

UTFC_P1231WO_ST25
SEQUENCE LISTING

<110> BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM

<120> CHIMERIC ANTIGEN RECEPTORS AND METHODS OF MAKING

<130> UTFC.P1231WO

<140> UNKNOWN

<141> 2015-02-16

<150> 61/940,339

<151> 2014-02-14

<160> 59

<170> PatentIn version 3.5

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<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

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36

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<213> Artificial sequence

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<223> Synthetic oligonucleotide

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<220>

<223> Synthetic oligonucleotide

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<211> 1491

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 4

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<211> 1488

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 5

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<211> 1380

<212> DNA

<213> Artificial sequence

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<223> Synthetic oligonucleotide

<400> 6

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<210> 7

<211> 1383

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<212> DNA

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<220>

<223> Synthetic oligonucleotide

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 <211> 720
 <212> DNA
 <213> Artificial sequence

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 <223> Synthetic oligonucleotide

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<210> 9
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 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 9
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<210> 10

<211> 723

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

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<211> 735
<212> DNA
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<220>
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atccccagca gattcagcgg cagcggctcc ggaaccgact tcacctgac catcagcagc 240
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ttcggcggag gcaccaagct ggaaatcaag ggcagcacct ccggcagcgg caagcctggc 360
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aaacctggcg cccctgtgaa gctgagctgc aaggccagcg gctacacctt caccaactac 480
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cccagcgaca gcgagagcca ctacaaccag aagttcaagg acaaggccac actgaccgtg 600
gacaagagca gcaacaccgc ctacatccag ctgtcttctc tgaccagcga ggacagcgcc 660
gtgtactatt gcgccagata cgactacgac gacaccatgg actactgggg ccagggcacc 720
agcgtgaccg tgtct 735

<210> 12
<211> 810
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 12
atggattttc aggtgcagat tttcagcttc ctgctaata gtcctcagt cataatgtct 60

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agaatggccc aggtgcaact gcagcagtca ggggctgagc tggctagacc tggggcttca	120
gtgaagatgt cctgcaaggc ttctggctac acctttacta cctacacaat acactgggta	180
agacggaggc ctggacacga tctggaatgg attggataca ttaatcctag cagtggatgt	240
tctgactaca atcaaaactt caagggaag accacattga ctgcagacaa gtcctccaac	300
acagcctaca tgcaactgaa cagcctgaca tctgaggact ctgcggtcta ttactgtgca	360
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aacgtcacct acaaggccag tcagaatgtg ggtactaatg tagcctgggt tcaacaaaaa	600
ccagggaat ctctaaagt tctgatttac tcggcatctt accgatacag tggagtccct	660
gatcgcttca caggcagtgg atctggaaca gatttcactc tcaccatcag caatgtgcag	720
tctgaagact tggcagagta tttctgtcag caatatcaca cctatcctct cacgttcgga	780
gggggcacca agctggaaat caaacggtcg	810

<210> 13

<211> 735

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 13

caggtgcagc tgggtgcagag cggcggcggc ctggtgcagc atggcggcag cctgcgctg	60
agctgcgcg cgagcggctt tacctttagc agctatgaaa tgaactgggt gcgccaggcg	120
ccgggcaaag gcctggaatg ggtgagcggc attagcggca gcggcggcag cacctattat	180
gcggatagcg tgaaaggccg ctttaccctt attagccgcg ataacagcaa aaacaccctg	240
tatctgcaga tgaaccgcct gcgcgcggaa gataccgcgg tgtattattg cgcgcgcgat	300
aacggctggg aactgaccga ttggtatttt gatctgtggg gccgcggcac catggtgacc	360
gtgagcagcg gcggcggcgg cagcggcggc ggcggcagcg gcggcggcgg cagcgatatt	420
cagatgaccc agagcccag caccctgagc gcgagcattg gcgatcgcgt gaccattacc	480

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tgccgcgcga gcgaaggcat ttatcattgg ctggcgtggt atcagcagaa accgggcaaa	540
gcgccgaaac tgctgattta taaagcgagc agcctggcga gcggcgcgcc gagccgcttt	600
agcggcagcg gcagcggcac cgattttacc ctgaccatta gcagcctgca gccggatgat	660
tttgcgacct attattgcca gcagtatagc aactatccgc tgacctttgg cggcggcacc	720
aaactggaaa ttaaa	735

<210> 14
 <211> 747
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 14	
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atcagctgca gaagcagcca gagcctgctg aagaacaacg gcaacacctt cctgcactgg	120
tatctgcaga agtccggcca gtccccaag ctgctgatct acaaggtgtc caaccggctg	180
agcggcgtgc ccgatagatt ttctggctct ggcagcggca cctacttcac cctgaagatc	240
agccgggtgg aagccgagga cctgggcgtg tacttctgta gccagagcac ccacatccct	300
tacaccttcg gcggaggcac caagctggaa ctgaagcggg gcagcacctc cggcagcggc	360
aagcctggca gcggcgaggg cagcaccaag ggcgaagtga agctggtgga aagcggcgga	420
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accgactact acatgacctg ggtgcgccag ccccccagaa aggctctgga atggctgggc	540
ttcatccgga accgggcca cggctacacc accgagtaca accctagcgt gaagggccgg	600
ttcacatca gccgggacaa cagccagagc atcctgtacc tgcagatgaa caccctgcgg	660
accgaggaca gcgccaccta ctactgtgct cgggtgtcca actgggcctt cgactattgg	720
ggccagggca ccaccctgac cgtgtct	747

