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<120> Biomarkers for type 2 diabetes mellitus and use thereof

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<212> DNA
<213> Faecalibacterium prausnitzii

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tgccgtccgg atgcagcaca ccgatcacaa taccctgggc accgaggctg cggaacattt 540

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<210> 175
<211> 275
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 175
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ccacatcatt tagaccaaaa aatatgtttt tatttgataa gtcaagttca acattatcaa 180

aatttctaaa atttttaata accacttttt caaatttcat atatgttctt tcaccatcca 240

tcttgtttgt ataataagaa aattatacca ttatt 275

<210> 176
<211> 256
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 176
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<213> Faecalibacterium prausnitzii

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<211> 1517
<212> DNA
<213> Faecalibacterium prausnitzii

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<211> 742
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<213> Faecalibacterium prausnitzii

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<210> 180
<211> 295
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 180
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<210> 181
<211> 579
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 181
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<213> Faecalibacterium prausnitzii

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<210> 374
<211> 2845
<212> DNA
<213> Faecalibacterium prausnitzii

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<211> 875
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<213> Faecalibacterium prausnitzii

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gtctttagaa cagtgggtga atggtataaa taacatatat atgaaagata tacataattg 180

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gcgtaaaaca cgatcaagag tgtgaaaacc atatttttca tagatattaa ttaaagtgga 840

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<210> 376
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<212> DNA
<213> Faecalibacterium prausnitzii

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<210> 378
<211> 618
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 378
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<211> 1681

<212> DNA
<213> Faecalibacterium prausnitzii

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<211> 700
<212> DNA
<213> Faecalibacterium prausnitzii

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<210> 381
<211> 7920
<212> DNA
<213> Faecalibacterium prausnitzii

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tcccactata ccagcattaa atttatccaa ttgttaaagg ataacgaact gagacagtct 180

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<213> Faecalibacterium prausnitzii

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tcatattgag ataactcctt cgccatcaat tctacaacag cctgtggact gtccaatatc 180

tgctcactat aaagagatgg ttcttttacc aaacggatat tcacaacttc caattcattc 240

tccattgttc tgatctcctt ttggaaattc tacaactaga agaacattac tttctgaaga 300

ttccacatat gctttcaatt gtgataatgt catttccaaa tatttaggtt gttccaccat 360

aatctgctcc tttcgtttct tcccttgctt ctgttttctc tgacaaatag cttatcactt 420

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tcattgatgg caaagaggtt accaatgatt atgaatttac agcggataag gaaaacatgg 360

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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aagaggaaga acttcttgca aactgctatt ttaattctat gaagctggca atggagaatg 480

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<213> Faecalibacterium prausnitzii

<400> 466
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<211> 1271
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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<212> DNA
<213> Faecalibacterium prausnitzii

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attttataat attcaattca cttgttataa ataatatttc ttattgtaat ttttatgccg 180

cagttgtttc aaatataata attctagata tttaatatat cattaagtac tattacttat 240

tttcataaaa ttaaacaaaa aaattgcaga atctattttc acaataaatt ccacaatctc 300

aaatgctata ttgctatctt ttctgaaatc ggtgttttcc tatacagcct acatattttt 360

tcccatctta taatttcagt taatcacaac ataattgtca aaatgatata tcacattatc 420

aacatctgat atggcagcca tttcatgcac aactgccata tcaaatactg ctacagatac 480

tataaattat actgtaacct tatttaatta tatagaatct ggctctaata atcaaaatat 540

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<210> 481
<211> 1872
<212> DNA
<213> Faecalibacterium prausnitzii

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atatatcttt ttagtatgca caaaacgcac ttccactgtt aaatctattt ataataatct 180

ttatttttat caagaagctc tatcattttt tcctttacat cttctggttc taacacttcc 240

acgttgccaa gtcctataag ccatcctaat aatacatttg atttgaccgc acagaatgtc 300

acaaccactt tcttttcctc agctttttca ttatgttcat tatcagctga ttctatatcc 360

tgttgacata ttgcttcttc ttttatatct atccattttc caaactggtc tataaaagtt 420

cctacaaggc tttcaggtat tcttaccttg attcttcttt cttggtcagt atacattccc 480

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cttccacatt cagcagtctc ctctgccata taatctttaa tatctgacat agataatgga 1140

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<212> DNA
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aaattgtatc tttaaatccg gaggctccga aataatgaaa ataccagccc atgcaaagta 360

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cgaaattgca 430

<210> 483
<211> 466
<212> DNA
<213> Faecalibacterium prausnitzii

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gcaattacga tggaacagct gatccgtata ggcagcgtaa ctgatgaagc cgctaacttt 120

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aagacaactt tcctgaatgc gttgtcgaac tatataccaa aaggagaacg cctgatcacg 240

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cgcggaccga atgcagaagg agaaggggct gtaaccatca gagatttgat taagtcagca 360

cttcgtatga gaccggatcg aattgttgta ggagaagtaa gaggagaaga gacggtagat 420

atgatctctt cagcaattat atgtactata taacaattat atatat 466

<210> 484
<211> 1251
<212> DNA
<213> Faecalibacterium prausnitzii

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gtattccttt actatctctt catctattcc gtacatagcc ttaaaatgtt cgagatctgc 180

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<210> 485
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<212> DNA
<213> Faecalibacterium prausnitzii

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<210> 486
<211> 1607
<212> DNA
<213> Faecalibacterium prausnitzii

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atttgtttga aaggttgcta tttataaaaa taaaagatag aataaatgta ccaaagaaag 180

gaatttataa taaatatggc taacaatgga attgaattag aaagagacgg atttaaaagc 240

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<210> 487
<211> 228
<212> DNA
<213> Faecalibacterium prausnitzii

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tcagttatca tagtttatat ggaaagactt agaaatatcc aatcaaagct tctggcattg 180

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<210> 488
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<212> DNA
<213> Faecalibacterium prausnitzii

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cctcaaaccg gataatttct tcctctgaaa aacctttgta gtaaatactg cccatctcat 300

cagatacaga atcgtactct ccctttaagg catgtgcttt ctcagtcaga aacagaagcg 360

tttttctttt gtccgtttca gactgaacac ggcttatcag cccttgattt tccattcttt 420

ccagcatcgt agtaagagat gttatcgcta atccgcattt agtcgagagt gacctgattg 480

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<210> 521
<211> 210
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 521
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ggagattgag tttctaaaaa aaattgtatc tttaaatccg gagacgccgg aataatgaaa 120

ataccagccc atgcaaagta tcagattatt tatgatactt tgcaaaaaaa cgataatcta 180

ttgaatgtag ctgccatgtg cgaaattgca 210

<210> 522
<211> 2362
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 522
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tgcgatactg tcgtcatcaa gtattgcaag tgcataggca acagctattc catcatcacc 120

accaagcgtt gttcccttag cagatatgaa atcaccattt acctcaagat ccagtccatc 180

ctcatccata ttcttatcac aatcaggtgt cttctcgcat accatatcca tatgtccctg 240

aagtattata ggtgctgcat cctcataacc ctttgaggct tcctttatta tgattacatt 300

gttaagtgaa tcctgataat attcaagctt tctttcctta gcaaaatcaa caagataatt 360

gctgattttt tcttccttat atgatggatg tgggatatta catatatcct caaaaaaaga 420

aaatacattt ttaggttcta attcagataa tactctcata acactgtctc ctttaaaata 480

tttataatct acaaatctat tttattcatt tgtttatctg cttatttatt tgcctattta 540

actacttatt tatcttgttc atatatacaa taaactgatt cttatgaagc agctttataa 600

aataacacaa tctctcatac agcggctccg ctttatctcc aaaatgctct ttcacaagct 660

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aaatcccttt attgtgtact ttgacttcta catgaccttt tttgttttcc ctgcattcga 840

acaacgaatt atgctttgga acatagtcta agtaattatc cttctgctta gccataaatc 900

aagccttctc ctttaatcct agaaaataaa aatctgccgg caaaataacc ggcagactca 960

ttataacata ttatttatta ttttgtcttc ttttcttttt tgttaataaa tgctactaat 1020

gttgcaacaa gacatacaaa gaatacaagt cctccgatat taccaatatt aataatcttt 1080

gatatattaa taacatcgcc aagagtagct gcaccaacag gaataatagc aaatactgct 1140

aagaggatac caaccagtcc ttcaccggca ataagacctg atgaataaag tattccctga 1200

ttaaccttag ccttacgctc ttcttctgta ataccttttct tcttatcaaa gtaaagtctt 1260

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acaagtgacc atggaaggct gttacccata acaccttcaa caaccatctt cataagagtt 1440

gcctgtggtg ctggtaattc tgttgaacca tagccccatg ctgcattaag taaataaagt 1500

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taaggtgttg cacctactat atagcctgtc tttaaatcct gtgatgtatc tcctgctata 1620

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gcaccggctc caatataacg tacataatta gaccatatct gtgatggctt catctgtgaa 2100

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atataaccaa cacctaaaag tgcaggtaat acatctgcac ctactgctga acccttatat 2280

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taaacagcag caataccaag ac 2362

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<211> 1574
<212> DNA
<213> Faecalibacterium prausnitzii

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aagcagacat ttacttttct tgcgccatta acgaacgaac agccatgcga agcaaggcga 180

tatagcgcgt agcgcgggtt cgtgagtgta cgggttaaga aagagtaaat tttgacataa 240

tgagcgcaaa aagaaaagga agcggctgcg cagcagacat atccttttct tgcgccatta 300

acgaacgaac agccatgcga agcagggcga gatagcgcgt agcgcgggtt cgtgagtgta 360

cgggttaaga aagagtaaat tatgacattt aactatgttt tatttagtgt ctatgcgcac 420

atgacacatc taatctgtat aaaatacatg cgcagaaatg aggaatatta tgaataaatg 480

gcagaaagta ggcctggcag ccggtatggg aacagctgtt attgcaacta cacatatcat 540

aaacaagttt atatttaaat acgcaacgat taataattat acatttgaaa ataaatcaga 600

aaatagttac ggctggaaat ttggaaatat tgcttactca gcttatggtg ataaaaatgc 660

ttctccttta ttgcttatac acgatctgaa tgcatatagc tctggatatg agtggaataa 720

cgttatacag catttatcag atacacacta tgtttatgta ttagatatgc ttggatgtgg 780

tcactctgat aaaccacaca tcacttacac aacatatatg tatacacagc tattaaatga 840

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aatagcaata ggcgctgcct ttactaacaa tgccttatat aataaaatac tgctggtaag 960

cccagaggct gtctctagag caggaatcac accagggaaa agggctaata taagaagaaa 1020

gcttctctct attcctgtaa ttggaacaac aatttataat atatgtgtag gaaaaggccg 1080

attaaacaaa atacttggaa ataaagtatt cagtgataat cttgtaccca ttgattacct 1140

gaatgcctgc cacgaaaatg cccacttatc tggtgcatct agcaaatatc ttttttcaag 1200

cacagagtgt aactatacaa cagtttctat atcaaaagcc gttaaagaac taaacaactg 1260

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taatagtgcg attgaaactg ttaatatatc tggttcaggt ttacttccac aggtagaaca 1380

gcctgatgag tttataaaac agtgtgagat attgttgttt aattaaatat tagttggtga 1440

cgaacggacg acaaatataa gctacaggca gtcatgcaca ctatgttcaa tgccagaagc 1500

ttcaatcggc tgtctctaag acttttcata taggtagtta taggtgacgc taccattcgg 1560

acgcgccgtc cgtg 1574

<210> 524
<211> 396
<212> DNA
<213> Faecalibacterium prausnitzii

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atggaatatt ccttttatta tttgttgcag ccccttttgct tgtattgata tattatgcat 120

ttaccaatgg acagggacag tttacagtaa gtaatctctg taatttcttt acagatccta 180

acacacttgg aacattgtgt tatagttttg cactggcatt tgttgtaact atggtgtgtc 240

ttttaatagc gtatccggtt gcatacatac ttgcacagag cgagattaaa agaaaagcag 300

ttattcttat gctttttgtg cttccaatgt ggattaactt tacacttaga attacagcac 360

ttaaggaagt tctttcatta atagaaggta atcttg 396

<210> 525
<211> 762
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 525
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ttgccattat ctgtaccggg aattataagt ggaatatcaa tggtgttcct gccagcgatg 180

actaattatg tagtgcttga tatgctttat aacagtacat atattatggg tagtcttata 240

ggaagctatt ttagtgcata cgactggaac aatggttcaa tgatagcact tatacttctt 300

ataattatat gtataatcag tcttatatca gcagacagcg ataatgaagg ttcaggacgc 360

aggctgtaga tatatgtgat gggaaagagg acaggtatgt ttaaaaaatg tgttaaatat 420

gcaattatcg gtcttgtact tatatttatg tatgttccga ttcttatatt agcagtatat 480

agttttacag attcacctaa tattggagct attcattcat tttcgttcca taattatgtg 540

acattattta caacaccaga gcttatagat atgattatag gttcaattgc acttgcaatt 600

ggaagtgcgg tgcttgctac aatacttgga acaacaggtg caattggagc attttattct 660

aagaaaaatg ttaatggtac aatgtcagtt cttaaccaga taccagttgt taatgccgat 720

gtcgtgacag gtttttcatt atgtattctt ctggttgttg ta 762

<210> 526
<211> 449
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 526
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ttcgttttaa taaaagtttt tccttttttga ttacattatt tgttttacag taactttccc 120

ctttcttatt tttctcgtaa gaatgagaga tactacgctg taatctacgt ttctgttttt 180

ctagtttctt tactttctga ctcttattaa tgttcttata tttaacagca tcagagcaga 240

cagctaaatc tttgattcct aagtctatgc caatcccatc atcattaagt gtttccttac 300

aatcaggaaa ttccacacat acactgatcc accaattcaa tccgtcaaag gatattctcg 360

gattcatata tttagcatca atcggaatac gtccatgttc tgcaagtctt acccaattct 420

ttttttgctt atttgctttc ctgctggaa 449

<210> 527
<211> 3602
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 527
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gcggcagtcg ccaaggtcat atcaggaata tgactttggc tcgttgctcg cgtaaattga 120

agcttctggc atcgttgatg tatgcacacc tgcttttctc atatatgctg tcgtccgtac 180

gttaagaatg cgtgctaaac aaccatacta cttctcattc acaaccgcgt tatccataac 240

tatattctgt gctttcttta caagcattgc ctttactatt gtattcttgt caaacttatc 300

tgtgaatgtt gttacctgtg aataaccgct gtcctttgca aactgttcaa ggtcatcttt 360

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ccgccataca ggatataaag agttatctca tcctatatag cggcttaaat gctactaatc 1440

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agacttccaa ctttctttaa taatgtaaga tcaagatatg ctccaactac accattgtta 3360

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gccttaatta ctgcatttac cttatctgaa tctggtgtgc ttggtgtatc gcttggtgtg 3600

ct 3602

<210> 528
<211> 201
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 528
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tgggattgac taatatttgc acatattcga catcgggtag ctttttttatg caggcggtat 120

ttacagatac cttgtagtta ttaaacgtaa acgaaggttc gtaaatatga gcgaagaatt 180

cgccacgtac aacttgataa c 201

<210> 529
<211> 219
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 529
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attttctttt gattctgaaa gcataccagt atcgaggata tcataaaggt gcccgtagta 120

tatatatgag gttgttacac atggaaccgc ctatagtgat gaatatcaaa aaaatccgtc 180

ggctgatgag gaaatataac ttacagtgtc ctatccgca 219

<210> 530
<211> 961
<212> DNA
<213> Faecalibacterium prausnitzii

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gtaaatgaaa aatgcccggt gactgttcat catcgggcgg tgtcggtatg atggaacaag 300

gcaaggcggc aacattaagg tatctataaa aaccttgccg tctttgccac gcttgccgtg 360

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tgtggggctg tccctcagct tgccgataaa gagcagactg cggactgccg ccgtaatgtc 780

gatagaccct aatccccggt aggtgctttg cgttcctgcg gctttgttga ggtgtccgat 840

cagcacgata gcgcacccgg tagcctgtgc aatgtctccc agactgcgga atatcgggcg 900

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<210> 531
<211> 217
<212> DNA
<213> Faecalibacterium prausnitzii

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tatactcagt ctcaagcgcc agaattaaca gaatttacag cagacaaaaa ctggcagact 120

gcttcagaaa gtaaacctta taaagaaccc gagctacaaa ccactcccaa agaaaccatt 180

atacaaaata taaagaatat tattacagaa attaaag 217

<210> 532

<211> 295
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 532
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caatcttgtt tcctgatgca tctactaatg caaggtctga tgtattagtg cttcctgtac 120

ttgttgctgt aactacaaca tctgctgttc ctgttactgt aaatgtaagt gctccttctt 180

ctttatcatc agctcccttt gcaagttctg cagaaaatgt actgctgttt cctcttgtta 240

cttttccaga taatgtaaag tatccttctg taccatactt acctgctgct atatc 295

<210> 533
<211> 803
<212> DNA
<213> Faecalibacterium prausnitzii

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tgagataatc gtaagggaaa taagggaaag ttttatttag tcgttgcctg ccactttatc 180

aagtaacttt gcggattccc gcttggcttt tcttgtggaa tgggcgtaga cattcattgt 240

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tccgatgata ttcttgtgcc ttgaaccatc atatcggata ctgcgtctga tcgtaaggca 720

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tgcataataa gctatctgga ttg 803

<210> 534

<211> 201
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<213> Faecalibacterium prausnitzii

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tgcaaatatt agtcaatccc attgaaaaaa aactggctgt ccgtccctgt cgagaagaag 180

aaaaagactc ttttcgttgg t 201

<210> 535
<211> 947
<212> DNA
<213> Faecalibacterium prausnitzii

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tctcccgaga tgatttcata gctgttcaaa aattaattac aaatgcaaaa tatggaaata 240

aagagatttt accagaatta catgtgatac aagaaggctc tctaagtgga ttcataagca 300

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tgttttcctc caaatcatta ttcttttaat taactattct acaatgaatt taattattca 900

taatgcttgg tatgtgtcat atttccattg gactatacct tcctttctca ctcaattcct 960

tacatctata ttaacattct taatgaatgg 990

<210> 551
<211> 399
<212> DNA
<213> Faecalibacterium prausnitzii

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ggtactccac attcccggct tccacttctt tcatcattgc cagaaatccg ggacggtcaa 120

agcaagtacc actaatgcca tcgtccgtga aatggacaat gttcgtaaac ccctgccgtg 180

cggcgaactc ctccaacata gccttttgat tggaaatgga attgctctca cgctgctggt 240

catcatcttt gccaaagtca tcacggctca atcgctcgta aagagctgtg attttctcgt 300

tttttctcat aacttgcgct cctttcttcg gttttaggtt gtgtgttcta agagacttcc 360

caaccgcttg attaagaagt cttttagagc atacaacac 399

<210> 552
<211> 217
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 552
gattctaaga gtgtgttagc ttatcctgcc gactggatga atagcttcgg taataattac 60

tatactcagt ctcaagcgcc agaattaaca gaatttacag tggacaaaaa ctggcaaact 120

gcttcagaaa gtaaacctta taaagaaccc gagctacaaa ccactcccaa agaaaccatt 180

atacaaaata taaagaatat tattacagaa attaaag 217

<210> 553
<211> 399
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 553
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acctaaaacc gaagaaagga gcgcaagtta tgagaaaaaa tgagaaaatc acagctctgt 120

acgaacgact gagccgtgat gactttggca aagatgatga ccaacagcgt gagagcaatt 180

ccatatccaa tcaaaaggca atgttggagg agttcgccgc acggcagggc tttacaaaca 240

ttgtccattt cacggacgat ggcattagtg gtacttgctt tgaccgtccc ggatttttag 300

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gcatgggtcg tgactatctg aaagtcggtc agattatgg 399

<210> 554
<211> 247
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 554
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aagcaaatcc ctatcggaga atggcaaaag caatggcaac cgcatatacc gcccccaata 120

tagtaaaccg tgaattcgag gaacacggac caagaaaaat tctgttaaca gatatcacgt 180

atattataaa tggaaaagca ccccggtgct atatgtcaac aattatagat gcctgtacca 240

aggaact 247

<210> 555
<211> 538
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 555
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cagaaagctc tttgatgtaa acattccctg cagtcacttc aacttcattc gtatcgccat 120

tctcatttgt tgtaagtgtt ccaatctgat tactacaatt ctggtctaaa aatatgccaa 180

aggttgctcc aacaatggaa tacatcgcat ttccatttgt gacaatctca tttgcagttg 240

tctttttac cttcgcattt ccgacattca gttctgccca aaactgtcca agatcctgtc 300

cttcaccagt atagatatat ccgccacatt tatagcgacc tttgtttgcc tgtacaaatg 360

ctctcgctcc tgcatacact tcattctgaa tatcctgtga aatctcagaa tatgcagctc 420

ggacattatc acacttccag cccaactgtt cactgagtct ctgccatact acacactgtt 480

ccagcagata tccctgattc gcattcaggt tactgtgact gcccctatac tgctttac 538

<210> 556
<211> 711
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 556
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ctccagataa tccggtagtt cttttaattc agaattcata ccattcttta cggcattata 180

ttccttccag taaatggaat agaattcatt ttttttgtaa gttctgccga agtcatttca 240

taccccagc cggcaccagt atttaacaat acattcacac cctgactctg aatttgaaca 300

ccataaccac ctgatgttaa aatagtgaat ttttcctttt atcaaatcct cttatgcctt 360

aatatcaaaa cttgatctat caggtacaga aatactcaca gatcctgcta caaggctttg 420

tgtcatactt tttacatcag taccagttac ggataaggta taatcacccg tttcctttct 480

ttctgccgat ttttctgcac gtttctttgc agctttttct tcctctgctt ttttagcagc 540

tcttttctct tttacttttt cctctttttc tctgttctct tttgcttttc gttcagcatt 600

ctctttcgct attttcccat ctggatcatt tgtacaagat gctgtctcta taatatttcc 660

gtttgcatca atcatataac tctgatttgt cacagtgccc aaacatccat t 711

<210> 557
<211> 260
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 557
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ttgaaacaga taccgttgtc ggaataccct gcattgaagt cagccctata ttcatataat 120

ggtattttcc tcgcaagtat tttgaataat catttacatt gctatacccc gtcttaatct 180

gctctgtttt tgtcacaccg ggacgtgatg tttttaattc aactgtactt gttgtcacgt 240

tgccgtcttt tgtatttgta 260

<210> 558
<211> 436
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 558
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gtagactcag ctatagactt tacgagtgga aatgaaaatt ctatggctat agtatggtta 120

tgtcttggtt cttcgtttct ttgcttgggt tcgactcata agaaaaagga aaacaataca 180

gatgataaat aatttcctgc ttgtattgct ggaaaatcgg gattcataga gtccttttgt 240

gatttgcaac tgctggttga cagatttaca gcctgaaatg gtggaatgca aacagcaaaa 300

ctgttatatt tagctcataa aatctgcaaa aggaggaaaa aatgatttta gctgataaga 360

ttacagagga aagaaaaaag aatggatggt cacaggaaga actagccaat cagttgggcg 420

tatccagaca ggcagt 436

<210> 559
<211> 887
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 559
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ttatccgtcc aacattggca ccgcagaaga ttaagccatt atccacatcg ccctttacag 120

catttataag agcttttgta atacaatatg gaacctttgc agggttacat ttttcaagac 180

aattgtaaca tttggaaata gggattcttg aattgtcaag ttgtttaata aatgcattgc 240

gaagagctct tccaggcatt ccgacaggac tttggataat ctgaacgtct tcttgtctgg 300

cattgatata agcctgttta taagcaggtg atgcatcaca ttctttagta gcaacgaatc 360

tgcttgctat ctgtactcca tcagccccaa gcttaattgc atgaataata tcctgtttat 420

cgaatattcc tcctgcaaca ataacaggta tttttttgga gtatttatct tcatattctt 480

ttttacattc tataatatta gttatttcat tatcgaaatc aagtgaagct gtattgttca 540

gctgttcatt agaaaatccg aggtgaccgc cagcctttgg tccctctatt acgataaaat 600

cagcggttcg gtcatactta tgtgaccaca tttttaatat aagctgtgca gctctttttg 660

atgatacgat aggagctatc ttagtctgac aggctttgtc tacaagtgct ggtaaatcaa 720

tcggaagacc ggcaccgctg ataattacat cggcacctgc ggcaaccgct gcttttacat 780

gttctttata atgtttaagt gcaaccataa tatttacacc aacaagtcca ttaccaccgg 840

caatttcttt agctttgcgg atatgcatct ttattgctgc taaatta 887

<210> 560
<211> 1139
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 560
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ctaccttacc atctacaaca agctttatat ctgagaatgt tacatctgcc tgtcttgcta 180

caaataaacc tacatataca taatctgcat ctattgatgt aagcttgaaa tcaaaaccac 240

ctgatatagc agcattatcg ccaaatgtac atgcgtatcc atcactgtta ctctcaatct 300

taagtgcata tgtcttacca gcctctaccg gattctctaa tttaccacca tagcctaatg 360

caccatcttt tctcttaaag cagttagctg ttccctgctg gatacttcct gctgcaacat 420

aatctccaag agctgactta tcattaacat caatatacat cgcatctctt gccataagac 480

caaatgccac ctgattgtgt ttattaatgc tgtttactgt tgcattagct gttattacaa 540

agttactatc tgctggtact ttataataat acattgccat tccatctgtt gttgatgata 600

tctttccctt accattaaca gcaatgtgaa tgcttccatc ttcattgccc tcaagtataa 660

acttatcctt aataagattt ggatctccgc ctatatctcc aaatattgaa cccttgaaaa 720

ctcctgcatc tttccataat tcactctgct taagttctcc tgaatattca gcttccttat 780

aatcaggatt agacttaagt acatcagcct taacaggtgc ttccttagct gttatatgtt 840

ctgatattcc agctacccca agttccttaa ttgtcttagt tacaagataa gcattatatg 900

ttccaccata aatgtttgta tgtgtattat caacgcttgt agccttagat gatgtccatg 960

catgaaggtt gactgtctca tctggtccta atgtatcata taactctttt gtcatcttag 1020

tcatatcaac aactggtata ttaagttcct taccaagatt ccttatagac tgggcataat 1080

ctccaccctt gaaatcacca ctatcctttg tgatatgaag attactgtca gaccattct 1139

<210> 561
<211> 581
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 561
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actgtggcaa aatccatcat tgaaaccgac agaatcaaaa ctttttaaac acacttgtag 120

ggattgccta attcatccac tttgatcatc tttccgctta tactaattct cccataacag 180

tcaatgaact ttgtaccgtt ctttccaaag cactaaagca caatgctata aatgaaggta 240

atgccaaatt cccagttata ccattgccct gaatattctg ataattaatg atgtaactat 300

tcttttatat atactccatt attcatgttc gcctatcttt tttacagctg atcgtacttt 360

gcagcacttc cttttgcctt ttccactggg tactttgctt cattctgcga catcttcata 420

ttgatgattt catctgcatc gatttccaat ttatccatca gattttggca ataaactatg 480

acatcagcta gttcctcttt aacatgctgt atatcatact ctttatcatt ccactgaaaa 540

cactccaaaa gctctgctgc ttggatgtaa aacagttttg c 581

<210> 562
<211> 869
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 562
aaggcattcc catctgcaaa agtcttactt ccaattcatc tagtacactg atttcctcga 60

tatatctatg tatactctct gtcaccagcc cttctgattc aacttttgtt ccagctgtga 120

caatctgcag caagcggaat acatcgtact tatgcttctt taaatctttt tcattgacat 180

gctcgccggc tctctttcgt tctaaaagat taatccacgc atacattttg aatggaatca 240

gatgctctgc tcccagaaca ccaataccat caaccactct acgtccggac atcataaatt 300

tataatagtc atcgttcaga agaatcgctg ataaactgga agtatcatca tcaatatgaa 360

tcggtataat tccctcttca atttcaagaa gatatcccgg ctttcttgaa aacaactcaa 420

tcatagtagg ataaccgaat ttgccttctg tgaagcggta aaagtgcata ttctgttcat 480

tcttccatcc gcacttatag ccgccttctt ttatgtattc ccagaatatg ctcgcaaatt 540

ctgggaagtt gtcctccata atcaggatca tatcaatatc ttttgtcgct cgaaacggca 600

agtctgcctc tgagagtaga atatcgcagg cagttccgcc gataatagtg taataatccg 660

tataattttt aaatttttct ctaaaagagt ctagccctgg taccatttat aattcctcca 720

acaatttctc aatactcatt tctattcttt cgtcttcgtt acctttgaat gtacatgcaa 780

gcgaaacagg atcaacacat ccttctcttg caaaataaga tggattgtat ttccataatt 840

gtaccttcaa gcagtcgtcc atatcttcc 869

<210> 563
<211> 1251
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 563
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ataattgtaa tctctttctg gaccggatta atcaaatatg cttttgcatt ttcataatac 120

tctttgcgtg agtaatttct cttaatagca atctctgttc tggatttcat ctggcggatg 180

agtcccattc cctctaattg ggctgttgct cttgtaatgg acgtcttggt aagattcaac 240

ttgttcgcaa cttcactttt taacacagat tcctcatcat ccatatataa caattcaagg 300

aacaccatct gtgttgcagg catcatctta tctgtcttga caagctgctt gcgatacaca 360

tcctgcaata taattcccat aaatggtaaa aatacatttc ccggcagatc tacaaacgga 420

actccgcttt ttaccagagc atttctcatg gatacgctgt ttaacgctac ttcatatgct 480

accgggcact gcaatgcttc ctcatacttt gctttctgct ttttcattgc agcaacactt 540

agctccgttt ccttcataac atctattatg gcaaagttaa caccatatat ttcaaccatc 600

gtaatctcac gcatagtcat aaaaatcggc aatggtaatt tattcttgta ttctgctatt 660

tttactttgc agccgaaata ctgctctaat tgcttttgca tatgacgtct ccttgtaaca 720

tgtttttata tatgataaca tattctttgt tactttccaa tcatttatgt tattttattg 780

tgatcagctt ggtttttatg catgtttagg taaggtatac gattattatt aatagtacaa 840

ccacatagta tgtattgcag tcaatcatca aattgtttct ttcattttta tcaattttga 900

tacaaatacc ggaactaata attattctaa taacaattcg gaacattttg ataacatttc 960

ggtgcatcgt aatgttcata cttatcaact tccatctcac gactgcaaat gcaacagttc 1020

catataaaca aaccgacact taaccgacat tcaaaccgac atttttttgt aacgaaaaga 1080

agtcccccgt aggaactcct ttcaccacaa atcatattca tttttatcaa ggacagtccg 1140

gttgataatc ctactgtttt aataaaatag gggtacaatg gggcacaaat cccattctca 1200

ttcctcaaaa gccttgattt taaactggtg ctagaatata aatagtacaa g 1251

<210> 564
<211> 702
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 564
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ccatcatatt gaattattat tttttcaact tcttttattt tttcaatatc tttaaattga 180

ttaacgttaa aatatttacc atctttttt gttattgaaa ttgaagaatt agaactttca 240

tataaagtct tttctatttc attacttgat ttcattattg ttaaacaaga atacaaacaa 300

gatagaacta tagttaatat aataaaaatt attaaagttc tatttctctt tcttgtaata 360

tatgctatag catttttat cactttccta actactcctc tctattttct tacacccaac 420

tgtacttaag ctcaaacata acgtaagtaa taggcatgct cctctttata ctattttttt 480

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tctacacacc ttttatgaaa cgttgatgaa atataatttt ttatttttcc aaactatggt 600

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tatatgagca agcataaact aactgaagaa gaaaaggctc tt 702

<210> 565
<211> 439
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 565
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gtaatcgctg taagtacgaa attaaggatg caaatactaa ggaagaaatc gaagatgctt 180

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ttaattggtt tagatatatt cctataacat ttaccgatag aaatcattat aaatcaataa 360

ttgataagga acctttattt gcaaatgttc cagcattgat agattttcaa taattttctt 420

gaagggaatg aattctaat 439

<210> 566
<211> 2510
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 566
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tagacgatgt taaggttagt ggtaaaatta aatatgttgt gattataatg cataaacgtg 180

tagaaataaa aatttttatt ataatacaag tatgtttgaa caaataatgg tcaaaaactc 240

atcgacatcc gaccccacac acgttataat gtaagtaatc taataagaaa acagtgttat 300

cattaccgca tacagaatga gaatggtagc cataaatatg aattcgcagg aacggaatgg 360

ttgaaccctc agggtgacag tgtcactcat ttgtcagcga gaagtgctta actcggatga 420

ttttcagttt tcttattttg acatggattt acaggaaagt cagtaaaatc aagttgttgc 480

ttgacttatg ttgaccaaga aaaacataga ttttctgtag tgacttgaac tcctaagggg 540

cagttggggg ttcgattccc ccagggaaca ttattttagc agcaatgatt gaatgtgtca 600

ttgctgcgtt tttaatatca gatggagtcg ttacatttat aacatttcag ttgaaaagaa 660

aaatcggagg taataactta tgggatatga tatagagaaa gagaaaagag aagcgataga 720

tgctggatac agggcaatca atagtttaaa gacagccaga gataatctga acagtgcaaa 780

gaactgggga ttattggata tgtttggtgg tggatttttc tccacgatgc ttaaacattc 840

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cagagaatta aatgatgtga atattgcatg tgatttgaat attaatatag gagatttttt 960

gtctttcgca gactattttt ttgatggatt tgttgcggac tggatggtac aggatcgaat 1020

caataatgcc agatgtcagg tggaagaagc tatccgtaga acggaatata tcataagtca 1080

gttgcagcat atgtaaagaa aatatatctt aatagtaatg ttgttatttg aatatttatg 1140

gaggaataag ataatgtcaa aggatgaata tttaatcaca gatgcgcctc taaaagcgct 1200

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gagagtggaa aatgtttttg cgttaatctt tgtatctatt ggaaatgcag tttcgccata 2040

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acttgtatta gacgtatgtt ttgcagttct tgcattcata gttattgaaa cattacatac 2160

gcagatttca tcgttgtttt taggaaaaga tggaactgat ttagcatatc aggtgtctgg 2220

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gcttgctgta ccagcaggct ggtttgccaa ctttctgatt tcttatgtgg cacttagaaa 2460

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<210> 567
<211> 12583
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 567
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tctgctataa agatttgaaa taaatataat aattaaagaa aggaaataac aatctatgac 180

accacatata aatatgatga aaaagaaatt ggaagatatg catttgaagg aaaggataaa 240

ttatggctac aaaaaagtta tcattatgat gctgatatcc gggctgtttt ctataatagt 300

tataggtgtg ttatttgcta atatgtatca ctatgtagaa aatgtttcgg ctgcagacca 360

ggctgttaaa atgtgcagag taaatgttaa ttctgctgcg agaaatataa gagaaatggc 420

attaaataat gatacatctt cttacaatga ctatgaactt acagtaaaaa aattgcttac 480

ggatgttgat tcccagcttc agattataaa gaagagtggg gttgtttcag aggcagatta 540

taatgaatat gcatcttatc tttctcagtg gggaaacata ggttattcaa tcatagaaaa 600

tattaaaagc ggcaacaagg ataaggcaac tgaagaaatt cttaataaat gtactcctgc 660

attgaataag cttgttgaaa aagcaatgag cttaggtgat attacagata aggcgagcaa 720

taaggctgct ataactacat ttatatttgc agctgcagga attgtatgta ttattgtttg 780

tctatcgatt gcgtggatac tggcaaagag gacaagtaag aaagtacttg aaacgattat 840

tgcaccatta aagtcagtag aaaatactgc agatgaactg atgaaaggaa atcttcacag 900

cacacttgat tataagtctg atgatgagct tggaagactg gcacacagcc tgcgtaactc 960

tattgctatt cttggaagct acgtagatga tatagaccgt gcaatgaagt tgtttgcaga 1020

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<211> 916
<212> DNA
<213> Faecalibacterium prausnitzii

