaaggccaa gggccagccc	720

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cggggaacccc aggtgtacac actgccccct agccgggaag agatgacaaa gaaccaggtg	780
tccctgacct gtctcgtgaa gggattctac ccctccgata tcgccgtgga atgggagtcc	840
aacggccagc ctgagaacaa ctacaagacc accccccctg tgctggactc cgacggctca	900
ttcttcctgt actccaagct gacagtggac aagtcccggg ggcagcaggg caacgtgttc	960
tcctgctccg tgatgcacga ggccctgcac aaccactaca ccagaagtc cctgtccctg	1020
agccccggc	1029

<210> 21
 <211> 375
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 21
 Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
 1 5 10 15

Thr Glu Val Thr Ser Ser Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
 20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
 35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
 50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
 65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
 85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
 100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
 115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
 130 135 140

Glu Pro Lys Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
 145 150 155 160

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Pro Glu Leu Leu Gly Gly Ser Ser Val Phe Leu Phe Pro Pro Lys Pro
165 170 175

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
180 185 190

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
195 200 205

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
210 215 220

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
225 230 235 240

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
245 250 255

Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
260 265 270

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
275 280 285

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
290 295 300

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
305 310 315 320

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
325 330 335

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
340 345 350

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
355 360 365

Ser Leu Ser Leu Ser Pro Gly
370 375

<210> 22

<211> 1125

<212> DNA

<213> Artificial Sequence

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

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<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
        polynucleotide"

<400> 22
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tcctccgagg actcctgcca gctgggctac tctgccggcc cttgtatggg catgacctcc      120
cgggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg      180
ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag aaccgtggcc      240
gcctgtaacc tgcctatcgt gcggggaccc tgtcgggcct ttatccagct gtgggccttc      300
gacgccgtga agggcaaatt cgtgctgttc ccctatggcg gctgccaggg aaatggaaac      360
aagttctact ccgagaaaga atgccgagag tactgtggcg tgccaggcga cggggatgag      420
gaactgctgc gggagcccaa atcttccgac aagaccata cctgtccacc ttgccctgcc      480
cccgagctgc tgggaggatc ctctgtgttc ctgttcccc caaagcccaa ggacaccctg      540
atgatctccc ggaccctga agtgacctgc gtggtggtgg atgtgtccca cgaggatccc      600
gaagtgaagt tcaattggta cgtggacggc gtggaagtgc acaacgcaa gaccaagccc      660
agagaggaac agtacaactc cacctaccgg gtggtgtccg tgctgaccgt gctgcaccag      720
gattggctga acggcaaaga gtacaagtgc aaggtgtcca acaaggccct gcctgcctcc      780
atcgaaaaga ccatctcaa ggccaagggc cagccccggg aaccccaggt gtacacactg      840
ccccctagcc gggaagagat gacaaagaac caggtgtccc tgacctgtct cgtgaagggg      900
ttctaccctt ccgatatcgc cgtggaatgg gagtccaacg gccagcctga gaacaactac      960
aagaccaccc cccctgtgct ggactccgac ggctcattct tcctgtactc caagctgaca     1020
gtggacaagt cccggtggca gcagggcaac gtgttctcct gctccgtgat gcacgaggcc     1080
ctgcacaacc actacacca gaagtccttg tcctgagcc cgggc                          1125

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```

<210> 23
<211> 320
<212> PRT
<213> Artificial Sequence

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```

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
        polypeptide"

<400> 23
Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1          5          10          15