<210> 15
 <211> 759
 <212> DNA
 <213> Artificial sequence

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<220>

<223> Synthetic oligonucleotide

<400> 15

gacatcaaga tgaccagag cccagctct atgtacgcca gcctgggcga gcgcgtgacc	60
atcacctgta aagccagccc cgacatcaac agctacctga gctggttcca gcagaagccc	120
ggcaagagcc ccaagaccct gatctaccgg gccaacagac tgggtggatgg cgtgcccagc	180
agattcagcg gcggaggctc tggccaggac tacagcctga ccatcaactc cctggaatac	240
gaggacatgg gcatctacta ctgcctgcag tacgacgagt tcccctacac cttcggaggc	300
ggcaccaagc tggaaatgaa gggcagcaca agcggcagcg gcaagcctgg atctggcgag	360
ggaagcacca agggcgaagt gaagctggtg gaatctggcg gcggactcgt gaagcctggc	420
ggctctctga agctgtcttg tgccgccagc ggcttcacct tcagcagcta cgccatgagc	480
tgggtgcggc agatccccga gaagcggctg gaatgggtgg ccagcatcag cagaggcgga	540
accacctact accccgactc tgtgaagggc cggttcacca tcagccggga caacgtgcgg	600
aacatcctgt acctgcagat gagcagcctg cggagcgagg acaccgccat gtactactgt	660
ggcagatacg actacgacgg ctactatgcc atggattact ggggccaggg caccagcgtg	720
accgtgtcta gccaggaac ctccgtgaca gtgtccagc	759

<210> 16

<211> 759

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 16

gaagtacatc tggttgagtc tgggtggagac ttagtgaagc ctggagggtc cctgaaactc	60
tcctgtgcag cctctggatt cactttcagt cactatggca tgtcttgggt tcgccagact	120
ccagacaaga ggctggagtg ggtcgcaacc attggtagtc gtggtactta caccactat	180
ccagacagtg tgaaggagc attcaccatc tccagagaca atgacaagaa cgccctgtac	240
ctgcaaatga acagtctgaa gtctgaagac acagccatgt attactgtgc aagaagaagt	300
gaattttatt actacggtaa tacctactat tactctgcta tggactactg gggccaaggc	360

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accacggtca ccgtctcctc aggtggcggt ggcagcggcg gtggtgggtc cggtggcggc	420
ggatctgaca tcgtactcac acagtctcca gctagcctgg ctgtatctct aggacagagg	480
gccaccatct cctgcagagc cagcgaaagt gttgataatt atggcttttag ttttatgaac	540
tggttccaac agaaaccagg acagccaccc aaactcctca tctatgctat atccaaccga	600
ggatccggggg tccctgccag gtttagtggc agtgggtctg ggacagactt cagcctcaac	660
atccatcctg tagaggagga tgatcctgca atgtatttct gtcagcaaac taaggaggtt	720
ccgtggacgt tcggagctgg caccaagctc gagatcaaa	759

<210> 17
 <211> 543
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 17	
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cggaacaaaag agaaccacag ccagcccacc cagagcagcc tggaagatag cgtgaccccc	120
accaaggccg tgaaaaccac cggcgtgctg tccagcccct gccctcccaa ctggatcatc	180
tacgagaaga gctgctacct gttcagcatg agcctgaaca gctgggacgg cagcaagcgg	240
cagtgtggc agctgggcag caacctgctg aagatcgaca gcagcaacga gctgggcttc	300
atcgtgaagc aggtgtccag ccagcccagc aactccttct ggatcggcct gagcaggccc	360
cagaccgagg tgccctggct gtgggaggac ggctccacct tcagctcaa cctgttccag	420
atccggacca ccgccacaca ggaaaacccc agccccaact gcgtgtggat ccacgtgagc	480
gtgatctacg accagctgtg cagcgtgccc agctacagca tctgcgagaa gaaattcagc	540
atg	543

<210> 18
 <211> 987
 <212> DNA
 <213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 18

atggattttc aggtgcagat tttcagcttc ctgctaataca gtgcctcagt cataatgtct	60
agacaattcc aagtgaagct ggaggagtct ggggctgagc ttgtgaggcc aggggccttg	120
gtcaagttgt cctgcaaaac ttctggcttc aacattaaag actacttttt acactgggtg	180
agacagaggc ctgaccaggg cctggagtgg attggatgga ttaatcctga taatggtaat	240
actgtttatg acccgaagct tcagggcacg gccagtttaa cagcagacac atcctccaac	300
acagtctact tgcagctcag cggcctgaca tctgaggaca ctgccgtcta tttctgtact	360
cggagggact atacattatga aaaggctgct ctggactact ggggtcaggg agcctcagtc	420
atcgtctcct cagccaaaac aacagcccca tcggtctatc cactggcccc tgtgtgtgga	480
gatacaactg gtcctcgggt gactctagga tgcctgggtca agagatctgg cgggtggcgggt	540
tctgggtggcg gtggctccgg cgggtggcgggt tctggagctc gacattgtgc tcacacagac	600
tccaaatcca tgtccatgtc agtaggagag agggtcacct tgacctgcaa ggccagtgag	660
aatgtgggta cttatgtttc ctggatatcaa cagaaaccag agcagtctcc taaactgctg	720
atatacgggg catccaaccg gtacactggg gtccccgatc gcttcacagg cagtggatct	780
gcaacagatt tcactctgac catcagcagt gtgcaggctg aagaccttgc agattatcac	840
tgtggacagg gttacagcta tccgtacacg ttcggagggg ggaccaagct ggaaataaaa	900
cgggctgatg ctgcaccaac ttatccgcat caccatcatc atcatcatct gcagatatcc	960
agcacagtgg cggccgctcg agtctag	987