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<210> 577
<211> 522
<212> DNA
<213> Faecalibacterium prausnitzii

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<211> 617
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<213> Faecalibacterium prausnitzii

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gatattggaa tttacaatct gggatttttg cgtattgtta cagggtgtga tccgcagaat 180

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<212> DNA
<213> Faecalibacterium prausnitzii

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gaaagccaag gaaaagtatg atacgcagag agaaaaactg gcaggcagat ataaaacaaa 420

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<210> 580

<211> 311
<212> DNA
<213> Faecalibacterium prausnitzii

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<211> 742
<212> DNA
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<211> 201
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<213> Faecalibacterium prausnitzii

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<210> 583
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<212> DNA
<213> Faecalibacterium prausnitzii

<400> 583
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gcaatattta cccagataag aaaatagctc tattttccat ggataacatc atcacaaaac 300

tgccacaaac agaattcaaa tcagaaataa tgggagatga gtatgcgcaa ttatagtata 360

<210> 584
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<213> Faecalibacterium prausnitzii

<400> 584
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<210> 585
<211> 507
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 585
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<210> 586
<211> 3499
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 586
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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<212> DNA
<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<211> 154
<212> DNA
<213> Faecalibacterium prausnitzii

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cggcttagaa ggccgttgct ctatccaact gagc 154

<210> 811
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<212> DNA
<213> Faecalibacterium prausnitzii

<400> 811
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tcaggaattc agcaatcttc tgtgcattat agcagtgacg ttccacgcgg agaggaagag 120

tttcaagtcc caagtttaac aggaagcagt ttgtaggaga cgggatagag cccaggtcac 180

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<211> 174
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<213> Faecalibacterium prausnitzii

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gttctgatgg caataaatat aagaacatca ataaaacgaa aaaagttaag aaac 174

<210> 813
<211> 710
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 813
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gattcccatc cgggtcgcta gattgtgttt aaaccaatcg tttgggatca tagctcagct 660

gggagagcat ctgccttaca agcagagggt cataggttcg agtcctattg 710

<210> 814
<211> 1192
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 814
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tgtgaataac atctgaattg tcaaatatga caattgaata tgtgggcgta gctcagctgg 180

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tggtacagca atcacaacaa caccaaaaca gcaggttaag gctgatgatg gatataatgg 540

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tgaattaaga agagcaggaa gaaaagtttc ttataatgag aaacagccag gagatatcat 960

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cagaaaaaca ggaatcaaaa tttcgccaag agcaaactac cgtagaattg tttgtgtaag 1080

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atgtaggggt tctttttttc gatttatagg aaattcccct atgaattgta at 1192

<210> 815
<211> 381
<212> DNA
<213> Faecalibacterium prausnitzii

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atcccaccat gtagtggcag tacgtcgtgt actacttgca gatgatttaa aatatttctg 180

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<213> Faecalibacterium prausnitzii

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<210> 817
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<212> DNA
<213> Faecalibacterium prausnitzii

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<210> 818
<211> 582
<212> DNA
<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<210> 1056
<211> 2377
<212> DNA
<213> Faecalibacterium prausnitzii

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caatctgctt tttgaaaaga ggaatcacac ttccgttact tcccagtaca tttccgaagc 540

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<211> 671
<212> DNA
<213> Faecalibacterium prausnitzii

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ataagaagca ggacgatagg gatgaagccc aatgtcctgc ttcttatttc actctgtgcg 240

aacagtaata tatttttgat ttctactgtt tggcttgttt ggaattgtca ttttaagtgt 300

accggaatct agtaaaggcc gtagatattt cttggtgaaa tttttgttgt ttttatatcc 360

acaataatct gcaatttcag cttttgaatg aggagttgaa caaaaaacaa gaaactcatc 420

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catgatggag taatcatgat ggtaatttac atttttttaat ataactctga aatcggttgc 540

cgttgaggaa aattcaggct tatatgcctc tgaatatcca ggcagctttt cggtttcact 600

gacgattttg cgtaggccgc ttccacggcg ttccatgtac ttcatgcggt ggaacaggtc 660

agcaatcaca g 671

<210> 1058
<211> 2304
<212> DNA
<213> Faecalibacterium prausnitzii

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cactaagtac tgggtattgc ttgtagcaaa gcttcacaag attaagcaac ttcgttgcaa 180

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cggtcaggcg agcatggaac ctatgacgca aagcacaatg accgcagatt tgatgtagaa 360

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tgtccggaag aaactttatt acagcttgga aacatggacg gtgcggtgtc tgctgatgtg 660

cttgcacagg tcagtgcaga atatttcgag gaatttaaca gacggtatgg ttcccatgtt 720

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agaaaacagc ggaaaataaa gcaa 2304

<210> 1059
<211> 309
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1059
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aagtctggtc ttcaggtagt ccaactgtgc ctgaaggtta gcgatcagtt gatccttttc 180

gctgtctttg gcatcacgtt cctgcagcat ttcctgcagg gaacggataa gctcgttctg 240

agtgctgatt gtattattca gttgtgaaat cgtatcctta agctctaaga gctggatatc 300

tcttactcc 309

<210> 1060
<211> 733
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1060
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taagagtatc tacataaaca ttctctgtcg gaagatcagc aaagacctca tcataagcag 180

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cggtactttt tattgccctt ggctgctcga tttcaagacc ggacataagc cagtcaaact 660

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<210> 1061
<211> 562
<212> DNA
<213> Faecalibacterium prausnitzii

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caaattgcct ccatgtaatg ggttttacct cattacggtt gcgcggccaa cggtattttc 180

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ccatattcag ctggtctttt acgaccgcgc ataatccatc aatggacttg cgcatatctg 360

tataaccaca gatcacataa atcccgtctg cgacagtgat gtcccctaac atgtccctgt 420

cacagcttta aggatctgtg acagcagctt cgggtcaaca tcatttgaaa tttttattga 480

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ttcgacagtt ggaatgcccg gg 562

<210> 1062
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<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1062
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gggatttact ttgtgttatt cctttttatt tggaattttt cattttcaga atatttatgt 360

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<210> 1063
<211> 3063
<212> DNA
<213> Faecalibacterium prausnitzii

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<210> 1064
<211> 501
<212> DNA
<213> Faecalibacterium prausnitzii

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ctacagtatc ggcgctagat actataaatg cgagcgtttt actataacta tggaggtttc 180

ctgtatgaaa acgcaaagac gcacagcaga cgaacaatat caacttatca tggaatgccg 240

cagcagcggt cttagtgact accaatggtg tacagaacat aacatcaatc ccggcacctt 300

ttacaactgg gttaaaagac tgagaaaaaa agcttgttat gatatcccct ctgccacagg 360

acgcggcgat tataagccag cccttaaacc ggatgttgta aaacttgagg tgatacctga 420

tcatcaaaac ccgggcattc caactgtcga aagcacaatg cttccgctgg aagaaccctg 480

ccccgccatc gaggtcatgc t 501

<210> 1065
<211> 815
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1065
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aagttccagc ctgacagcag atttttatgc taagttagtg gttaaagcgt atcagcttag 120

gcgtcagatt gacctcatcg ggtggaatcg gcctaagctg aagtgctttt aagatgtcta 180

taccatagtt ttcaagtgct acatcatacg gtgttcgacc accaaggctt tctcttgggg 240

ttgaatttat gtggtctacg atagctctta aatcccactg ggtgaggtat tcaaagctgg 300

tctttttagg aagaatcatt cgaagcatgg tatgtgcctg ttcgatgccg ccttttttgac 360

cgcttctcat cggatcacag taatagatgc ttgaccgcat aatgccatta atgccgtttt 420

cgagagactc cggatctccg aattcggatc cgcgatccgt aagaatcgtg ttgaataagg 480

ttaaaaaatc atatgtgcca agctggtgtt ccaacttgtt aaaaacaagt tttacggcac 540

ctttggtgca tctgttcata atgaatgcaa gaaacagttt ttcacgggtt aagaagaatg 600

tcaggatgac acgctttgag tcctgtgatg agtgaacggt atccatttca gcaaaatggt 660

caagttcaag ggcttgaaaa tcagaaaaca tacgtctgat aaaaacggat ctgtctttga 720

tctgggtctt gtgtactttg cggggtttga attttacctg acgtttcaga tcgatgtttc 780

ttgcggacag gattccttta tcaaggtaag aatat 815

<210> 1066
<211> 637
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1066
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gtaagaatac aagagttctc acggacatat cgagttctgg atgattcgtt ataatctgat 120

atggagactg tccctgaaaa atcaggggcg tgatgaccat atctttctga tgcagttcgt 180

gtctggtcat gtttataccg gccctggact gtgagagaca ttctttgtat ttgcggtcag 240

caaaaatagc atcatagcgg tatttgtggg caatcgtgca gtgattgatt gcttttggac 300

aaccattaca cacataaggt gctttatcga gtcggttaca tcgttctttg acaaagtccg 360

gacatgtctg gttgcaggtt ggacaggtgg tacatttgac accgcagaga ataatcttgc 420

cacaggcatt gactttttg caatgatatc tgtggacgca aaagttatgt gcattgttaa 480

aacagccttt gtgataccag tcgctgagcc tgtgcagcct gatttctttt gagattgttg 540

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tttcaatgta tttgcgatct tcgagagtaa gatgttt 637

<210> 1067
<211> 272
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1067
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atttcaggtt ggtttggcaa aggttttact tttatgctat taacgttaca tgatggaact 120

acggcgcagt tgtaaatttg ttcttccgaa agaaatgtcc cccttcttcc tgtagatagg 180

aaaactataa gtaaaagaat gatgtccgca aatcctgtct gtggaacaaa cataaaggca 240

ccagaacctg cagttaaagg gacgcctcaa aa 272

<210> 1068
<211> 235
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1068
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tctgaatcag aagatccaga tccgcagacc gtctccgaat ttgaagaacg ttataaaaca 120

atcctgtcca tagatgggga tgaatacgac tatgagccgc ctgggaaata ctaccgtgat 180

ggatacaacc tgtacaaaag gatgaaaaag tataagaaag atcatcttct tttcc 235

<210> 1069
<211> 431
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1069
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acattggcct ttgccgttaa aagctcccgc atttcctcac gggaacgccg gtactcggca 120

taggtccttt tcttttcttc cagcaatttc gcatactctg tctgcaactc tttgaccttg 180

ggcagcttct tgatgcccat ctcgtcaaag gcattcttag cagcctggtg gagcagaatt 240

tcttcctcat gttcttcccg gaatttctta gagtagccgg ccttgcggta tgccacatag 300

acctcacggg tcttggcata atttacgatg tgagtacgca gaacagcaat ctctgccatg 360

cgcttttcag ccgctttgat ctgcgccgaa agctcattgt gatgtgccgt ggcagccgca 420

gccttttctt c 431

<210> 1070
<211> 1458
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1070
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tccgcagcta tatgctctgg atgtatggtg ttaaacttgc ttatgagcgg tcatatgagt 120

atgtgaaggc tatagcggat tatttcgggc tggatatcga gtttacacag gaaaatcgtg 180

tggatttttg ctggcactcc aactatttaa agtgcccgga aaaatttttc agtccggaga 240

atttttataa aatgcgtgtg gatcgcttta aagatgctat tttgcatacc agtaaaaagg 300

gatcggaaga ttttgaaatt gattatctgg ctatgggaaa acggtctcaa aaaattttta 360

tccggattta tttgaaatca aaggaagtag ttgaaaaagg ttataaaccg tggtttttta 420

aggtgtggct ttttaatggg ttaattaatc gctatgacat gtactgttat gaatatgcat 480

ttttgaaaca tagctggaaa tctttagatc ttggtcggtt gcagttttac gcggagtatg 540

gcagacagaa acattatgtt gagaagtgcc gccggatatt gtcgcaggaa gaaacgattt 600

ccccggattc gctccgtgct ctggctgatc ggcttactcc ggctgtaaac cttgttatga 660

atgttgagta tcaggtaatg cggaaacata cgaaatcgta tgaacttatt cctttttttg 720

ataactcgga taagctgacc gggaaacgta tttatgattt tctggataac cgaaaattga 780

tttgtgatta tttgaccagt aaagtttttc gattggttga acctcacgaa cctggaaaaa 840

atgattcgaa taagtccagg cgggatttat gtgcattctg gaaagcactc cgcagttgca 900

aacttacaga tacatttatt ccggaagagg atagatcttt agtcaggaca tatacaagaa 960

aactgaatag tgaagtggtt aagtcccggg cggtgaaagc tgctattact tatggaattt 1020

atgtccgtgg tattaacagt gatgatcctt taacagattg cattgaggct ttgtgtatgc 1080

tgaatgataa tgatctacat gatgcataca actataagac aaaaaaagtc cgccaattca 1140

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tttatgaatg tacagatggc ttacaacttg tttctggttg atcgtgaatc atattgttca 1380

gataaatcta tattgtatta tcgggaaaac atcttaaaat ttatgaattt tctgtctgat 1440

cggctcggat tagctcct 1458

<210> 1071
<211> 235
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1071
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ggtagtattt cccatgcggc tcatagtcgt attcatcccc ggctatggac aggattgttt 120

tataacgttc ttcaaattcg gaaacggtct gcggatctgg ctcttctgat tcagataaac 180

cattccggta atggatcatt tcctgtatca gggaatgcat ctgcctgttc cagga 235

<210> 1072
<211> 2664
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1072
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gaagtattgg aaataccgga tttataaaca gagtttgggg caaaatcact tctacaagta 120

acacgcaagc aacatacaag aagcgattaa atctgattaa tggcttcgac cagcacaggc 180

acatccagat gcgtgtaaat ccgttctgtc agggacatag cgccggaatg accgacaatt 240

tttttgatgg tcgtctgatc gacatgtgct tcggcgagca gggaaatcgt ggtgtgccgg 300

cagcagtgag gtgtatgatc gatgtgcaga cgaaacatca ggggttggaa aacattgtgg 360

taatacatat aataggtaaa atgctggctg tccagagtat ggatgagata ttcacaatcg 420

gaacagtcat gaagccagcg ctggtaaaag gggagtactt tgtcagcaat cggaaccttt 480

cgaatgccgt tttcggtttt gctgtcaatg acatcaaaat attgttcgga cagatgaaca 540

ttttcttttt tcagttccaa aagctctgag acgcggaccc cattgtatat cagcatgagg 600

actgtctggc aatagggatc gtttttgtgt ttccacagga gagcaatttc agaagtggaa 660

aaacagctcc gtatgttttt attaggattc cggtctttgt atttcgagat atttacatag 720

gcagaataat cttttgagac aatttcgtgt ttcatggcat aagaatagag ctggttaaag 780

agaacacgaa ttttttcag ggtaggatag ttcttgccgc agtgatctat cacctgctgt 840

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gctgcccgat aacctttgat gttggagtgg gagatggtag gaaacttttc ttcggaccat 960

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taacgtgcca gaatctgcaa agcttccgac cgggtaggag cgtagcccag aatctgatag 1080

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atttttcttc ctttcgtgtg taaaaattta tattatcgtg tcaatcatac acatttattt 1260

gtaaaatttt taagtaacac acaagtaaca aaaaagtgtt tttacctatt atatatattt 1320

tacgtgttga aaaaacgaag gtttagaggt attatattct agaaaaattg tttactaagg 1380

agagaaaact ttgagtgaga atggatatcg aaatttaaaa aagacgaata agctgatgat 1440

tcccgtcatt ttgatgatgg ggtttgtgcc attgcttgta catatgtatt cctataattc 1500

aaatctgtcg cagtttgact ggtttccggc caattcagat acacagacag atttcttttt 1560

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tcggcattat gtgaagaaag agaccctgca gtttgaaaat tctttttatt ttctgctggt 1680

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cattggcatg gctattgtta cagtgatcgg cgtatttcag tattttggac tggacttctt 1920

tcagtcaaat tttggaaaac atttgatcac aaatcctgga tggtggaaga atttaaaaga 1980

gctgacgttt aattttgcac cgaaaacttc ttatacgaca ttatataatc cgaacttttt 2040

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gatatggcat cggatagtgc tggcagtagc tgcagtatgc tgtgccatct gtctgaaagg 2160

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gcttttgagc cggaagaaaa aactgtttgt tgtgggtgct gttgtagtgg taattgggat 2280

tatagcagca atcgtacttg gaaataccac ctcagcaggt gaaaatataa aaaatacaat 2340

tgttggtaca taccggatga gtgacagatg ggctctgaat ggagtagaaa ccaatacgga 2400

tgatgtcgtg cttgatattc acgggaataa actgagtgtt tcttataccg tgggagagga 2460

cggaacaaca cagatcagct gtaaagattc ggatggaaac gagttaagtc agacgatagt 2520

ggatgcagat aaccaggtga caacgatgga tgacagccgt ttttctgggg tacagctgca 2580

accggtatct tttggagata acctgcctgg aatttgtgca acgattgatg gtgtgcagtg 2640

gaacttcata aataccgatg agaa 2664

<210> 1073
<211> 517
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1073
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cgaggacttc tcctaactgt tccagttgag gaatggaagg aagaaagtct tctttttcca 120

tacgagagat tagggaacgg ttgattccgg ttgcatcagc aagagattgc tgtgtcatgg 180

agagtttctt acggttcgtg attatgaggt tcgccaggat ggcggtggag agtttttttca 240

tggtgatttc ctttctatgg ctataataat gaaaaagtta tttataataa caaaatagcg 300

ctaataactg tttgtatagt atcataaaat aaacaaaaat gcaatggagt gtgaatttaa 360

acgacaaaaa tgtaagctgg aaaagaaaaa gtgaatttct ttattcatgt gatacttgaa 420

attaagttct acaattttta aatgttgaga gagaatataa taaatattgc aagaatgtac 480

gtttgttagt ataattaaag aaaaatatgg aaggatt 517

<210> 1074
<211> 774
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1074
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ctataatgat atggtgcgtg tatgcaccat actgtatgta tatgatagaa tagaaaatag 120

ccataagctg catagaaaac agctctcaag gttattatgt aatatagaac ggattatctg 180

ttttactttt atggtattca accgggacaa ttcaagcacc tgacaatttg cccgcagata 240

cccttctcag aaaggattca caacaacact atggatgata aaaacacata ctctgttgat 300

aaatatttgg aaatcattgc cgaaaaagaa ggaatcacaa aagaagaagt ccaacaggaa 360

attgggcggg cagtttccat tgctttaaaa agccctgatc cacaaatgca acgcttctgg 420

acagactttc catgtgaaaa tgatactccc atcattgaag aaatcatata ccatctcgct 480

gaaaaatttg caaaagagtc atagacaaag gacaggataa ctacccgtct attcactcag 540

ataatcttcc tgtcctctta atatttgttc aatcatatgt aatgcaaatt ctatttctct 600

ttcgtcgcac cgattcatca taaatgcaaa acgctcaatg tgcttttctg ggtgctgctg 660

gctcatcaga accataggcg atgactccaa tgcatgaaca atattcaaat atgtatcaag 720

actcattgcc cttctgccat tttcaacact tttgatagta tccaatgata catc 774

<210> 1075
<211> 1595
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1075
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gcaaagtatt tcttttccta ataaaatgta acagggattt tgtcagtttc aaatagacac 180

ctctaccgat ttatgctaga atatttttg tataacttca tagaaagaag cggatgcgtt 240

cttttgatgc cctctagttt tacgaaagag ggtgatgccc atgaacacaa tggaggtttt 300

aactttgttg ctggtaattt ttgcggcact atcttacata gataatcata acaaaaagaa 360

atagcatccc gccctgagaa agttggatgc tatttcttaa atacatttaa attactgagg 420

gcaatcggat aacgcatccg ataacctttc tgagatgatt atacaataag aggcttgaga 480

aatcaagtct cttatttttt actttaacag taagttccct gtttatcact tttatacagt 540

tgttaaaagc ccctgctcct tcatgctgta ataggcatat ccgtaactgt caccattttc 600

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taatcgcttt gtagtgctta tgtcttcttt tgaaacagat acttctcctg atgggtggtt 720

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ttttgtatct aatgataaaa gatagacata ttcctctgcg gccgtgtgaa gttcaaacaa 900

atcacaaatc atacttgcga ttttttctgc acagtctaag tgcttatttt ctgttttata 960

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catcatctaa attttcgtct tcttcatagt catcatcata atctttgtca aaatgttcac 1200

acataatctt tactcctttg taaaaaaata aggagaatgt aacttacact ccccttattt 1260

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acattctttg gaactttctt ttgcttcctt tgtctttgta cctgatataa attcaaagct 1380

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tttgcagcct tgacatacat agacaataaa cataaccgca aataaacgga aaggctatcc 1500

tctacgccaa taggggatag cctttaatcc gtttgatttt taaactgatt atttgtttcc 1560

gatcggctgg atgcctgtat tacatggctg aagga 1595

<210> 1076

<211> 4158
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1076
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gggaaatgtt acgaggcaga atttgccctt gcttatgtca ggtttccaga agaaatgcag 180

acggacgtaa acagtatttg cgaatatctg gaggctgata cgaaatcgct tggaaagcaa 240

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tcaggtgatg cagggggaat tatttaaaga actggatgaa aaccggccat tgggagaagc 360

cgaggctgtc cgtcaggatt tcacagcgcg ttatcaggga ataaagcttc cgttttcacg 420

gcttttggca catttggaag aagatatcgc acagttacag gatctgatta aagcggggga 480

tcgtgagttg tttgaagata ttctggccaa tacggtcagt cgtaaaatcc gcggcaaaat 540

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gagtggctta aagctgagcc ttcgctggcg cagcaagacg gcagagagtg aaaaccagct 660

ggatacaaaa gaactggtag aactgttaaa gaaggattac cggttaatga gtgaagaaga 720

ggcagcacgc ctgtccacac attttcgctc aaaagtcgaa gaagcaagaa ggagagcctc 780

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ttgctgtttt tgcaacggaa atcactggaa atccacatgc atttgatcaa aaaggttcct 1860

ggggaacttt tttgtatcag gtgatcccga tggaattgcg gcagagaagg gtattcccac 1920

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ttgcagtcct ttcaaagtgg aacagcatat tttgcaaaga taatgaaatg tatatcgtgg 2160

aaaatccgtc cgtatttgca ggcctttgcg cagggcacac aaagcaggtt tcctgtatgt 2220

gtatgaacgg gcagccgcga ttggcagggc ttgttacgtt agatcttctg gcggcatcgg 2280

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aaagcaagtc gaatgaaaca atttccgaga aacggataaa aagtctggaa cgcatcacgg 2460

atacagagtt atttccggtg gcagaaaaaa tgcgcctgga ccggctgacc ggatatcagg 2520

aaaaaataga aataaaatag aggcttctgg cataatggtg gaagcccagc accataaatt 2580

aataacaaca tattgaaaaa accacttgcg tcccttaatg tattaactgc gaagaaaacc 2640

acaaaaggag tattcacaag tggctttatt ctggcgatag cggcaggacg tgaagatgtt 2700

ttttgacaaa acgcgaattg tcaatttgat aaaatagtat tgtgctggaa aatgagaagg 2760

cgtatgataa aaatataaga catgtttaaa gcggaggaaa agataaggag gcaattgatg 2820

aaaacaatca aaaaaacaat tctaagtttt acacttgtat tttttatgat gattttgcca 2880

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taaactgcta aaaatcaaag gcggatggct tcggtcatcc gtctttcttt aaccaaggag 240

ataaaatgga agaggaaagt tttaaggaac gtgcccgaca ggaaatgata aaagctgcaa 300

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<210> 1087
<211> 3682
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1087
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tgttaaagtt tgcagttatt attgcaaaac ataatgggaa atgggtattc tgcaagcata 180

gagaaagaag tacatgggaa gtgccgggag gacatagaga acaaggtgag gatattcttg 240

aaacagcaaa gagagaattg tatgaggaaa caggagccat taattttgag ataaatccga 300

tatgtattta ttctgtgacg gtgccagaca actttaaggg gaaagaaacc tttggaaagt 360

tatttttcgc ggagatacat acgtttgaaa aagatttaca tagtgagata gagaaaatag 420

caattatgaa tgaactaccg cttaattgga catatccgga aattcaacca agactgctag 480

aagaagcgag acaaagagga tttttgccta agaaggatga aataaaatgg ttatttttg 540

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gaaataaaaa aggtgattta gagatagcaa aacaattgag gatagaacta cctaaatggg 720

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cggacagacg tatatttgaa attgctttgg aaagaagtgg ctgtaagccg gaaaatgcgg 960

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cgatatggat aaaacaggga tttggaagtt tgtggactgt aatggaagag agtgaaaaag 1080

ccgatattga agttaataac ctatctgaca ttttgaatta tctataggag ggaaagtgaa 1140

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ctattagaga atacaggaat cgggaaatgt taggaaacac gtttcgtaag gtagaagcat 1920

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gatacaatta cggaaaatag tgttttatga atctgatcaa tcgaattttt tgtgtaaagg 2220

agaactttat gaaaaagata ttagtgacag gcggaacaac ttttgtaagt aaatatgtgg 2280

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cctgaatatc gcagacaaag aa 3682

<210> 1088
<211> 230
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1088
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attacttttc attggcgata tcccagcaat atttctaaaa ctccaaacta tccgcattga 120

gcagaaaata cttcattccc atgattacaa agccttcctc atttctccaa ggctttttg 180

ttccgtttac taccacgatc tttttaaatg aatcagggat atttctaaat 230

<210> 1089
<211> 525
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1089
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tggtaataca gtggcagaag tgatagtggc aagagctgat cataataagg aacatatggg 120

acttaaatca tggaaaaatg cgccggatgg taaaatagta aaaacagatg tgtcaattgc 180

aaaaaactac ttagaaaaag aagaacttgc agaattaaat gagattgtga caatgtatct 240

tgattatgca acaagacagg cacgaagaca tattcctatg actatggaag attggaaaac 300

aaagcttgac gcatttctta gatttaatga tgcagaagta cttcaggata aagggaaagt 360

tactgcagct attgcgaaag aatttgcgga aagtgaattt gagaagtaca gagttataca 420

ggattcattg tatgaaagtg actttgataa attgatgaat gatatggaga aggatggtac 480

taacgattag taccgctgac ttgaaaaagt aaattccagt gcaag 525

<210> 1090
<211> 1547
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1090
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ccagtctgac agcagatttc gatcagttaa ttagttactt cttaaagcgt atcagcttag 120

gcgttaaatt gacttcatct ggtgaaatcg gcttgagctg aaaggcttta agaacatctt 180

ctccaagtgt ttcccgggca gcatcatacg gcgttttgcc gtcaaggctt tctcttggag 240

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cgctacgcat tggatcacag taataaatgc tgcttctttg tatgccggta attccagttt 420

ctaattcttc tgggttccca aattcagagc cacggtcggt taagatattt tcaaaaacag 480

atgtaaattc atacgttccc atacgttttt ccaaacggtc aaatacagca cggacggcac 540

cttttgtgca ccggttaata agaaatgcaa gaaacagttt ttcctctgta aagatcatgg 600

ttaacagcgt tttctgggag tcccttgatg actttactgt gtccatttgt acataagaat 660

ttaattccaa agaacagaag tctgcatagg ttctgttggt aaatacttcg cggtctttga 720

tctgtgtttt gtggcacttt cttggtttga attttgcctg ccttttcaga tccacatttc 780

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taccgccctg tgggcatgcg gacgaaaagt tggactgtgt aatgcct 1547

<210> 1091
<211> 605
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1091
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cagattgtag aaagcgaggc ggagaatgat gaagacgctg aatgattata tggcaatgtc 120

ctatcgtatg gaaattatag aagataagga tgagggggga tttgtggttt cttatccgga 180

tctgccaggg tgtattacct gtggagaaac tgtagaaagt gcagtagaaa atgcgttaga 240

tgcaaaaaag gcatggcttg aagctgcatt agaagatggt gtagagattc atgagccaga 300

tagtctggag gattattccg ggcaattcaa attgagaatt ccacgaagtc tgcacagatc 360

gttggcagaa cattcccaga gagaaggaat cagcatgaat cagtattgtg tatatcttct 420

ttccaaaaat gatgcggtgt tttcaaaata agatgatgca gcaaaaatgt aaatgaaatg 480

ggatgctttt cagttgcgtg aattgatgaa tatagattgc agataagaaa cagaaatcag 540

caaatcagcg ggtacaatat gcccgctgat tttttcgtta catgaaaagg gcgattcgtt 600

acatt 605

<210> 1092
<211> 159
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1092
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gatgattcat aaaatgcact acaattataa ttatcatatt tcctcttcca gtgcatagtc 120

ttttatccag tcatcttcta cttttagcgg attttcaca 159

<210> 1093
<211> 914
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1093
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ataaatttat ataaaataaa aggtgaaatt ggcagagatt atttcagatg aagaggagga 120

attttatatg atatgtccga agtgcggcag tgaaatgccg gatgacagtg cgttctgcac 180

cagatgtgga gccagcttac atacaggaac acaggaaaat cagaattcgc agggaggacc 240

acagcaggga aatccgcagg ggacgccata cggctacgga aatccacagg gaaacaacgg 300

agcgtattat ggcaatccac agatgaacaa tggtatgccg tacgggcagc cttatgtaga 360

tccaaaggat cattccgcag aatttgacgg aaaggatatt gcagatcaca aactgtttgc 420

aatgcttcca tatcttctgg gaattttggg aaccatcgtg gcacttcttg tggcaaagga 480

ttctccttat gtcggatttc atgtgcgtga gggaatcagg atccttgtgt ctgaagttct 540

gctgggactg attaccgtag tgttctgctg gaccgttgta gttccgattg cagcaaccgt 600

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ggcaaaggaa gctgctatag tcagcaattt cggatttttg aaataactta taaagatcca 720

atgaaaaaga gaagaagatt ctgcatgcta tgtaagaatc ttcttctctt ttttgtggaa 780

acatgggatg tttaattgag aagaatggaa aaagtcaggg aatttccatc ttcacttttg 840

gcagaaattt tccctttgtg tgcggttgca atggcatgga ctacggaaag tccgataccg 900

tgtccatcgg tttt 914

<210> 1094
<211> 225
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1094
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acggttgtgc cacccgccag atcaagcatg atctttcagt ccctggatca gaacacgaaa 120

aagttccggc gggcattccg gcatcacttc aatccgaata gcgtttgtga taaaaatgcg 180

gactggagac gggctgatgt tcaaagtctc attctttgaa atttc 225

<210> 1095
<211> 312
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1095
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aaaagcaatt ctgacaactt ccgccagagc agtattcaag gtgtcatgaa gcgtatcaag 120

gcgaagggcg caactgttat catttacgaa ccaactctcg aagatggtgt cacctttttc 180

ggaagtaaag ttgtaaataa tctggatcag ttcaaaaaaa tgagtcatag cattattgca 240

aaccgctatg actctaattt ggatgatgta catgataaag tgtatacacg tgatttattt 300

caacgtgatt aa 312

<210> 1096
<211> 3345
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1096
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gctccggtac ttccgcttac agaatgggaa gttgatttga tagatggttt gtttaacatc 120

aaaacagaat ccgggcttag aaatctttgt atagttcatt tgatgcttga tgctggtttt 180

cgtgtgggtg atgtgatttc tcttacattt aagggaatca attttcaact taattattta 240

atggtgaagg gtaaaggtga taaattccgt actgtgttcc tgtgctccaa gctgaaaagg 300

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cggattaaga gaaaatctgg tattgagcgt gtacatcctc atttgcttcg acatacattt 480

gctacgtcat ttatagttgg tggtggtgat ctggaatatt tgcgtatgat gttaggtcat 540

acagattatg ctacaacaaa aatgtatgtt catattgccc agcagtctaa aatgctgcat 600

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tgagtttaga tgagtttaca gtaatgcttg atgaatatgt ggttgttgat ccggtggatg 720

gtttttgcta tttttggtcg aaatcaaagt ttgaagctga tctttttttc aaagtgaata 780

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aatcacagtg ttcgtcaaga gttcttttca caacttcgtt tatttatcta aaaatgttac 960

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gcgggatgcg actcatgtac cgcaagattc tcttttcgtc cgggtgacaa ctccctgttc 3180

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agtataacac aatgaaaaag aaatgcaact acatttttcc attttgtgac aaaacgccat 3300

ctgtcacacg tttttacgtg gaacaaatgg cgttatccgt tattt 3345

<210> 1097
<211> 499

<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1097
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tcttccggct gaagcggtgc ttcttttacg gcttccggct cttcgaccgg ctccggaata 120

tcctccggtt ccacagtttc ctcggcaggt tcctcaactt tatccgcatt gttatcgttg 180

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aagtccggca tcggtgaaag ttcttcctcc ggcaggttct catcattcgc ttcatcaaca 300

atcgcatcct ccggaatcgg atccggctct accagttctt ctgcttcctc aatggattct 360

tccgggtccg gcgggataat ctcatccgct gccatgactg gaggctcttc ctccggctca 420

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<210> 1098
<211> 8673
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1098
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catttcagga tggtcacagg cctcttgcag tttttctcgc aagtcctcta catccgactt 660

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<211> 1993
<212> DNA
<213> Faecalibacterium prausnitzii

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<212> DNA
<213> Faecalibacterium prausnitzii

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<212> DNA
<213> Faecalibacterium prausnitzii

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<212> DNA
<213> Faecalibacterium prausnitzii

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<212> DNA
<213> Faecalibacterium prausnitzii

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tactgtggac ccgtccactt ccgctcctcg cgtaactgtc aacatctact gcgctaagcc 300

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catgaagcag tgcatgcgca atgccatgag cccccgcgat cgcgcaaccg ttcccgcaaa 540

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<212> DNA
<213> Faecalibacterium prausnitzii

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<211> 1147
<212> DNA
<213> Faecalibacterium prausnitzii

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<210> 1225
<211> 335
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1225

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tcagcaattt tggatttgaa ccgtactcgg aactg 335

<210> 1226
<211> 525
<212> DNA
<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<212> DNA
<213> Faecalibacterium prausnitzii

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<213> Faecalibacterium prausnitzii

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<212> DNA
<213> Faecalibacterium prausnitzii

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<212> DNA
<213> Faecalibacterium prausnitzii

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<212> DNA
<213> Faecalibacterium prausnitzii

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<212> DNA
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catggacacg gtgggcttgg cttcgtagat gatgtgtccg gcgtagactg ggctgtgcag 180

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<212> DNA
<213> Faecalibacterium prausnitzii

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aaaaatcctc tcaataggta ggcaacgaaa acagccc 217

<210> 1263
<211> 280
<212> DNA
<213> Faecalibacterium prausnitzii

<400> 1263
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<212> DNA
<213> Faecalibacterium prausnitzii

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<213> Sutterella sp.