Thr Glu Val Thr Lys Lys Thr Val Ala Ala Cys Asn Leu Pro Ile Val
          20          25          30

```

2015-02-23_UTI-5001-WO_Sequence_Listing_txt

Arg Gly Pro Cys Arg Ala Phe Ile Gln Leu Trp Ala Phe Asp Ala Val
35 40 45

Lys Gly Lys Cys Val Leu Phe Pro Tyr Gly Gly Cys Gln Gly Asn Gly
50 55 60

Asn Lys Phe Tyr Ser Glu Lys Glu Cys Arg Glu Tyr Cys Gly Val Pro
65 70 75 80

Gly Asp Gly Asp Glu Glu Leu Leu Arg Glu Pro Lys Ser Ser Asp Lys
85 90 95

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Ser
100 105 110

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
115 120 125

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
130 135 140

Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
145 150 155 160

Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
165 170 175

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
180 185 190

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

Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
210 215 220

Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr
225 230 235 240

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
245 250 255

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
260 265 270

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
275 280 285

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Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
290 295 300

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

<210> 24
<211> 960
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 24
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aagaaaaccg tggccgcctg taacctgcct atcgtgcggg gaccctgtcg ggcctttatc 120
cagctgtggg ccttcgacgc cgtgaagggc aaatgcgtgc tgttccccta tggcggctgc 180
cagggaaatg gaaacaagtt ctactccgag aaagaatgcc gcgagtactg tggcgtgcca 240
ggcgacgggg atgaggaact gctgcgggag cccaaatcct cgcacaagac ccatacctgt 300
ccaccttgcc ctgccccga gctgctggga ggatcctctg tgttcctggt cccccaaag 360
cccaaggaca ccctgatgat ctcccgacc cctgaagtga cctgcgtggg ggtggatgtg 420
tcccacgagg atcccgaagt gaagttcaat tggtagctgg acggcgaggga agtgcacaac 480
gccaagacca agcccagaga ggaacagtac aactccacct accgggtggg gtccgtgctg 540
accgtgctgc accaggattg gctgaacggc aaagagtaca agtgcaagggt gtccaacaag 600
gccctgcctg cctccatcga aaagaccatc tccaaggcca agggccagcc ccgggaaccc 660
caggtgtaca cactgcccc tagccgggaa gagatgacaa agaaccagggt gtccctgacc 720
tgtctcgtga agggattcta cccctccgat atcgccgtgg aatgggagtc caacggccag 780
cctgagaaca actacaagac cccccccct gtgctggact ccgacggctc attcttcctg 840
tactccaagc tgacagtgga caagtcccgg tggcagcagg gcaacgtggt ctctgtctcc 900
gtgatgcacg aggccctgca caaccactac acccagaagt ccctgtccct gagccccggc 960

<210> 25
<211> 308
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

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<400> 25

Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Glu Pro Lys
65 70 75 80

Ser Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
85 90 95

Leu Gly Gly Ser Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
100 105 110

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
115 120 125

Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val
130 135 140

Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser
145 150 155 160

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
165 170 175

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

Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
195 200 205

Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln
210 215 220

Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
225 230 235 240

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
Page 30

Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
260 265 270

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
275 280 285

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
290 295 300

Leu Ser Pro Gly
305

<210> 26
<211> 924
<212> DNA
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 26
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aagaaagagg actcctgcc a gctgggctac tctgccggcc cttgtatggg catgacctcc 120
cggtacttct acaacggcac ctccatggcc tgcgagacat tccagtacgg cggctgcatg 180
ggcaacggca acaactttgt gacagagaaa gagtgcctgc agacctgcag agagcccaaa 240
tcttccgaca agaccatac ctgtccacct tgccctgccc ccgagctgct gggaggatcc 300
tctgtgttcc tgttcccccc aaagcccaag gacaccctga tgatctcccg gaccctgaa 360
gtgacctgcg tgggtggtgga tgtgtcccac gaggatcccg aagtgaagtt caattggtac 420
gtggacggcg tggaagtgca caacgccaag accaagccca gagaggaaca gtacaactcc 480
acctaccggg tgggtgtccgt gctgaccgtg ctgcaccagg attggctgaa cggcaaagag 540
tacaagtgca aggtgtccaa caaggccctg cctgcctcca tcgaaaagac catctccaag 600
gccaagggcc agccccggga accccaggtg tacacactgc cccctagccg ggaagagatg 660
acaaagaacc aggtgtccct gacctgtctc gtgaagggat tctaccctc cgatatcgcc 720
gtggaatggg agtccaacgg ccagcctgag aacaactaca agaccacccc ccctgtgctg 780
gactccgacg gctcattctt cctgtactcc aagctgacag tggacaagtc ccggtggcag 840
cagggcaacg tgttctcctg ctccgtgatg cagaggcccc tgcacaacca ctacaccag 900
aagtcctgt ccctgagccc cggc 924

<210> 27