<210> 19

<211> 753

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 19

ctgatcccca tggcccaggt gaagctgcag cagagcggcc ctgatctggt gaagcctggc	60
gccagcgtga agatcagctg caaggccagc ggctacagct tcaccggcta ctacatgcac	120
tgggtgaaac agagccacgg caagagcctg gaatggatcg gcagagtga ccccaatagc	180

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ggcggcacca gctacaacca gaagttcaag gacaaggcca tcctgaccgt ggacaagagc	240
agcagcaccg cctacatgga actgcggagc ctgaccagcg aggacagcgc cgtgtactac	300
tgcgcccggc ccaagggcaa ctactttctac gccatggact actggggcca gggcaccacc	360
gtgaccgtgt ctagcagcgg cggaggaagc ggagggggag gatctggcgg aggcggcagc	420
gatatcgagc tgaccagag ccctagcagc ctggccgtgt cactgggcca gagagccacc	480
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cagcagaagc ccggccagcc ccccaagttc ctgatctacc gggccagcaa cctggaaagc	600
ggcatccccg ccagattttc cggcagcggc agcagaaccg acttcaccct gaccatcaac	660
cccgtggaga cagacgacgt ggccatctac tactgccagc agagcaacga ggaccctccc	720
acctttggcg gaggcaccaa gctggaactg aag	753

<210> 20

<211> 732

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 20

gaagtgcagc tggtggaatc tggcggcgga ctggtgcagc ctggcggatc tctgagactg	60
agctgtgccg ccagcggcct cgacttcagc cggtactgga tgagctgggt gcgccaggcc	120
cctggcaaag gcctggaatg gatcggcgag atcaaccccg acagcagcac catcaactac	180
gccccagcc tgaaggacaa gttcatcatc agccgggaca acgccaagaa cagcctgtac	240
ctgcagatga actccctgcg ggccgaggac accgccgtgt actattgcgc cagacccgac	300
ggcaactact ggtacttcga cgtgtggggc cagggcaccc tcgtgacagt gtctggcagc	360
acaagcggct ctggcaagcc tggatctggc gagggctcta ccaagggcga catccagatg	420
accagagcc ccagcagcct gtctgccagc gtgggcgaca gagtgaccat cacatgcaag	480
gccagccagg acgtgggaat cgccgtggcc tggtatcagc agaaacccgg caaggtgccc	540
aagctgctga tctactgggc cagcaccaga cacaccggcg tgcccgatag attttccggc	600
agcggctccg gcaccgactt caccctgaca atcagctccc tgcagcctga ggacgtggcc	660

UTFC_P1231WO_ST25

acctactact gccagcagta cagcagctac ccctacacct tcggacaggg caccaaggtg 720
gaaatcaagc gg 732

<210> 21
<211> 720
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 21
caggtgcagc tgcagcagtc tggccccgag ctggaaaaac ctggcgcctc cgtgaagatc 60
agctgcaagg ccagcggcta cagcttcacc ggctacacca tgaactgggt caagcagagc 120
cacggcaaga gcctggaatg gatcggcctg atcacccctt acaacggcgc cagcagctac 180
aaccagaagt tccggggcaa ggccaccctg accgtggaca agtctagcag caccgcctac 240
atggacctgc tgagcctgac cagcaggagc agcgcctgtg acttctgtgc cagaggcggc 300
tacgacggca gaggcttcga ttattggggc cagggcacca ccgtgacagt gtctagcgga 360
gtgggaggat ctggcggagg cggaagtggc ggagggggat ctgatatcga gctgaccag 420
agccccgcca tcatgtctgc tagccctggc gagaaagtga ccatgacctg cagcgccagc 480
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atctacgaca caagcaagct ggcctctggc gtgcccggca gattttctgg cagcggctcc 600
ggcaacagct actccctgac aatcagcagc gtggaagccg aggacgacgc cacctactac 660
tgccagcagt ggagcggcta ccccctgact tttggagccg gcaccaagct ggaaatcaag 720

<210> 22
<211> 60
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 22
agccaggaag agatgaccaa gaaccaggtg tccctgacct gcctcgtgaa gggcttctac 60

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<210> 23
 <211> 141
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 23
 aagcctacca caaccctgc cccagacct cctacacccg cccctacaat tgccagccag 60
 cctctgtctc tgaggccga ggctttaga cctgctgctg gcggagccgt gcacaccaga 120
 ggactggatt tcgctgcga c 141