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aagctgttcc tcactcaatc cagcacgggc ggtcgttata taaagcgtgt cgagcttatc 180

ccctccaaaa gcgcatgacg ctacgtgggg ggccggtacg acaatttttg tcaacaggtc 240

gccggtatag ggattgtaac aataaacacc gccacctccc cattgagcca cccaaaggtt 300

gtcgttgcaa tctatcgtca ttccatccgg ggagccggtg ccctcgggta tatttacggc 360

tacgccatcg tacaatatgt caccggagct atcgtcatac cggaaacgta tgatcttacg 420

ggtaggtgtg tcgttgtaat acatgtattt cttgttggcg gaccatacga tcccattgga 480

gatcgtgact tttgtcaact tagtttcgac ggttccgtct gcccatacac aataaagg 538

<210> 1424
<211> 628
<212> DNA
<213> Sutterella sp.

<400> 1424
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aagtaaagca ggatgttagc tgattcaaag acacgaaccg gttggtcttc agagtaatcc 180

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agttcttcaa gcatgatagt tgccttgata ccattaggtg tcggaagagt atagagttgg 360

aaaggttggt cacctttagg taaagtttgt tcaaaacgtg caccagctgt aggttgattg 420

aggccgcccc aggcacctcc catagaggtt ggattttgcc aaacttctgg taaaatatag 480

tcagacataa agtttctcct tgtattcttg atagttacat cctaacaaaa tgctaatggc 540

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taagatagta aaaattaatt tttatctg 628

<210> 1425
<211> 140
<212> DNA
<213> Sutterella sp.

<400> 1425
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tcggcccatg catccacagt ggatgcgaga tagccgtgtt tacggcagta ttgaccgaag 120

tcagtctcgc tcaggaatgc 140

<210> 1426
<211> 137
<212> DNA
<213> Sutterella sp.

<400> 1426
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aaagagctcc gaatctctga agcctccgtt cagtactcga taggcaaatc aacaatcagg 120

tactggctcg agaaggc 137

<210> 1427
<211> 157
<212> DNA
<213> Sutterella sp.

<400> 1427
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tacttgatga gggtatttca gggcagttat gaacatgggt tgtgattgca ttcacaaatt 120

tgcaagtttc tccaagaaac cgaagcaaca tttagag 157

<210> 1428
<211> 515
<212> DNA
<213> Sutterella sp.

<400> 1428
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ttcatgtcta tcgttactgg aaaattgcaa ccagatgaag gtaaggtaga gtggtctaag 120

tatgttacag cgggttactt ggatcagcat gcagttcttg aaaagggaat gacagttcgt 180

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gctcgtgctc ttggtgtcat ggattttggt atggacacag atgtaacaga cctttcaggt 420

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<210> 1429
<211> 1035
<212> DNA
<213> Sutterella sp.

<400> 1429
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gatcagggcg tcgatccggg gaacgatcgc gaggtgggtg gcggaaggaa tcgtgtcgtt 540

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gtaacggtca ttcgggattt ccatttcacc gaggcagtca cgctcaatgc gggtatcagc 960

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<210> 1430
<211> 402
<212> DNA
<213> Sutterella sp.

<400> 1430
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cgtgataagg taaattgaca gctaacgatg gatttctgcc aattcggatt tctcacttat 120

gacgccttat gaccttccgc ttccggatgt ggatccgccc cctccggctc atcccgctcg 180

ccgcgccgcg gtcatcgtga cccccggaac catcacgtat ctcctttcaa tcccgtggct 240

cgtcatgcag acgctgccgc ctgagaaaca ccggtggctt gtcacgctct gcgctgagga 300

acccgggaac atccgggcgc tcggcgggat tgacgtaccg gtctccgcgg ggcttgaggc 360

gctggatgac gcggataccg tcctgatgcc gcactggaca ga 402

<210> 1431
<211> 1912
<212> DNA
<213> Sutterella sp.

<400> 1431

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cgatcccaag gcgctttata tcgatgaccg gaaccggatt acgtctggcg gcatcgcggc 180

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gtcaggcagc gcgtccgtcg ccccttttcgc cgcggcctct cccgcctcaa gagaagtaag 1860

cgatccttta aacgaatcca tcgcgatcac gattttcata gtccagtaac tc 1912

<210> 1432
<211> 451
<212> DNA
<213> Sutterella sp.

<400> 1432
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caaaacaatt tgcttcactt tttggaagat gaataaaatg atttctgcac caaaaccagt 360

tccatgaagc atggcaaccc tttgaggaag agccatctta tttgtgtttt tggccattga 420

tattatcttc tcttttaaat aaacagtggt c 451

<210> 1433
<211> 1166
<212> DNA
<213> Sutterella sp.

<400> 1433
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cactaccggc atcgccaatt tcgacgtcat ccgctctcag gccatcgacg gcttcgtgga 300

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caagctgctg aacccgaaaa tcaagt 1166

<210> 1434
<211> 20415
<212> DNA
<213> Eubacterium rectale

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atatatttat acacacaaat aacggaaaag atatagaata caaacggtat ttacagggca 8400

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<210> 1557
<211> 703
<212> DNA
<213> Eubacterium rectale

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catacttctc ccactcgtcg agtgtcggtg gtcgtgttcc taccagactc atatctcctt 180

tgaggatgtt ccaaaactgc ggcagctcat ctattgatgt cttcctgata aactgtccta 240

caccggtttt ttttgttcca tccgacagta tcttgttgcc tatgattcgc gggtcgaaat 300

ccatcttaaa catcattccg tcgctcacct tgttttgtgc catgagctcc ttctttcgct 360

cctcggcatc catgtacatg cttctgaatt tgtacatctt aaactttctt ccgtttctgc 420

cgattcgctc ctgtgagaag aaaattggcc ccggcgatgc gatatagatt gccggagcaa 480

caaatatggt tacaagcatt gtgataagac agccaaccag tccaccaagt atatccattg 540

ctctttttgc aacaagctgt gatgtgctcg catagttcat acttgctgtg atgactgtgt 600

agtcacctat tttttctatc tgattgaaat tgcctgacat ggccttgttt ttagtgatgc 660

ctctgtgaac tgctataccc atctctataa agcttgccac cat 703

<210> 1558
<211> 1131
<212> DNA
<213> Eubacterium rectale

<400> 1558
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cattggtata gtttgcgaca ggagcagaat ccttcatgat gcctttatag atttcagcag 120

ggatgatcca aagatcagta tctttttctg cttcaatggt tacttcaaat tgaatggatc 180

gcatgataca tgaggcagat aagagacaca tatccatatc gaacagacgg tagagtgtaa 240

tctctcgtcc ttcatctgaa agtatgtaag ttcgaagctg cccggattta accagtaata 300

atccagtaca atccatgttc ccgttgtgaa tgattgttcc ttttttcaca tgctgtgtga 360

tcaaattgtc tgaaattagt tttttctgtg ctgtatttaa gtcattccat agtggaaaat 420

aattttcgaa gctcataata gttatctcct ttatgaacat agtatacttg ctttttttaat 480

atgcgtcaat cgaataattg acatatgccc tttataggac tattatataa gaaagcgaga 540

aaggagcaat ttcatgccga gaccagtaaa atgcagaaaa gtctgccatt tcccaaatgt 600

tttagaattt cttccggcag atgatactga gaaaaaaatg cccattgttc tgacggtaga 660

tgagtacgag acaatccgtc ttttggacaa gaaaggttac agtcaggagc agtgtgcaga 720

atctatgcag attgcaagaa cgacggtcca acggatttac gagattgcca gaaagaaaat 780

agcagatgct ctcattgatg gacatccgct taaaattgag ggtggggatt tcataatctg 840

tgacggtcag agcagcgact gcagctttgg aggatgttac aaacatgaga tttatcaaaa 900

atatgcagta gaaaaaggag aagatatcat gagaatagca gtaacatatg aaaatggaca 960

gattttccaa cactttggac acacagagac atttaagatt tacgatgtag aggaaggaaa 1020

agtgctacat tcagaagtag tagatacgaa tggaagcgga catggtgcat tggcaggagt 1080

tcttaatgca ttaaatgccg atgttttgat ctgcggcgga atcggaggag g 1131

<210> 1559
<211> 2725
<212> DNA
<213> Eubacterium rectale

<400> 1559
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ctgccgattt tgcaagagcg gcattcgcat gaccttgtgt gttgacaaca atgcctgcat 180

ttttcagggt tgccataagc tgtctgacat aagccgggtt tgtcttgata ctttctgcaa 240

tttttgtgct ggagagttgt tcgtcatctc caagagcaat aaatataaga atatgaatgg 300

tgtcactaag ttttgtggaa tatttcattt gtcacctcga attttcttct tgcaattttt 360

aaacttacat gataatataa ttttaatgct tgatgtaatt ttaattttaa caagtaaaaa 420

aataaaagtc aagcaaaata aaaagtgtgg aatctgatat aaaagaaaac atagtaggaa 480

aggaaatgtg atgaagatga atgtatatca agagataagt caaatcatca aagaagcaga 540

tggtattttg attggagcca gtaatggttt gtctatcgca gagggatata atatttttgc 600

agatgacgca tggtttcagg aaaatatggg agatttcaga gaaaaatacg gactgcgctg 660

tgttttacac ggattttcgg tgccaatgaa ggtagaagaa aagtgggcgt ttgtaagcag 720

acttgttaag gcaaaagcta tgcaggatga gccgagtgag attatgaaaa acatctatgc 780

actggtaaag gataaagaat atttcgtagt aacttccaat gcggaggatc attttgtgcc 840

ggcaggtttt gaggcagacc gtgtttttga aatggaaggg aaattaaccc agatgcggtg 900

caagaacaga tgtcatgacg aggtctatcc taatcaaaaa gcagttcttg ccatgacaga 960

agaggaagta aacggaagag tacccaaaga gttattgccg aaatgtccaa aatgcggtgg 1020

agatatggaa gtaaattggg gtgcgatgtc ctcgtttaca gaaacgaaaa attggaagga 1080

aaaggctgcc cgctatcaag aatttattca gaatttacat ggaaagaagc tggtaattct 1140

ggaatttggc attggttgga gaaatcagat gattaaagct cctttgatgc atcttgcagc 1200

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aaaggaattc taaggaaaat gacaagagaa gaaaaagcag tatattacaa acataatgga 1380

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gacctaaagg gaaaggatac aggtgttgta ctctgtgaat gcgatgattg cattcgcaat 1680

gcaatacggg cttttgacga ggtgttgccg atgaaatcag aaagtgaagg atagactaag 1740

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gcggtactgc tgtagtgttg agcaaacaaa aaccacttcc ttatgaggaa cagattcagg 1920

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cagcggctgg aggtggtgac ttttattata gtgatacccc ttcttttcgt gagcattttg 2040

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ggaattttct gcaagggaaa aaatacgaag aagaatatga gaaaatttca aaatacattc 2520

aaaaaaacaa agatagaaaa attctcttta tagaacttgg agtagggcgc atgacaccga 2580

tgtttataca ggaaccgttt tggaaactga caaacagctt gaaagacgca tattatgtct 2640

ccgtaaattc agaatatcag tttttgccgg aattcattga agataagggg attgctattt 2700

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<210> 1560
<211> 1183
<212> DNA
<213> Eubacterium rectale

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ttataaggcg gacgggacta gacaatttgg aagtataata gaattgcagt ctcaaaaaga 120

agtagctata gaagatatta cacctctagt gcgtggctca gaagctgatt cattaggaac 180

tttaaatatc gataattttt taataaaaac aagggctgta tctagcgata gtatatctca 240

ttctactgca cgatacagtt ataatccaga tggaagatgt ggttctgttg caggagccat 300

tgttttgaat tattatgatc gatataagtc accgtcatat gtacctaata gtttagaatc 360

ttcagatggc gttgctttga taaatgcact tgttgcaaga atgggaacaa gtactaatta 420

cattgagtta aaaagaggat tatcgttgta tattaagcaa tactataaac caactacagt 480

aactgcaaat acatatagtt ggggagatag aattagaaca attattggta aaaattatcc 540

atgcatatta ggattgacat ctcatccacg atatggagaa cattgggttg ttgtaacggg 600

ttataatttt acatctcata attctggaac ctatacagta aatgatggat ggggaaatgt 660

tggaataaat attaattcga gttgtacaga tgggggtgtt gatattgggt aataaatctg 720

ttgtaaaacg caagtcgtat attacaatgt tagtgtttat atccacgata attatacttt 780

ttttaatagt gaatatgaat gaaaatagta gcaaaataaa ggtaaaaggt ggagaaggat 840

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tatccaatcc agatgaaatt gaacaaataa ttcgtttgtg ccgtcaaaac tgggagccat 960

caaatactca tattacaaag gaagattgtg atatgtgtgt taagtttatt ggtacagata 1020

cagaggtttg ggttgatact gaaacattat catcatatat aggggaaagt tttgtacaaa 1080

tgccagaaga tttatttaaa aaaattaaag aagtagtctc gttaagtaat acacttcgga 1140

gcatgccgat atttcaatgt atctacaagg aaaaaattct act 1183

<210> 1561
<211> 320
<212> DNA
<213> Eubacterium rectale

<400> 1561
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cgtcaattcc tttgagtttc attcttgcga acgtactccc caggtggaat acttactgcg 120

tttgcgacgg caccgagaag caatgcttcc caacacctag tattcatcgt ttacggcgtg 180

gactaccagg gtatctaatc ctgtttgctc cccacgcttt cgagcctcag cgtcagttat 240

cgtccagtaa gccgccttcg ccactggtgt tcctcctaat atctacgcat ttcaccgcta 300

cactaggaat tccgcttacc 320

<210> 1562
<211> 3990
<212> DNA

<213> Eubacterium rectale

<400> 1562
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tagtacaaat ttatcattac aaaaattctg atataaaaag agcaatatta aacaaaaacc 120

aactaaatta aacctaaaac catgtcgtat tttgtcgaaa actgctaatc acctatcaat 180

attaaatctt ctaatagaaa tcttcaaaat acaagcgcgt aacgcgccta gaatattgat 240

atattatatg gaaaaatgaa tccaccaaca aagagtgaaa tttcgcaaaa gcgacaaaat 300

ttcaaaagaa agacaaaaaa agaagttcta cgaaaaatac aatcgatgga gggatgaaat 360

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tatttattga ggtgggaaat atacacaatt acctggaaaa tgcagccttg cggattttgc 480

tttttggcaa tcctgagctg aatttttatc agtgccgatt attagtattg aagtacggag 540

aatcactttc acaggatgat ttgcacgggc ggatggtatt tatgagaatg atacagctgc 600

tggaagccaa cacagtttaa aataaaatga gaatttcttt tttgaccggg caaccggtct 660

ttctttttg cacaaatggt gttataattt tgaagaaatt atgttgatta ctcatagctt 720

taaaaaagaa gcactgcatt gtgtttaatt aaaccaaagc atgataattc aatcaaagaa 780

aagaggacaa aaatgaacat cgtagtactt gccggagggc tcagcacaga gagagatgtt 840

tccttcaaga caggaagcat ggtagctaag gcgctcaaag agaacggcca caaagttata 900

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gagtggacta tccggagccg gagacagttt aatgataata attattgatg aggcaagcgc 3900

aaaacttgcc tctttttact atcatgacga gatattcaag ctgcagtgga gaagtgtggc 3960

aggcaaggca tctatgtcag aagagctgca 3990

<210> 1563
<211> 24082
<212> DNA
<213> Eubacterium rectale

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ctcccacaga ctgcatctgg atagtctcaa accggcagca gaagcaaata gctgactcgc 180

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gcatgtggct tgtattttcc agagaaacag ggaagctgat aggacgggca gggcttgagc 540

acaatgaaat gggctacatg atagaaccgg aattatggaa ccaaggctat gccacggagg 600

tgtgccgatt catcatagac tacgcgcgcg aaaacacaga ctttgaagag ctttactgcc 660

ggatagacga gaaaaatacg gcatcggtgc gccttgccaa aaagcttgga tttacaaata 720

gcgggcatat ggatgatgat ataaacgctt ctatatatag aaaaaatata aaaaacataa 780

aaaacaatga aaaacattga aaaatatgca attaggcaat aaaatataaa catagtttaa 840

cgatttggag gacgaaaaaa tgaaacaata cgcatatgga gtagatatag gtggaacaac 900

tgtaaagata ggctttttg agaccacagg aaagcttgtc gatacatggg agattcctac 960

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ccaacacgga tgaaacaaag ttt 203

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<211> 782
<212> DNA
<213> Eubacterium rectale

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atttctcgta tttgtgatag cgatacttat tataaagctt gtagggcaat gtttttttga 180

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<212> DNA
<213> Eubacterium rectale

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<213> Eubacterium rectale

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<213> Eubacterium rectale

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gaaattcatc atcatcacag gacaaatctt ccatatcact gaacacacac atataatgtg 180

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<211> 305
<212> DNA
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cgagatatac tgtta 315

<210> 1586
<211> 480
<212> DNA
<213> Eubacterium rectale

<400> 1586
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gcatggtctc acaccatcca gcgaaagaca gccttcctcc gtctgaaaag ctcctgattt 120

tccggtaatc accggattaa tcatggcaaa ctggaatggt ccggccgcaa ccactatgat 180

attctttttc acaccaatca tgttagctgc cattccaaca caatggtcaa gatttgctct 240

caatgtgtca agtaaatccg taaccacctg tttatcatct tctgtagcat ccactgattt 300

ctgtgcaaga aacagtggat cacgcattat cttctttacc attatttact tcctgttata 360

cctttcttct taattttttg ttcaaataat aaatgcatct tccctgtttt ccatcatgcg 420

gaaatccttc atctccaccg tatccatcgt atggcatata aatatacctc gtttaatatt 480

<210> 1587
<211> 439
<212> DNA
<213> Eubacterium rectale

<400> 1587
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caatcagcac aaaaatcaga ttgtatacaa gtggatgtgt ataaaatacc cctgacatga 120

tatccattgc cgctaccggg aatgtgcctg ttcctacctg tggtattacc atcggaaata 180

ccattgcagt aagcataaag tcaaagacca gtggtatcat tccaataagc gcaccgctta 240

caaatgcagc tccatatttt gctcttatat aatcgctctt ctttcctctt gatatgatct 300

gggcagcata ccctgattta acatcaaaat aaaagcttct gccatacggt atggcacaca 360

aagcaggcat tatcagataa agcagcaacg gctgcacact tgcattatcc gcacctatcc 420

atttctcata tgcagacaa 439

<210> 1588
<211> 3052
<212> DNA
<213> Eubacterium rectale

<400> 1588
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ggatttatct gatatcgaca atttatctga cgaggaacaa tctacaataa ttactgagca 120

gaaagcacgc atctcaaacg tatataataa gattcagaaa gagagggaag catttatgaa 180

aacagtcggc taatgtagtc ttgcacattt tctttactaa tgttattata aaaatgtgag 240

tgggaacgaa atagcactca ctatcccttt tttttaaata ttttatcaaa aactaaactt 300

cccaaaagcc agccgtttgc aaacggctgg ctttttactg tattcattta ataatctgta 360

ctacagttta cgtccgcaca taggacaata ttcaatctct attccgttaa tgaacactgg 420

caaactatta atgcctatgt taatctccag tgtattatta tctcttcagt tggagagaat 480

ctgtttgggg aaaaattatg aaatttttta aattgttgca gatataccat aaaaccccgt 540

acagattttc tattatagac aatctatacg gggtttattc gtgaaacaat attctatttc 600

caaacttctt ctgcaatttc ttttacaagt gcaagttttg cccactgctg ttcctctgtg 660

atcttatttc caatctcaca ggatgcaaat ccacactgtg gacttaagca tagacgctca 720

agcggaatat acttttctgc ttcgtgaatt cttgcgatca ccttatcctt atcttccagt 780

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agtcatagtt tgaagctata tccagttatg acaaacatat ttaaatgtag tactcttgta 1860

attttggaaa tttccgaatt caggtacatc gctacctcat tttccaggcg tgccccggat 1920

gaagcgataa gctctatgat attctcccgc acactttttt gggcatcaat cagccggtta 1980

taatacgaaa ttccgccaaa cacactaaac aatcttacct tatcttcttc tgaaaattca 2040

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cactatatat tatagttaaa gaacgtatgt ttgatatata agtaaaaatg tg 3052

<210> 1589
<211> 1737
<212> DNA
<213> Eubacterium rectale

<400> 1589
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agcataaaaa tccaataccg gctttttat cagattgatt actgcctgta tgattcgctt 120

ccagaagaca cttcttattt tcatgctcag ttgagaaggc aggcaataac tgaaattgga 180

aaagattatg ttattcttga taatgtaaaa ggaagtggcc gttatgtagg tacttatctg 240

ggacttttgc ttcgatgtac ctttatgtgt attaataagc atgtagagag atatagtttc 300

tctcttctgc atagttccgt aatgattgct gcttgacagt ctccttcaag ttcgttataa 360

tgataaacgc aaaattttag tggacttttc cggattcggt catctttttg ccacacagct 420

atcttgtgat agttgtgtgg ctttttttgtt gcttgtaact cggaagtatt agcagaatgg 480

aggactataa tgttcggaca atttgtggag aagagggaaa gcatgcagac aaataacaaa 540

atggcggttg cgccgcgctg gcaaccggca tcgggcagac cttgacgctt gcgatttatc 600

tggtcgttta ttttgtgcgg ccaattcgcg tgcatatccg caggcagtac attttgctca 660

gcaaaaagat ggtaataaag ctgtactcca tcggcattcc cgcaaccttg aatattgcgc 720

tcccatctct tttgatttcg gcgctcaatg caattttggc ggcatattcc gaagtgtata 780

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tcagccagat ttataaaatc gtcttgtgca tgagcggtat cattatggtg cttgggacag 960

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agatagtata atggaacaga aaggaaggac aaaatgattt tgaaagcctg gaggtgttaa 1500

aatggtaaaa attatatctg acagtacatg tgatctgtca caggaagttt tagaaagata 1560

cgatatagat attattccgc ttcatattgt aaaaggagat gaagaactgg aggacggacc 1620

gcagatagac attcatgcat tgtatgagtg ggctgataaa aataagacta caccaaagac 1680

ttcagctcca tctatagaaa cagcaatgaa tgtaatgcga ccatatattg atgaagg 1737

<210> 1590
<211> 478
<212> DNA
<213> Eubacterium rectale

<400> 1590
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atgataccgg ttctggcttc cgaaacaaca tgatgtgcac gctcatgtgc atctgccgga 120

tcataaatac gttttaataa cgtgcatttc gacagctgac tgcagccatt acaaacataa 180

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tcagagcaca ggctgcattt gtaagcagat tggtgtgtac agcttgttcc gcaaatcctt 300

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ttcttgtcat aggaatactt tttaatctcc ttggcaatgg ttgtacggtc ctttcctaac 420

tctttgccaa ttgccccaaa ggatgcattc tcctgaaggc gttgagcaat aatcattc 478

<210> 1591
<211> 396

<212> DNA
<213> Eubacterium rectale

<400> 1591
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gcttctgctc caattaagat aacatacatt tgccctgtat gcttcacgga aacacttttt 120

agcaaatctc tccatttctg cttaacaatc tgcttcttat caataccgaa aactgataac 180

acctctgtgg tgtcacattc ctttaaatcc tccggtttga taaccttatc tccgtcaaac 240

aatacataat tacagatttc actaaacctc gtattgtccg acaaatactc ctttgccttc 300

gagtcctttg tacccaaatt aacctcctct tcttgtgtga gcaggaaaat ctgaagtcga 360

ataaaaatac tgtatactta tgctttccac gtatat 396

<210> 1592
<211> 4021
<212> DNA
<213> Eubacterium rectale

<400> 1592
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tgataattta tcttccggta ttttttcaag ttccattatg gcgctctgtc taagtgctgt 180

cattatatat ccccctcttt ccaattaatt aatcggttat atccttttat agtatagcgg 240

atttttctaa aaaatgcaat tactgtaata taatactcca aagcacccca ccgaaccggt 300

ggggtgcctc ataaaaccag gcttatgaca cctgcactct atacatattt ttgcggtcta 360

tcgctccaat ctcttcaagc gtattgatca tacgatacac cgtagcagtc ccgatagagt 420

ggtctatctt tgacgctcgg taataaattt ctttgcagct tccgcactcg ccctcgagga 480

ttacatcaag caaaataagt ctctgctttg taatcctgca tccgctgtcc tttagcttgc 540

caacgattac ctctttttgc tctattgctt ctttcgacat acatcctcct atcgttaccg 600

atgccggcag atgcagctta agcggcagat gagttctttc catgaaatgc ccatcctgtg 660

cttcatacac accatgccgt ggattaatga cagcccttgc aatggctgca gtccattcca 720

cactgcaggc ttttgcctgc tttctttgat ttgattattg tcctgattac aagtgcaact 780

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taatatacac cccacataat gagtgcgaaa ataggcagtg ccaaaaatct gtttgtaaca 2340

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tggtatctct tacggctgtt agtatactct aacgcaactt agatgtcaat aatatttttt 3960

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<210> 1593
<211> 1108
<212> DNA
<213> Eubacterium rectale

<400> 1593
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attgagtcga tgttgactgt aatcttgttt gtcatgtcag catcagcacc tacgtggagg 120

ttgaagctta aggcatcttt gtatgaaaca gttcccttat taagagtgaa ttttgtagtt 180

gctgtattat atgcatcgtt tactgttgtt gcatttttag ctgctgtatc agttccaata 240

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gttgagtcat tatcatcaat accatctgct tttttatcat caattgttgt aacagattta 360

aatcctactg aaatagttgc acccttttaca gctgcaaacg cagctgcatc tgcataatca 420

gctactacag cctgagtctt attgtttaat gttgatggat cattagaata ccaacctgcg 480

gcagttccct tcgttccggc agtggtatct gcatcaattt tatcatacca tttataggtt 540

gttccattca ctgtaacatc attgtgatta gttgcaatat cagcaccttt atcacctaac 600

atagatgtaa catctgcggc tactccacct atagtaaaat tcttaccagc aatacttatc 660

ttatcaccgg cattgagtgt ctttaatgta acctctactt cattaccctt atctgtaagc 720

gtaacaccat caagtcctgc gtcatgtgca tttacattat gagctttctc agctccatca 780

ccctttaaga gatatgtctc attgaacttt gttgtctctg atacacggtc aatctctgtt 840

gtaagctgat caatctcgtc ctggattgct ttacggtctg tgttagagtt tgttccgttt 900

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cggttaattc tgtaacctga tgaaagct 1108

<210> 1594

<211> 374
<212> DNA
<213> Eubacterium rectale

<400> 1594
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tccatcaccc tttaagagat atgtctcatt gaattttgtt gtctctgata cacggtcaat 120

ctctgttgta agctggtcaa tctcatcctg gattgcttta cgatctgtgt tagagtttgt 180

tccgtttgca gactgtgttg caagctcatt catacgctga agcattgagt gaacctctgt 240

gagggcacct tctgctgtct gtactgcaga aacgccatcc tctgcgtttg ttgaagctct 300

gtcaagtccc ttgatctgct ttctcatctt ctcagaaatt gtaagtcctg ctgcatcatc 360

tgctgcacgg ttga 374

<210> 1595
<211> 3725
<212> DNA
<213> Eubacterium rectale

<400> 1595
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cttctgctgt ctgtactgct gatacaccat cctgagcatt tgttgaagct ctgtcaagtc 120

ccttgatctg ctttctcatc ttctcagaaa ttgtaagtcc tgctgcatca tctgctgcac 180

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agaagtggat taaaaaacat caaatgtata cgccaattta gtcatttttc atcaagaatt 900

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<210> 1596
<211> 140
<212> DNA

<213> Eubacterium rectale

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<210> 1597
<211> 1196
<212> DNA
<213> Eubacterium rectale

<400> 1597
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ttccttgtca agtcctttag ctgcgctgat agttaagtaa ccattctcca gcttagcctc 180

aatctcatcc ttcttgaatc ccggaagatc tatatctact tcgtagctat tgtctgtttc 240

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<210> 1598
<211> 363
<212> DNA
<213> Eubacterium rectale

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attcggctga ttgtttctgt agcatttttc ttgaaatctt tctttaaagg ctgatccagc 120

ttatcatcca cgtaacaatt taagacatca atataacggt gaagggttcc atgcccctct 180

aaaagcctgt caatatcctt tttcctagat gtatagtcaa ttcccaggtc aatttcatct 240

aaaatggtat cacaggtctg cagtgcctcg tccacatcca tcattgtatc atacacatac 300

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<210> 1599
<211> 1923
<212> DNA
<213> Eubacterium rectale

<400> 1599
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gtgtcgtttc atctgatgcg acagtacaac tgctgtcttt atttttata ttatcacatg 1860

aaatgccttt atttcaatta tattcgtgaa ttttcgcggt tcatgctttt cgtccctcat 1920

gtt 1923

<210> 1600
<211> 333
<212> DNA
<213> Eubacterium rectale

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tcatcctgcc ggaaaacctt aaggaaagag acacgacaga ggtgctgacc gcactggggc 120

ttgataaaaa gaccatagcg gtgcagaagc ttagggacat cttcaaaaat gccagcatca 180

aatataccgg caaatcatac gttgtcctga taggagtaga aaatcagtcg gatatacact 240

attccattcc ggtaaaaaac atgttttatg atgtcatggc atatggcaat caggtaaagg 300

aaacagccaa aaagcaccgc agggaaaagg ata 333

<210> 1601
<211> 247
<212> DNA
<213> Eubacterium rectale

<400> 1601
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aaactatgat ttatgatgca ttgaattacg gagagcaggt caacgaggca aagaaacgcc 120

accggaaaaa taaggattac aggtcttcgg acgagttttt gtcaggcttt acacttgatg 180

ataagctgac accggtgatt acaatcacac tgtatcttgg aactacacag tgggatgggc 240

caagaag 247

<210> 1602
<211> 638
<212> DNA
<213> Eubacterium rectale

<400> 1602
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ccataaaaga ctataaatga tgtctgtata aatttagtaa aaaatgagga gtacaaagag 120

atgaaaaaag aaaacaatta tatatccact gatatgaatc ataaaaagct aatagttgga 180

gtcgtaataa ttcatgtttg ttttatgctc ataggagcta gtggtattat ttctacttta 240

aaagaaaaaa atatatttta tgggctgctg ataaatatga tttatcagtt gactttgatt 300

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gaccgaattt ctgtaaatat aaaaagagtt ttggcaggtg tgggaattgc attcttgtta 420

agctgcatcg ctggaatcat tgaaatgaca gtgtgttcaa atacatcggt ttcggcaaat 480

cagtcaaacg ttagtggata ttttgtggat tatcctattt tggctgttat catgagtgta 540

attatgggac cttttaccga agagataatt tatagaggta tattgtttcg gtttttcagc 600

aaatatggag aactgtgtgt agtattggtg acaggatt 638

<210> 1603
<211> 288
<212> DNA
<213> Eubacterium rectale

<400> 1603
cagtaggaag cggaacagca gtattcggag ctgcagatgc catagagggc actcaggata 60

tttattatgg aagcacaggt gacattgaca gcacggcagt aaacggtata aaggatggcc 120

tgtttcaggg aaacgaggac gcatattatc tgacagaaaa tgcctttgca tttgcggcat 180

ccgcgatgat tccaatcggt caggcatcta cagcgggaaa tctgacattc aaaagcacag 240

caacaatagt cgccaaagaa ggcatctcaa tgggagccgg agccggtg 288

<210> 1604
<211> 252
<212> DNA
<213> Eubacterium rectale

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ttatataacc ggcggaatgg gatatgccgg aaccatggta gaacaggaaa aagcaaagct 120

gacttttgca gattttattg gaacttctga cggaaaggcg gatggaaatg ggcttcatat 180

atcgtatacc aatggaagtg tagaagattt tgcaagtatt tttgcagcac agtatgaggc 240

aatgaaagca tc 252

<210> 1605
<211> 906
<212> DNA
<213> Eubacterium rectale

<400> 1605
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gcaaatatat cagccattgt tgcagtattt ccttttgtcc ttggacttcc tttaattatt 540

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cagtctaatt attaaaactt agctttctca tattcactca ttatatcatt taaatgtttc 660

acgtgaaaca ttcctattat atcatttaat actttatatt tgtcactaaa tattgtattt 720

gatatatact atcatatatt tccgaattac ataataattg agattatacc ccatcatata 780

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taatatacta tatgacattt attatacatc caacacgtag tgaatccgac atacatatat 900

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<210> 1606
<211> 376
<212> DNA
<213> Eubacterium rectale

<400> 1606
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gcgcaaccct tatcctcagt agccagcagg taaagctggg cactctgtgg agactgccag 120

ggataacctg gaggaaggtg gggatgacgt caaatcatca tgccccttat gatctgggct 180

acacacgtgc tacaatggcg taaacaaagg gaggcaaagc cgcgaggtgg agcaaatccc 240

aaaaataacg tctcagttcg gactgcagtc tgcaactcga ctgcacgaag ctggaatcgc 300

tagtaatcgc gaatcagaat gtcgcggtga atacgttccc gggtcttgta cacaccgccc 360

gtcacaccat gggagt 376

<210> 1607
<211> 1539

<212> DNA
<213> Eubacterium rectale

<400> 1607
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agtagtgcca gctgctgggg gttcttctct ttttgttcgg ttgagcatcc gattaggcta 180

ataaagggca tgaatgattt ttgtttactt tcctttatga atgggcagcc agtgttgcca 240

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ctataatttc cttatttgca ttctgcaact cggaaatgct tcttgaaaga gtatctgcat 420

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aaaatccata ggaaaccaga tgtttgatca tcgcatgttc cgtattactt ttccaacaaa 1500

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<210> 1608
<211> 538
<212> DNA
<213> Eubacterium rectale

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cacgcgatga ttatttgtac tatgaccttc tgattggaat ggacactgca aatatcagga 300

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atacaggaga ttttgatgcg acctttgatg atgtcataag tggatgccgg ggcttgttag 480

aatacataaa agaggtgtat aatctatagt tgcgcagcag cgaatacaaa tacactat 538

<210> 1609
<211> 24703
<212> DNA
<213> Eubacterium rectale

<400> 1609
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aggatagacc acgaggcggc atttacgatg gaggtttgtg aggagattga caagacactc 120

ggcgcaacaa tctgcaagaa tctttttctg tgcaatcgcc agaaaactga tttttatctg 180

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<212> DNA
<213> Eubacterium rectale