<211> 374

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 27

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

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Val Glu Val His Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn
210 215 220

Ser Thr Phe Arg Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp
225 230 235 240

Leu Asn Gly Lys Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro
245 250 255

Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala
260 265 270

Pro Gln Val Tyr Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp
275 280 285

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

Thr Val Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn
305 310 315 320

Thr Gln Pro Ile Met Asp Thr Asp Gly Ser Tyr Phe Val Tyr Ser Lys
325 330 335

Leu Asn Val Gln Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys
340 345 350

Ser Val Leu His Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu
355 360 365

Ser His Ser Pro Gly Lys
370

<210> 28

<211> 1122

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 28

gcagtgtctgc cccaagagag tgaggggtca gggactgagc cactaataac tgggaccctc 60

aagaaagaag actcctgcc a gctcaattac tcagaaggcc cctgcctagg gatgcaagag 120

aggtattact acaacggcgc ttccatggcc tgcgagacct ttcaatatgg gggttgccta 180

ggcaacggca acaacttcac ctctgagaag gactgtctgc agacatgtcg gaccatagcg 240

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gcctgcaatc tccccatagt ccaaggcccc tgccgagcct tcataaagct ctgggcattt	300
gatgcagcac aagggaagtg catccaattc cactacgggg gctgcaaagg caacggcaac	360
aaattctact ctgagaagga atgcaaagag tactgtggag tccctggtga tgggtacgag	420
gaactaatac gcagtaaaat cgtgcctcgg gactgcggct gcaagccctg catctgcacc	480
gtgcccgagg tgtcctccgt gttcatcttc ccaccaagc ccaaggacgt gctgaccatc	540
accctgaccc ccaagtgcac ctgcgtggtg gtggacatct ccaaggacga ccccgagggtg	600
cagttcagtt ggttcgtgga cgacgtggaa gtgcacaccg cccagaccca gcccagagag	660
gaacagttca actccacctt cagatccgtg tccgagctgc ccatcatgca ccaggactgg	720
ctgaacggca aagagttcaa gtgcagagtg aactccgccg ccttcccagc ccccatcgaa	780
aagaccatct ccaagaccaa gggcagaccc aaggcccccc aggtgtacac catcccccca	840
cccaaagaac agatggccaa ggacaaggtg tccctgacct gcatgatcac cgatttcttc	900
ccagaggaca tcaccgtgga atggcagtgg aacggccagc ccgccgagaa ctacaagaac	960
accagccca tcatggacac cgacggctcc tacttcgtgt actccaagct gaacgtgcag	1020
aagtccaact gggaggccgg caacaccttc acctgtagcg tgctgcacga gggcctgcac	1080
aaccaccaca ccgagaagtc cctgtcccac tccccggca ag	1122

<210> 29

<211> 391

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 29

Glu	Pro	Lys	Ser	Ser	Asp	Lys	Thr	His	Thr	Cys	Pro	Pro	Cys	Pro	Ala
1				5					10					15	

Pro	Glu	Leu	Leu	Gly	Gly	Ser	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro
		20						25					30		

Lys	Asp	Thr	Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	Val
		35					40					45			

Val	Asp	Val	Ser	His	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val
	50					55					60				

Asp	Gly	Val	Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln
65					70					75				80	

Tyr	Asn	Ser	Thr	Tyr	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His	Gln

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
100 105 110

Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
115 120 125

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
130 135 140

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
145 150 155 160

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
165 170 175

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
180 185 190

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
195 200 205

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
210 215 220

Ser Leu Ser Leu Ser Pro Gly Lys Gly Gly Gly Gly Ser Gly Gly Gly
225 230 235 240

Gly Ser Gly Gly Gly Gly Ser Ala Val Leu Pro Gln Glu Glu Glu Gly
245 250 255

Ser Gly Gly Gly Gln Leu Val Thr Glu Val Thr Lys Lys Glu Asp Ser
260 265 270

Cys Gln Leu Gly Tyr Ser Ala Gly Pro Cys Met Gly Met Thr Ser Arg
275 280 285

Tyr Phe Tyr Asn Gly Thr Ser Met Ala Cys Glu Thr Phe Gln Tyr Gly
290 295 300

Gly Cys Met Gly Asn Gly Asn Asn Phe Val Thr Glu Lys Glu Cys Leu
305 310 315 320

Gln Thr Cys Arg Thr Val Ala Ala Cys Asn Leu Pro Ile Val Arg Gly
325 330 335

Pro Cys Arg Ala Phe Ile Gln Leu Trp Ala Phe Asp Ala Val Lys Gly
 340 345 350

Lys Cys Val Leu Phe Pro Tyr Gly Gly Cys Gln Gly Asn Gly Asn Lys
 355 360 365

Phe Tyr Ser Glu Lys Glu Cys Arg Glu Tyr Cys Gly Val Pro Gly Asp
 370 375 380

Gly Asp Glu Glu Leu Leu Arg
 385 390

<210> 30

<211> 1173

<212> DNA

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic polynucleotide"

<400> 30

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ggaggat	cct	ctgtgt	tctct	gttcccc	cca	aagccca	aagg	acaccct	gat	gatctc	cccg	120
accctga	aag	tgacct	gcgt	ggtggt	ggat	gtgtccc	acg	aggatcc	cga	agtga	agttc	180
aattggt	acg	tggacg	ggcgt	ggaagt	gcac	aacgcca	aaga	ccaagcc	cag	agagga	acag	240
tacaact	cca	cctacc	gggt	ggtgtc	cgtg	ctgacc	gtgc	tgcacc	agga	ttggct	gaac	300