<210> 24
 <211> 696
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 24
 agcgagagca agtacggccc tccctgcccc ccttgccctg ccccgagtt cctgggcgga 60
 cccagcgtgt tcctgttccc cccaagccc aaggacaccc tgatgatcag ccggaccccc 120
 gaggtgacct gtgtggtggt ggacgtgtcc caggaggacc ccgaggtcca gttcaactgg 180
 tacgtggacg gcgtggaggt gcacaacgcc aagaccaagc cccgggagga gcagttcaat 240
 agcacctacc gggtaggtgtc cgtgctgacc gtgctgcacc aggactggct gaacggcaag 300
 gaatacaagt gtaaggtgtc caacaagggc ctgcccagca gcatcgagaa aaccatcagc 360
 aaggccaagg gccagcctcg ggagccccag gtgtacaccc tgccccctag ccaagaggag 420
 atgaccaaga atcaggtgtc cctgacctgc ctggtgaagg gcttctaccc cagcgacatc 480
 gccgtggagt gggagagcaa cggccagccc gagaacaact acaagaccac ccccctgtg 540
 ctggacagcg acggcagctt cttcctgtac agcaggctga ccgtggacaa gagccggtgg 600
 caggagggca acgtctttag ctgctccgtg atgcacgagg ccctgcacaa cactacacc 660
 cagaagagcc tgtccctgag cctgggcaag atgttc 696

<210> 25
 <211> 60

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<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 25

agccaggaag agatgaccaa gaaccaggtg tccctgacct gcctcgtgaa gggcttctac 60

<210> 26

<211> 696

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 26

agcgagagca agtacggccc tccctgcccc ccttgccctg ccccgagtt cctgggcgga 60

cccagcgtgt tcctgttccc cccaagccc aaggacaccc tgatgatcag ccggaccccc 120

gaggtgacct gtgtggtggt ggacgtgtcc caggaggacc ccgaggtcca gttcaactgg 180

tacgtggacg gcgtggaggt gcacaacgcc aagaccaagc cccgggagga gcagttccag 240

agcacctacc ggggtggtgtc cgtgctgacc gtgctgcacc aggactggct gaacggcaag 300

gaatacaagt gtaaggtgtc caacaagggc ctgcccagca gcatcgagaa aaccatcagc 360

aaggccaagg gccagcctcg ggagccccag gtgtacaccc tgccccctag ccaagaggag 420

atgaccaaga atcaggtgtc cctgacctgc ctggtgaagg gcttctaccc cagcgacatc 480

gccgtggagt gggagagcaa cggccagccc gagaacaact acaagaccac cccccctgtg 540

ctggacagcg acggcagctt cttcctgtac agcaggctga ccgtggacaa gagccggtgg 600

caggagggca acgtcttttag ctgctccgtg atgcacgagg ccctgcacaa ccactacacc 660

cagaagagcc tgtccctgag cctgggcaag atgttc 696

<210> 27

<211> 696

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

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<400> 27

agcgagagca agtacggccc tccctgcccc ccttgccctg ccccgagtt cgaaggcgga	60
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gaggtgacct gtgtgggtgt ggacgtgtcc caggaggacc ccgaggtcca gttcaactgg	180
tacgtggacg gcgtggaggt gcacaacgcc aagaccaagc cccgggagga gcagttccag	240
agcacctacc ggggtggtgtc cgtgctgacc gtgctgcacc aggactggct gaacggcaag	300
gaatacaagt gtaagggtgtc caacaagggc ctgccagca gcatcgagaa aaccatcagc	360
aaggccaagg gccagcctcg ggagccccag gtgtacaccc tgccccctag ccaagaggag	420
atgaccaaga atcaggtgtc cctgacctgc ctggtgaagg gcttctaccc cagcgacatc	480
gccgtggagt gggagagcaa cggccagccc gagaacaact acaagaccac cccccctgtg	540
ctggacagcg acggcagctt cttcctgtac agcaggctga ccgtggacaa gagccggtgg	600
caggagggca acgtcttttag ctgctccgtg atgcacgagg ccctgcacaa ccactacacc	660
cagaagagcc tgtccctgag cctgggcaag atgttc	696

<210> 28

<211> 711

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 28

atggtgtcca agggcgagga actgatcaaa gaaaacatgc acatgaagct gtacatggaa	60
ggcaccgtga acaaccacca cttcaagtgc accagcgagg gagagggcaa gccctacgag	120
ggcacccaga ccatgcggat caaggtggtc gagggcggac ctctgccctt cgccttcgac	180
atcctggcca caagcttcat gtacggcagc aagaccttca tcaaccacac ccagggcac	240
cccgatttct tcaagcagag cttccccgag ggcttcacct gggagagagt gaccacctac	300
gaggacggcg gcgtgctgac cgccaccag gacaccagcc tgcaggacgg ctgcctgac	360
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accctgggct gggaggccag caccgagatg ctgtaccctg ccgatggcgg cctggaaggc	480
agagccgaca tggccctgaa actggtcggc ggagggcacc tgatctgcaa cctgaaaacc	540

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acctacagaa gcaagaagcc cgccaagaac ctgaagatgc ccggcgtgta ctacgtggac	600
cggcggctgg aaaggatcaa agaggccgac aaagaaacct acgtggagca gcacgaggtg	660
gccgtggccc ggtactgcga cctgccctcc aagctgggcc acaaactgaa c	711

<210> 29
 <211> 333
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 29	
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gccagcgacg gcttcctgga actgaccgag tacagccggg aagagatcat gggccggaac	120
gccagattcc tgcagggccc cgaaaccgat caggccaccg tgcagaagat ccgggacgcc	180
atcagggacc agcgggaaac cacagtgcag ctgatcaact acaccaagag cggcaagaag	240
ttctggaacc tgctgcatct gcagcccgtg cgggatagaa agggcggcct gcagtacttc	300
atcggcgtgc agctcgtggg cagcgaccac gtg	333