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atactttgca gacaatgcca ggtttgcgga tctgtgcaac aatgtactgt atggaggaag 10560

agaggtcatc ctgccggaaa accttaagga aag 10593

<210> 1623
<211> 974

<212> DNA
<213> Eubacterium rectale

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agagcgaatt tctacattgg tgaccttctt caaaaatgat ggtactgtag ctgcagcaaa 120

acaaatgctt aattcgtcag atgaagacat taagattgct aaggaacgtc tttcgatgat 180

tgaagagtaa agatacaaga aaacacctct attgcagtgc aatggaggtg ttttttgct 240

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cctctgttaa aaacactaga tatataataa aactttagtc attttatgtc aactattgta 360

tctttttttg tatcttttta catttttaat ggaatattgg gatgtatttt atatattttt 420

aatttttga tggtcaaaat tgtggtcaaa aataaattaa attatattga cattatatat 480

ccgatttggg tataataaca aaaaaagtaa ccaaattgga tatgctttta tgggaggttt 540

gttattatga acattaagga aatacgaaat actactggac tttcgcaacg cagtttttca 600

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acgccgtata ttataaaatt gattgccaac cagttaccga tagataatga taatatgtgt 720

aaaattgaag ataataacgg taagatttat tattataaca gagacgctgg gtatttaatt 780

gattcaatag gtacaaaaat caagataggt gaagatcttg atggtgttaa gaaaaaaaat 840

ctttcattat atgtggctga tttgtttgaa tcctattatg aaatagttga taaatttaat 900

cgtgactgta gacttgataa aactgaagat attatatgga gttaatattc ttcttcctat 960

aaagtatata tata 974

<210> 1624
<211> 632
<212> DNA
<213> Eubacterium rectale

<400> 1624
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ctactacata gtagacacag ccggcagcaa aaagtgcaaa tcggtatatg gccacagcta 120

taaggaagta acagaaaggc tgcttacagc aaaagctgct tcacttaatc aaacagcagc 180

cccaaagcag tccgctatca ccgtaaaagc agtcgcggag aaatggcttg aaagtatagc 240

atccagccgg aagtgctcta ccattcaaaa gtattctact atatacaata aatatatcaa 300

accgaactgg ggagaaagcg tcatagatga gttaaatcag aatgaaatac tcaaggagtt 360

gcctgagaca gccggtgaga gcgttacaaa gagcatactt tgtatattca attcaatcct 420

tgcatatgga gctgccacat atggcaccgg agaaattcat ctgtcgtaca gggcaaaacg 480

ttcatccgtc acatcctcaa acaacataaa tacaatcaat acaacagacc agcaaaagct 540

aaccgagtat cttcttaccg agcttgatat ctataagctc ggtattttat tgtgcctttt 600

tatggggctg cgtttaggag aaatttgtgc cc 632

<210> 1625
<211> 4995
<212> DNA
<213> Eubacterium rectale

<400> 1625
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acggcatgtt tagcgaaaac gtttttcgac tggttcgcaa ggagaaaatc agggaagtgg 120

tagttgatat cgtccgacat ttattctccc gtcggaggac gattggttat caactatttg 180

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taattaggga tcgtaaaaat gtaaaaaatt atgaaactaa ttatcagaat acttgttata 420

ctgcttgttt ggagcgtggc gatgattatg acgatgaaat acaccgggaa ttaggttata 480

agcttgaagc aagtaaagat atatatatat ctgatttaga atgttttgtt tcattttttt 540

gtagtcgaaa caatattgat tttaattttg aagattgaat ttttatggtt aggagaatta 600

aaaatgatta aagtatttga gtgtttaggt gtccagactt ttgagaagga cggaaaaaaa 660

ggaactaata tatattatag tgagccgttt gatgattatg aaaagaattg ttcaggtgtt 720

aagtgtaacc acttgtttac ctacaagaat attacagttc caaaaccggg tgagagattc 780

aaggctattt attcattagg ctttgacttc aaaaaccaac gtaacatacc ggtgcttgag 840

gagcttgaca tagttccgtt cagtaaatag cgtgaattac ctattggtat ttacataata 900

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aaggagaagg gactt 4995

<210> 1626
<211> 447
<212> DNA
<213> Eubacterium rectale

<400> 1626
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actcgtgtgg agcatacatg ttgtagaaat tgtgagttgt cttttgaaaa attatatatt 120

tctgattccg gtaatactgc cgatttgtct aacattagtg ctagtcgtag attattggtt 180

aaatcaatta tacgacttcg agaaaatggg atagagtacc aggacttatt ggatgagctt 240

gacagagcta ctaagatgcg tatcatgcct tatatcagca atacaaacta tactgtttat 300

gagtatgatc taaatatact tgatgattta ttaagtcata tgagcgtttt atttcatttt 360

gactatacag attcaaacgg ctttatgatg tttgatgatt ctcttgaaga tttgcctttt 420

gattaatatt ttttattata acattgg 447

<210> 1627
<211> 535
<212> DNA
<213> Eubacterium rectale

<400> 1627
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agcctgtgtt actaacatct tttcgctcat aaaaaatcct cccttaaaaa ttatctctta 120

atataattct aagggaggat tcatgtaatg tcattgaact tgtagttcaa aaattatgct 180

gcatttaatt ctctcatttt cttatagtag gtataaactc ttctctcctg atccgtaaga 240

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aaccatcgat aaacactctg cacacatcca aaccctaaat attcttgaat atcttttggt 420

tttactcctc tcatatccat aattcttcga agattaacac ctgtttcttt tttattaatt 480

gttggaaaca tactatcacc tcctagtata ataatggtgt agtcaatcaa gacta 535

<210> 1628
<211> 423
<212> DNA
<213> Eubacterium rectale

<400> 1628
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tcttttctcg gaatcacgtc aggataatct ccatcgacat atccaagagc acaatgtcct 120

attccctcat actcatcctc aataccgagt gatttgagaa gctccttgcc ccagtcagac 180

tcaaactctt ccttcgcgcg gtgaatccag cagcttccaa tgccaagatc atgtgctgca 240

agcatgagat tccccatcac aagactgcca tcatagacat gtgtaggcca gtccttcttt 300

ccaagaacga taagaataac cggcgcacca taaactggat cagtattact tcccattatg 360

tcggcatttc tcttagcgat ttcatccctt atttccttgt ttgtcacctg aataattatg 420

gtg 423

<210> 1629
<211> 220
<212> DNA
<213> Eubacterium rectale

<400> 1629
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tacagctgta taacgcaatg aatgggtcta gctatgacaa tccggaggat gttgagatag 120

tgattcacga tggcggcatt tcactttcgg tcagaaatga tgcatcgttt atcgtggatg 180

cgagattgag catatatgag catcagtcca cagtttgtcc 220

<210> 1630
<211> 484
<212> DNA
<213> Eubacterium rectale

<400> 1630
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atgagcatca gtccacagtt tgtcctaata agccggtgag aagtcttatt tattttagtg 120

tgatattgtc agatatgctc agcgacaaga aaaaaggaac aaaaagtggc aagaacatct 180

atggcagaag actggtaaag ataccgacac cacattttgt ggtattttac aatggtgagg 240

aggaacagcc ggaggttcag gagcttaagc tgtccgatgc gtttgagaag ccgaccgacg 300

agccgaatct tgagcttaaa tgtaaggtgt acaatataaa cgacggaaag aacaaggcta 360

ttatggagtc ctgtggctgg ctgaatgatt atatgacatt tgtaaataag gtcagagagt 420

atcatgcaga cggggcattt gatgatcttg ctatagatat tgagaaggct atagactatt 480

gtat 484

<210> 1631
<211> 247
<212> DNA
<213> Eubacterium rectale

<400> 1631
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agcttatcat caagtgtaaa gcctgacaga aactcgtccg aagacctgta atccttattt 120

ttccggtgac gtttctttgc ctcgttgacc tgctctccat aattcaatgc atcataaatc 180

atagttttaa caggcatcgc ataatgaatg tctgtctgcg cttctgctcc aattaagata 240

acataca 247

<210> 1632
<211> 1218
<212> DNA
<213> Eubacterium rectale

<400> 1632
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caataactat attcatatat gagccggtct gggtgatgga gaatctgatc cagccatgtt 180

cacactcaga ggctgctttt atcgcattat caaacagatt acctattatg gtcgtaattg 240

aaaaatcgtc aatattaata ccgggtgtat ttatattaat ttcacatctg atattttgtg 300

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cagcatttgt cagagaaaga tcttcacaaa tattatgaat atattcatga attttcctat 420

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caagttccag tttgaaccga taatttgtgt tttcttcaat gactgccaga aatttatcat 600

atagtgaaat acatatgata aggaataaaa atataattga aaaaataaca atcaaattat 660

aagagtttgg attttcaatg catattgaaa gcgtaatgta gccaagcgac atacttaatc 720

ccaatataat aattgtaaat gcatatgaat aaaaatatgc actggatttt ctttttatat 780

tgttggtata aagtatgtaa atattataaa caactataaa aatggttgtg gttttataat 840

ttaaatattc ctgagaactc agtgcaaaat gtgcatcatt taatagtaaa gtttgtatag 900

tggcaattgg tataaataga aataatatag ctatataatt gaataaacat ttcaacagta 960

gtttgtttaa tttcctaaaa attataagca tgaataggat aggagcaaaa tatgataata 1020

tcccgatagc atgtattgtg gctggaaaaa ctacaaatac tataatataa aataacttca 1080

tcggaatgct gattttattg tgcatatttt cttcacatat tctgaatagc aagaatgcat 1140

tacaaagaag atataaaaat tctaaaaaaa tattaatgta attattcata ccgtgtctcc 1200

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<210> 1633
<211> 177
<212> DNA
<213> Eubacterium rectale

<400> 1633
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gctcccacac cacaggctgc tgtatttcct gcaaaatcta tcagagctgt ttttcca 177

<210> 1634
<211> 729
<212> DNA
<213> Eubacterium rectale

<400> 1634
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aacaggaatt tttggagcag ttttataggc agggagaatt tacccatgac agcagtaacc 180

catttttaaa ctttgtttcg tccgtgttag atatcacaat tatcaaacct gttatagagt 240

catgtattgg agaagacctg ataaccggag aagacctgac agacatggaa cgtggactta 300

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ttgcaggaaa tacagcagcc tgtggtgtgg gagcactggg agaaacattt gactggccgg 480

tgcctataac aatgatgctg agtcttgcaa caggaatcac ggtaagtatt tcgggaaata 540

aattgctgtt taaaaatgca gatggaatag agattggggc aaagacgctg agtgatgctg 600

aggttaaaaa aatcggggat gtgttggatg aaacaacaaa ttctagcttt gcaaataaaa 660

atttgggaga agtgttaaaa caacagggat taacattaga agaatttaat aagttaagat 720

tgacggatg 729

<210> 1635
<211> 735

<212> DNA
<213> Eubacterium rectale

<400> 1635
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ttaaaagaag gacttaaggc atttggaaaa acagccctga tagattttgc aggaaataca 120

gcagcctgtg gtgtgggagc actgggagaa acctttgact ggccggtgcc tgtaacaatg 180

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gatgctaaca cttatattca aaagacaata ccggcttcgg atatagacaa gtatatagga 540

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aaaggatatg ataatgttgt ggagtcatcg cgactggatt atgtaacagg tgatggtgta 660

agaccatatc cggaaggtgg agatgcttat ggatatatta aatttaaaac aaaaagaaca 720

aataaaatag agata 735

<210> 1636
<211> 229
<212> DNA
<213> Eubacterium rectale

<400> 1636
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cgagatatac tgttatcgtt atcaccggaa tcagcttatc ctcttttgta aatcccgaga 120

gaaattcatc agatgttgcc gtatcctttt ccctgcggtg ctttttggct gtttccttta 180

cctgattgcc atatgccatg acatcataaa acatgttttt taccggaat 229

<210> 1637
<211> 210
<212> DNA
<213> Eubacterium rectale

<400> 1637

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caccgagtga tgaacgctgt gaagatactg ttgagatagc atctgcgatt gcatcgattg 120

catatgtagc atcctgctct gtatcagcct tgattccctt tactccaagt cctgcagagt 180

tcattgagtc gatgttgact gtaatcttgt 210

<210> 1638
<211> 439
<212> DNA
<213> Eubacterium rectale

<400> 1638
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gcaatagtat atgcatcagt gcatcacgga aacacaaaaa agataattga cgagatagca 180

aagacaaacg atgtcgagct gatagatgcg acacagactg tagagaaaga cttgtcggaa 240

tatgatttaa tcggttttgc atcaggagta tacggaggaa agttccatca gtcggtgctt 300

aagtttgcat cagtcaatct cacagacaat aaaaatgtat ttcttatctg tacatatggc 360

ggcagacctg tctttaagtc aattgagcag gtgatagcat acaaacatga caccattgtc 420

ggaaggtttt catgcaagg 439

<210> 1639
<211> 183
<212> DNA
<213> Eubacterium rectale

<400> 1639
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tgcaaaatct atcagagctg tttttccaaa tgccttaagt ccttctttta accccatttc 120

cgagaacttt gttgctgcaa tggctcctcc aagtgtaacc aaatccacca ctgcaaaaac 180

cac 183

<210> 1640
<211> 185
<212> DNA
<213> Eubacterium rectale

<400> 1640
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tacataaaga cagatgacag cgtatttacc attccggtgt cgtggttttt gttttatgca 120

tttttatttt ttgtggtagg attttatcca tcgtcagatc tgtatggtgc aggcaaaaag 180

acact 185

<210> 1641
<211> 725
<212> DNA
<213> Eubacterium rectale

<400> 1641
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ttcgacagtg tcgagcgaat ttaaattacc agattttgta aaaagttcga cagtgtcgaa 120

cgaatttgtc acagatccag atgttttagt taataacttg tctttttcac atattcgaga 180

aattatggtt ttaaatgatg cgtttgaacg atttttttac gaaacagagt gtatgaaatg 240

caactggaat gtaagagaac tacgcagaca gataaaaact aacctttatg taagagccgg 300

cataagtaaa aaaccagagc ttttattgaa aaaatctgtt gataacgcaa atggaacaat 360

gctatcaata aaagacccat tcacatttga atttttggga cttgatgcaa gggatgctgt 420

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gaatgatgag ttcaaacatg aggatttggg acagcttaat gcttatgtag gatattataa 660

gaaaaatgag atggcagaag gagataatcc gccagtagga atactacttt gtacagataa 720

aggct 725

<210> 1642
<211> 3225
<212> DNA
<213> Eubacterium rectale

<400> 1642
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cgctaaaggt ctgaagcatt atgcgccata caatgtccat tacttttgca ccaagcacta 120

cgctgatgat atccgagatg accaccacga tggatgttga gaccagataa agacttgcaa 180

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<210> 1643
<211> 189
<212> DNA
<213> Eubacterium rectale

<400> 1643
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<210> 1644
<211> 177
<212> DNA
<213> Eubacterium rectale

<400> 1644
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gagaaaaatg cacgatagct ctatttggag atttggcaag aagaatggca ttggcaaatc 120

cgggtaaaga tgtgaatcct ttggaaggct caggtgttgt gctcattgat gaattgg 177

<210> 1645
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<212> DNA
<213> Eubacterium rectale

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gaatatatcg ttgtgattgt ggttatgttg aggataggga tttcaatg 228

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<212> DNA
<213> Eubacterium rectale

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<213> Eubacterium rectale

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cggagagatt cgaactcttg acccccctgct tgcaaggcag gtgctctccc aactgagcta 180

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cc 722

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<210> 1658
<211> 319
<212> DNA
<213> Eubacterium rectale

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agggataacc tggaggaagg tggggatgac gtcaaatcat catgcccctt atgacttggg 180

ctacacacgt gctacaatgg cgtaaacaaa gtgaagcgag agtgtgagct taagcaaatc 240

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gctagtaatc gcagatcag 319

<210> 1659
<211> 447

<212> DNA
<213> Eubacterium rectale

<400> 1659
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ctctgcatat atcatattca catcttcttt catccagact ttactgtcgg cctcggaatc 180

tcaccgaatc atgccttgcg gctcgtgggc tataccaccg gtagggaatt gcaccctgcc 240

ctgaagaata attatttaat tagcttacgc taaccatagt aaacctttgt ggcttgtatg 300

tcaagattat tttcattttt gataaaattt atgctataat catacatcga ttaaaaaaat 360

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taataaatgt caatagtaaa atgagaa 447

<210> 1660
<211> 1866
<212> DNA
<213> Eubacterium rectale

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atatagaaaa cataaagaag gacagcacat gtataatttg taaactgtac cactgtaccc 180

tcattggcac cagattttcc tgctcacaca agagaacagg aggagaagga ttgagcgcaa 240

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cagaggtgct gactgcactc gggcttgaca aaaagaccat agcgatgcag aagatgaggg 420

acatcttcaa aaatgccagc atcaaatata ccggcagatc atatgtcgta ctgataggag 480

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caacatcgga tgaatttctc tcaggattta cgaaagagga taagctgatt ccggtgataa 660

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agataa 1866

<210> 1661
<211> 475
<212> DNA
<213> Eubacterium rectale

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ccttgcgctg tggcaaaaaa tataatgaca aagtaacata gctctgctac aatctgttta 180

aagagacaat ttatgaaaga gataagctga ttcctgtaat tatgattaca gtatatctcg 240

gcaccgaggg agataacaga ctttaccgga ttcaggacat caatcaggca gcttttcgag 300

gtactgcaga atgcatatga taaagaaaag atgcaggaag tgctacagaa cgatgacaag 360

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<210> 1662
<211> 494
<212> DNA
<213> Eubacterium rectale

<400> 1662
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<210> 1663
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<212> DNA
<213> Eubacterium rectale

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caaaggcatt ttctgtcaga taatatgcgt cctcgtttcc ctgaaacagg tcatccttta 180

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cagctactat tggtattgca gcacct 326

<210> 1664
<211> 446
<212> DNA
<213> Eubacterium rectale

<400> 1664
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cacccgtccg ccactcagtc acaaaataat cagtcccgaa ggaaatcaaa taaagtgctt 240

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aatctttcaa ggtttctcac tgttca 446

<210> 1665
<211> 113207
<212> DNA
<213> Eubacterium rectale

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aactgaaaat ttttattaaa ttagtactcg tgcatatttc tcctttcgtt aatcgcatgt 840

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<210> 1673
<211> 177
<212> DNA
<213> Eubacterium rectale

<400> 1673
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ttgccaatgc cattcttctt gccaaatccc caaatagagc tatcgtgcat ttttctccat 120

ccgataactg atctatcttt aaagacttgc cgtttttatt gaccttcatt gccaaag 177

<210> 1674
<211> 492
<212> DNA
<213> Eubacterium rectale

<400> 1674
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ctgctggtgc aaagctgtat taagatgatg taaagatgta ccgttttact aaatagacgg 180

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<210> 1675
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<212> DNA
<213> Eubacterium rectale

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tctacgttgt gacaggaccg cattaacaaa aacatcataa tttaaataca taaaattaaa 780

atcaataact acattattat tgctatctac ttttactgca tttgggcaaa ttttattaat 840

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<211> 177
<212> DNA
<213> Eubacterium rectale

<400> 1676
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atgtaatgcg accatatatt gatgaaggta gggagatcat atgcttttcc atatcaagtg 120

agatgtcgac atcaatcaat gtgatcagaa tggcggcaga agaacttgat gcagaag 177

<210> 1677
<211> 546
<212> DNA
<213> Eubacterium rectale

<400> 1677
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catttacatt atgtgccttc tctgatccat cacccttaa gaggtatgtc tcattgaatt 180

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cctgca 546

<210> 1678
<211> 177
<212> DNA

<213> Eubacterium rectale

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ttgatatgga aaagcatatg atctccctgc cttcatcaat atatggtcgc attacattca 120

ttgctgtttc tatagatgga gctgaagtct ttggtgtagt cttattttta tcagccc 177

<210> 1679
<211> 177
<212> DNA
<213> Eubacterium rectale

<400> 1679
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tcctgaaggc gttgagcaat aatcattcaa tcttcataag ataaaaactt tgacatggtg 120

actcctttcc agccgccaga aatcaaagca taacagaaaa gagaccaact atccagt 177

<210> 1680
<211> 402
<212> DNA
<213> Eubacterium rectale

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tcgggttgaa atccttttat atcaggaaaa cttgtggctg acgcaggcaa agatggcaga 180

attatttgaa gtgcaaaagg cggctatttc aaaacatttg aaaaatattt ttacatccgg 240

cgaattgcag gaagaagcag ttgtttccaa aatggaaaca actgcggcag acggcaagcg 300

gtacaataca agctattaca atctggatgc cattattgct gtcggatacc gtgttaattc 360

taaaaagact acgatgttcc gcatttgggc aaatcgagta tt 402

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<211> 51460
<212> DNA
<213> Eubacterium rectale

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<210> 1761
<211> 1933

<212> DNA
<213> Clostridium leptum

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<210> 1762
<211> 1487
<212> DNA
<213> Clostridium leptum

<400> 1762
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<210> 1763
<211> 2240
<212> DNA
<213> Clostridium leptum

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aagcgtcgcc agataggtca aaaccgccac aagcgccgat gccagccgaa ccgtatttcc 2160

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<210> 1764
<211> 1017
<212> DNA
<213> Clostridium leptum

<400> 1764
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<210> 1765
<211> 648
<212> DNA
<213> Clostridium leptum

<400> 1765
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<210> 1766
<211> 370
<212> DNA
<213> Clostridium leptum

<400> 1766
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<210> 1767
<211> 2797
<212> DNA
<213> Clostridium leptum

<400> 1767
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ggcaccgcac ggtacatttg tggctcgtgc gtaagaaaga cggcaaattg caggttttgc 180

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<210> 1768
<211> 449
<212> DNA
<213> Clostridium leptum

<400> 1768
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acggccgctg ctgctatgag cagcagcgac cttttctgtt cgcgcgacat gagattcagt 120

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<210> 1769
<211> 1230
<212> DNA
<213> Clostridium leptum

<400> 1769
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<212> DNA
<213> Clostridium leptum

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<210> 1809
<211> 4631
<212> DNA
<213> Clostridium leptum

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caacgtggtg ccggtaaagc ttgtaaaaga cgagctcttt gtcgccatga gcgacccgct 480

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<211> 889
<212> DNA
<213> Clostridium leptum

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cggtcggtat tccaaggtga acagccgata gcgattttcg gcattctgc 889

<210> 1811
<211> 1086
<212> DNA
<213> Clostridium leptum

<400> 1811
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<210> 1812
<211> 492
<212> DNA
<213> Clostridium leptum

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gaagtatgag ctggttggcg actattatct gattgccgga gaagatgagc cggaagaacg 360

cgagccggtc ggtatatggg gacagcggca tctccgctat ctcaagaggt accaccgtgg 420

acgatatgcc aatttgctga ccagcggtga attgaatgcc tatgattact tcctattagg 480

aacactgtaa at 492

<210> 1813
<211> 529
<212> DNA
<213> Clostridium leptum

<400> 1813
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tcatcaaggg gctggaattg ctgaagcggc agagagaacg gaaccggga 529

<210> 1814
<211> 994
<212> DNA
<213> Clostridium leptum

<400> 1814
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gcaaccggca gacggcttcg cacgatagtc ggcc 994

<210> 1815
<211> 330
<212> DNA
<213> Clostridium leptum

<400> 1815
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acattttccg ctgccaatac gttcatacat 330

<210> 1816
<211> 662
<212> DNA
<213> Clostridium leptum

<400> 1816
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aaaaattcgg aacataccaa tgtacccttg ctgtccgtga ggcttttatg cagaaaacac 120

agcgggagat caacgatgcc atcatcgacg aggtgctgat caccggcacg gcaattattg 180

cgcctgccga cctgaaaatc atcaagggcg tcgccgccga gtatgtgcgg gacatcttcc 240

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gcaggtcata cgggaggaat tgcaggaggt gtcgtttgct gcggcacctc ctgtttttga 660

gc 662

<210> 1817
<211> 600
<212> DNA
<213> Clostridium leptum

<400> 1817
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cgacgagctt tccgaccacc tgctttcgct catcaacgat attttggata tgtcccgtat 540

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<210> 1818
<211> 486
<212> DNA
<213> Clostridium leptum

<400> 1818
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cgttttgcag gcggcgggct atacgacggg gctgttcacg tccccgtttc tcgagcaatt 120

cgccgagcgc atgcaggtca acggccagcc gatcccggac gcggagcttg ctgccgcgtg 180

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ggtgcg 486

<210> 1819
<211> 780
<212> DNA
<213> Clostridium leptum

<400> 1819
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ggcaagtatc aggagttcga gcagcaatcc gccaagacca agtccagtct gcgcaccctg 600

ccgctcatcg gcagcttccg ggaatacttt atgcaggtga aagaggcaca ggagctgaac 660

aagcaggtct gcggcaactg ctacaactat gaatacgatg gctttgtatt cgtggatgag 720

ttgggcgagc ggatgcgggt ggaatacctg accaacgcat ttccgaaatt tctggagagt 780

<210> 1820
<211> 483
<212> DNA
<213> Clostridium leptum

<400> 1820
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aggatttaca agaactggtt tcatttcatt atcctgtaga aaccttccaa gattgaacca 300

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gtccaggatc cattccttaa atgtcgcaaa tccagcctct gtattgctaa acttaaatgg 420

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<213> Clostridium leptum

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ccatttatat gaggccttgc cacagcttcc acacccataa atccccacac ccgccgtccg 180

gcagagttgg tgatgttgtt gcaatgttcc agattgaatc tcccggcatt ggcaatcatg 240

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tagatttcat agaaatcctt ggagctgatg gacgc 335

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cctgtgcttt gcacactat 319

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<212> DNA
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gtgttggagg attgacccc 259

<210> 1825
<211> 414
<212> DNA
<213> Clostridium leptum

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gtcttttgtt gttggtggca aggaaattac tgcgaagctg cttgccgaag ctctgcacag 360

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<210> 1826
<211> 513
<212> DNA
<213> Clostridium leptum

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caggagacgg ctgaggaaat ggcggaactg gca 513

<210> 1827
<211> 703
<212> DNA
<213> Clostridium leptum

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<210> 1828
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<212> DNA
<213> Clostridium leptum

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<211> 261
<212> DNA
<213> Clostridium leptum

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ggttttagct ttgtttataa ttaccagaac cacgaacagg aatatcacct gattcacgga 240

agtctttcag ccactttgtt a 261

<210> 1830
<211> 488
<212> DNA
<213> Clostridium leptum

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<210> 1831
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<212> DNA
<213> Clostridium leptum

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gcaccatccg gggtgtagat gtcctccgct gccttgatct cataggttgc tcctgcaaga 240

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<210> 1832
<211> 592
<212> DNA
<213> Clostridium leptum

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<213> Lactobacillus reuteri

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<213> Lactobacillus reuteri

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<210> 1926
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<213> Lactobacillus reuteri

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ttcagcacca gttaaaagac gtaacggccg aatattcaaa caccactcag gataccgtca 9120

aacgaatcat aaacgtgcag ctgccaaatg gacagatagt tacgacaacg cagacggtca 9180

attttaagcg aaccgcgaca atggatctgg taaccaatct gattgaatat ggtcaatggc 9240

aggcagacgg cagctttgcc aaagtcgtga ttgatccaat tgccggctac caggctacgc 9300

agaccgaggt gccagcaatg acgccaacgg caatggctga tgacattact attgaggtca 9360

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gcagtccgat tggtgagcaa tccattcctg ggctggttga tcatgacgtg gccgtgacgc 9480

catcaatccc agccaattgg gaactggtac caaatgaaac gattccaggc agcgtcacga 9540

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gtaccagtca aacgatcgaa caaaccataa cgtttacgcg ctcggcagtc aaggacctgg 9720

ttgacgatac gattgcctat ggtgcctggc agggcggtgg cgtttttgtc ggcatggaag 9780

tcccacaaat tgcgggctac tatgccagcc aagacgtcat ctacagtgtg cagccaacgc 9840

cggatatgct tgatcaaatg attgagatta cctattcgcc aaa 9883

<210> 1941
<211> 1082
<212> DNA
<213> Lactobacillus reuteri

<400> 1941
ttagcattcc tgctctccat atccttcgct tccttagaaa ggaggtgatc cagccgcagg 60

ttctcctacg gctaccttgt tacgacttca ccccagtcat ctgccctgcc ttagacggct 120

ccttcccgaa ggttaggcca ccggctttgg gcattgcaga ctcccatggt gtgacgggcg 180

gtgtgtacaa ggcccgggaa cgtattcacc gcggcgtgct gatccgcgat tactagcgat 240

tccagcttcg tgcagtcgag ttgcagactg cagtccgaac tgagaacagc tttcagagat 300

tcgcttgcct tcgcaggctc gcttctcgtt gtactgccca ttgtagcacg tgtgtagccc 360

aggtcataag gggcatgatg acttgacgtc atccccacct tcctccggtt tgtcaccggc 420

agtctcatta gagtgcccaa cttaatgctg gcaactaata acaagggttg cgctcgttgc 480

gggacttaac ccaacatctc acgacacgag ctgacgacag ccatgcacca cctgtcttag 540

cgtccccgaa gggaactttg tatctctaca aatggcacta gatgtcaaga cctggtaagg 600

ttcttcgcgt tgcttcgaat taaaccacat gctccaccgc ttgtgcgggc ccccgtcaat 660

tcctttgagt ttcaaccttg cggtcgtact ccccaggcgg agtgcttaat gcgttagctg 720

cagcactgag aggcggaaac ctcccaacac ttagcactca tcgtttacgg catggactac 780

cagggtatct aatcctgttc gctacccatg ctttcgagcc tcagcgtcag ttgcagacca 840

gagagccgcc ttcgccactg gtgttcttcc atatatctac gcattccacc gctacacatg 900

gagttccact ctcctcttct gcactcaaga aaaacagttt ccgatgcagt tcctcggtta 960

agccgagggc tttcacatca gacttattct tccgcctgcg ctcgctttac gcccaataaa 1020

tccggacaac gcttgccacc tacgtattac cgcggctgct ggcacgtagt tagccgtgac 1080

tt 1082

<210> 1942
<211> 809
<212> DNA
<213> Lactobacillus reuteri

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tcaacatgca catatttgcc tccttcctta tcgaaatctg cgcaaacaaa aagcgcccta 120

tcagtatcca aaccgatgag cgctggcgag tgtgctacct gagcagtcgc ttaattaatt 180

ttttaacgtg cttactaggc acgatgatga ttagaaggaa ccaatgtccc ataggagtca 240

cctcctaatg cacacaggct taagtgggag ctacccgctc ggtgcgcaat aaacattgta 300

tcataaatag aatgtgatat aatacaggta tgatgattag aaggccggtg cgcaaaacgg 360

tattgaggta gcttctcacg taccgaaccg gttgaggacg cttaataggc gtccttttta 420

ttagctcaca gtatcatgct gtgggctttt ttgtttgatc ttaagattgg ctgatagtcg 480

tattagctga ttgagcagca ttggcaggcc aagaatcaga tgcagtagca gaggatgcag 540

ttacatagtc cttgccagtg atttgcttgt attgttctgc tgtgatcgtg ttgtactgta 600

cgtagcactc aatcgggaat ccccaagagt agatagtctt tacaaaatca aagtcagtca 660

tcatagtctc tcactcctta gttagtcgtc ttggattgtg ccttaagctg agcaaccgtt 720

tgaccaagca cggataccat ctgcttaagc tgcgcgttgt cctgcttgat ctgtgcattt 780

tcggcgttga catgagccgc ctgttggcc 809

<210> 1943
<211> 335
<212> DNA
<213> Lactobacillus reuteri

<400> 1943
catacccccgg ccctcactat cgtatggcac gactaacgtt tcgttagttt tcaattccga 60

gcctttggga ataatcgcta ccgtatcaaa atagcccttt tcgtcataat gataggcatt 120

cattaattca tttacccact catgaccatt aaaaaaccgt gctccatcac ttggaaccac 180

agtcgtttga ttattcttca atccaatatt ctcatcaatt tgcactgccg ctaaaaatgg 240

gtacattcga cttgtagtat cgaattcata tactgtaatt ttgttactca tttcatttct 300

cctatctaac cgattaagca tcaagatgaa tccac 335

<210> 1944
<211> 493
<212> DNA
<213> Lactobacillus reuteri

<400> 1944
gtaaaattgt ttgtgtaaat ttctaaatta agatgagcga atttaaagaa attcgccaat 60

ctgaatcact tgaagaaaca aaacaagctt tagataactt cattttgaaa tggaaaagca 120

aatatagcaa ccagatgcga aaattgggta agttaagtaa cttattcacc ttctacgaat 180

ttccgccaag cattcgggca tcaatttact caacaaattt gattgaagct ttcaacaaaa 240

agttgaagaa gaaaattcgc cagaaggagc agtttccaaa tgaggatgcc cttcaacgat 300

tcgtgacaac tcaaattcta gaatacaatg acaagttcga agaacgagca catcgtggat 360

ttcgaggaag caaggatacc ttggattcca tgtttattta agtaagcatt tcatacaaag 420

aaggattttc aaaagtacac aaaattattg acactctcac caaatcacct gaatgtcttt 480

aaatatttag aga 493

<210> 1945
<211> 412
<212> DNA
<213> Lactobacillus reuteri

<400> 1945
tccgcctggg gagtacgacc gcaaggttga aactcaaagg aattgacggg ggcccgcaca 60

agcggtggag catgtggttt aattcgaagc aacgcgaaga accttaccag gtcttgacat 120

cctttgacca cctaagagat taggctttcc cttcggggac aaagtgacag gtggtgcatg 180

gctgtcgtca gctcgtgtcg tgagatgttg ggttaagtcc cgcaacgagc gcaacccttg 240

ttgtcagttg ccagcattaa gttgggcact ctggcgagac tgccggtgac aaaccggagg 300

aaggtgggga cgacgtcaag tcatcatgcc ccttatgacc tgggctacac acgtgctaca 360

atggacggta caacgagtcg cgagaccgcg aggtttagct aatctcttaa ag 412

<210> 1946
<211> 664
<212> DNA
<213> Lactobacillus reuteri

<400> 1946
gtttgctttc cggcacttca tcgattcgat gcgtcagata aaccgtaaac agctggtctg 60

attgatcatc actatcaaaa tcagccggtt tcattgcaag atcgtcaata tcttgattgt 120

ctggtgtcaa aatatagcca gctgccagat aagcggttaa ttcagcgtta atcttagcaa 180

aattaattgg ttcgccggat aagccctgca gcttttcttc agtcaatggc ttgccagctg 240

ttaggtcaat aatccgtacg ctggcagtct gttcatgacc ttggtagtag atatcgacag 300

tcttatcaac actcgttcca tcaactgttt cagcagcaat tacggcttgg cttggtgagt 360

atcctgcacg ctctggtacc tgaaccgctt gccaagcagc cagtgaccat tgcccgtaaa 420

ctttggtgcc aattgcctga tcaacctgga ctggccgact gatcgtaact gactgcgcaa 480

cggtcttaac ggtgccatcg ggcagatgat agttgattgt ccttacgatg gttcgatctt 540

ccttaacatc ttgccagaca tgcgttaagt gaaccacata gttttgcacc ccatttactg 600

catgatactt ggcctcttta aaggcagtcc gcgcgtcatt taaagcttcg ttgtcgctta 660

aagc 664

<210> 1947
<211> 364
<212> DNA
<213> Lactobacillus reuteri

<400> 1947
ggaagggtgg gattccaaag cgtgctgaac gtccatttct tggtatacct tttcggtagt 60

tacttgctca gaatcccgat tgatttttt aacacttcga tcgctccttc agcgtcacga 120

agttgacgct ttagtcgtgc aatctccttg tccttatcgc tagcaaaatt accagagcca 180

cggccaaact ccccagtctc agtaagctgc ttaacccatt tatgtaatgt actagcccca 240

atacctagat tcttacttat ttcattcatg gccatgtgat ccttgttatc taagtaatac 300

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aatt 364

<210> 1948
<211> 529
<212> DNA
<213> Lactobacillus reuteri

<400> 1948
aagcccgact ttcgtccctg ctcgacttgt aggtctcgca gtcaagctcc tttatgcctt 60

tacactctgc gaatgatttc caaccattct gaaggaacct ttgggcgcct ccgttacctt 120

ttaggaggcg accgccccag tcaaactgcc cacctgacac tgtctcccgc cgtgattgcc 180

ggcgagggtt agagtgttca tacaacgagg gtagtatccc accaatgcct ccatcgaaac 240

tagcgttccg acttctacgg ctcctaccta tcctgtacaa gttgtacaaa cacccaatat 300

caagctacag taaagctcca tggggtcttt ccgtcctgtc gcgggtaacc cgcatcttca 360

cgggtattat aatttcaccg agtctctcgt tgagacagtg cccagatcgt tacgcctttc 420

gtgcgggtcg gaacttaccc gacaaggaat ttcgctacct taggaccgtt atagttacgg 480

ccgccgttta ctggggcttc aattctgagc tttgcttacg ctaacccat 529

<210> 1949
<211> 364
<212> DNA
<213> Lactobacillus reuteri

<400> 1949
ggaagggtgg gattccaaag cgtgctgaac gtccatttct tggtatacct tttcggtagt 60

tacttgctca gaatcccgat tgatttttt aatacttcga tcgctccttc agcgtcacga 120

agttgacgct ttagtcgtgc aatctccttg tccttatcgc tggcaaaatt accagagcca 180

cggccaaact ccccagtctc agtaaacagc ttaatccatt tatgtaatgt actagcccca 240

atacctagat tcttacttat ttcattcatg gtcatgtgat ccttgttatc taagtaatac 300

tgaacggcct gttccttaaa ttccttgtca taactgtgct tcgtcattat ttgatccgcc 360

aatt 364

<210> 1950
<211> 413
<212> DNA
<213> Lactobacillus reuteri

<400> 1950
cgttctttaa acgtccgcac gatcgtcttg cccgtgttgc cttcgtagtc ttcttcgatt 60

tcttctttgg tcagagcatc ggcggctggc acatcggtat agaaagtatc ggcatgcgtc 120

gtgtttaagg ctggaacatc catattagct gccgcaaacg aaacagccca tggtgaatgg 180

gtgtggacga ttccaccaat ctttggaaaa tgattgtaca gataagtgtg cgtcggcgtg 240

tcagaagatg ggttcatgtc cccttctacg acttcgcctt tcaagttgac aacgaccatg 300

tcttctggct tcagctcatc atatggcact ccggatggct tgatgacgta caggcccttt 360

tcacgatcga tccctgaaac gttgccccac gtaaacgaaa ccagtcccag ctt 413

<210> 1951
<211> 2874
<212> DNA
<213> Lactobacillus reuteri

<400> 1951
gttccctagt ttgccagcag tgggaataat gctattagta tgatcaatgc ttactgttgt 60

tgcgttagcg aaatctttta acttttcaaa gttggcttgg atagcttcag gccctttatc 120

catgccgcta aaaactttag taaggtccat ttttttacct ctcatttaaa ataaatagcc 180

ttgacgccat cgaatacgcc aaagctacca tcatctaatc ttcgcattag ttggttgtcg 240

gaaaagttgc taaatttact cgtgatttct aacgtgctaa cgccattaga tacactgaca 300

actttaactg gcaacgtttg tcgattgcca ccaccaaaga aaccgctagg ctcagtgccg 360

attggtacga taccgagtgg atactccaga taggttacgt tggcggttga accgactgtt 420

aatgtcgtag gaacacgaat gcgaatgccc ctgtcagtac gctaatactt ttcgattcgc 480

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ccgttaccgt gtagttctta ctacctgtcg ttgcaattaa agcggtgccg ttgcgtactc 600

gatactgcat gacatcacct actttttaag tccagcttaa atcaacgctg ttagtcgtta 660

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caagcgcagt cttatcaatc gcaatcgtga tagattgtac tggaatttca ctcgtagtta 960