ggcaaag	agt	acaagt	gcaa	ggtgtc	caac	aaggcc	ctgc	ctccat	cgaaa	agacc		360
atctcca	aagg	ccaagg	ggcca	gccccg	ggaa	ccccagg	tgt	acacact	gcc	ccctag	ccgg	420
gaagaga	tga	caaaga	acca	ggtgtc	ccctg	acctgt	ctcg	tgaagg	gatt	ctaccc	ctcc	480
gatatcg	ccg	tggaat	ggga	gtcca	acggc	cagcct	gaga	acaact	taca	gaccac	cccc	540
cctgtgt	ctgg	actccg	acgg	ctcatt	cttc	ctgtact	cca	agctga	cagt	ggaca	agttc	600
cggtggc	agc	agggca	acgt	gttctc	ctgc	tccgtg	atgc	acgagg	ccct	gcaca	accac	660
tacacc	caga	agtcct	gtgc	cctgag	cccc	ggcaagg	gag	gtggtg	gatc	aggagg	tgga	720
ggttccg	gtg	gcggagg	atc	agctgt	gctg	cctcag	gaag	aggaagg	ctc	tggcgg	aggc	780
cagctcg	tga	ccgaagt	gac	caagaa	agag	gactcct	gcc	agctggg	cta	ctctgc	ccggc	840
ccttgta	tgg	gcatgac	ctc	ccggtac	cttc	tacaac	ggca	cctccat	ggc	ctgca	gagaca	900
ttccagt	acg	gcggct	gcat	gggca	acggc	aacaact	tttg	tgacaga	gaa	agagtg	cctg	960
cagacct	gca	gaaccgt	ggc	cgcctg	taac	ctgcct	atcg	tgcgggg	acc	ctgtcg	gggcc	1020
tttatcc	agc	tgtgggc	ctt	cgacgc	cgtg	aagggc	aaat	gcgtgc	tgtt	ccccta	tggc	1080

ggctgccagg gaaatggaaa caagttctac tccgagaaag aatgccgcga gtactgtggc 1140
 gtgccaggcg acggggatga ggaactgctg cgg 1173

<210> 31
 <211> 147
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 31
 Ala Val Leu Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val
 1 5 10 15

Thr Glu Val Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala
 20 25 30

Gly Pro Cys Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser
 35 40 45

Met Ala Cys Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn
 50 55 60

Asn Phe Val Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala
 65 70 75 80

Ala Cys Asn Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln
 85 90 95

Leu Trp Ala Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr
 100 105 110

Gly Gly Cys Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys
 115 120 125

Arg Glu Tyr Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg
 130 135 140

Phe Ser Asn
 145

<210> 32
 <211> 352
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source

<223> /note="Description of Artificial Sequence: Synthetic polypeptide"

<400> 32

Met Arg Ser Leu Gly Ala Leu Leu Leu Leu Leu Ser Ala Cys Leu Ala
1 5 10 15

Val Ser Ala Gly Pro Val Pro Thr Pro Pro Asp Asn Ile Gln Val Gln
20 25 30

Glu Asn Phe Asn Ile Ser Arg Ile Tyr Gly Lys Trp Tyr Asn Leu Ala
35 40 45

Ile Gly Ser Thr Cys Pro Trp Leu Lys Lys Ile Met Asp Arg Met Thr
50 55 60

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

Met Thr Ser Thr Arg Trp Arg Lys Gly Val Cys Glu Glu Thr Ser Gly
85 90 95

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

Lys Trp Asn Ile Thr Met Glu Ser Tyr Val Val His Thr Asn Tyr Asp
115 120 125

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

Thr Ile Thr Ala Lys Leu Tyr Gly Arg Ala Pro Gln Leu Arg Glu Thr
145 150 155 160

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

Asp Ser Ile Phe Thr Met Ala Asp Arg Gly Glu Cys Val Pro Gly Glu
180 185 190

Gln Glu Pro Glu Pro Ile Leu Ile Pro Arg Val Arg Arg Ala Val Leu
195 200 205

Pro Gln Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val Thr Glu Val
210 215 220

Thr Lys Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala Gly Pro Cys
225 230 235 240

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Met Gly Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser Met Ala Cys
245 250 255

Glu Thr Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Val
260 265 270

Thr Glu Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala Ala Cys Asn
275 280 285

Leu Pro Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln Leu Trp Ala
290 295 300

Phe Asp Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr Gly Gly Cys
305 310 315 320

Gln Gly Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys Arg Glu Tyr
325 330 335

Cys Gly Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg Phe Ser Asn
340 345 350

<210> 33
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 33
Ser Gly Gly Gly Gly Ser
1 5

<210> 34
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 34
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10

<210> 35
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic peptide"
 <400> 35
 Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 1 5 10 15

<210> 36
 <211> 21
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic peptide"
 <400> 36
 Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 1 5 10 15

Gly Gly Gly Gly Ser
 20

<210> 37
 <211> 26
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic peptide"
 <400> 37
 Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 1 5 10 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 20 25

<210> 38
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> source
 <223> /note="Description of Artificial Sequence: Synthetic polypeptide"
 <400> 38
 Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 1 5 10 15

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<220>  
<221> source  
<223> /note="Description of Artificial Sequence: Synthetic  
polypeptide"
```