<210> 30
 <211> 675
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 30	
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agcgtgaacg gccacgagtt cgagattgag ggcgagggcg aaggcagacc ctacgaggga	120
acacagaccg ccaagctgaa agtgaccaag ggcggacccc tgcccttcgc ctgggatatc	180
ctgagcccc agttccagta cggcagcaag gtgtacgtga agcaccgcc cgacatcccc	240
gactacaaga agctgagctt ccccgagggc ttcaagtggg agagagtgat gaacttcgag	300
gacggcggcg tcgtgaccgt gaccaggat agctctctgc aggacggcag cttcatctac	360
aaagtgaagt ttatcggcgt gaacttcccc agcgacggcc ccgtgatgca gaaaaagacc	420

UTFC_P1231WO_ST25

atgggctggg aggccagcac cgagagactg taccctagag atggcgtgct gaagggcgag	480
atccacaagg ccctgaagct gaaggatggc ggccactacc tgggtggaatt caagagcatc	540
tacatggcca agaaaccgt gcagctgccc ggctactact acgtggacag caagctggac	600
atcaccagcc acaacgagga ctacaccatc gtggaacagt acgagcgggc cgagggccgg	660
caccatctgt ttctg	675

<210> 31
 <211> 717
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 31 atggtgtcca agggcgagga actgttcacc ggcgtggtgc ccatcctggt ggaactggat	60
ggcgacgtga acggccacaa gttcagcgtg tccggcgagg gcgaaggcga cgccacatat	120
ggcaagctga ccctgaagct gatctgcacc accggcaagc tgcccgtgcc ttggcctacc	180
ctcgtgacca cactgggcta cggcctgcag tgcttcgcca gataccccga ccatatgaag	240
cagcacgact tcttcaagag cgccatgccc gagggctacg tgcaggaacg gaccatcttc	300
tttaaggacg acggcaacta caagaccagg gccgaagtga agttcgaggg cgacaccctc	360
gtgaaccgga tcgagctgaa gggcatcgac ttcaaagagg acggcaacat cctggggccac	420
aagctggagt acaactacaa cagccacaac gtgtacatca ccgccgacaa gcagaagaac	480
ggcatcaagg ccaacttcaa gatccggcac aacatcgagg acggcggcgt gcagctggcc	540
gatcactacc agcagaacac ccctatcggc gacggccctg tgctgctgcc cgacaatcac	600
tacctgagct accagagcgc cctgagcaag gacccaacg agaagcggga ccacatggtg	660
ctgctggaat tcgtgaccgc cgctggcatc accctgggca tggacgagct gtacaag	717

<210> 32
 <211> 717
 <212> DNA
 <213> Artificial sequence

<220>

UTFC_P1231WO_ST25

<223> Synthetic oligonucleotide

<400> 32

atggtgagca agggcgagga gctgttcacc ggggtggtgc ccatcctggt cgagctggac	60
ggcgacgtaa acggccacaa gttcagcgtg tccggcgagg gcgagggcga tgccacctac	120
ggcaagctga ccctgaagtt catctgcacc accggcaagc tgcccgtgcc ctggcccacc	180
ctcgtgacca ccctgaccta cggcgtgcag tgcttcagcc gctaccccga ccacatgaag	240
cagcacgact tcttcaagtc cgccatgccc gaaggctacg tccaggagcg caccatcttc	300
ttcaaggacg acggcaacta caagaccgc gccgaggtga agttcgaggg cgacaccctg	360
gtgaaccgca tcgagctgaa gggcatcgac ttcaaggagg acggcaacat cctggggcac	420
aagctggagt acaactacaa cagccacaac gtctatatca tggccgacaa gcagaagaac	480
ggcatcaagg tgaacttcaa gatccgccac aacatcgagg acggcagcgt gcagctcgcc	540
gaccactacc agcagaacac ccccatcggc gacggccccg tgctgctgcc cgacaaccac	600
tacctgagca cccagtccgc cctgagcaaa gaccccaacg agaagcgcgga tcacatggtc	660
ctgctggagt tcgtgaccgc cgccgggatc actctcggca tggacgagct gtacaag	717

<210> 33

<211> 363

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 33

gccaagggcc agcctcggga gccccaggtg tacaccctgc cccctagcca agaggagatg	60
accaagaatc aggtgtccct gacctgcctg gtgaagggtg tctaccccag cgacatcgcc	120
gtggagtggg agagcaacgg ccagcccagag aacaactaca agaccacccc ccctgtgctg	180
gacagcgacg gcagcttctt cctgtacagc aggctgaccg tggacaagag ccggtggcag	240
gagggcaacg tctttagctg ctccgtgatg cagcaggccc tgcacaacca ctacaccag	300
aagagcctgt ccctgagcct gggcaagatg ttctacccat acgatgttcc agattacgct	360
tac	363

UTFC_P1231WO_ST25

<210> 34
 <211> 708
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 34
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 ctgaagatgg agggcaacgt gaatggccac gccttcgtga tcgagggcga gggcgagggc 120
 aagccctacg acggcaccaa caccatcaac ctggaggtga aggagggagc cccctgccc 180
 ttctcctacg acattctgac caccgcgttc gcctacggca acagggcctt caccaagtac 240
 cccgacgaca tccccaacta cttcaagcag tccttccccg agggctactc ttgggagcgc 300
 accatgacct tcgaggacaa gggcatcgtg aaggtgaagt ccgacatctc catggaggag 360
 gactccttca tctacgagat acacctcaag ggcgagaact tccccccaa cggccccgtg 420
 atgcagaaga agaccaccgg ctgggacgcc tccaccgaga ggatgtacgt gcgcgacggc 480
 gtgctgaagg gcgacgtcaa gcacaagctg ctgctggagg gcggcggccca ccaccgcgtt 540
 gacttcaaga ccatctacag ggccaagaag gcggtgaagc tgcccgacta tcactttgtg 600
 gaccaccgca tcgagatcct gaaccacgac aaggactaca acaaggtgac cgttttacgag 660
 agcgccgtgg cccgcaactc caccgacggc atggacgagc tgtacaag 708