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gataggtagt ttttgctcgc aagcccgtaa ccgtgtaggt tttctggtca gtaacttccg 1080

caatcttagt cagctctccg tcagtgccta agccttgata gatgtaatac ttcaacttaa 1140

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tgataccgtt tgatcatctc ggccaatgaa acgaacaaag aattgttgcc agtgtccagg 2220

aacgttgaaa gtgcgttcgt caaagtgcag cgttacccgt cccaatgcga tttgatcgtt 2280

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gccgtattcg tactgccaac cccgcatatc aacgggcaaa ctattgctag tgatatatac 2400

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cgaatttcag ctgcgttacg tcttcgctgc ttgcgccgct ctggacaatc ttag 2874

<210> 1952
<211> 817
<212> DNA
<213> Lactobacillus reuteri

<400> 1952
gtcttgcgct cgacggctcg tttccaactg atagtcggtc agccctaacg acttatcgcc 60

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cagttgcgtt tgtgctacat acggattgac aaacatatac cggtcggcaa ctttgaaatg 180

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tttgacctta tcaccaatat tgacgcgaat ctgaccggca ctgctgaatg cttcttgata 660

gacgatatta aaaccgtctg tactgtgcgt tacaacgtag ttgccaagac cgcccatgta 720

gcccttgaaa acaaccgtgc caccatggat tgcatgaact tcactgcccg ggtggtcaac 780

cgaaccaaaa tccaagccat catgaaaact gttagta 817

<210> 1953
<211> 599
<212> DNA
<213> Lactobacillus reuteri

<400> 1953
gtgatcataa taaaaatctt gacccgtacc cccaaagttg gaaacacaac tttgggggta 60

tttttatgac caaaatcagc atagagacta agattaaggc aattgaagaa tactgtacaa 120

ccgcaagctc tctgcggggt accgctcgca aatatgggat tgcgcagctt gactttcaaa 180

tctgcgtggg tatttatgca cgtttcggca aggaaaaact attgaatcca ccaatcgcaa 240

ctggggattt ccgcttaaat ctggtaaagt ggaagcaaca aaaactagtt tccattccag 300

agacctgtat ccactttggc ttttgttcgc caggctttgt ctatcgatgg gagtgtcagt 360

acaacaagca tggagcacag gccctcttaa aactacgacc aggaaggaga tcaaaacatg 420

agctcatcaa gtcgcgagaa agagattcaa cgtttaaagg cgcagaatca gcttctccaa 480

aaagagaact tatccttaaa gattcaactc gacgcctcaa aaaaattagc aaccttgaga 540

aagcatccaa aaaagaactt gcccaagtaa tttatgacct cgggcctaga ataaaaagt 599

<210> 1954
<211> 462
<212> DNA
<213> Lactobacillus reuteri

<400> 1954
ggaagtaaat tggaggacca aataatgacg aagcacagtt atgacaagga atttaaggaa 60

caagcagttc agtattactt agataacaag gatcacatga ccgtgaatga gatgagcaag 120

aatctaggta tcggagctag tacattgcat aaatggatta agctgtttac tgggactggg 180

gaatttggcc gtggctctgg taattttgcc agcgataagg acaaggagat tgcacgacta 240

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tctgagcaag taactaccga aaaggtatac cgagaaatgg acgttcagca cgcttcggaa 360

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caacgagaaa tacgtcgtaa tcaccaattg tcgatggcag tc 462

<210> 1955
<211> 1631
<212> DNA
<213> Lactobacillus reuteri

<400> 1955
tttgcattgt aagttattca actattgaaa agcttaaatt acttcatgat tatcagaaat 60

cagattatgg tttaacggtg tactccgatt accatggtgt ccgaccagca aacatgagta 120

agtggattaa gcaattcctg ctcgctggat tggcgggatt aattaggcct aagcataatc 180

agaagtactc attagagact aagttaactg ctgtaaaagc ttatctttct ggcaagtata 240

ctaatcaagc aattccccag cagtatcaaa ttagaaatat ttctcaacta catcaatggg 300

ttatcagtta caataatgac aaactccgag ttaatcagac aacgagaaag cgagtcagaa 360

aaatgggacg aaaagtaacc tttgatgaaa agaggcagat tgtccgatgg acaattgaac 420

ataacaataa ctataaagcg gctgcagaga agtatgatat tagttaccaa cgagtttatt 480

cttgggtacg gaagtaccga gtaaatagcg actgggaagt actaaaagat aaccgtgggc 540

gtaataaagg aaaagagccc actaatgaac tagaaagact aaggaaacga gttcgtgagc 600

tagaagctcg tgaccgtgaa cgggagctgc aaatcacttt tgcaaaaaaa ttagtcgaaa 660

tacgcaatcg ggaggtgaaa cgaccggacg atatcaagcg attcaagaaa tgaacaatga 720

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caagttaagt catcagattc cttataccgt caataagaaa cgagtcattc gcattatgaa 960

agaccatagt atcaaagctg actatcgtca gccaacccat aaacgtattc aagcccagca 1020

aacttacgaa gctgaaaata ttcttaaccg acaatttgac caaaccgcag ctaaccaagt 1080

ttgggttacg gatacgacgg aactaaatta cggaatccgg cttaataaag ttcgtctaca 1140

tgtagtatta gatttatatg gtcaatattc agtaagctgg ttaattacac ctacagaaac 1200

cgctaaagga gtagttcaag tgttcgagca agcacggatg aaggaaggag cactagctcc 1260

gttaattcat actgatcgtg gtgcggcgta tacttccaaa gcatttaatc agtatttagt 1320

agttaatgat gcccaacaca gttattcagc accagggaca ccggctgaca atgccgtaat 1380

agaacattgg tgggcagatt ttaaggctat ttggatcgca cacctgccta aagcacaaac 1440

attattagaa ctagaaggac aagttagaga aggaattacc tatttcactg aaaaatttat 1500

ctcagcgaag agaaatgacc ttaccgcagc ggaataccgt tttggcaagg ccaactaatt 1560

tttattattt aatgtgtaaa cttacttgac agggcacagt accactcttg gcgcatctgt 1620

ttttcattta c 1631

<210> 1956
<211> 1075
<212> DNA
<213> Lactobacillus reuteri

<400> 1956
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<211> 1221
<212> DNA
<213> Lactobacillus reuteri

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gcaacgtcag gcttcccggt gattgaatcc caagtgacct tacccaatac cgactgcacc 180

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<212> DNA
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<211> 414
<212> DNA
<213> Lactobacillus reuteri

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<210> 1961
<211> 1045
<212> DNA
<213> Lactobacillus reuteri

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<211> 8805
<212> DNA
<213> Lactobacillus reuteri

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<211> 851
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<213> Lactobacillus reuteri

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<213> Butyrate producing bacterium

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<211> 977

<212> DNA
<213> Butyrate producing bacterium

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<213> Butyrate producing bacterium

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<210> 2095
<211> 166
<212> DNA
<213> Butyrate producing bacterium

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<210> 2096
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<212> DNA
<213> Butyrate producing bacterium

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<212> DNA
<213> Butyrate producing bacterium

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<211> 2448

<212> DNA
<213> Butyrate producing bacterium

<400> 2099
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<212> DNA
<213> Butyrate producing bacterium

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<210> 2115
<211> 361
<212> DNA
<213> Butyrate producing bacterium

<400> 2115
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agagataaaa aaccacgcaa gcacaaggta ttggtttaaa cctcttacga ttgcacggtt 180

ttaattatcg taacggagcc aataaggtag aagttccgga aaccgcgtac agaaacgcag 240

aaacattgga atttgctttg tgagcgagca tagcgtcaga ccggagactc ttgtttgagc 300

acgcagcgcg tgcgagtttg ggtcgcaggt ctgacaatag gcggcgcagt gaacaaagcg 360

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<210> 2116
<211> 1716
<212> DNA
<213> Butyrate producing bacterium

<400> 2116
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atacagaaac tgaaagatct cagcaacaca aaacgtaaaa acgactgtaa ctgattcaag 180

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<210> 2117
<211> 1119
<212> DNA
<213> Butyrate producing bacterium

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tattctggat ataacacact gcggcacctc ccgcaagcac cagaattcct gcagccgcca 1080

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<210> 2118
<211> 2964
<212> DNA
<213> Butyrate producing bacterium

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ccgagaaagt acaaaaaaac atcc 2964

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<211> 1327
<212> DNA
<213> Butyrate producing bacterium

<400> 2119
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<210> 2120
<211> 578
<212> DNA
<213> Butyrate producing bacterium

<400> 2120
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<211> 1563
<212> DNA
<213> Butyrate producing bacterium

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<210> 2122
<211> 2164
<212> DNA
<213> Butyrate producing bacterium

<400> 2122
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acggatatac ggttacagca accggaacat ccggaacgat cccggcggga gatacggtgg 360

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cgacaagtcc gtctgatccg acaacacctg tcactccgac gagaccgtgg catcatgatt 480

ccgatgaccc ggaggagacg gatccgacga aacgtcctcc gaagatgccg accgggcagt 540

caacggagac tgtgacagag acagatccgg caggtacgac ctcaccggat gagactgcgg 600

aaagctggac ggaaacaacc tcttcggaga ccgaaaccaa tatcgaagaa actgccacgg 660

cggaaaccgc gacagaaacc ggcacagaga cggataacga tgacagggat aacccgaaaa 720

ccggtgattc cacccatacc tggatctggg cggttctcat gatcctctcc gcattcggtg 780

cgatcatact gcacagggtg aagaaggacg atgagaaaga agaaaatatg aagtaaccga 840

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acattgtcgg aagatgatcc ggagacggtg gaatgggtgc aggagaatat tggatatttt 1260

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<210> 2136
<211> 524
<212> DNA
<213> Butyrate producing bacterium

<400> 2136
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gcggaagctg ctgttgcagc agccgtaaaa gacggcgact gggtcgatta tggattcggc 120

ggaggcttcc cggaacttct tgataaagca cttgccgcaa gaaaagggca tttgagggat 180

gttaaaatcc gtggcggtct cgtgatccgt ccgcgcattg aggtcgttga ggctgacccg 240

gaacaggaaa gcttctccta ctacagctgg catatcggtg actacgaacg gaaactccag 300

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cagcgctata tccggacaga tgttgccttc gttccggtat ctgctccaga tgaaaacggc 420

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gtgatctttg agatcaatga acattatccg aagcttcagg gtgt 524

<210> 2137
<211> 331
<212> DNA
<213> Butyrate producing bacterium

<400> 2137
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agcctccagg gcgacatcat acggtgtacg cccattcaaa ctctcccgcg gtgttgaatt 120

gatgtggctg gtgattagat tcacatccca ttgagtcagg aattcaaagg tagttcgttt 180

cggcaggatc atgcggagca tggtgtgtgc ctgttcaatg ccgcctttct gtccgcttct 240

catgggatca cagtaataaa tgttggttct ctggataccg gtaacaccgg tttcgagaga 300

atcaggatca ccgaattcag cgcctctgtc g 331

<210> 2138
<211> 1127
<212> DNA
<213> Butyrate producing bacterium

<400> 2138
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agttatcaaa gatgaaattg cactgatccg tgacaaatat ggcgatgaaa gaagaacaca 120

gattggattt gatgttgatg atatttccat ggaagatctg atccctagag aaaatactgt 180

gatcacaatg acaaaacttg gatatatcaa gagaatgact gttgataatt tcaaaagtca 240

gaatcgtggt ggtaaaggta tcaagggaat gcagacaatc gatgaggatt acatcgaaga 300

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taatctgctt cagttacagc caggagagaa gattacagca gtgattccac ttgtagatta 480

cgaagaagga aaatatctgt taatggcaac gaaatatggt gttgttaaga aatcatctat 540

catggaatat gcaaatatcc gtaagacagg attagcagca atcacattaa aagatgatga 600

ccagctgatc gaagttaaat atacggaaga tgatgaggat gtattccttg taacgaagaa 660

tggacagtgt atccgtttcc atgagagtga cgtcagatgt attggacgaa cttctatggg 720

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agagggaatt atcatacgta cagcggtaga ttctatttct attcttggaa gaaatacttc 1020

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tgaagagaag cttgaagacg aaatggaaaa aaatacaaca gaagaat 1127

<210> 2139
<211> 1164
<212> DNA
<213> Butyrate producing bacterium

<400> 2139
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aatctgatgc agctttattt gcaggaaaat ttatgatatt ttggcagtga caataaaata 120

tttttggagg aaaacatgag aacgattcat acagatgaga tcatcaagaa tataaaagag 180

atgtgcatcg aggcaaattt atctctgaca gaagatatga aatgccgttt taagaatgca 240

acagaaagtg aaaagagccc attagggaaa cagattttaa atcaattgca ggaaaatatg 300

gaaattgcag cagcagatca gattccaatc tgtcaggata caggaatggc aatcgtattt 360

ttaaatatcg gacaggatgt tcatattgag ggtatggatt tacatgatgc agttaacgaa 420

ggggtgcgtc aggggtatac agaaggatat cttaggaaat ctgttgtaaa ggatccgttg 480

atccgtgaga atacaaaaga taatacacct gcgatcatgc atatagatat tgtcccaggg 540

gaaaatcttg aaatcctagt agctccaaaa ggatttggaa gtgaaaatat gagtcgtata 600

tttatgttaa aaccagcaga tggagaagag gggataaaga aatcagtaat tcaggcagtc 660

aaagatgcag gacctaatgc ctgcccacca atggttgtag gtgttggact gggtggaagt 720

tttgaaaaag cagcatttct agctaagaag gcattgacga gaaacttaga tacaccatct 780

gagaagccac atattgcgaa attagagaaa gaattgttag aagaaatcaa tcagttaggt 840

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cctacacaca ttgcgggaat gccattagca gtaaatatct gctgtcacgt aaatcgtcat 960

gcacatagag tgttataaag agttagatat tatctatcgt tcagacgaaa ttttgagaat 1020

atagtatttt ttaaatacaa ggagtagaag attatggaga aacatttaaa tgttccagca 1080

aatacagaag agttggcaga gcttaaatct ggagattatg tatatttgac aggaaccatc 1140

tatacagcta gagatgcggc acat 1164

<210> 2140
<211> 848
<212> DNA
<213> Butyrate producing bacterium

<400> 2140
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ttgtcgatct gcgcgttctt taatgcggag agaagcatgg aaagggaatc ttttctctct 120

ttatcttttg ctttcatcga ctcgaccata gctgctctta caacatcgat cttactcatc 180

ttatattcct cctgtctatg cggtattccc agtcaaaaca actggttccg catgttcctg 240

tgatgatata atttgtaaac ttgattagtt ctttccgaac tcactgagtt tcaagttcgg 300

atttctctcc tcgaccatgc cgacactcca gctgttgatg aataacaata acggattgcc 360

cttgaggtcg cagatgcgct tcatgtcaga agtaccctgg atcttcgcca catccacttc 420

ctccgggttc tcaacccagc ggatgtactc gaacggaagc tgttccagac ggacatcgac 480

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tctcgcgaaa tgctccggtg caaaggtcgg gataccctcg aactggaact tctcgttgga 720

cgtacagagc gtgtcaccga tggagaaaat acccggatca aaaacgccga tgatatctcc 780

ggcataagcc tcgtcaatga tcttacggct ctcagccatc agctgctgcg gctgggtcag 840

acggatct 848

<210> 2141
<211> 1643
<212> DNA
<213> Butyrate producing bacterium

<400> 2141
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tctgaacttc tggctattcg gccgctgtac tctttgagca gttttcatgt aaaacggcag 120

gtctgttccc tgcggtattc cctgctcctg ccgcgctgtt tccacctgtt gtttttctgt 180

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cccggaagtc tcttccattt tccgctctat cggtctgtct tccatatttc cgcatgtgtc 300

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tgtatccatt cctttttccg cctccggcag catctgggca gtaaatttcg ggaccgaaag 720

gaccggattc tctccggtat ttccctcctc cgctgccaga gcatcctccc agatcgtctt 780

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gcgaacgaaa acattcccaa gaaatgtctc acgaccgcct gtccctaaaa gatacgcacc 960

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gtatatgcgg aaggagtgtt tctcataact atttttaat tgtcatttgc catcgatgat 1200

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ctgctacgga cacgccgata aat 1643

<210> 2142
<211> 564
<212> DNA
<213> Butyrate producing bacterium

<400> 2142
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cagttcggtg agggaaattt ccttcgtgct ttcgtagatt actggttcga ccttgcaaat 120

gagaaagcag gctggaacgg aaaatgctgc ctggtacagc cgatcgctcc aggtcttgca 180

aagatgatca acgagcagga aggtctctac acactgtacc ttcgcggaag cgagaacgga 240

cagaaggtag acgctaagag agtgatctcc agcgtaaacc gctgcttaaa cccgtatgag 300

aaagaggatt acgagaagat gatggaggtt gctgcaagcg acgaccttga gatcatcgtt 360

tccaacacaa cagaggccgg tatccagtat gatccgtcct gcaaacagga tgactgcccg 420

ccgtccagct tcccggcaaa attaactcag gttctctatc atcgttacaa agcaggaaag 480

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tgcgtaaacc agtacatcga gcag 564

<210> 2143
<211> 1065
<212> DNA
<213> Butyrate producing bacterium

<400> 2143

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tgtctgagca acacttaaga tcatccagat atatgcagac atcggtgtcc agcagttgaa 180

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gaacatcgga acgaagatcg gagcgaaaat agcccacttc gcggaaccgg aggatacgaa 300

gatgttaacg aaggagcaga ggacgatgaa agctacacag agcggaatgc ctgtgaaacc 360

tgcagcctcg agaccatcag cacctgcgat cgcaaggagt gtaccaagct ttgtccagtt 420

gaataagccc tggaactgtc cacagaagaa gcagaacaga acgtaggagc ccataccagc 480

catctgcttt gacattgctt tgttgacatc aacagcgttc ttgaatgtac ctgcagtgaa 540

gccgtatgca agaccgcaga gacagaacag aacgaagagg atcgggatca ggccctttaa 600

gagcggggat ccgataaacg caccgttttc gccggaaaga agaccggtga agaatccgat 660

tgcaatgatg atgatgtaga tgattgcggt aagacctgca gcattaagac ctttcttctg 720

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gatcgcatcg tttgtaagac cctgtaacag agtatcagta ccggcaacca tcaggtttgc 960

tgtgaaaccg gcctgagcac ctgcgtaacc aaccatcata ccaactaccg ggtgcttgcc 1020

tacgcccatg taaacgatgg cagccatcgg cgggataacg accat 1065

<210> 2144
<211> 828
<212> DNA
<213> Butyrate producing bacterium

<400> 2144
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ggagatcagc attccggact cctcacagag accaataccg agtgtcatgg tgataaccag 120

acctaacgga gcgaagcctg tgaagttctt taccatgttg cctaagatcc agtcaacgcc 180

gtctttggag aacaggttcg cagatgttac gacctctccg gaagccgggt ttgtaagggc 240

aacgcccatt acactgaaga tgcagccgat gatggctgtg ataaggaaga gccagcagaa 300

cagaatcgct ggcggcggca atttgttaca aactttttcg ataccatcaa tcagtttgtc 360

cacgccggtt ttcttagcgg tagtgttttc actcatttga aaaacctcct gtaaacttaa 420

tttacgggac ctaaaccccc gagatcccgc ttgcatagat attatactat aaatagttca 480

gaaaagctat atgtttttta taaagtgttt atatttttta tttttacatt agaaaactga 540

aaaaatagcc ggagatttca ccaaatggaa tgataaatat ttggtaaaaa tgcataaagc 600

aggaaatgac gatcataaga agattattgc gtttatagtg gattcatgtt aagataaagt 660

atcgtgcatg aaacgtgatg acagacaata aaggaatcct gcctgatgga ttcaaaaaag 720

actgtcagtg gcagcagctg ccaatgtgcg gttaattgaa tacctgggag gataaaatat 780

gtttggtgga aactttcaga catggaaact tcattcggcg caggacta 828

<210> 2145
<211> 1305
<212> DNA
<213> Butyrate producing bacterium

<400> 2145
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atggagtgac cgtgtactgt aaccagaaat gtcagctgtc tgcgggcaat tcataaaaaa 120

gacagcatgt tcagctgtga aaaaacatga tcaggccgca gggccgtaca atatcgggaa 180

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cgcggcaaaa acagcggatg aattctggaa agatcttgag accagcctgc gtctgttaaa 480

gacggactgc atcgatgtat atcagttcca caacccggca gtctgtccga agccgggcga 540

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cagtatcacg aaccatcgtc tcgcggtcgc aaacgaggcg gtcgattccg gcctttacgc 660

gaccttacag ttcccgttct gctatctctg cagcgatgcg gatctggcgc tcatggagaa 720

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ggggaaggag attttgccgg gaaatttcta ggataaataa gaaatgatct gcatattcgg 1260

aacttacata tgcaaaaaag aaaaaggctt ttcggagaac aatct 1305

<210> 2146
<211> 2182
<212> DNA
<213> Butyrate producing bacterium

<400> 2146
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gtgatgcctg caaggtcagc aa 2182

<210> 2147
<211> 2728
<212> DNA
<213> Butyrate producing bacterium

<400> 2147
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<210> 2266
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<212> DNA
<213> Lactobacillus delbrueckii

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gttaaaaatc tgatttcttt tgccaagttg aatctactca tagatttaac tagaaaggaa 180

tatcagaaaa acttaccaat attgatgtga ttatcaagat ttagtaagtt ttatgattcg 240

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<210> 2267
<211> 1257
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2267
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<213> Lactobacillus delbrueckii

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<212> DNA
<213> Lactobacillus delbrueckii

<400> 2269
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aggctagccc taaagctatt tcggagaga 209

<210> 2270

<211> 1685
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<213> Lactobacillus delbrueckii

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<210> 2272
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<212> DNA
<213> Lactobacillus delbrueckii

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<210> 2273
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<213> Lactobacillus delbrueckii

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attattagca aactttccag cttcaacatc actgatgaac ttatataagg aagaaaagaa 180

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tcttgccaat atcctttacg atatcgcaaa ttgttgttac ctagactgtt tattgcaatc 180

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attactttgg caagttcacg gctttttagc taattattat taatgccacc gctattaacg 3360

gttctgcgaa ggctcttgct gaaacttaag cttcagactg atacaaatgc gtgggctatt 3420

ctaaccggga ttctggtagt tac 3443

<210> 2292
<211> 581
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2292
cgtgacgttg ccgtttgggt ccaccaagcc aagaccaagg aagctttgcc agttttgatg 60

gacactgcta tccgtcaagc ttacgcaaag aagggtccag ctgttttggt aattcctaag 120

gacttcggtt ggcaagaaat cgaagacaac taccgcgttt ccgcaagcaa ccacgttgct 180

gacaactacg ctgctccaac tgctgaatca attgaagccg caactaagtt gatcaaggaa 240

gctaagaacc cagttgttta cttcggtttg ggtgcttcag gcgctgccga agaattgaag 300

gaatttgctg acaagttcaa gatgccaatg atgtcctcat acctgggcaa gggtatcgtt 360

gaagacagct tcaagccata cttggggact atcggccgtc tcggtgctaa ggctcctaac 420

gaagttcaag gccacactga cctggtagtt tgggttggta acaactcacc attctcagta 480

ttgtggttcc ctaagaacgc caaggttatc caaatcgacg ttgacccaga aaagcaaggc 540

aagcgtcact cagttgacgt atcaatcctg gcagacgcta a 581

<210> 2293
<211> 338
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2293
tggccaacca cgtaagacag gaagcgttcc tgcaggtcca gggattcatc ttggtgcatc 60

caggccattt ccggttccat catccagaat tcagtcaagt gccggcgggt cttggaagct 120

tccgcccgga aggttggccc gaaggtaaag atcttgccga aggcttctgc cccgacttcc 180

ccgtaaagct ggcccgattg tgacaggtaa gcgtcgtggt cgaagtagtc gatatggaag 240

agttccgtgg tcccttctgg cgctgagtgc atcagaagcg gggcgtcaaa cttcacgaag 300

ccttcgtttt caaagaagtc gaccgtggcc ttgaagat 338

<210> 2294
<211> 215
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2294
tggaagagtt ccgtggtccc ttctggcgct gagtgcatca gaagcggggc gtcaaacttc 60

acgaagcctt cgttttcaaa gaagtcgacc gtggccttga agatccggtt tctgatctgc 120

atgatggcga atggccgccg gcttctcagc cagaggtgac ggtggtccaa aaggaagtcg 180

atcccgtgtt ccttgttggt gatcgggtag ccttc 215

<210> 2295
<211> 308
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2295
atagcgaaga cagcgttgtc tgcggcttcc ttgttgatga catcccagat tggttcttgg 60

cgtacgcggc cttcgtcctt caagtggtcg tcagcaaatg aagcggtcca tgcgtcccat 120

tcttcacggt cggccaaagc agccttgtaa agtggtgatt cttcacgggc ttcaccggcg 180

tcgatcaaag cacgcaagct cttcttagcg tctgccagga ttgatacgtc aactgagtga 240

cgcttgcctt gcttttctgg gtcaacgtcg atttggataa ccttggcgtt cttagggaac 300

cacaatac 308

<210> 2296
<211> 327
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2296
ggtgaatacg ttcccgggcc ttgtacacac cgcccgtcac accatggaag tctgcaatgc 60

ccaaagtcgg tgggataacc tttataggag tcagccgcct aaggtagggc agatgactgg 120

ggtgaagtcg taacaaggta gccgtaggag aacctgcggc tggatcacct cctttctaag 180

ggaaacggat ggatggagag cagaaatgct aaaagaaatc catcagttac ggaagcacac 240

tgcaaaagaa actttgttca gttttgagag tatcagctct cacttgtacg ttgaaaactg 300

aatatcttaa ttccaagaaa aaaccga 327

<210> 2297
<211> 243
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2297
gaagtctaac gtatgcatta tggtcaatgg ccaaaaagtt aatgactatg ccatctccaa 60

cgatatggta ggcttcaatc agctgctggg tgaccttaag caggttacta aaccgcagat 120

tatctttgaa gcaactggcg tctattccag aagactccag gcgttcttgg acatgcacga 180

attgcgctat gtcatgatga atccgctaga agccaaaaga aagacaaagg atgacctgca 240

cca 243

<210> 2298
<211> 214
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2298
cggacgagcc tgccccagga aaccttagtc ttgcggcgga caggattctc acctgtcttt 60

cgttactcat accggcattc tcacttctag aagctccaca tgtcttctca gtcatgcttc 120

accgccgcta gaacgctctc ctaccacgtg cataaatgca catccacagt ttcggtatca 180

tgcttagccc cggtaaattt tcggcgcggc gtca 214

<210> 2299
<211> 452
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2299
attgaagact tgtccgaatt aaacttgaag gatattgctt tgacaaagat aaagaagctt 60

ccagatggta cttacagact gcagctgact ttttcattgc ctcgcaagaa gcaggaagca 120

aaaactattc aaggctttga ctggaacatg gcgggcaatg aggcattttg ctcatctgac 180

ggcaagcgca tcaaggtatc agacagaact atcaaacgtg ctgacgagta tgagcagaag 240

atcaacgaaa ttaaatcatt tcgtgacttg gaagagaata tccatggccg aagcaagcga 300

tatcggcgac ttgaccgcag gcagcagaag ctgaatgcaa agcgtacgaa tctgcttacc 360

aacgaatacc gtcatctggt gcacgaagtg gccgacggct gtgacacgat agtcgttgag 420

aagctggatg cctatgagat gcgcaagcgt gg 452

<210> 2300
<211> 315
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2300
gcagcttgga cactgccatt ctttctgacc aactttgaga tctttgttga tgtatccgca 60

gtcgtggcat gccttgcttg tccaaaatga atccactttg acaagcctct tgttctgctt 120

ctttacaagc gactctaaaa tagtcatcag ctcatatggc ttaaggaccg ccagtctgcg 180

attgatgcct ttgctttgag cagagccttt tccacgcttg cgcatctcat aggcatccag 240

cttctcaacg actatcgtgt cacagccgtc ggccacttcg tgcaccagat gacggtattc 300

gttggtaagc agatt 315

<210> 2301
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2301
gaccatctcg caaggctaaa tactaaccag tgaccgatag tgaaccagta ccgtgaggga 60

aaggtgaaaa gaaccccggg aggggagtga aagagaacct gaaaccgtgt gcctacaagt 120

agtcagagcc cgttaacggg taatggcgtg ccttttgtag aatgaaccgg cgagttgcgt 180

tagtcagcaa ggttaagtca gaaaagacg 209

<210> 2302
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2302
agaaccagct atctccaagt tcgtttggaa tttcaccgct acccacaact catccccgca 60

attttcaact tacgtgggtt cggtcctcca gcgcgtttta ccgcaccttc aacctggtca 120

tgggtaggtc acttggtttc gggtctgcgt cagccaactg ctcgccctct tcagactcgc 180

tttcgctgcg gctccgtctt ttctgactt 209

<210> 2303
<211> 2038
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2303
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cgccaatcgg ttaggcgctg catggatttg gtctggccgt ataccgcctt tgggccttgc 120

ttggtattga tgatgctttc gagctggtgg tattgagctt gaaggctctt caatttcgcc 180

atgcgcttgt tgtagtactg attgacagac ttgattgcac ggccattaat gagtaaggcc 240

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gcaagcttga tgctaagccc caaagaatga ataatcagat accgcgctac gacatctttg 480

ccatcagcac ttttcacttc tttgactctc gcgttttgtg gtgtcacgta aaaggtatga 540

cgtctgcttt tcttcaagta acgtggaatt ctcggcctgc cggtaaattt ctgtggtgct 600

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gtctgttgag cacattgaac agtgggcatc tgaccataaa gcataagctc attggcattt 720