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly

20 25 30

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<210> 40
<211> 41
<212> PRT
<213> Artificial Sequence
```

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<220>  
<221> source  
<223> /note="Description of Artificial Sequence: Synthetic  
polypeptide"
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Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly

```
<210> 41
<211> 46
<212> PRT
<213> Artificial Sequence
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<220>  
<221> source  
<223> /note="Description of Artificial Sequence: Synthetic  
polypeptide"
```

1	5	10	15
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Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
35 40 45

```
<210> 42
<211> 51
<212> PRT
<213> Artificial Sequence
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<220>  
<221> source  
<223> /note="Description of Artificial Sequence: Synthetic  
polypeptide"
```

<400> 42
Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly

20 25 30

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly

35 40 45

Gly Gly Ser
50

```
<210> 43
<211> 16
<212> PRT
<213> Artificial Sequence
```

```
<220>
<221> source
<223> /note="Description of Artificial Sequence: Synthetic
      peptide"
```

<400> 43
Gly Ser Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
1 5 10 15

```
<210> 44
<211> 19
<212> PRT
<213> Artificial Sequence
```

```
<220>  
<221> source  
<223> /note="Description of Artificial Sequence: Synthetic  
peptide"
```

<400> 44

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

Val His Ser

<210> 45

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 45

Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg Glu Pro Lys Ser Ser Asp
1 5 10 15

Lys Thr His

<210> 46

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 46

Pro Gly Asp Gly Asp Glu Glu Leu Leu Gly Ser Gly Gly Gly Gly Asp
1 5 10 15

Lys Thr His

<210> 47

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 47

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

<210> 48

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<221> source

<223> /note="Description of Artificial Sequence: Synthetic peptide"

<400> 48

Gly	Gly	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser	Gly	Gly	Gly	Gly	Ser
1				5					10					15