<210> 35
 <211> 423
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 35
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 cctctgtctc tgaggcccga ggcttgtaga cctgctgctg gcggagccgt gcacaccaga 120
 ggactggatt tcgcctgcga caagcctacc acaaccctg ccccgagacc tcctacaccc 180
 gccctacaa ttgccagcca gcctctgtct ctgaggcccg aggcttgtag acctgctgct 240
 ggcgagccg tgcacaccag aggactggat ttgcctgcg acagcagcgg cggcggcggc 300

UTFC_P1231WO_ST25

agcggcggcg gcggcagcgg cggcggcggc agcgcgcagc tgaaaaaaaa actgcaggcg 360
ctgaaaaaaaa aaaacgcgca gctgaaatgg aaactgcagg cgctgaaaaa aaaactggcg 420
cag 423

<210> 36
<211> 423
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 36
aagcctacca caaccctgc cccagacct cctacacccg cccctacaat tgccagccag 60
cctctgtctc tgaggcccg ggcttgtaga cctgctgctg gcggagccgt gcacaccaga 120
ggactggatt tcgcctgcga caagcctacc acaaccctg ccccgagacc tcctacaccc 180
gcccctacaa ttgccagcca gcctctgtct ctgaggcccg aggcttgtag acctgctgct 240
ggcggagccg tgcacaccag aggactggat ttgcctgcg acagcagcgg cggcggcggc 300
agcggcggcg gcggcagcgg cggcggcggc agcgcgcagc tgaaaaaaga gctgcaggcc 360
ctggaaaaag aaaacgctca gctggaatgg gaactgcagg ctctggaaaa agagctggcc 420
cag 423

<210> 37
<211> 69
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic oligonucleotide

<400> 37
tgggtgctgg tcgtggtggg tggcgtgctg gcctgctaca gcctgctggt gacagtggcc 60
ttcatcatc 69

<210> 38
<211> 81
<212> DNA
<213> Artificial sequence

UTFC_P1231WO_ST25

<220>

<223> Synthetic oligonucleotide

<400> 38

attatctcat tcttcctggc cctgacctct accgccctgc tgtttctgct gttctttctg 60

accctgctggg tcagcgtggg g 81

<210> 39

<211> 84

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 39

atctacatct gggcgccctt ggccgggact tgtgggggtcc ttctcctgtc actggttatc 60

accctttact gcaaccacag gaac 84

<210> 40

<211> 63

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 40

ctctgctacc tgctggatgg aatcctcttc atctatgggtg tcattctcac tgccttgttc 60

ctg 63

<210> 41

<211> 144

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 41

cagcggcgga agtacagaag caacaagggc gagagcccg tggaacctgc cgagccttgc 60

agatacagct gccccagaga ggaagagggc agcaccatcc caatccagga agattaccgg 120

aagcccgagc ccgcctgtag ccct 144

UTFC_P1231WO_ST25

<210> 42
 <211> 132
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 42
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 cggaggcctg gccccacccg gaagcactac cagccctacg cccctcccag ggacttcgcc 120
 gcctaccgga gc 132

<210> 43
 <211> 132
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 43
 ttttgggtga ggagcaagcg gagcagaggc ggccacagcg acttcatgaa catgaccccc 60
 cggaggcctg gccccacccg gaagcactac cagccctacg cccctcccag ggacttcgcc 120
 gcctaccgga gc 132

<210> 44
 <211> 108
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic oligonucleotide

<400> 44
 agggaccaga gactgcctcc cgatgcccac aaacctccag gcggcggaag cttcagaacc 60
 cccatccagg aagaacaggc cgacgcccac agcaccctgg ccaagatt 108