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tctctagcac gtgaatcttt cacgtgcttt tttgccgaaa taaaatcctc caagttatag 1860

tatacgtagc tattattaga cgcataaaat aatataaaaa atagtttaag aatatcatcc 1920

aaagtgttgc atttacaaaa tacttgtaaa atatagaatg aatacggtaa cattaatgct 1980

ttgtattgga ggataaaaaa tgaaggcaat caagcagctc taccatgagc acaagatc 2038

<210> 2304
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2304
cacctgtcaa tttcaaagcg tgggacagct attggcagaa aggtgctgta cttggccata 60

aaccaaattc agtcggctaa gaaagcggga aacccttgtc atatcgcgga ttattacgag 120

aaacgaaaac ggtcttctga gactgcaagt cacaagaagg ccgctatcgc atcgatccat 180

aaattattac ggacgatctt cgctttaat 209

<210> 2305
<211> 219
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2305
tgatgaagcg ccagccgaca agattatcaa agctcctgta cccaaggctc cgttaaccaa 60

cagtcttggc tcagcgtctt tgatctcaaa tactatctat cagaagtacg ttctcaaggt 120

tcctgcctac cggcaagaga aagacttgcg gcgtatgggc cttccgcttg atcacaagac 180

ggtttcgaat tggcatatca aagtctgtga gtactacct 219

<210> 2306
<211> 240
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2306
gccaggatat tgatcacagt gaaggtatcc gctaaagcct gtgaggaaat cccatgcttc 60

ggtgcctttt cgtgatccat ggtgatacag gacaatcggc ttttcggcat gcttgcctga 120

caagaaggtc cagacatagt ctttggctct ttcgctgtct aagactcgat atggcgtctc 180

atctgcgtga atgacatcca gctttagcag ctcttttctc aagagctcgt aaaggctgga 240

<210> 2307
<211> 284
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2307
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cgcaagcgct tgaattcatg gactaagggc caactggatg aacgtattga atatctttca 120

agcaaaaatt cgattgaaac tcatgatgtc aacccagcat atacttctca gtactgtcca 180

atctgcgggc agcattttga ggaaagatac ggcagtcatc atgaactgac caaatgcaag 240

aaatgcggcg agatgaatgc gaacatcgcc gcagccaaaa acat 284

<210> 2308
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2308
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atcaagctgg agcgggaaat gtatgaattg caggctgacc tggtggtcaa gcggcaccat 120

acgattacct tggctgaagt gacttacatg gaagagcaaa tcgatgcctg gacggaagaa 180

ttgccggaaa tgaaggaatt catcctgcc 209

<210> 2309
<211> 260

<212> DNA
<213> Lactobacillus delbrueckii

<400> 2309
tcgatgctag cggttaataa ctggcaggct ctgcgcaacc aagttcgcaa gtgggacaag 60

ccggttaaag gctcaaaagg caagctagaa acagtctaca attttcagac caagcactgg 120

gttggtgctc tccgtgaggc atgtgccaac ataaaaagca tgtggtcgaa tctggctaac 180

cgtttgaaga agctgattca aggaaatgaa aatctttctg cagatcagcg ccaccttctg 240

ttctttattt tgaaatttaa 260

<210> 2310
<211> 846
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2310
actacggcca atgcaatgct gaatcagtcc ttgatgccga ctgctaaaag agaacctttg 60

cactgggatc caactggctg gcacaacaag cggatttcca gcggttggct ctataaccgg 120

agtcacttga tcggctacca gctgactgga cagaataaca acccgaagaa cctaatcact 180

ggtacggaag aaatgaacgt atcggggatg ctgccatacg aaaatgaagt agctgactat 240

ttgaaggaat cttcaaataa ctacgtccgc taccgggtta agccgatctt taaaggagat 300

gaacttctgg cccgtggcgt tcaaatggag gccaagtctg ttggcagcaa cgcggtttcc 360

tttaacgtct atgtctttaa cgtccagccc ggcgttgttt tgaactacag cgatggtacc 420

agccgggtac agaattaaat agcattagaa aaaagttctc tgaagctgtt agacttcact 480

tctaacagag cggagaactt ttatctttta tgagctttaa tacattacgt taagtgaaag 540

tgtattgagt agcacaattc ctacggtgaa aaatataatg gaaactatcg aaagcaatat 600

gcaaaatttg aaatcaatct gatattcccc ataagcaaac agtttcttaa tgccgataaa 660

aagcatcaaa attatcaagt agatgacgat taggtacacg ccaccaacta tgaaagcata 720

tcatagagaa gcgctagaca gattctttaa gtcgctaaac agattcccaa gaatctcgac 780

ggagcccatc atggcgaagg acattgctgt aaagattcct aagatccaga caaactcaga 840

gtagat 846

<210> 2311
<211> 526
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2311
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gctacctggc tttgcgtaac atctgctttc aagttttgtc tctgatcctg ctcttgacat 120

atgtcaagga tgaaagcgat ctattgctgt atgcttggac tacggtggcg ggcagcgcgg 180

gggccaactt gatcaacttt ctgaggttac gtaagtactg cacctggtct ttgacctggc 240

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ttcaaaaatt ggcccggcag atcgcggatt tagatttcgc gccggc 526

<210> 2312
<211> 753
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2312
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gagtagactc taatcgtctt gggctgagtc tttttcactg tctgcttgac tgaagagctt 120

tttgctttct tggatgactc ttgcattccg atgcgacctc tttccataca gcttagctga 180

gaaaacggtg attatagata aaacatcttc tacaagttct gaatttggag caacgttgtc 240

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agtgtagcga cgttgattgg aggcagttct aagcggagta atcaatccct cagcttccca 660

attgcggaga gttgacttag caacattaag atattcagct gcttttgata tggacatgta 720

ttcgctcatt atttcttcct cccaatcttt tga 753

<210> 2313
<211> 17524
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2313
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aatcacgctt tacacgcctt acaagcgagt taaggagatt cttgacagtc ggataaaaga 120

agcataagcc aagtaatact acaaagttga aggctctagc atgtaagagc agtcagcttt 180

aacgagctca gttcggggta ttaaaatcgc ggcttgactg cttcgagaat gcatcacgat 240

atgcttgcct gctttttgcg ggcaagatgc ctttccgact gccaggctaa aagtttccag 300

tggggcagat aaaaagctat tggataatgc catttggcgt tatttgacag ccaaccgtac 360

tcactgacct taacttcaaa aggttaaaaa tctgatttct tttgccaagt tgaatctact 420

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aacgcttgct agagatcagc ttatgaactt caaggcgctg cttgatgcgg tcaagcacca 540

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<211> 414
<212> DNA

<213> Lactobacillus delbrueckii

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aagttctgaa tttggatcaa cgttatctgt ctgattgatg acaaccagct ctacatcgtt 180

tgcctgacag attgtctcaa tcatttcaaa gccaaaacgg acaagccggt cttgataatt 240

taccacgact cgctcacact gcttcttgca gatcatgttg atcagctctg tcaggccctt 300

tttcttataa ttgagaccag atccaacgtc ttgaatgatc ttaaactgat agccattgac 360

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<210> 2349
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<212> DNA
<213> Lactobacillus delbrueckii

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tgcgtttcgc ttgccgtatt tgtcaacgat ggcattggca atcttgctga aatttttacc 660

atattcatta ccgctgctgc aggaaagcag ggtggcaagc cccttgtcaa tgccaattgc 720

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<210> 2350

<211> 245
<212> DNA
<213> Lactobacillus delbrueckii

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gcttctattt cagttaaagc ttcagtgtat tcttctggca gctcaattgg cttgtgaaga 120

agaacggctt gccatgcgct tttaaatttc aaaataaaga acagaaggtg gcgctgatct 180

gcagaaagat tttcatttcc ttgaatcagc ttcttcaaac ggttagccag attcgaccac 240

atgct 245

<210> 2351
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

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tctttctctt cctgcagcta cttagatgtt tcagttcgct gcgtgttcct tccttaagct 120

atgtattcac ttaaggatag catgtctgca catgctgggt tcccccattc ggagacctcc 180

ggatcaaagc ctacttacgg ctccccgaa 209

<210> 2352
<211> 252
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2352
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gctcctcatc acgccttgtc cttatgaaag caagcatttg actcgctctc agacttgacg 120

cttgaacgtg gtatccagca ccacgcgttg ctagcctcct gcgtccctcc atcgctcata 180

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gccttaggtc cc 252

<210> 2353
<211> 221
<212> DNA
<213> Lactobacillus delbrueckii

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ccaagcagtt ttattttctt cctcaaagca gtcttagaca aaggttggtt tgccttctcc 120

agttgctcaa gctgctgatt gagctgccag cgcaaactca tatatggctg gcgatttgcg 180

tttcgcttgc cgtatttgtc aacgatggca ttggcaagct t 221

<210> 2354
<211> 344
<212> DNA
<213> Lactobacillus delbrueckii

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tttagaacca tcacctcaca aaagcttcca gaagattcta aaggcggcat cagaattgag 120

gacaagcata cagacaacca caccttctta acaatagccg actttggtac tctcgaagtc 180

attgaagact tgtccgaatt aaacttgaag gacattgctt tgacaaagat aaagaagctc 240

ccagatggtt cttacagact gcagctgacc ttttctctgc cccgcaagaa gcagaagtca 300

aaaactattc aaggctttga ctggaacatg gctggcaatg aggc 344

<210> 2355
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2355
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gatttcttgg agcaccagtc ggaaaacttc tctagcagag gctttaattc ggactgacgc 180

ttctcgtatc tctcttcagc ggaaaggtc 209

<210> 2356
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2356
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atcaagctgg agcgggaaat gtatgaattg caggctgacc tggtagtcaa gcggcaccat 120

acgattacct tggctgaagt gacttacatg gaagagcaaa tcgatgcctg gacggaagaa 180

ttgccggaaa tgaaggaatt catcctgcc 209

<210> 2357
<211> 383
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2357
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tcgctcagaa gattacgcag ataacaccgt ctagtgctaa ggacgattgt tccgtttcgc 120

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gccattcttt ctgaccaact ttgagatctt tgttgatgta tccgcagtcg tggcatgcct 360

tgcttgtcca aaatgaatcc act 383

<210> 2358
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2358
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aaggtgaaaa gaaccccggg aggggagtga aagagaacct gaaatcgtgt gcctacaagt 120

agtcagagcc cgttaacggg taatggcgtg ccttttgtag aatgaaccgg cgagttgcgt 180

tagtcagcaa ggttaagtca gaaaagacg 209

<210> 2359
<211> 272
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2359
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agctttatca gctgtgcgat aaacaggatg attgagaaag agcatccggc ggtcattgct 120

aaggaagact tgacgttcgt aaaagaaaaa ggcgtcaaat cagataatag cagattcgca 180

agaaagatgc gcaagcgctt gaattcatgg actaagggcc aactggatga acgcattgaa 240

tatctttcaa gcaagaattc gattgaaact ca 272

<210> 2360
<211> 540
<212> DNA
<213> Lactobacillus delbrueckii

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ggcaaaccaa cctttgtctg agactgcttt gaggaagaaa ataaaactgc ttggcaagct 420

caagaatctg gagcagaaca atatcggcag aaagtcgtat gaaaagagtt atcgctcagc 480

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<210> 2361
<211> 512
<212> DNA
<213> Lactobacillus delbrueckii

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tcatcatgaa ctgactagat gcaagaaatg cggcgagatg aatgcgaaca tcgccgcagc 120

caaaaacata ttgagtagat taactgacga agaaatcacg ctttacacgc cttacaagcg 180

agttaaggag attcttgtca gtcggataaa agaagcataa gccaagtaat actacaaagt 240

tgaaggctct agtatgtaag agcagtcagc tttaacgaac tcagttcggg gtattaaaat 300

cgcggcttga ctgcttcgag aaggcatcac gatatgcttg cctgcttttt gcgggcaaga 360

tgcctttccg actgccaggc taaaagtttc cagtggggca gataaaaagc tattggatga 420

ggctatccgg cgttatttga cagccaaccg tactcactga ccttaacttc aaaaggttaa 480

aaatctgatt tcttttgcca agttgaatct ac 512

<210> 2362
<211> 6795
<212> DNA
<213> Lactobacillus delbrueckii

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taaaaagcta ttggatgacg ccatccggcg ttattcgaca gccaaccgta ctcactgacc 120

ttaacttcaa aaggttaaaa atctgatttc ttttgccaag ttgaatctac ccatagattt 180

aactagaaag gaatatcaaa aaaacttacc aatactgatg tgattatcaa gatttagcaa 240

gttttatgat tcggtaaagg attagatgac tttttatctg ggactgaccg gcgggattgc 300

cacgggcaag tcgaccgcca gccggatatt aaaagagctg ggctgccagg tcatcgacag 360

cgacttgatt gcccaccagc aggccgaagt gggccaggtc tcctggcaaa ggatcttaga 420

agaattcggg ccggacttct tcaatgaaga tcggagtctt aacaggaaga agctgggcca 480

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taattatgcc gattgcaaac acaagcaacg ccacgagggt ctgtgaccaa tctaacgaag 6420

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aaacgcaaca gctactggtc tttaggcctc ttgctaatct tgaacctcct acgactaaag 8400

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ctcagagtgt ttaggttagt ttcacaactg cccaatgtca tctcgtcttc gttttgactc 8520

gctcagaaga ttacgcagat aacacagtct agtgtgctaa ggacgattgt tccgtttcgc 8580

ccgggctgtt tttagtgctt taatcttaga cttccgtcac cagtgacgaa gggctaagat 8640

tttttccttc ttcggccgtt ttcttcagct ttgcgtgatg ctctggatgg atcccccaat 8700

ctaatatgtt tcttgctgcg tttaaatctc tgtctaccgt cttcttgcag cttggacact 8760

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tgcttgtcca aaatgaatcc actttgacaa acctcttgtt ctgcttcttt acaagcgact 8880

ctaaaatagt catcagctca tatggcttga ggaccgccag tctgcgattg atgccttttc 8940

tttgagcaga gcctttccc 8959

<210> 2385
<211> 462

<212> DNA
<213> Lactobacillus delbrueckii

<400> 2385
gaagaagtca gtgctgtttt tgtcgtctca ttcagccgat gagtttctca agaccgtcta 60

caccaacttc tcacagtatc gcaagcgctt ggtgaaagca gacaggagta tggacgagaa 120

ggctcgctat aacttcaaga tgaacgtaac taaagataag tacggcaagc acaagaacca 180

gctccacaag tcttggtacc gcaagggatc gatcaacttt ttgagaaacg gcgcgagctt 240

tagagacatc acctcacaaa agcttccaga agattctaaa ggcggcatca gaattgagga 300

caagcatata gacaaccaca ccttcttaac agtagccgac tttggtactg ttgaagtcat 360

tgaagacttg tccgaattaa acttgaagga tattgctttg acaaagataa agaagcttcc 420

agatggtact tacagactgc agctgacttt ttcattgcct cg 462

<210> 2386
<211> 377
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2386
cggtccaggc ccaaaaccaa tggcagataa aggataggat aaaaggccag gttgccggca 60

gcatgataca agtcaaaggt caggccactg acccagtagg caataaaggc cgcccagccg 120

ccccagccgg ccatgcccag gctgacgaag aagccgtatt ccaggcccag aaagccggcc 180

aggaactcct gcagccagaa gaatttccgg cttttcagcg gcaaaagcct ggcaaataac 240

gccacggtca aagcgcaggc cgcgtaggca aagatctgcg gcaaggtcca aatgccaaac 300

cccaggaaga tattagagat caccatgacc aaaatggcca ggagaatccc cgtccctgcc 360

cccagttcca gcgtcgt 377

<210> 2387
<211> 250
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2387
gttctgacag gaaggcttca tctggcgcgc caaagtcgtc gccccacttg aagtccttgc 60

cagcttcttg cagcatctta accgcgtcat cgtaggacag gcgggtgtaa ttgccttcag 120

cggctggacg caatttgtct aagtcccggc ccaggatgct taattcgtat tcgcagtgtt 180

ccaaaacctg gccaaccacg taagacagga agcgttcctg caggtccagg gattcatctt 240

ggtgcatcca 250

<210> 2388
<211> 1018
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2388
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cacagcgatc ccctgctttt agctgcctgc tacagaaaca gcctacgggt ggccaaggaa 120

aatggcctgc actcggtcgc tttttccgcg atctcaaccg gggtctacgg ctatccgttg 180

gacgcggcca gcaaggtggc tttcggtgag gtccgcaagt ggctgagaga acacagggat 240

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tattacgtga caatcgtctt taccctgctg gctctgctaa atttgctgag cagctgggga 480

acgctgcagt accgcctggt catgttagcc ttaaacctgg tttgcggctt tggcatggag 540

tacctggtaa acaagaaggc gccggcagag aaatacaatt tgtggaaggg atgcacggca 600

gctgttttgc tggcagtcaa cctgctttgg atttttctga caaaatagat ttagaatcaa 660

acgaaaaagc ttcagtaacg caatactgaa gctttttca ttgttattca aactcatctt 720

tcttgatttc ccggtagata gccaggataa agacgaagac ggcggagatg atggccgggt 780

agaccatacc gccgacttgg acagcgtttt ccgctgctgc ctggctcatt tggttttcta 840

cggcgtatga gatgacccag cggttcatca aagttggcgt caaggcaaag gagatggtgg 900

agattaagga ggctaccgtc atcacgtgcc gggagtaagg ctctctgaag aactgggaca 960

aaacgcagaa ggccggggcg atcatcaaga ggaagatcca gaggatgatc atggtgcc 1018

<210> 2389
<211> 233
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2389
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cgcaaccttc gctactttaa tttcgctcct catcacgcct tgtcattatg aaagcaagca 120

tttgactcgc tctcagactt gacgcttgaa cgtggtatcc agcaccacgc gctgctagcc 180

tcctgcgtcc ctccatcgct cataacgatt cggtgcagta caggaatttc aac 233

<210> 2390
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2390
tggtcatctc cacagaaaac tgctttctag gcacgtctga actgaatgaa aaagtatttc 60

cttcaaatgc ccaattcaag tcacacttca tgctagagcc aagcctgccc gacttccgtg 120

cccggtagtg gtagcggtac gtaatccggc gcaggtagct gtgcgcttgc ttgatttgct 180

tatccgtcag tttagcttct atttcagtt 209

<210> 2391
<211> 444
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2391
tttggggctt agcatcaagc ttgcagatgg cataaaaaag gtcaatcgca tcgcaattaa 60

gccactgtca aatggttata aactcacagt agcctacact ccagttgcaa accagaaagc 120

gtatctgcca gacaacggcc gctatattgg tatcgatcca ggtgtagata atgcatttgc 180

ctgcgtctca aatactggcg ataaggcctt actcattaat ggccgtgcaa tcaagtctgc 240

caatcagtac tacaacaagc gcatggcgaa attgaagagc cttcaagctc aataccacca 300

gctcgaaagc atcatcaata ccaagcaagg cccaaaggca gtatacggcc agaccaaatc 360

catgcagcgc ctaaccgatt ggcgcaatgc caagattcgt caatttgccc acaaggcatc 420

caagcgcata gtagattacg cgct 444

<210> 2392
<211> 855
<212> DNA

<213> Lactobacillus delbrueckii

<400> 2392
tcaagttcaa gacattcgca ggctacctgt gcaagatgtt cctcctccat agcaagtggt 60

gcatcataaa gaatttcaac atcaaggttc tgtaatacat gtgacttagg tacattacag 120

aataatgcaa tcttatcctt aatccctggt tcaagaggat gttctgtacg gcagacaaga 180

atatcaggct gtattcccat tccctgtaac tccttgacac ttgcctgtgt tggcttagtc 240

ttcatttctc ctgatgcctt aagataagga ataagtgtta cgtggatgag tatagcattt 300

tcacgtccta cctcacgctg gaactgtctt atagcctcaa ggaatggctg tgactcaata 360

tcacctacag taccaccaac ttcaataatg gcaatcttag tttcatctgt ggaataatct 420

ctgtagaaac ggctctttat ttcattagta atatgtggaa taacctgaac tgttcctcca 480

ccaaagtcac ctcttctctc cttctggaga actgaccagt ataccttacc tgttgttaca 540

ttggaattct tgttaagact ttcgtctata aatctttcat aatgtccaag gtcaaggtct 600

gtttctgctc cgtcatcagt tacaaacacc tctccgtgct ggataggatt catagtacca 660

gggtcgatat tgatataagg atcgaacttc tgcatagtca ccttaaatcc acgtgccttt 720

aataatcttc ctaaagatgc tgctgttatt cccttaccaa gtcctgaaac aacaccgcct 780

gttacaaata catactttac agccattttt cctcctaact gccatatggc atattggttt 840

aaacataata attat 855

<210> 2393
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2393
ggtggaagca aaatgcttaa agtctacact aaagtcggtg accaggggaa aaccaagcag 60

gtgaccggca agatggtcgc caaatacgac ccgcagatcc agacgctggg agctctcgat 120

gagctgcagt cctggctggg ggttacggtg gccaaccttt ctccggcctg ccagggcctg 180

gaagaaaagc tgatcaagct ggagcggga 209

<210> 2394
<211> 230
<212> DNA

<213> Lactobacillus delbrueckii

<400> 2394
atgactcttg cattctgatg cgacctcttt ccatacagct tagctgagaa aacagtgatt 60

atagataaaa catcttctac aagttctgaa tttggatcaa cgttatctgt ctgattgatg 120

acaaccagct ctacatcgtt tgcctgacag attgtctcaa tcatttcaaa gccaaaacgg 180

acaagccggt cttgataatt taccacgact cgctcgcact gcttcttgca 230

<210> 2395
<211> 214
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2395
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accagaacaa gaccgataag cttgatgcct tgtaccttgc caagttgcag tctgagcacc 120

cgcagcggct ggcctacgtt caaagcgaag aatatcaaga attgatggcc aataaccgca 180

tctatgagca ggcttcgcac gatctgataa ccaa 214

<210> 2396
<211> 209
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2396
aatgggaaat ctcatcttga ggggggcttc gcacttagat gctttcagcg cttatcccgt 60

ccgcacatag ctacccagcg atgcctttgg caagacaact ggtataccag cggtgcgtcc 120

atcccggtcc tctcgtacta aggacagctc ctctcaaatt tcctgcgccc acgacggata 180

gggaccgaac tgtctcacga cgttctgaa 209

<210> 2397
<211> 211
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2397
cagtggcctg acctttgact tgtatcatgc tgccggcaac ctggcctttt atcctatcct 60

ttatctgcca ttggttttgg gcctggaccg gtttaaaaag aaagtagggt ggaagcaaaa 120

tgcttaaagt ctacactaaa gtcggtgacc aggggaaaac caagcaggtg accggcaaga 180

tggtcgccaa atacgacccg cagatccaga c 211

<210> 2398
<211> 258
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2398
aacttgtcag gcgggcagaa gcagcgggtg gcaatcgccc gggccatgta cgccaacccg 60

aagattttac tggctgatga gccaacggca tcactggaca gtgagcgggt ggaagaagtc 120

ggccgcttgt ttaagaagct ggccaaggat gacaggaagg cgatcatttt ggtcacccac 180

gacccgcggc tggaaaaata cgctgaccac atctatgaca tgatggacgg gcagttgtca 240

caaagaaaat aacagaag 258

<210> 2399
<211> 308
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2399
gtattgtggt tccctaagaa cgccaaggtt atccaaatcg acgttgaccc agaaaagcaa 60

ggcaagcgtc actcagttga cgtatcaatc ctggcagacg ctaaaaagag cttgcgtgct 120

ttgatcgacg ccggtgaagc ccgcgaagaa tcaccacttt acaaggctgc tttggccgac 180

cgtgaagaat gggatgcatg gactgcttca tttgctgacg accacttgaa ggacgaaggc 240

cgcgtacgcc aagaaccaat ctgggatgtc atcaacaagg aagccgcaga caacgctgtc 300

ttcgctat 308

<210> 2400
<211> 871
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2400
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cagctggttc ttcagtattt tcctcagcgg ttggttctgt agaaagttct tcggacggct 120

cggtagtcgg ttctgtcgtt ggatcagtag acggttccgt agatggttcc gtacttggct 180

ctgttgatgg ctcagtactt ggtttagtcg ttggatccgt tgacggttct gtacttggct 240

gagtcggttc agttggagtc gttgggtccg ttggctgtgt tgcttccaag gcagccaggc 300

gggccttagc caggttcaaa gcgtacaaag ttgcggccgc ttttgccgta gcagtggcca 360

acgcttcctt cttttccgcc aaatcagctt cctccgcgat caaagcagct tgtgcgcttt 420

gcagcttcag ccgtcttagc gttctcttgc gccgtcttca agtcatcctg gctggaacta 480

gcctggacgt cattagtagc cgcgttgact ggctgaggca aatttgccgc ccccaggctg 540

actgccccaa taccagcagc cgcaactgct tccatctgct tgatccgggt ctcgcttctc 600

gctttcatgt ttttccactt ttcgctctta aatagtaaaa tcacatatat atctaattat 660

aaatgatgga aagattcccg ggaaagcagg aagcaccgga aaagcaaaga ttcttttatc 720

tattaaaaag acaaaagtat catcaaaaag caataaagct gctaaactat ttttcaccca 780

aaggatcggt aattagccta taattttagt taaaccgtct gaaaaaagag cctttgcaag 840

ccaacttgtg ctaggcttgt gatgcgaaag g 871

<210> 2401
<211> 237
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2401
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ttggaaggaa gaaacgatga gcgaatacat gtccatatca aaagcagctg agtatcttaa 120

cgttgccaag tcgactctcc gcaattggga agctgaagga ctgattacgc cgcttagaac 180

tgcctccaat caacgtcgct acactaaaga aatgctagat gagcttctgc aaggcaa 237

<210> 2402
<211> 1804
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2402
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gatttctcat ttcactaagt gggaagtcac tcgggcttag attagtagct agtacttccc 180

acttggtgct tcccgattgt gggtcgttga gcttaagctt aacgattctg cagtggaccg 240

gacaaaaact ttcaaaatcc cagtgcgctg tacggtactt aggtgaatat ttgtccttat 300

agcgacgatt cggggcattg atcttgtgat actctggatg aagcttcttt tgcttggcgc 360

tattggtgat gttaaacgtc atctcaaaat cgcattcttg atcgggaaga gcgctaattt 420

cccgaatagc acttttattt tgagttctta gacggataac atagttgcag ttagacagtc 480

gattgccatg ctcgaaaaga ttgaaggatt catagccgcg atccatcagt acgatatagc 540

ggtgttgaag tcttaagttc tgaagcatgt gcacagctac actgcgttca tccatactct 600

ttcgtgattg caataagcag tctaggtaac aacaatttgc gatatcgtaa aggatattgg 660

catgaatcaa acatgtgcct ttggtcgtta atttattatc gtccgaaggc ttttttcttg 720

tctgaatatt gcatagaaac attgaattct tatcatacgg caaagcaaag tcactaccat 780

caattgccag cagccgatag ccatgataca aagcaggctg tttcaaagtt gaattgaatt 840

catacagaat tgccttaaat aatctaggat taaccttcga tttctgctgt tcgtaagccg 900

acgcggtcat tcgcttagag ggcttaggaa atgcgtcagc tagctccttg ttcaagcagt 960

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cagaatcaag ctgtcttagg acttgatgct tcttagtcat gaaaatacgc cacctttgat 1140

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caaacttaga tgagtgtcct aaagcattcc ccgttcaaag tcaatgtctt aacttaatga 1260

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agagcataac ctttactagc aagctaacat tctgggataa gtttaaatgc ttttatttgc 1740

tacacctttg cagtcttatt tttttaatac gatttcaaaa gaagtggcaa aagattctta 1800

ttta 1804

<210> 2403
<211> 258
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2403
gggatcgatc aactttttga gaaacagcgc aagctttaga accatcacct cacaaaagct 60

tccagaagat tctaaaggag gcatcagaat tgaggacaag catatagaca accacacctt 120

cttaacagta gccgactttg gtactgttga agttattgaa gacttgtccg aattaaactt 180

gaaggatatt gctttgacaa agataaagaa gcttccagat ggtacttaca gactgcagct 240

gactttttca ttgcctcg 258

<210> 2404
<211> 496
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2404
ggttcccatc agttcatagc ccccgcagat ggccagcatg gggttgccag cttggatgta 60

gtcgttcagg gtttccttga agcgctgcag gtccttggcc acgatgcttt gttcatagtc 120

ctggccgccg ccgaagaaga caaagtcgta gtcgtccgcg ttgaactggc tgcccaggga 180

gatattgtcg atctgggtct gccagccttt tttctgcaaa aagtagcgga ggatcttgac 240

gtcaccggag tccccgtagg tgttcatcaa gtcttcgtag aggtaggcaa tgcgaatcaa 300

attatcatcc atagtcaaat tcttccttat tgtaatcaat tacactaatt ataaactaaa 360

aggcggaaaa ataataatct aaaggccagg tccttttggt ttgtttttt tcacaaactg 420

gcttagacta aaatagtaag cgcttttgca aaaaacggcg aaaaagcaag taagtaaagt 480

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<210> 2405
<211> 15014
<212> DNA
<213> Lactobacillus delbrueckii

<400> 2405
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tgatccaata gatattataa cagcctcttt tttgaaatta cagagggtgg ctgtaattgt 120

catgccctaa atcagatatt tgacttgatt ctccgggagc tatttcccga ttaggccttt 180

atttcaaaat aaaattgcct aaaatcattg ataacacttg acttagagta gaaacaatag 240

acagccccaa tgtgcagaga ctaagcatta attcgctgat atttggaatt ctttgtaaga 300

agacaataat caaatcatac aaaaaatcta ttagcaaccc caccataaag gcgcctgaaa 360

ccttgactaa gccatatttt cgatagtacc aagtgaatag tatcaattcc actacactag 420

ctgcgtttgt ttcccatctc ccttgcatgg ccattaagat tgctagtata catagtccga 480

aagaaaatat tcgatcgcga taaccagtca gcttaatttc tgctaaatgg taaccaacat 540

atatatcaaa cgcaaccgaa atagcagctg acaaaacacc agcgatcaat tcaacatata 600

gcttaatttc ttccatggcg cttgtgatgc aataaacgga aaatcaagga agcttcacta 660

tttttcactt gagtagcacc gccaatataa atacaaaatc ctgcaatact tcccccaaca 720

atctgttcca attcttcatc tgtcagtgtt tcaactttat gcaagttatt atccataatt 780

ttctttcctt tcatgaaaaa tcaactattt ttatcctaac aaattttaac tcaaacgtga 840

aaaagagacg gattatgtca aaattcagac tgatttttca tccctcttcc acatccagct 900

aatcctcccg gcaatgatat aatagtaata aaactgaaag gagacgtttt gatgcctgaa 960

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aaggaaaccc accgggttca gctgctttta gtcaagcgca aggacgaacc tttcgcggac 1080

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cagaagaatt accacaagag cggacggccg ccaaagctct attgccttaa ggaaacgcaa 1680

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gtaaatggtc aggtgcttgt cgtcgaggta tcgaagaata tcgatcttca tcgttctcac 180

tcccctacgc caactattat accacatctg tgatatacca caagtgtgaa ataacgattt 240

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cgcaacggct gacctatgtt caaagcgaag aatatcaaga attgatggcc aacaaccgca 180

tctacgagca ggcttcgcac gatctgataa ccaacaaaaa tagactgcac aaagccattc 240

agctcacttt cccagagatt gagcacctaa tggctaatcc gagaggaaaa aactactgga 300

gtattgttct cagattcccg caccctgata tcgtactaga aacaaaagaa gccgatatca 360

tcgacttctt aaagagctta tctggtattg gtgaaaaacg tgccaatgat ctggcgcaga 420

ggcttatccg gctggccaag ctcgcatgcc cagctttcaa aaagagcagt acacatattc 480

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ggtgctgtac ttgacaatca accaaattca gtcggctaag aaagcgggaa ccccttgtc 180

atattgcgga ttattacgag aaacgaaaac ggtcttctga gactgcaagt cacaagaagg 240

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<211> 342
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aatttcaccg agtctctcgt tgagacagtg cccagatcgt tacgcctttc gtgcgggtcg 180

gaacttaccc gacaaggaat ttcgctacct taggaccgtt atagttacgg ccgccgttta 240

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attggtccgg ttttttgcgg caaaagtttg ctcaagtact aaggaaattt gtataattga 180

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<212> DNA
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ccatgccgaa cacagtagtt aagcttctta ac 212

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<212> DNA
<213> Lactobacillus delbrueckii

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gaatctctga aagctgttct cagttcggac tgcagtctgc aactcgactg cacgaagctg 180

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accgcccgtc acaccatgga agtctgcaat g 271

<210> 2416
<211> 240
<212> DNA
<213> Lactobacillus delbrueckii

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gggtgagtac ttgcaataca ctggtgaagt tatgcaagtc ttagaagatg attcttacac 180

tgatttgcgt attgccgtaa atggcaacta tgatgatgtt ttgtatgtag aactcgataa 240

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<212> DNA
<213> Lactobacillus delbrueckii

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ggaggaccga acccacgtaa gttgaaaatt gcggggatga gttgtgggta gcggtgaaat 180

tccaaacgaa cttggagata gctggttct 209

<210> 2418
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<213> Lactobacillus delbrueckii

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aagacggttt cgaattggca tatcaaagtc tgtgagtact acctctccag cctttacgag 120

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gtcttagaca gcgaaagagc caaagacta 209

<210> 2420
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<213> Lactobacillus delbrueckii

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<210> 2421
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<212> DNA
<213> Lactobacillus delbrueckii

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<213> Lactobacillus delbrueckii

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taccgaaaac agttttcaat aaatccataa gaataaacct ccgctttact cggagatgag 180

ctgccttcac ccaattcaat cagatctaat tttctcaaca ggactttaac ag 232

<210> 2423
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<212> DNA
<213> Lactobacillus delbrueckii

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ctcaactata agaaaaaggg cctgacagag ctgatcaaca tgatctg 227

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<211> 213
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<213> Lactobacillus delbrueckii

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gccgtaggag aacctgcggc tggatcacct cctttctaag gaaagcggat ggatggagag 120

cagaaatgct aagagaagtc caccagttac ggaagcacac tgcaaaagaa actttgttca 180

gttttgagag tatcagctct cacttgtacg ttg 213

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<213> Lactobacillus delbrueckii

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actttgatat gccaattcga aaccgtcttg tgatcaagcg gaaggcccat acgccgcaag 180

tctttctctt gccggtaggc aggaacctt 209

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<211> 209
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<213> Lactobacillus delbrueckii

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caagacatca acttcttcca agcctttgac gaaacgccat ggttccgtga cgttgccgtt 120

tgggtccacc aagccaagac caaggaagct ttgccagttt tgatggacac tgctatccgt 180

caagcttacg caaagaaggg tccagctgt 209

<210> 2427
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<213> Lactobacillus delbrueckii

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ctggacgact actcctggta cctggacctg agaaagtacg gaagcgtgcc gcactccggc 120

ttcgggatgg gctttgaacg ggttattgcc tggatctgca agctggacca cgttcgtgaa 180

gctgtcccat tcccaagaat gatcaacaga atgcagcc 218

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aagcctattt accatgggct gagaatgttc agctccactg taagtaaagt cccataaact 180

gattaatccc atcttagcat tgctaggat 209

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tttgtctttc ttttggcttc tagcggattc atca 214

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<212> DNA
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caaagcaatg tccttcaagt ttaattcgga caagtcttca atgacttcga cagtaccaaa 240

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<212> DNA
<213> Lactobacillus delbrueckii

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gtgaccggca agatggtcgc caaatacgac ccgcagatcc agacactggg agctctcgat 120

gagctgcagt cctggctggg ggttacggtg gccaaccttt ctccggcctg ccagggcctg 180

gaagaaaagc tgatcaagct ggagcggga 209

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<213> Lactobacillus delbrueckii

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tatgccattt agccaaaagc ccattcagt 209

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<210> 2436
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<213> Lactobacillus delbrueckii

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<213> Lactobacillus delbrueckii

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<400> 2624
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gcgtgatctg accaaactgt taagttacgc cctgcagaat gataccttcc ggcagatcta 180

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gagtacgatg ttcaagaaga tggattctcc cgcggtcaat ggcggagaga tcgaaggcgg 300

aaagaccgga tataccagcg aagccggaca gtgtctggcg agccttgcca aagtagacga 360

tgtggaatat atcctggtga ccgcaggagc cccgggagga ccttccaccg agccatacca 420

tatcgaggat gccaaaaccg tctataaccg tatccaggcg ggagaacagg gatctgtggc 480

agatacggca gcagattcac aggatgatca ggcgacgaca gagacggacg aagctgcctg 540

aaagatttta aggaaaagtt aagaaaaaag aagaaagatt cgtcagaagt gtatggtatg 600

ataggaacat caaaggagat cttattatac taacaggttc gaatagacag aagtgttttc 660

cgtgcggcca catggaaaac acttcttttg tatatgtaat ttcctgtaaa gtaaaaaaat 720

gacccgaaag catcagcttc caggtcattt tctcaagtta agggatgcaa atattatgct 780

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<210> 2625
<211> 3125
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2625

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<210> 2626
<211> 2257
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2626
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aacatcaata ttctggtaga aggcgtccgt gtgattgatt aattgaagga ggagctttag 180

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gatacaggaa ccaatatgac tctgacgatc atgtcagcag taaaagaggt aaacggtctg 360

gaagacgtac agatgaccac gctggcaaaa gctatttcct caggatcttt acgtggcgcg 420

cggggaaatt ccggtgttat tctctctcag ctgcttcgtg gatttaccaa aggaatccgt 480

gatctgaaag aactggatgc cgtagcactg gcacgtgcgg tagacaaagg tgtggagact 540

gcatacaagg cagttatgaa accgaaagaa ggaacgatcc ttaccgtagc aagaggggtt 600

gcagataaag cactggagct ggccgaggat gcggaagatt tacagacctt cctggaggat 660

gtactggaag aaggacgcag agtgcttgcc aaaactccgg atatgctgcc ggtactgaaa 720

gaagctggtg ttgtggattc cggcggacag ggtctgatgg ttgttctgga aggtgcattt 780

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ggagacgggt gcggttcttg caacgctgac ggcatcgttg gatatgaaaa aagtccggaa 2160

tctgaccgtg atctccggaa cggttgcgga tgctaccgga cgctgtcgcg tcacctggtt 2220

taatcagccg tatcttcgca accagctgcg gcgcggg 2257

<210> 2627
<211> 928
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2627
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aaagacttta ttgactatgt aaaaccgctg atccagggcg attatcagcc aattatggta 120

aatggtctgc cacgccatct ggttctggac atgaaaaaga aataatgtgc cgaaattcat 180

gtaaaaataa gaaggatttt taacgtattt ttccttttt tcttcggttt gacttgacta 240

taatgtgctt tttgattaca attattatat acgagtgcga actgcatgag taaaatgttt 300

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cctggtatga tggatactat cctgaacctg ggtctgaatg aagaagtagt agaagttctg 720

gctgctcatt ccggaaatcc tcgttgggca tgggattgct acagaagatt tatccagatg 780

tactctgacg tagttatgga agtaggtaaa aaatacttcg aagaactgat cgacaaaatg 840

aaagctgaca gaggcgtgaa acaggacgtt gaactgacag cagaagatct gaaagagctg 900

gctaaccagt tcaaagctga atacaaag 928

<210> 2628
<211> 619
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2628
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ccggatctga ctgagatcat caaagagcgg ttaaataaaa aatcgtcgat cggtttccag 180

gcggatctga aggacaaata cgataacgat aaaaacctgc tggataaagt gacggtggaa 240

gacctgagag ccttcggtat ggtgccggaa tttctgggaa gactgccgat tattttcacg 300

ttgcagggac ttgatgagga tatgctggtg aagatcctga aagagccgcg caatgcaatc 360

ctcaaacagt atgaaaaact actggagatg gacgaagtga agctggaatt tgaagagaat 420

gcgctgcggg cgattgcgaa aaaagcactg gaaaaagata ccggtgcgag agcactgcgg 480

gcgattctgg aagaatacat gctggatatc atgtatgaga ttccgaaaga tgacagcagc 540

ggagaggtga tcatcaccga agagtatatc gaacacatcg gtggtccgaa gatccttctg 600

agaggacagg aaccgctgt 619

<210> 2629
<211> 1291

<212> DNA
<213> Lachnospiraceae bacterium

<400> 2629
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agaataaaac agacactggt gatccggcac agacagccgg gcgatcggat ctgccttttt 120

gacgggggcg gcagtaaaaa gctgaaagat tatctgatcg accggaaaat cccggcacag 180

aaacgggatc agctgtggct tctggcggac gggtccgaca tcctgtggat cataggagac 240

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cgtaccggta accatggact ttatgtccgt atccagttac ggagatgaca ccaaatcaag 540

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acaaagaact ggaacaggat ctggagaatc atcaggtgtc ggaagcagtg attcatcaga 1140

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<210> 2630
<211> 1028
<212> DNA

<213> Lachnospiraceae bacterium

<400> 2630
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<210> 2631
<211> 1052
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2631
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aggacaacgc ggccgaggaa cgtacctcta cttatgataa cgatacggat gctcaggctg 540

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aagatgcatt atgcgacaag atttaccaca aaataatcag gatgtgaagt atatgggatc 720

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tggaaagatt gaacagcttc tggtgaattc gatttatcgc gattttacca agatctatca 960

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catcatgaaa gaatgtctga ataagatctt tg 1052

<210> 2632
<211> 3247
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2632
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gcagcagaac tgtccgacag gctggtatcc agctgggtga gaatcagttt taactgttct 180

atggtcggat tcacatccga aagtgttgcg gtcagcgttc cactcaaggt agataatgca 240

tccatggatt gacttaactt cggaatcaga gattcattca gagaattccg gtaagtctga 300

agtgaggaac gactgtccgt caccagtttt tccagagaag ttctggtatt ctgtgctgtg 360

gtcatagctt cctgaatact ggaattgctg gtactcaaag aatccagaag ttcctgaaaa 420

gaagcattct gctgttgcag aacagtaatt ttctccccaa tcagcccgga aagcgtggaa 480

tcggaaccga tggattcatg aagcttttga agttcagcga gtaattctgc ctgtttctgg 540

ttcagactgg ttacagaatc gatactatca ccgatcaccg tattcacctg agaagctttc 600

gtctcgaacg taccgagttt tacaattgcg gaagcgtacg tgttatttaa cagtgtttca 660

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gcgaaaaggg tcggctgcag agtcgtgctg gagatcaaga atatctcgga aaactcgttg 180

aatatcaagg cggaggaact gacggagcgt tttatccgcg gagatgtgtc gagaagcacg 240

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tttgatattt acctggatgg ggatttgttt aaggttgtga ttacgtttga ggcggtggat 360

aaagagagtt agataagggt tgtataagga gcc 393

<210> 2682
<211> 947
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2682
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aggaactgcg ccagatcatt acggcggcag cagacggcgc taactgcgtg aattcggcac 180

agcaggatct gtatgatacc aggggcaaaa gggcagaagg ttgacgcaag tttgcttgca 240

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acaagaaaga cacagatccg ccctgtaaaa acgcaaaacg gacaggtgcc acataggaaa 540

aatgccggtg agaaaccggc gaaaacagcg ataaaaagag gcttttgtta aaaagtacca 600

agttgtgtct gaaattcaca caattgcggt ggatagtgaa aaagttatac tccagttatc 660

cacacaggaa aatgctggaa atgccgtaaa atcaagttat acacaaagtt atccacttta 720

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<210> 2683
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<212> DNA
<213> Lachnospiraceae bacterium

<400> 2683

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gccagacgcg aaagaggcgg aaccggttag gtgtttactt ttaaattata ttagta 3056

<210> 2684

<211> 956
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2684
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acatggaaca gatcagaggg atgcctgacc gcagggcggc aaggatgttt tcttgtgtta 360

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<210> 2685
<211> 1633
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2685
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gatcttcaag cgctgataga tctccgctcc catgcgtact gcctcccgaa agctttccgc 240

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gttcagaatg ttcatcatcg gaaccggcat ccgcaccgca tgcacgcccc cgagatactg 360

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<210> 2686
<211> 1327
<212> DNA

<213> Lachnospiraceae bacterium

<400> 2686
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aatgagcaaa aagaaagtgt tgaaaatatt gttgagattg tatcacataa acaaactatt 180

cttgaaagag aggaataaaa agatgatgag acagtataag tatatgggaa ttaattggaa 240

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ggaatcatat gctccaaagg tagatttcga agtaacgtta gtagagaaaa taagtagtga 360

tttgacagaa atattggaat atggagtacc cattacaatt cataatagca aaaaaccatc 420

agtgcatgaa gaagggttag tgtatttgaa tggatatatt cgaatgatat ataataaagc 480

aactaaaagt gtgtatcggt taaactatct ttcgaaaaaa attaatattt ttaataaaga 540

taaaagttcg ttagtaaaag atgggattcg tgtgattcga gatattgtaa aagctttagc 600

agaagatagt ggcggcgtta tggttcacgc agcggcattc aagaaaaatg ataaaggggt 660

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acaccat 1327

<210> 2687
<211> 371

<212> DNA
<213> Lachnospiraceae bacterium

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aagaatctgc tgttttcccg gaagatccag tgcccttgtg gttggatcca gcgtggcaaa 180

caactggtct tcctcaagaa cccctgcctg tgtcattgta ttcagcaatg tagatttgcc 240

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gatcagttcg cggtgcttct gcacctgttc gagctgttct tttaactgac cgatccggct 360

atggatcagt c 371

<210> 2688
<211> 657
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2688
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gaaactaaca caatcaaaaa agttggcgga aaagaagaaa caagaaaatt ccttgagaat 180

cttggattcg taactggagg agaggttacg gtcgtgtctg aaatcgaagg aaacctgatt 240

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taagcaggcg gattatcaag gaaagaggga gaatgttatg aaaactctga aagagattgc 360

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catggacatg ggtatcacca aaggcgtaag tgtatatgta cgcaaagttg caccgttagg 480

tgatccggtg gaagtaaccg taagagggta tgaattatct cttcgtaaag ccgatgccga 540

aatgattgag gttgaataat ttttttgcct gtgcgttagc gaaagctaat aaaagatagc 600

gcagaccaaa aattagtagg aatgtataac aacatttcaa caaataagaa aaaggag 657

<210> 2689
<211> 1180
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2689
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agaagagatt ttccgtcagg aaggctggca ttatcagctg gatcaggtgg aagatccgtt 180

aaaatacaac ggtgttgtat acaacgagat gaagggagca ttttcatcct ccgaagaagt 240

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tctggagtgg atggacagag aatatctgag caaattcgat cagattaccg tagattctcg 480

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<210> 2690
<211> 2606
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2690
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<210> 2691
<211> 571
<212> DNA
<213> Lachnospiraceae bacterium

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<210> 2693
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<212> DNA
<213> Lachnospiraceae bacterium

<400> 2693
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<211> 931
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<213> Lachnospiraceae bacterium

<400> 2696
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<211> 1304
<212> DNA
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<400> 2698
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ccttccgtga atttgctgaa aagactagcg gatggtatgg gaatggtact caaaatagag 540

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<213> Lachnospiraceae bacterium

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<211> 605
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<212> DNA
<213> Lachnospiraceae bacterium

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<211> 993
<212> DNA
<213> Lachnospiraceae bacterium

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<210> 2717
<211> 651
<212> DNA
<213> Lachnospiraceae bacterium

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<210> 2718
<211> 1493
<212> DNA
<213> Lachnospiraceae bacterium

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<211> 582
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2719
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caccggtttt ctatgtattt gcgctttccg gaagcaagca cc 582

<210> 2720
<211> 498
<212> DNA
<213> Lachnospiraceae bacterium

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<210> 2721
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<212> DNA
<213> Lachnospiraceae bacterium

<400> 2721
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<210> 2722
<211> 482
<212> DNA
<213> Lachnospiraceae bacterium

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<210> 2723
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<212> DNA
<213> Lachnospiraceae bacterium

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<210> 2724
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<212> DNA
<213> Lachnospiraceae bacterium

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<213> Lachnospiraceae bacterium

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<211> 610
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<213> Lachnospiraceae bacterium

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<212> DNA
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<400> 2746
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<211> 2159
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2755
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atttacgcga gcaacgagtc aaagtccgtg cttgcacgga accttgagga gtgccgcga 2159

<210> 2756
<211> 1180
<212> DNA
<213> Lachnospiraceae bacterium

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atcgcatcat ttgtgtgcgg tgaaagtctc gttctttttc tgtatataaa aaagaaacgc 300

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<210> 2758
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<212> DNA
<213> Lachnospiraceae bacterium

<400> 2758
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gcaaaacagc attatgaggc gctgac 626

<210> 2759
<211> 878
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2759
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cactcataga aatgcaaaca tatactttcg cttatatcgt tttcactatt tgacttttcc 720

aagcattcca tctgctgtat gactatactt tccaaatccc cttctgcata atatccactc 780

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gcagcaattc tctgtttttt tactgaaatc atatgaat 878

<210> 2760
<211> 449
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2760
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tgcttggcgt accggcgaga tatgtgaccg gctatgtggt gacaccggag gattttacgg 180

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gcgatgcaaa tacagatccg ggggagaatg gcgaagagag tacgccaaca ccggagccga 360

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gcgggacaac ggtaacgccg gaaggcgaa 449

<210> 2761
<211> 726
<212> DNA
<213> Lachnospiraceae bacterium

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<210> 2762
<211> 1493
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2762
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<210> 2763
<211> 288
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2763

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<210> 2764
<211> 247
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2764
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<210> 2765
<211> 2739
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2765
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<210> 2766
<211> 246
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2766
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<210> 2767
<211> 1323
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2767
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<210> 2769
<211> 2529
<212> DNA
<213> Lachnospiraceae bacterium

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gagaaaaagc tggaggatgt aaaactggaa aaagaatcag gaagagcatt acggcatgta 180

gtaacggaga ccggtgactg ctatcgatac gaagc 215

<210> 2771
<211> 239
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2771
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ggcatacggt gccatacaaa aggaactgct ccggagattc cgccgtgtct tactgcatcc 180

cagtcgatgg tcgcatcttt tccatgtaca tggacgatct ttttgcacca ttttctcag 239

<210> 2772
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<212> DNA
<213> Lachnospiraceae bacterium

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gaatatgata tcacgccgtc cgtagaaccg atgacaaaat acgctgtcat ggtgacagat 240

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ggaccgtgct ggctggatct tccgttgaat gtacagagtg cggtcgtgga aaccgatgat 360

ctgaaagcgt atgatccgag cgaggatgca aaagaacttc cggctccggt aagcgagg 418

<210> 2773
<211> 601
<212> DNA
<213> Lachnospiraceae bacterium

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tagcaaaaag gctcgaattc acctccatcc attatcactt taagtgatgt taattctatc 180

gcgggatgga gcagtctgga agctcgtcgg gctcataacc cgaaggtcgc aggttcaaat 240

cctgctcccg caatttcgcc cagatagctc agttggtaga gcagaggact gaaaatcctc 300

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aagaagtaga atgatatatc attctacttc tttttgttat gtaaataatg aatgaagggt 540

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<212> DNA
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gaataagaaa gaaacgagga gagaaaaatg aacagaatcg gaattatcgg agcaatggag 240

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ggtaaggtaa atgcagctgt ctgcacacag atcctggtgg atgattttca ggtagaagcg 420

gtgatcaata ccggaatcgc cggatccctg aaggcagaga tcaacattgg agatatcgtt 480

gtgtctaccg atgccctgca gcatgatatg gatgccagag aattcggcta tccaaagggc 540

cagattccac agatgaatgt attttctttt aaagcagatg agacactccg taaagtagcg 600

gcagaatgct gtaagaaagc gaacccggat attcaggtgt ttgaaggaag agtggtcagc 660

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<211> 593
<212> DNA
<213> Lachnospiraceae bacterium

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gagtctgtaa caggacagac cttccgcaaa ctggctgacc agaccaatca gggaaatgac 180

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ggagtagcat tcttctcagg agaagagaaa gaagcaccgg actatgagca ggaactgttc 480

taccacatcg ttgcagacgg agcagaacag atcgtaaaac ctgcacaggc tgcagttgtc 540

acccgtgtac tggaagcaat ctatgagtca gcaaagagcg gtaagacaat tta 593

<210> 2776
<211> 389
<212> DNA
<213> Lachnospiraceae bacterium

<400> 2776
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gaaggaagat atggtgcgat accggtatt 389

<210> 2777
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<212> DNA
<213> Lachnospiraceae bacterium

<400> 2777
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<211> 182
<212> DNA
<213> Lachnospiraceae bacterium

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gaatccgcat acgaagagtt cggaaaagtg ttccgtgaac tggcagacct tgcagaagaa 180

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<210> 2779
<211> 188
<212> DNA
<213> Lachnospiraceae bacterium

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tagcagtcac cggtctccgt tactacatgc cgtaatgctc ttcctgattc tttttccagt 180

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<210> 2780
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<212> DNA
<213> Lachnospiraceae bacterium

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<212> DNA
<213> Lachnospiraceae bacterium

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gatatggaag gaaaagaata tgcagtggaa tactgtaagt t 161

<210> 2782
<211> 179
<212> DNA
<213> Lachnospiraceae bacterium

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<210> 2783
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<212> DNA
<213> Lachnospiraceae bacterium

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ggatttggtg acacaaactg gagagatatc atttctattt taagaagcaa cggatatgag 180

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<400> 2784
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gatcgatcca aagtgcgact gggcattacg ccatctcgaa caatttcccg tggaagtaga 240

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gatcacatat gcaagacggt atggaagaat ggattt 336

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gttcagttaa cattagaaaa aggaattatt aagtcaaaat acattattat ggatgcaacg 180

catacaaaat caaaatacaa tcaaaagact cccccgtcaa gtactccagg aacaatcaaa 240

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aaaaggaaat gaagaaattt gcagttatcc aaaagtgcag gaaaaattaa aatctactag 420

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<212> DNA
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caattattta ttctgataat atttactttg caaaggctgc tcttaaaatt ggaag 235

<210> 2921
<211> 478
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<213> Dorea longicatena

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cacagatatt ctttttgcca ccggttccct gtatttctgc agactgacac caagaaacag 420

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<210> 2922
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aagaaacgat ttacaaaaaa gcaactggat gttatgaagg ttctgtggga aagcgctacg 180

ccaatgattg catccgatat tgtcaggaaa gacgatgcat tgaatatcaa taccgtacag 240

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<212> DNA
<213> Dorea longicatena

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<210> 2924
<211> 772
<212> DNA
<213> Dorea longicatena

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caatgactgg aaatctggcg attgagatgg tgaactggaa acacaggtat ccatcatcat 180

gggctgcttt gacagttgat ttgaatgagg tgtgtgaaaa agattgttct tatgttgata 240

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caggacaaag aaataggagt ggatactgta cttatgagaa aatacgtttt tatccggaaa 360

aattaaagga ttgtgatccc gaaggttacc agagatataa aataaaattt gaagaaacat 420

aaaaaggctg catagtagag atgttatcag agaacaggag gaatcaggat gagaaactat 480

caagatgaac agaataaaaa ttatgagaat acaaaacaaa tgtttgaagc gtgtcgaaaa 540

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tttgcagata ttccggaaaa tggagtgtgt attacgtcac aatttgaaaa tgggctttgc 660

ggagagatta tctggtgccg aagtggagaa gatgtttata tgctgcacag cagtatccgt 720

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agaatgttac atagatatgc attgccacat tctgccggga gtcgatgatg gggcgaaaga 180

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aaggaaacaa tagataagga ttattgtgaa tgtggaatgc cgttagaaac aatt 174

<210> 2927
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<210> 2928

<211> 508
<212> DNA
<213> Dorea longicatena

<400> 2928
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cctcttatga tgagttactg ggattagaag aatcaccgga aaagagtatg aaccagattg 420

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atgaaaaaat ggatgagaca gtagagag 508

<210> 2929
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<212> DNA
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gcaatccgga tggaagtgaa ttttccatgg ttttccagtt tgagcatatt atgcttgatc 180

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gagaagagct gggaatgacg aatgtgcagt ttgacagcat tgaggaatat gaagatattg 480

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<211> 6996
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gttagctgcc cattgcttga tgagtggaaa gccggggaag tctggatccg gaattatgag 180

gatgacagag aaggaaatgt attgcgtcca tatgaggcgg tgataattgg aactgctgtg 240

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<212> DNA
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<213> Clostridium bolteae

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<211> 706
<212> DNA
<213> Clostridium bolteae

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<210> 3422
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<212> DNA
<213> Clostridium bolteae

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<212> DNA
<213> Clostridium bolteae

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<213> Clostridium bolteae

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ctgttatctt gcgattaagg cacag 205

<210> 3425
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<212> DNA
<213> Clostridium bolteae

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gaccccttga agacgacgag gtagataggt tagaggtgga agtgcagtaa tgtacggagc 480

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aatcggaatt caatatgtgg ttttga 566

<210> 3426
<211> 199
<212> DNA
<213> Clostridium bolteae

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ggaggagcgc gggatgggcg gtgcggccag gcaggagggg actgccagca atgagatgtg 180

tacatttctc attatcaac 199

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<211> 435
<212> DNA
<213> Clostridium bolteae

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ggggtgaaga agatcgtagt tacccatccg gaatggtggg tcgttgacat gagcgttgaa 180

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taccatatga cacat 435

<210> 3428
<211> 223
<212> DNA
<213> Clostridium bolteae

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<210> 3429
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<213> Clostridium bolteae

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<211> 369
<212> DNA
<213> Clostridium bolteae

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<211> 175
<212> DNA
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<213> Clostridium bolteae

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<212> DNA
<213> Clostridium bolteae

<400> 3433
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tatggccctc agctcaacct ccgat 145

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<212> DNA
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<211> 145
<212> DNA
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<210> 3517
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<213> Clostridium bolteae

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<213> Clostridium bolteae

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<212> DNA
<213> Clostridium bolteae

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<210> 3524
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<212> DNA
<213> Clostridium bolteae

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<211> 221
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<213> Clostridium sp.

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<210> 3635
<211> 1586
<212> DNA
<213> Clostridium sp.

<400> 3635
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tattgtcacg cagatttgcc agaagctgga tattccctgc ggagaactgg ccccgaccaa 180

tggagttgta gtgaaatcac cgtgttttgg gaaaaaggca tataaggcaa tcatgatggc 240

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tcggctttgc gtgattgaaa aggggacgtt gtgtggagct gtgatgaccg gagactacaa 360

cctaattgat acagagtata aaagcactct gcagaatctg gtaaaccgtg tcattatcac 420

gaacagcaaa ggaaaccaga tcaaggtgat agaggatgcg gagtccattc aaaaatatgg 480

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aagtaacatt tgactgtacc agcatt 1586

<210> 3636
<211> 234
<212> DNA
<213> Clostridium sp.

<400> 3636
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ccagcaagat ttattgataa aacagctgtt acaaaagatg gagaaatggc cgatatccta 120

tattttctgg atgaaaaaaa gattgcacag gaagcacagt acgatggcct ctatgctgta 180

tgtacggatc tttttgacga tgagccggaa gatattttaa aagtcagtga aagc 234

<210> 3637
<211> 508
<212> DNA
<213> Clostridium sp.

<400> 3637
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tcaagattat ctggacattt gtgatccggt gctgacattt gatcgattta tgggagaaat 120

cgatttggag aaatacctga aggaaatcac gaaacatgag gtgggaagac ttcggtataa 180

cccggtcagt atgctgaaaa caatcctgtt cggatttatg acaaatggat atgtctctct 240

tcgtgagctg gaagacagct gcaaagtgaa tctaaggttc atgtatctga tggatcataa 300

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gaaactattc tgtgatatca atcaaaaaat ttttgagaaa gaacatacgg acctgcaaca 420

tttatatatt gacggttcta agtttgaagc caacgcaaac aagtattcct gggtatggaa 480

gaaagcgact gaaaaatcca gataccgc 508

<210> 3638
<211> 197
<212> DNA
<213> Clostridium sp.

<400> 3638
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cgttttcatg atccgaaagc atgcttcaat ctgccaacgg ctttcactga cttttaaaat 120

atcttccggc tcatcgtcaa aaagatccgt acatacagca tagaggccat cgtactgtgc 180

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<210> 3639
<211> 1806
<212> DNA
<213> Clostridium sp.

<400> 3639
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cattcgcaaa aaatgaattt gcaccatttt ccgaagaatc cgttgtgatc acctcgattg 300

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agccagaatt tacataggaa tcctccccgg atgccgaact ggtcggccct gcattcggag 480

tgcttccctc ctcgccgccg cttgatgcaa tggaagagat ttctccctgg ctgacttccg 540

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<210> 3640
<211> 1550
<212> DNA
<213> Clostridium sp.

<400> 3640
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gtaaaataat gtcataaatc ggattatgtc attattttaa tattccaata ttagatacca 180

tatccggttt aggcatttta cctaaaaaac gaccattata aaatcaaaaa aaagcaaaac 240

ttccattcat ttattttctg aacaagaagt tttgcgtttg tgctctttga cacaaacgca 300

cgttcgctat ataatcggag tgtccaatta aaacggaatg cgcatgaatg gagtaatgtg 360

atgaatacag tcagttccac tactgttgat attaaaaaaa ccttattgca ctatataaaa 420

gcggaattta aagaaaaaga tctcgacatg ctgaagtcct tacttggcag catttataca 480

gaattaacga atacgccaaa tattctgccc cacttagaaa acccgaattt tgcagctgat 540

cctctggatt gctgtgacag aacaaattcc gataccatta ccgacacacc ctctttctct 600

ccagataatt tgaaacctta tcgggatttt ttaatagcaa atgagcgatc caagaataca 660

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tcgaaagaac aatgcctgaa ttataaaaaa tatctattgg aacagcatta tgccgtttcc 780

acggtaaatt caaaattgtg ttccattcat tcttttctga ccttttttgga ccgtgctgat 840

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<210> 3641
<211> 1285
<212> DNA
<213> Clostridium sp.

<400> 3641
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gaaacggaaa cagacgtatt agaacgattc agagattgcg gatatccagc agctacacta 720

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acggtagcct acaccacgta tcgtttctat gtagtgcggt tcttccggat tttcttctat 1260

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<210> 3642
<211> 219
<212> DNA
<213> Clostridium sp.

<400> 3642
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ttcaactaag gggagattat catatggttg aagtaagcg 219

<210> 3643
<211> 281
<212> DNA
<213> Clostridium sp.

<400> 3643
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gtctgatcat ctggtctccg atggagagat tgccgttttc atactggcag gagatgatgt 120

tcatggacgg agagccaatg aatcgggcac agaaaatact tgccggcata ttgtatacat 180

ggcttggcgt gtccagcatt tccatatttc cgcgatacat gatggcaaca cgctgtccca 240

cggtcatggc ctcaatctgg tcatgagtga cataaaccat g 281

<210> 3644
<211> 267
<212> DNA
<213> Clostridium sp.

<400> 3644
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atgtgggcaa gaatgaaaac agaactgcta tatgatcgtt atgatacaga gaaaatgact 120

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atctgctcca ctaatagagg tcttccccca atgatcaaaa gacaacaata ttacgcttcc 240

ctgaaggaag cagcataggg ttcaaaa 267

<210> 3645
<211> 443
<212> DNA
<213> Clostridium sp.

<400> 3645
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cgcgggagca aactacttat ctcagatgca tagcgttgca tctttggtct gggttgttta 180

caaaatttgt tgtattgttt tccacatgat caatcacttg atcatatggc ctcggatgtc 240

ttgatattca attgaataat caatcatttc tattcaatat gcggttttca aggtacgtat 300

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<210> 3646
<211> 1375
<212> DNA
<213> Clostridium sp.

<400> 3646
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cggtatttac agttttgtct actagttccc gggcagtcca tgtagcattc agcagccgtt 180

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gggcttcctt tttggtaaat gcttccaatt tcaggaagta ttcttttcca tcgttaggaa 300

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gcggatcgtg ttcatggcgg tttactcctt taaacaatac ggctacccca tttatcagtt 1320

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<210> 3647
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<212> DNA
<213> Clostridium sp.

<400> 3647
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gtagacttgg catgtccacg gggagctgcc actacacgct tgcagccatt catccggctg 960

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gcccttccga agaactccat atcaacagca ccaagccgct gccggattcc gcctttccca 1140

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<210> 3652
<211> 1016
<212> DNA
<213> Clostridium sp.

<400> 3652
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ttcttggttc catcggattc ctgggagaat ggcaattcat attcctggga agataacgtg 420

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<210> 3653
<211> 1708
<212> DNA
<213> Clostridium sp.

<400> 3653

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ccctaattca ttcaccggtt ttacgaccgt agagatgacg caagcaagcg cctgcagcag 540

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<210> 3654
<211> 496
<212> DNA
<213> Clostridium sp.

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ggtgatggac tttttgtgaa tcctgataat acagacaagg tagtacgtaa ctggattggc 420

ggtgattatc gtttatggaa ggtacgtcat ggctggcttc cattacatcc tacttgttat 480

attcgccgcg aggtaa 496

<210> 3655
<211> 428
<212> DNA
<213> Clostridium sp.

<400> 3655
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atattgttga tgatgccgat gtttaagttt cgcaggccgc ccatctggct gtggatctgc 180

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tcaaatacct ttcgcccgat gatctggttt gcggcatctg caatactgga agctgttgca 360

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<210> 3656
<211> 2573
<212> DNA
<213> Clostridium sp.

<400> 3656
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gagttcgtat tgcggtaact cttctcatca atcgtttttg ttactttgat ctgctgactg 240

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<210> 3657
<211> 889
<212> DNA
<213> Clostridium sp.

<400> 3657
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gaccagaata ccgtcatcgc ccgtcatccc tccggtgaga ttgtagcatt aacttttacc 180

ccggatgtta gcgtaaaggg cactgacaat aattaccagg caaaaatcaa tggcagcgaa 240

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cgcgccatgt ttgactacca gcaaccggac ggcatgatta tagactgcat ctacaccgat 660

cctgccgaga acaatgcacg cgacagcaaa cctcctctcg tatcctgggc tgtagacgaa 720

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<210> 3658
<211> 700
<212> DNA
<213> Clostridium sp.

<400> 3658
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caggactatg agctgatcaa tgcatatgca ggaaagtacg tggatctgtt gaagaagtat 540

tactatgtgg gcggaatgcc agaggtggta cagacttata ttgattccga tgatctgtat 600

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gctcccaaag aggttgttcc gcgtattatg atggtctgga 700

<210> 3659
<211> 1291
<212> DNA
<213> Clostridium sp.

<400> 3659
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tgcagctgga tatccactct attattttgc gacagaacgt tcaacgggtg aaattgattt 180

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<210> 3660
<211> 1170
<212> DNA
<213> Clostridium sp.

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<210> 3661
<211> 2644
<212> DNA
<213> Clostridium sp.

<400> 3661
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ca 2882

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<211> 2292
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<213> Clostridium sp.

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tggattttgc aagtatcggt ataccgccca tgcctctaat acgatcagaa cagggtaaca 180

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ctcagctttg tgttctttac accatgcaat cagtttctgt ttttcgttgt catgagcaat 240

cagggcaata ttctttttct ggccgattgt aaaggt 276

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<211> 909
<212> DNA
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gctgcttatc aaaaagagat tcgggagaaa cagattgaac gagcaaaagc aatgctttca 180

aatggcaggc ataagaa 197

<210> 3676
<211> 366
<212> DNA
<213> Clostridium sp.

<400> 3676
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cctctgctgc gtaagatcta taaagatgat gacgaatacg ttgaagcatt aaacaaccat 180

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<210> 3677
<211> 4513
<212> DNA
<213> Clostridium sp.

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<211> 335
<212> DNA
<213> Clostridium sp.

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tgtcctcact gcaagaagga aatggcgctg gtagaagtct actatcgtca caaacgggtt 180

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tgcaaagctt atagagaaac ttaggcaaaa ataca 335

<210> 3679
<211> 232
<212> DNA
<213> Clostridium sp.

<400> 3679
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atcttctcaa acaggcggta tctggatttt tcagtcgctt tcttccatac ccaggaatac 180

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<210> 3680
<211> 2000
<212> DNA
<213> Clostridium sp.

<400> 3680
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aaccgataga aagattatca ttgaaaatca attagaagac acggatcatg accatcttgg 180

caaactgatt acttatgcat ccgggaaaga cgcagatgtg gttatctggg tagtaaaaca 240

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gggatatatg atgagggatt acgaaaaatt cttggggatt atagctttga attttatgcg 1500

gcaaaattaa cattggggag agaatatgat aaagctgatt tttggaaatc ctttgatgca 1560

ataaaacagg atttgataaa ctatatatat aattgggtag atataagata ttacaattat 1620

tgtaggttta agccatacaa atttcatgat gataaatcag aaacaatgcg tgcaatgttg 1680

gaaagtgaaa ataaataatg cagtaaagtg ggatcaaatt gctacaccct tttcgttaaa 1740

taatgcacac ccccatcagt agtctgaacc cccttaactg actacgattt gactactaca 1800

caaggcattg aattgctccg ttttgcatta ttttgcaaaa agtgtagtta taaacaagaa 1860

aaaagatgat gcccggaaaa gccgataaac caacgcaaaa ctcggcatta cagggtattt 1920

cagaacagga gaattttatg attagagtac tttttatctg tcacggcagg atttaccggg 1980

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<210> 3681
<211> 197

<212> DNA
<213> Clostridium sp.

<400> 3681
ttcttatgcc tgccatttga aagcattgct tttgctcgtt caatctgttt ctctcgaatc 60

tctttttgat aagcagcgta ttttggtgag taagtaatta acagacgctg ttccatcttt 120

ttggaactgt aaggttcttc tttataaaaa agttcctctt tatcatcgtc tgtcaggctg 180

ttcagatcga ccgcttt 197

<210> 3682
<211> 720
<212> DNA
<213> Clostridium sp.

<400> 3682
gctttcagac cgtagatgat gttatttttt acagtcatat gcgggaaaag ggcgtagttc 60

tggaatacca tggatacgcc gcggtctccg caggcaacat tgttgactac ctggcctcgc 120

atatgcaggg agccggaggt gatatcctcc agaccggcga tcatgcgcag agtggtggat 180

tttccgcagc cggacgggcc cagcagaatc agccgctccc cttcccggat ttccatattc 240

aaatcattga cgatcacatt ttttccgtat gcttttacga cgtgttcaaa aacgatatta 300

ttcataagtc ctcctgacag attaaccttt tacgccggat gcggcaaagg tgttgatgat 360

atagcgctgg aaaataagat acagagccag cggaatgatc atggtgatga cggatacggc 420

catggcaatg gtaaattcgg tgccgccctc agcgctgatg tacatctgga gcgccaggga 480

aagcgtgtag ttttccttgc tctttaagat gagcaccggc catacatact cgttccagga 540

attgataaag aaaatgatcc cggtcgtgag aatggacggg cgtaccagcg gcaggatgat 600

atctcgcatg atcttgaggc taccgatgcc ttccatccgc gcagcctcaa tgagggcctt 660

cgggattccg cgcatggcct ggcgcagcag gaagatacct aaaacatccg caaactgcgg 720

<210> 3683
<211> 803
<212> DNA
<213> Clostridium sp.

<400> 3683
gttttgaaat catcaggtag tttggaatca tggtcacggt gaacggaata aacatggtac 60

tcagcatgat aaagtagaaa aactgttttc ctttgtaatc aaaatagaca aaggaatagg 120

cggcaaacag gctggtaatg gttttgaagg tggtaacgga tgccgcgatc agaaatgtat 180

ttaaagttat ctggacaaat ggcagttttt caaatacatg ccggtagttt tccagagtcg 240

ggtgagacgg aatgatctca aaaatagtat taaatgcgtc ctgcagagtc ttgaaggagt 300

tggacagagc gaacacgatg ggaaccagca tgaggaagac gatggcgccc aggatcatgt 360

gccagccaat ttccgaatga ttgttagttt tcatagtaga ctcccttctc cacaaattta 420

aattccagaa gtaaaaggac aatgaacagc agcatggtca gaatggaaat ggccgatgag 480

gtgccggtcc gatacaaggt aaaggcctcg tggtaggaag cgtagatcag gttggaactg 540

gcgtagttcg gtccgccctg ggtaatgacc ttgatggggg tgaacacata ctgaagtccc 600

tggacaatgg tggtgatgaa cacgtaaatt ccggtagcgg agctcattgg cacaatgatg 660

tccagaaaga ttttccacat gggaacctga tccagccgtg cagcctcaat aacttcctgg 720

gatacgccgg agacaccggc taaaatattg atgaagttgt agccgaaggt cttccaggtg 780

gtaatgatgc agagcacggc aat 803

<210> 3684
<211> 197
<212> DNA
<213> Clostridium sp.