<210> 45
 <211> 126
 <212> DNA
 <213> Artificial sequence

UTFC_P1231WO_ST25

<220>

<223> Synthetic oligonucleotide

<400> 45

aagcggggca gaaagaagct gctgtacatc ttcaagcagc cttcatgcg gcccgtgcag 60

accacccagg aagaggacgg ctgctcctgc agattccccg aggaagaaga aggcggctgc 120

gagctg 126

<210> 46

<211> 102

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 46

aagaaaaagt acagcagcag cgtgcacgac cccaacggcg agtacatgtt catgcggggc 60

gtgaacaccg ccaagaagtc cagactgacc gacgtgaccc tg 102

<210> 47

<211> 336

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 47

cgggtgaagt tcagccggag cgccgacgcc cctgcctacc agcaggggcca gaaccagctg 60

tacaacgagc tgaacctggg ccggagggag gactacgacg tgctggacaa gcggagaggc 120

cgggaccctg agatggggcg caagccccgg agaaagaacc ctgaggaggg cctgtataac 180

gaactgcaga aagacaagat ggccgaggcc tacagcgaga tcggcatgaa gggcgagcgg 240

cggaggggca agggccacga cggcctgtac cagggcctga gcaccgccac caaggatacc 300

tacgacgccc tgcacatgca ggccctgccc cccaga 336

<210> 48

<211> 759

<212> DNA

<213> Artificial sequence

UTFC_P1231WO_ST25

<220>

<223> Synthetic oligonucleotide

<400> 48

gatattcaga tgaccagag cccgagcagc ctgagcgca gcgtgggcga tcgctgacc	60
attacctgcc gcagcagcca gaacattgtg catagcaacg gcaacaccta tctggattgg	120
tatcagcaga ccccgaggca agcgccgaaa ctgctgattt ataaagtgag caaccgcttt	180
agcggcgtgc cgagccgctt tagcggcagc ggcagcggca ccgattttac ctttaccatt	240
agcagcctgc agccggaaga tattgagacc tattattgct ttcagtatag ccatgtgccg	300
tggacctttg gccagggcac caaactgcag attaccggca gcacctccgg cagcggcaag	360
cctggcagcg gcgagggcag caccaagggc agccaggtgc agctgcagca gagcggcgcg	420
gaagtgaaaa aaccgggcag cagcgtgaaa gtgagctgca aagcgagcgg ctataccttt	480
accaactatt atattttattg ggtgcgccag gcgccgggcc agggcctgga atggattggc	540
ggcattaacc cgaccagcgg cggcagcaac tttaacgaaa aatttaaaac ccgctgacc	600
attaccgcgg atgaaagcag caccaccgcg tatatggaac tgagcagcct gcgcagcgaa	660
gataccgcgt tttatttttg caccgccag ggcctgtggt ttgatagcga tggccgcggc	720
tttgattttt ggggccaggg caccaccgtg accgtgagc	759

<210> 49

<211> 732

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 49

gatattctgc tgaccagag cccggtgatt ctgagcgtga gcccgggcga acgcgtgagc	60
tttagctgcc gcgcgagcca gagcattggc accaacattc attggtatca gcagcgcacc	120
aacggcagcc cgcgctgct gattaaatat gcgagcgaaa gcattagcgg cattccgagc	180
cgcttttagcg gcagcggcag cggcaccgat tttaccctga gcattaacag cgtggaaagc	240
gaagatattg cggattatta ttgccagcag aacaacaact ggccgaccac ctttggcgcg	300
ggcaccaaac tggaactgaa aggcagcacc tccggcagcg gcaagcctgg cagcggcagag	360

UTFC_P1231WO_ST25

ggcagcacca agggcagcca ggtgcagctg aaacagagcg gcccgggcct ggtgcagccg	420
agccagagcc tgagcattac ctgcaccgtg agcggcttta gcctgaccaa ctatggcgtg	480
cattgggtgc gccagagccc gggcaaaggc ctggaatggc tgggcgtgat ttggagcggc	540
ggcaacaccg attataacac cccgtttacc agccgcctga gcattaacaa agataacagc	600
aaaagccagg tgtttttttaa aatgaacagc ctgcagagca acgataccgc gatttattat	660
tgcgcgcgcg cgctgaccta ttatgattat gaatttgcgt attggggcca gggcacccctg	720
gtgaccgtga gc	732

<210> 50

<211> 726

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 50

gaagtgcagc tgcagcagag cggcccggaa ctggaaaaac cgggcgcgag cgtgaaactg	60
agctgcaaag cgagcggcta tagctttacc ggctataaca tgaactgggt gaaacagagc	120
catggcaaaa gcctggaatg gattggccat attgatccgt attatggcga taccagctat	180
aaccagaaat ttgcgggcaa agcgaccctg accgtggata aaagcagcag caccgcgtat	240
atgcagctga aaagcctgac cagcgaagat agcgcggtgt attattgcgt gaaaggcggc	300
tattatggcc attggtatth tgatgtgtgg ggcgcgggca ccaccgtgac cgtgagcagc	360
ggcggaggcg gctctggcgg cggaggatca ggtggcggag gatccgatat tcagatgacc	420
cagagcccga gcagcctgag cgcgagcctg ggccaacgcg tgagcctgac ctgccgcgcg	480
agccaggata ttggcagcag cctgaactgg ctgcagcagg gcccggatgg caccattaaa	540
cgcctgattt atgcgaccag cagcctggat agcggcgtgc cgaaacgctt tagcggcagc	600
cgcagcggca gcgattatag cctgaccatt agcagcctgg aaagcgaaga ttttgtggat	660
tattattgcc tgagtatgt gagcagcccc cgcacctttg gcgcgggcac caaactggaa	720
ctgaaa	726

UTFC_P1231WO_ST25

<210> 51
 <211> 111
 <212> PRT
 <213> Artificial sequence
 <220>
 <223> Synthetic polypeptide
 <400> 51

Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
 1 5 10 15

Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
 20 25 30

Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
 35 40 45

Pro Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys
 50 55 60

Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg
 65 70 75 80

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

Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
 100 105 110

<210> 52
 <211> 108
 <212> PRT
 <213> Artificial sequence
 <220>
 <223> Synthetic polypeptide
 <400> 52

Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
 1 5 10 15

UTFC_P1231WO_ST25

Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
20 25 30

Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
35 40 45

Pro Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln
50 55 60

Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu
65 70 75 80

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

Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala
100 105

<210> 53

<211> 112

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic polypeptide

<400> 53

Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
1 5 10 15

Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
20 25 30

Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
35 40 45

Pro Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln
50 55 60

Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu
65 70 75 80

UTFC_P1231WO_ST25

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

Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
100 105 110

<210> 54
<211> 111
<212> PRT
<213> Artificial sequence

<220>
<223> Synthetic polypeptide

<400> 54

Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
1 5 10 15

Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
20 25 30

Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
35 40 45

Pro Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln Lys
50 55 60

Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu Arg
65 70 75 80

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

Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro Arg
100 105 110

<210> 55
<211> 2034
<212> DNA
<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 55

atgctgctgc tggtgaccag cctgctgctg tgtgagctgc cccaccccgc ctttctgctg	60
atccccgaca tccagatgac ccagaccacc tccagcctga gcgccagcct gggcgaccgg	120
gtgaccatca gctgccgggc cagccaggac atcagcaagt acctgaactg gtatcagcag	180
aagcccgcgc gcaccgtcaa gctgctgctg taccacacca gccggctgca cagcggcgtg	240
cccagccggg ttagcggcag cggctccggc accgactaca gcctgacctat ctccaacctg	300
gagcaggagg acatcgccac ctacttttgc cagcagggca acacactgcc ctacaccttt	360
ggcggcgga ccaagctgga gatcaccggc agcacctccg gcagcggcaa gcctggcagc	420
ggcgagggca gcaccaaggg cgaggtgaag ctgcaggaga gcggccctgg cctggtggcc	480
cccagccaga gcctgagcgt gacctgtacc gtgtccggcg tgtccctgcc cgactacggc	540
gtgtccctgga tccggcagcc ccctaggaag ggcctggagt ggctgggcgt gatctggggc	600
agcgagacca cctactacaa cagcgccctg aagagccggc tgacctcat caaggacaac	660
agcaagagcc aggtgttctt gaagatgaac agcctgcaga ccgacgacac cgccatctac	720
tactgtgcca agcactacta ctacggcggc agctacgcca tggactactg gggccagggc	780
accagcgtga ccgtgtccag cgagagcaag tacggccctc cctgcccccc ttgccctgcc	840
cccagattcc tgggcggacc cagcgtgttc ctgttcccc ccaagcccaa ggacaccctg	900
atgatcagcc ggacccccga ggtgacctgt gtggtggtgg acgtgtcca ggaggacccc	960
gaggtccagt tcaactggta cgtggacggc gtggaggtgc acaacgcaa gaccaagccc	1020
cgggaggagc agttcaatag cacctaccgg gtggtgtccg tgctgaccgt gctgcaccag	1080
gactggctga acggcaagga atacaagtgt aaggtgtcca acaaggcct gccagcagc	1140
atcgagaaaa ccatcagcaa ggccaagggc cagcctcggg agccccaggt gtacaccctg	1200
ccccctagcc aagaggagat gaccaagaat caggtgtccc tgacctgcct ggtgaagggc	1260
ttctacccca gcgacatcgc cgtggagtgg gagagcaacg gccagcccga gaacaactac	1320
aagaccaccc cccctgtgct ggacagcgac ggcagcttct tcctgtacag caggctgacc	1380
gtggacaaga gccggtggca ggagggaac gtcttttagct gctccgtgat gcacgaggcc	1440

UTFC_P1231WO_ST25

ctgcacaacc actacacca gaagagcctg tccctgagcc tgggcaagat gttctgggtg	1500
ctggtcgtgg tgggtggcgt gctggcctgc tacagcctgc tggtagacagt ggccttcac	1560
atcttttggg tgaggagcaa gcggagcaga ggcggccaca gcgactacat gaacatgacc	1620
ccccggaggc ctggccccac ccggaagcac taccagccct acgcccctcc cagggacttc	1680
gccgcctacc ggagccgggt gaagttcagc cggagcgccg acgcccctgc ctaccagcag	1740
ggccagaacc agctgtacaa cgagctgaac ctgggcccga gggaggagta cgacgtgctg	1800
gacaagcgga gaggccggga ccctgagatg ggcggcaagc cccggagaaa gaaccctcag	1860
gagggcctgt ataacgaact gcagaaagac aagatggccg aggcctacag cgagatcggc	1920
atgaagggcg agcggcggag gggcaagggc cacgacggcc tgtaccaggg cctgagcacc	1980
gccaccaagg atacctacga cgccctgcac atgcaggccc tgccccccag atga	2034

<210> 56

<211> 2040

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 56

atgctgctgc tggtagaccag cctgctgctg tgtgagctgc cccaccccgc ctttctgctg	60
atccccgaca tccagatgac ccagaccacc tccagcctga gcgccagcct gggcgaccgg	120
gtgaccatca gctgccgggc cagccaggac atcagcaagt acctgaactg gtatcagcag	180
aagcccgcag gcaccgtcaa gctgctgac taccacacca gccggctgca cagcggcgtg	240
cccagccggt ttagcggcag cggctccggc accgactaca gcctgaccat ctccaacctg	300
gagcaggagg acatcgccac ctacttttgc cagcagggca acacactgcc ctacaccttt	360
ggcggcgga caaagctgga gatcaccggc agcacctccg gcagcggcaa gcctggcagc	420
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<210> 57

<211> 2037

<212> DNA

<213> Artificial sequence

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<220>

<223> Synthetic oligonucleotide

<400> 57

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<210> 58

<211> 2037

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic oligonucleotide

<400> 58

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<210> 59

<211> 2160

<212> DNA

<213> Artificial sequence

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<220>

<223> Synthetic oligonucleotide

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