<400> 3684
ccacaggaga tcatcgacca gtatgatgct tctgacaaaa ccttcctgac cgacaatttc 60

ctgccaaacg tcctggatct ggcggtaaac agtgatggcg tacaggtcgg aataccgtat 120

tctttaagca gcccggttct ctacatcaac cgcgatctgc tgaaggaagc aggactttcc 180

gaagagggac cgaagac 197

<210> 3685
<211> 787
<212> DNA
<213> Clostridium sp.

<400> 3685
ggtgtatcat actcatcaat aatgatgaag aatggacgat atccatttcg gcgaaatgat 60

cgagttccag cttttgaaaa tcggaaaaca tacggccttg aaaaacagta cggtctttga 120

tctgagtttt atgaactttg cgaggtttga actttacctt gcgtttcaaa tcaacatttc 180

ttgccgtaag aatgccatca ttgaggtagg agtaaagtgt tctgactgac atatccagct 240

ctggatgaag acagacattc cttgtacttg cgttctgcaa agacggcatc gtagcggtac 300

ttgtgtgcaa tggaacaacg attgatagct ttcgagcatc cattacaaac gtaaggagcc 360

ttatcaagac ggttacactg ttctttaacg aaatcggggc aggtttggtt gcaggttgga 420

caggaagtac acttaatgtt gcagagtatg atttttctgc atacatttgt ttttctgcag 480

ttgtatctgt gaatgcagaa gttgcgagtg ttaaggaagg atcctttatg ataccaatcg 540

cttactcgat ggagtttcac ttccttcgaa atggtagtag gatccttgca taagaaccgg 600

gcaatatctt taaaggagca gccattgttc agggaacgct caatgtattt acggtcttta 660

agggaaaggt gtttctggtt accaggaata tatttgctca tggagatctc cttctactgc 720

tgtcagaagg tctccacgat catagcatga atgtatgaaa gattaaactc tactcatgca 780

ggagtaa 787

<210> 3686
<211> 197
<212> DNA
<213> Clostridium sp.

<400> 3686
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tgattttgca aatactcaaa ctgctggatt tcaaacacag atggtgccat atattgaaat 120

gcaatccctt catatgctaa aacagccgga gtaagcctgt tataaagatc catattttcc 180

aatctgttaa agttctg 197

<210> 3687
<211> 1687
<212> DNA
<213> Clostridium sp.

<400> 3687
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gataaaaaag ggggaaggaa aatggaagag aatacagcag ttctggatac tccggaagtg 120

gtaaaacata caggcgcgga gtggtaccgg gatgtatccc tggaagatgc agaggtattt 180

atccggtcca acctgcagtc agccgtacgc agtgtgatcg caacgggatt ttacctgaag 240

catatcaggg acaatgaact gtatctggaa gcaggatata agaacgtcaa tgagtatgcc 300

atggacaggt ttggtctcag tgcctctgcc acatccaggt acatcaccag gaacacaagg 360

ttttccaggg gcgggaacag tccgctcata gatgataggt ttaaggactt cagtaagagc 420

cagctgcagg agatgcttgg catgagcgat gagcagctgg agcaggtcac accggatatg 480

accgtccggg agatccggag catggcaaga ccaaaggaag tcccttacat agagatacct 540

gggcagacag agttaaaaga tatccctggg gttatgccgg aagagagggc ggaaagcttt 600

gaagcatcaa cggcggagct gtttgatgtg gaagaggatg aaaatatggt ccagtcggtg 660

gcaggtaagc ctattagcca ggaaatatcg attacggaat tggttgaaga ggaagatgcg 720

gagattgcga cgtcgcaact gctcccggaa gagactgctg ccaatgagca gcggaatgaa 780

tctatagatg ctgccgaaaa gcagcaaatg ggtcattgct tacaccgccc agaatatgag 840

tgttctttgc cagaaaaata tatgcaccgg cccggaagtg gaacagactg tgcccatgag 900

tgctgctggg agtgtgccaa acatggggag tgcaagcttg aatgcaacag ttcggctgat 960

cgccctgaga cagaggaaga gattgcgacg tcgcaaacgg ataccgaagc ttctgaaaat 1020

gaaatgaaag aacgtacaga catggaaatc ctgagagaac tgctggagag aaaaaagcag 1080

cttcttagca aatgtctgag agctcccggc attgataagt cagatgagca tatcagaatg 1140

caaaagctgg aagtaggtgc tttggcttcc atgctgtgtg agctggaaga tttggaagag 1200

aaaaaggata gaccgaagca gccagagctt ccacagctta aaaacaatga ccagagagca 1260

gcttttattg atgcgtatga gacctggaca ctctggatcg ataaccagga gaccggtgag 1320

cggtattacc gatatgatct tccagatggg acaagcttcg ttatcaagac gtatcactcc 1380

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gaggagtatc ttctggagcc tggaaagttc tttagggatt gccgggtaaa caggacagct 1500

ttaattgaaa agctgaaaga gatacagaga ggggaaaaga aatgaactgt aaagactgca 1560

gctataaaaa attttatgat gggaacggaa ggccagggcg ttattactgc tttcatgatg 1620

aagccaagtt cgcacggggt gaatgcgagc ctcatctgaa taaaaaggag aagggcaatg 1680

atcataa 1687

<210> 3688
<211> 659
<212> DNA
<213> Clostridium sp.

<400> 3688
ataaaagagg gcttatggtg ggagtgctcc agccggtagt accggaaccc aagaacctgg 60

atgattatga gttcctgaca ttgaagaaga tcctggctgg atgtgagttc ttccggattg 120

tgctggagga agaaaaaaga gagacagagc cagctgagaa ggcaccggca gaagtagcaa 180

agccgaaggc tgtggaagag aagccaacag agacatctgt ggaaaccaag gagaagccgg 240

agccaccaaa gccagaagca ccaaacaaaa agcagattga tgttggaaaa atgaaagcgc 300

ttcgcaatgc aggatggagc atgaagcaga tcgctgagga aatgcagctt gcaccaagta 360

cagtatgcga gcatttgaaa aaagatggag gaaggaaatg aaatgggatt agcagatacg 420

tttggcgcag aggacagagt gcaggtgaag ttttcagatt tttataaact gatgaaacag 480

gctacgcagt atgaaatagc catgaatgcg gtgggatgtg atgtgccgca tagatacatc 540

agagaatgca tgacaggagt aaaagagccg cagaagcagg gtatacagat tgaactggaa 600

aatccggcga ataagagcat gatgtcagcc aagaaaggac aggtcaatgg atagaacat 659

<210> 3689
<211> 366
<212> DNA
<213> Clostridium sp.

<400> 3689
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tcccattaag ctgaccttga tattctgtac agcatccatg gaagagattc cctctttgtc 120

ttccagagcc agagtagcgc caagaacgat atttgccagc catggcatgg tgttgaagta 180

tttataatgg ttgtttaatg cttcaacata ttcgtcatca tctttataaa tcttacgcag 240

cagaggtcca ataccgaaaa caacagccgg agcaagctgg gtatcgtagt taaaggttgt 300

tactgccatt aaggaccagc ggatggcacc tttcacacag tctttttttg ttaaaacggg 360

agcttt 366

<210> 3690

<211> 232
<212> DNA
<213> Clostridium sp.

<400> 3690
cagatttcta cgtatttcga tgcggcttcc tttaagtatt ctggcgagta ttccgtatta 60

atactgaact ttatccccgt gtattgaagc tcaagattga tttcctgaaa cagggaagtg 120

atcttctcaa ataagcggta tctggatttt tcagtcgctt tcttccatac ccaggaatac 180

ttgtttgcgt tggcttcaaa cttagaaccg tcaatatata aatgttgcag gt 232

<210> 3691
<211> 1016
<212> DNA
<213> Clostridium sp.

<400> 3691
aagctttttg gatccaacat tgataagact ttccattcag cttatcacaa catatgccat 60

gcttactttt ccatgcattc cagtccttgc tgttgtcagg cttttccgtc cgaatgatca 120

aacaggaact ttccggacac tcttccataa gatacaagag ttccttcctc tctttttca 180

catcctccac cttataaatg gcacatggta caccaaagaa tgaaatgctc tgcagaaatt 240

ctttcactcc atccatgtca tcaaatacct gcacataata tgccgtattt tctgctaatt 300

tccgtacttc atggtcaata cggtatggtt ccgttccata tacaattttc accattttct 360

ccactcactt tctcagtaat tcgtactcaa tgaagcgaag ccgtgccctc attggttaca 420

ctataatggc tgcgcttcct gttccatgac agaatgttta aaaaattctt cgacatttcc 480

atttaacttt ccatacagca tctgtaataa tgggataaga ttccatgaca agaagccaat 540

cccatatgtg atttccacgt atccatcgca aaatccagtt tcggaaggat atatcataat 600

gaaaaaatct tcaaatgaaa tcacaaaata atccagttcc atgaaaatat ccgtttcaga 660

aagaagcggt gcattttctc cttttatgag tacaatgaca aactctcgct cttctccata 720

aaaatcgcat cggaattcat caaatgctct gtaaaatgcc gccttctgat ccctggacaa 780

tatatgatcc agatcctcca attcagcaac ttccaataat tcaaacccta atgccttcat 840

aatggcatca atcgttcttt tcctctgtcc atctgccact ttcaatccct cagagcattc 900

atcactgaca atacatagaa gattttcaac cggtacatcc tccattctta gttctgccgt 960

ctcatactca caggttataa tacctgcttt gatcagccgg tttactaaat ggctga 1016

<210> 3692
<211> 702
<212> DNA
<213> Clostridium sp.

<400> 3692
tatcagccgg acatggcggt tcgaagcagc atggcaaatt ataaaaaaga agactggctt 60

attaatgttc cattatatat gctcgctgag tatttaaaga gcatggtgca tgtaaattag 120

gctatgggag aaacaggcta tcgtttggtg gcctgttttt ttattcaaac agattgagat 180

attcatattc cgcagcatgg gaagagaaag aaatttctat aattgatgtt cgatagtcat 240

gatttttgtt caaaagggct tttgaatcag gtaggtagtt tacatatcat catggatcgt 300

atacagtgat tatagagcag agaagaaggg gagaagcttt atgaaaagac taaccatttt 360

gtgtgcggct ttgaccgcag caatgtttat gaatatgtca gtatacgcag gaacttcaga 420

agtggcagca gaagtcagtg ccggtactgt atgtttaccg ggagctgatt taacggatgt 480

aatgggcggc ggttttattt tcagtgatca gcgtccagaa attacggatc cggaatatta 540

cttaaaagaa tggtacaatt ctccgcaaga aggggaacag agtattttaa atgcgcatgg 600

agaatataag acaccataca acaattacat ggatgaggca tatccacttt tgcaggaatt 660

tcttcatagt tttgactgga tccatgcaga tgaatatacc ag 702

<210> 3693
<211> 2985
<212> DNA
<213> Clostridium sp.

<400> 3693
aaacggcaat ctctccatcg gagaccagat gatcagactg gctctgatgt ggcgtccgat 60

cgcagatgcc tgtccatccg gaaaatactg cgttggcatc cgcccggaac atatagtctt 120

aagcagccgt ccaacggaaa cttccatctg cggaaccgta aaatacgtgg aggactatgg 180

aaaccgctac ggagtttata ttgatgtaaa gggtgaaaag agcgagctga ttgccatctg 240

caacgactcg gttccgcgcc cgggcgaaaa cattttcatc aatattgatt tccgcaaact 300

gcatctgttt gatgcccaga gcgagaagtc ccttggatat ccagaagaaa tccgccgtct 360

gaacgcagcc ctggattttt ccatgccgga tgctcagaat aaaaaccaga aagcaggagg 420

taaatatcat gaatcttttg gtcagtacca atgtgtataa accgggtcag cttgcccggg 480

tcatcccgca tttacatgcc ttccgtggtc agattggcgt cgagctgttc cctatgtttg 540

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ttagttttca tggcccgtac tatgaaaccg agcacagcgc agcccccggc accccggaat 660

atgcgcactc catggacctg atccgccaaa ccctgcctta ctgtgtgcgc cttcaaagcc 720

agtatctggt ctttcatcac aataacatcc cggtgacgga agaacgccgg gaagagatga 780

tccgtgtttc cagagaaaac tacagggaaa ttgcggagct gttcaagccg caccagatcc 840

cggtggtggt ggagaatgcc ggtgtcctgg accgcggcaa catgctgttt gaccaggatg 900

cgtttattca gctctgcagg gaagaacatt atccggtgct gatcgacatt ggccatgctt 960

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tggattttcc cctgtttctg tctgattatc agagactgac tccaaacgca gatctggttc 1140

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cggactacat caaaaaattc cgtcagatgg gtgtctcaac cgatcctcag aattttgtaa 1440

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cacttggaac acgatcactg attcgagagc ttgaaggaca tggaatccgc gtcaccacgg 1560

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acaggtttta cactgacatt gcatgcggga acgcttctgg ggtagagaca gtcctggtac 1920

taaccggtga agcgaaaaaa acagatacta tgattcatac gtactctcca acttatattt 1980

tcgactccat aaaagaagta aagaaagcct ggaagaatta gtaatccagg ctttctctac 2040

ttctttaaaa ttttcaatgc ggtatgtgta atgattgtaa aagatgaaat aacgcaacaa 2100

tatagcattg cttacttata aaaaagtaac cgactcagaa acgagaacga ttactttttt 2160

agatagtatg aatttaagtg cttcttcatt ctaatgcaaa accgtaaaga tagcaaggaa 2220

aagtggcatc atgatggata ttgccatatt tttgcttaat aataccgcct catattcgaa 2280

agagagtagt gtagacaaat tatatgtatc tattttcgcc atatgcaact ccgaaactca 2340

attccattct cttctctccc gctattttcc tgacctctcg aaaaaatatt tctccactag 2400

gctcccctaa tttgttcgct cgccgtcagg cgtttgccgc catcaggcgg cgcactcaat 2460

ggataaaaag aaaaataaat ggaagggaaa atgaaaaacg gcgctgctgc gccagcaatc 2520

aaggaattta tgcagccaat tctctctccc atttaataaa aaagtcgagg gagcaatgga 2580

aattggggaa tatccgcttg catatggcga aaataaatac atatgatttt ctcagcattc 2640

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ccgctgttgc atgatttcca tatagcagcg ggtttttggc cgtaattctt tgcaaaaaag 2760

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cacttcgctg agctctcccg tataggttac cgttacctca tctccttctt taacatctga 2940

taagccttcc ggtgcggtat cgaatgtcat tgcataggta ccctt 2985

<210> 3694
<211> 506
<212> DNA
<213> Clostridium sp.

<400> 3694
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tggaagcatt tggaaagaat gtttttggtg aaccttgcta tgtcaaagat tgtggctgtc 120

tatgaagaag gacagattga atgcgggaca ttttgtgtga atgaaaaaat ggcccaaata 180

ggaccacagc ttcataacga ccagaagctg gatctttctc tgggccggaa atcaaccgaa 240

gtttatcatt atcaactggt tgtggtaggc actggtggga ccggttctta ttatctgaag 300

gaattagggg cgatcctttc atccttaacg aaggaggaat gcaactccta tgaattgtcc 360

ataatcgatg gagaccgggt ggagcagaag aaccttgacc gtcagaattt cctgaaagag 420

gatgttggcc agcataaggc aatggtactg gcacaagctc ttagagacca ttatgggatc 480

gaagtaagag catatccaat gtacat 506

<210> 3695
<211> 4367
<212> DNA
<213> Clostridium sp.

<400> 3695
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cgcaacgtaa aggtcaaacc actcgccttt cactaaattt actcttaccg cagatagctt 120

atcgaatttc caaaaagaag ttcagcataa tgcgttgtta tgtccttttt aagatatatt 180

ccaacaggca gtaattcgac ataatattct atccatgata taatttaaat aataacatat 240

gaacgaaata cagtgagtat atctgcaatt atgaaaatta tcagttaact tctctgtatt 300

ttaattatac aaggattttt caaacgcaat ttctgtcttt ttattcctat aaatcttcgt 360

ggagttttat atccctatta tctgccatac attgttttaa agcaacaatc atttttccg 420

catccaacgg ctttgcaaga tgggcattca ttcctgccag ccgactgtta attatgtctt 480

ctgcaaaggc atttgcggac attgcaatga tcggaaccct catggcatct cttcttttca 540

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aaatcacccc gaaataatcc agtgcggatt tcccgaagat ttcaactgct tcctgtccgt 660

ccgctgcaca ggtaacctcc ataccactgt cttccagtat acatctggca atttccatgt 720

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tttttacaac aactgtagta ccaacaccaa ttttgctctt cagttcaatt cttccatcca 900

tcctgtccac aagctgtttc gtaatcgcta gccccagtcc ggtgccttca tatctggatc 960

tgcttgtctg gctttcctgg gagaacatat caaaagcatg ggcaataaaa tcttcactca 1020

tacccacgcc ttgatctttg caatagaaag tgaaaaatgc tctgccatca tccagcgctt 1080

cttccttaac ccagaccgtg atcacactac ccacctgact gaattttata gcattgtcca 1140

aaatattcga tagaatcctg ccaagatata ccggatttcc aaccagagcg atgtgactat 1200

atgtaccatt tttccagtca atctcatact gaatgccttt ctttgcagcc cgctcatcat 1260

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<212> DNA
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<212> DNA
<213> Clostridium sp.

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caagcggctg cgcagcagac atttgttttt ggtgcgtgtc agcaacgaac aaaccgcctg 180

cgtaagcagg cagtggagcg cgtaagcgcg ggtttgtgag tctgcaaaat ttataa 236

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<212> DNA
<213> Clostridium sp.

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<213> Clostridium sp.

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gtaaatattt ggatttgcag catatcctgc cagaacatcc atagtcaact tcatatccgg 180

cggtacctga gaacagccat tctgattatt aaaggtaatg gctccttcta cctgagaagc 240

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ttcttacaat gaggtaactc aaaagtacag tattggttta aatgcctatc tgaccggcat 960

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caatcagtgc tccgagattt gtcagcttgg cattctggat cattctgatg ttctctatct 1080

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gctgataagt caatccatac atttttgtgt ttcagataag gcaaagcttt ttccaaagtc 1920

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cagaaaccat gagattaata aaaggaagaa acaaagaaga tagcagatca ataacatgcg 3600

ctactccttt tttccatatg ttttcacttt tattgcttga atctcccata gaaatttcct 3660

cccaccgtac aacaacggaa caacagtaat aaacgtgttt tccgagtttt attttgcagt 3720

tgccgaccag aatgttaaac tccagattaa gttacaaag 3759

<210> 3712
<211> 527
<212> DNA
<213> Clostridium sp.

<400> 3712
gaaaaggccg cttgacaatt gaacaacctg cttttcagat gtccacacgg catattttaa 60

ccccatcata cagttcccaa caaaaatatc cttaaaggag cccctaaaaa tgaccctatc 120

caaaatccac cacattgcca tcatcgtttc caactacgaa actgccaaag atttctatgt 180

aaacaaacta aattttccaa ttatccgtga aaactaccgt ccggaacgca acgactggaa 240

actggatttg cgagtgaatg agtatacaga attggaaatc ttcgcagaac cggatccgcc 300

aaagcgtgtg aatcgtccgg aggcatgtgg ccttcgccat ctggcttttt gcgtggagag 360

tgttgaacag acggtaaaag aactggcaga agttggtatt gattgtgagc caatacgtgt 420

agatgcttac acaggcaaga taatgacctt cttccaggat ccggacggtc tgccattgga 480

actgcatgaa taataaagtg aaaatggtag tcattatacc tgacaat 527

<210> 3713
<211> 1558
<212> DNA
<213> Clostridium sp.

<400> 3713
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atatgcaggg agccggaggt gatatcctcc agaccggcga tcatgcgcag ggtggtggat 180

tttccgcagc cggacgggcc cagcagaatc agccgctccc cttcccggat ttccatattc 240

agatcattga cgatcacatt ttttccgtat gcttttacga cgtgttcaaa aacgatatta 300

ttcataaatc ctcctgacag attaaccttt tacgccggat gcggcaaagg tgttgatgat 360

atagcgctgg aaaataagat acagagccag cggaatgatc atggtgatga cggatacggc 420

catggcaatg gtaaattcgg tgccgccctc agcgctgatg tacatctgga gcgccaggga 480

aagcgtgtag ttttccttgc tctttaagat gagcaccggc catacatact cgttccagga 540

attgataaag aaaatgatcc cggttgtaag aatggacggg cgtaccagtg gcaggatgat 600

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cgggattccg cgcatggcct ggcgcagcag gaagatacct aaaacatccg caaactgcgg 720

aagtgccacg ccccagatgc aatcccgcag accgattttt gaaatcatca ggtagtttgg 780

gatcatggtc acggtgaacg gaataaacat ggtactcagc atgataaagt agaaaaactg 840

ttttcccttg tactcaaaat agacaaagga ataggcggca aacaggctgg taatggtttt 900

gaaggcggta acggatgccg cgatcagaaa tgtgtttaag gttatctgga caaaaggcag 960

tttttcaaat acatgccggt agttttccag agtcgggtga gacggaatga tctcaaaaat 1020

ggtattaaat gcgtcctgca gagtcttgaa ggaattggac agagcgaaca cgatgggaac 1080

cagcatgagg aaaacgatgg cgcccaggat catgtgccag ccaatttccg aatgattgtt 1140

agttttcata gtagactccc ttctccacaa atttaaattc cagaagtaaa aggacaatga 1200

acagcagcat ggtcagaatg gaaatggccg atgaggtgcc ggtccgatac aaggtaaagg 1260

cctcgtggta ggaagcgtag atcaggttgg agctggcgta gttcggtccg ccctgggtaa 1320

tgaccttgat gggagtgaac acatactgga gtccctggac aatggtggta atgaacacgt 1380

aaattccggt agcggagctc atgggcacga tgatgtccag aaaaatcttc cacaggggaa 1440

cctgatccag ccgtgctgct tcaataactt cctgggatac gccggagaca ccggctaaaa 1500

tattgatgaa gttgtagccg aaggtcttcc aggtggtaat gatgcagagc acggcaat 1558

<210> 3714
<211> 197
<212> DNA
<213> Clostridium sp.

<400> 3714
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gtcagtctac ttccgcagat accacagcag gttccgcctc ttccgaagcc accacttccg 120

ccgagagcac cgcttccggc aatggttcca aaaccgttat cgagtactgg cactgtaatg 180

cagagaacca gggcgga 197

<210> 3715
<211> 197
<212> DNA
<213> Clostridium sp.

<400> 3715
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gtatatcata atcgacgagt aatcgctgaa aggcgatgcc gcttcccgaa gcatcactcc 120

acaaagcgga atcaccaacg cagcttccag tagggagata ccacgaaaaa tggcattctg 180

gcaaaacaga taataaa 197

<210> 3716

<211> 1345
<212> DNA
<213> Clostridium sp.

<400> 3716
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cctttgaaag aattccttct ttcttctctt cctccagttc cggaacatcc agatcttctc 120

ccgtcagctc cgcatactcg gactccgtga tactatgaac ggcgccctgc tccactctac 180

tcgtggaaga atctgcctct ggagctgcat cttcgttgat ctggatatga ttgctgtatt 240

cattcgcaaa aaatgaattt gcaccatttt ccgaagaatc tgttgtgatc acctcaattg 300

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agccagaatt cacataggaa tcctccccgg atgccgaact ggtcggtcct gcattcggag 480

tgcttccctc ctcgccgccg cttgatgcaa tggaagagat ttctccctgg ctgacttccg 540

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atacaaccgg attatccagg tattttgaca gatacgtttc atgatctgtt ccgccataca 900

gttctaccgc accgtcacgt tccaggttga cctggtcctt atcatcaaaa cgctcataaa 960

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tgctggatgt tccagaagga tacgatggcg tatttccacc attcccacca aaaccttgct 1140

ggccccagaa aattcctgta ccaaaaactc ctgatgctcc cacggacgca taatatacac 1200

tacttggaag agccatttcc acgtatgcca gtctctgatg ctgctgcgcc ggcactaccc 1260

caattcgcgg gaatttctta tgctgaccag cacactgctg aagcacccac agctgcagac 1320

actgttcata caaatctctg gccga 1345

<210> 3717
<211> 280
<212> DNA
<213> Clostridium sp.

<400> 3717
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gcacagtatg tacctgcaga cgcagaagtt tctattgatg aatttctgaa ataacaaagg 120

gggaaattgt tatgcaatta agtgctttac aaattgtact gcttgtcctg gtggctgctg 180

aaatcaacgt tgaccgccgc ggattatcac tgacacatgc aagacctgtt atcgtaggtt 240

tcctgtgcgg actgatctta ggcgacatga acagcggtct 280

<210> 3718
<211> 1279
<212> DNA
<213> Clostridium sp.

<400> 3718
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tatatcttct taaatgtccg caaagcctta ttttataggc tctacgggca ttttgctttt 120

gtggtaaacc tcgcatatct aggtctatct tcttatattt tctctatcaa tcgttgttaa 180

aatcgtggta aatactttta tgcgattaga cgctgaacct ctgattttgc ggtatctatg 240

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aaatcttttg ggttcatgtt cttgcttgcc agccttgtgc agaacgtatg gcgtagcgta 360

tgcggtgtga tatgtggcaa gggattgtct ttgtggtgct tgttgtattt ctttaccata 420

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aggaaattgc cctgtccgtc tatcacaaat ggttctgcct ttgggcgttt cttcataacc 540

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ttaggcgttt caatataata gccttgttcc ttgctcttta gtaactggtg gtcgataatc 660

acaacttcat tcttgaaatc aatatcggct actgtcagac cgcacagttc cgagatacga 720

agtcctgttt ttaacagtat cagcacatca tcataatgct tgtgatacac attgtccgtc 780

ttaataaatg acaataaggc ttgttcctgt tcctctgtca atgcgacttt ctctttggta 840

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tccagttctc gaagtgaggg tttttcccgt tttccctttg gtgtcgggtc tgtgggtgtc 1260

aatctccaag catacacat 1279

<210> 3719
<211> 307
<212> DNA
<213> Clostridium sp.

<400> 3719
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gctctccatg tttcctggga tgaaggctgc cagagcttta ttgatggcaa ctgcgcaatg 120

ctctacacca ccattgcccg tcgcgcatcc gttcagaaga gcgcgcagtt cgatgtcgct 180

accgtaaaat ccccgacatg gggcagcaac ccgcgtaaag ttccggcagg cggatgcttc 240

ttagctatca ccgcacagac cgatgagcag aaggaagccg catgggagtt tgagaaatac 300

ctgtaca 307

<210> 3720
<211> 750
<212> DNA
<213> Clostridium sp.

<400> 3720
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gatcccaacc ataagcagat taagaagaag cagcatggaa tccgaaaaca ggttccctgg 120

attttgcaag tatcggtata ccgcccatgc ctctaatacg atcagaacag ggtaacaaaa 180

cttcacagac caggtccagg aaagtgactt ctggatcagg aactgctttt cttcggtcat 240

gtcacctgtg cgctccactg catcatccgt tgtataaaaa atctgccaga aagtaccgct 300

gcattcaaaa ttccagccgg cttcctggca ctgcttacgg aactgctctg ctttccagct 360

ttccgcgcct gtgagggaag aactttccgg aaccagaagg gctgcatatc ttctctttgc 420

cggttcagct ctatgaaact tcatgacaga accgccaacg ctctccagaa accagccctg 480

cgctgccatt tcttccaggt actgttcaaa tacatttgcc tcccataaat taaaggacca 540

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gattttgcat ctattttcat tatagaaata ataggaatat ctgacaagaa agattggatt 660

aacaatttct tacatatttc tattgatcag ttggaatatt caaattttcc atatacgggc 720

attctgaaag gaaaaaagta ttggaattgg 750

<210> 3721
<211> 1321
<212> DNA
<213> Clostridium sp.

<400> 3721
acagaaacag ctaaaatgta tggcccgggc tacagcatat ctcagataaa gaaaaatata 60

agaccggcgt aacggaccgg tctcatttcg tggttcaggc aggtatctac agtgtttctg 120

cccgatctgc aatatgctgt ttgaaattga tcacttcatg cttgtaatca cgattcatat 180

aacaggatgt aatcataaaa tccgcagtgg atttattgac ggccattgga atatcgtaga 240

cctgggaaat cctcatcagg gcttttacat ctggatcatg aggctgcgct gtcagcggat 300

ccgaaaagaa aatcacgaag tcaatgacac cctccacaat cttagcaccg atctgttggt 360

ctccacctaa tgggccgctg ttataacctt ttactgtaag tccagtctga tccgtgatca 420

tgcgggccgt tgtacctgtt ccgtaaagat tatgcttctc cagctcagct ttgtgttctt 480

tacaccatgc aatcagtttc tgtttttcgt tgtcatgagc aatcagggca atattctttt 540

tctggccgat tgtaaaggta atgtattctt gagacatgga aaaatccccc ttatctaagt 600

atggaaagtg cagatagata caacttatca cagaatggtt tattacacaa gtgcaaaaat 660

atcaaactga agattagaac tcaaattatt agaatttcct cagaacagtc aaaatcagaa 720

gatttctccg aatatttgat tttgactgca gtataagaat cgaatcttta atccaatctt 780

ttccgaactc tcacatcgaa gaaaatccgt attcattatc accgtactcg atgctgataa 840

tatggtattt tgtggaaata atctattgcc cattccctaa tcttaacatt ccgctaaaat 900

caaaaattcc aaacttccaa atttggtatt tttcttagaa ttaacatact taacaattat 960

ttgcattttt cctagtttct ttcttaaaaa cttacaatgt ttttactgtt tcatgataga 1020

tgtcaaggcc atacaacact ataatcggaa actgtgaaac acataaccaa tcctattgcc 1080

agactaacat gaggagaaaa acattatgaa aaaaaatcta aaatgtctca cagcactttg 1140

catggctggt gccatgatct ctctgaccgg atgcggttca tccagtcagt ctacttccgc 1200

agataccaca gcaggttccg ccacttccga agccaccact tccgccgaga gcaccgcttc 1260

cggcaatggt tccaaaaccg ttatcgagta ctggcactgt aatgcagaga accagggcgg 1320

a 1321

<210> 3722
<211> 280
<212> DNA
<213> Clostridium sp.

<400> 3722
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gcatgtgtca gtgataatcc gcggcggtca acgttgatct cagcagccac caggacaagc 120

agtacaattt gtaaagcact taattgcata acaatttccc cctttgttat ttcagaaatt 180

cgtcaataga aacttctgcg tctgcaggta catactgtgc atagagtttg gttcccgcag 240

cctttaattt cttgtaagcc tcaatgtcat ccggctttgc 280

<210> 3723
<211> 272
<212> DNA
<213> Clostridium sp.

<400> 3723
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ctgcacatct gcaaattcat agtctcttaa tgtcgacaat aactcttcac atgtatattt 120

ccgctcgagt tttttttcga gcagacgata aatgaacagc gctagaaaac agatcaggaa 180

atgtgctcgg atccggtcgt ttcgctggac aaaaaccgga cgggcagaaa aatccgtttt 240

catgatccga aagcatgctt caatctgcca ac 272

<210> 3724

<211> 207
<212> DNA
<213> Clostridium sp.

<400> 3724
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ctgattcaga taccctatcc ggattgcacc atgctgcccg atccactcac tttcttcttt 120

tgaaagaaac gagctgctct gtgcagaaag ataacgcctg tagagatcat ctgtgtaaaa 180

tgggttgtca tccttgattc tgcgcat 207

<210> 3725
<211> 262
<212> DNA
<213> Clostridium sp.

<400> 3725
ggcagcatgg tgcaatccgg atagggtatc tgaatcagga tggaggtatc agcagtgtag 60

atccatcaac aggtaaactg acaggtgtta ttacagatta tgtggatctt gcagaaaatt 120

gtctgcaagg tcagactctg gaatttgaat taaatggata tgagacaaga agtgaactgc 180

ttcaggcatt gcaggatgga aaaatagacc tgatttttca tgcaaaccag aatccatact 240

ttgcagaaac aaatggattt gc 262

<210> 3726
<211> 1088
<212> DNA
<213> Clostridium sp.

<400> 3726
taaacggtaa gatgatcatc gtttttagat acttctttct ttgactgtcc acatccagac 60

aagacagcag ttgctacaag tacacctaac accactgcaa tcagacaacg ttttgccttt 120

ttcatacttt tattttcctc attctttcct gataaaatca ttgttgttac gtctgtgaaa 180

taactccgta aaaaaacact gtcaaacaga cagtgcacct catttttgc aactggctgc 240

cattttacag gctctgtagc tttgcgtccc agactttcat ctggtttgcc gatttcctta 300

ttgtaccaag ttcaatatcg ttaaaaattg tacattaaaa ctttccaaag taaattcccg 360

taagggaatc tgccagagta aaataccgct atctcttttg aagtaaacct tccggcttct 420

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gtttcaagat tgtaggcaag aatactgatc tggcgatcat caaacagcat ggaaaatgtg 960

tattccacct cacggggcgt tatcatgtca cccgtagtaa catccaccgt cagcggtaca 1020

ctgatcggcg gatagtttgc tttcagccca acccggatgc cgggataatc atccgtttcc 1080

cgtatatc 1088

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<211> 402
<212> DNA
<213> Clostridium sp.

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ctgcacatca tcggcaatct gtacagtaca gatatccgta aaaattttcc ggatcgcttc 180

atgggtcaga gtgaaccctt tgattgtcgt gtccagatcc atggttgccc gcgtatccag 240

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aagtgaaatt cgttccagca gtcgctctag catatagttc tgcatgacaa gctgtgcaga 360

aatatgcttc tctgctgcct tatttttgat aaaggctttt aa 402

<210> 3728
<211> 197
<212> DNA
<213> Clostridium sp.

<400> 3728
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ctgccaaacg tcctggatct ggcggtaaac agtgatggtg tacaggtcgg aataccgtat 120

tctttaagca gcccggttct ctacatcaac cgcgatctgc tgaaggaagc aggactttcc 180

gaagagggac cgaagac 197

<210> 3729
<211> 272
<212> DNA
<213> Clostridium sp.

<400> 3729
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ttgtccagcg aaacgaccgg atccgagcac atttcctggt ctgttttcta gcgctgctca 120

tttatcgtct gctcgaaaaa aagctcaagc ggaaatatac ctgtgaagag ttaatgtcga 180

cattaagaga ctatgaattt gcagatgtgc aggggcaggg attcataccg atttatgaat 240

ctactaaact gacggatgca ttacatgaag ta 272

<210> 3730
<211> 197
<212> DNA
<213> Clostridium sp.

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gtatatcata atcgacgagt aatcgctgaa aggcgatgtc gcttcccgaa gcatcactcc 120

acaaagcgga atcaccaacg cagcttccag tagggagata ccacgaaaaa tggcattctg 180

gcaaaacaga taataaa 197

<210> 3731
<211> 269
<212> DNA
<213> Clostridium sp.

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agtgtagatc catcaacagg caaattgaca ggtgttatca cagattatgt ggatcttgca 120

gaaaattgtc tgcaaggtca gactctggaa tttgaattaa atgggtatga tacaagaagt 180

gaactgcttc aggcattgca ggatggaaaa atagacctga tttttcatgc aaaccagaat 240

ccatactttg cagaaacaaa tggatttgc 269

<210> 3732
<211> 211
<212> DNA
<213> Clostridium sp.

<400> 3732
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acacatgcaa gtcgagcgaa gcaatttaag tgaagttttc ggatggatct tagattgact 120

gagcggcgga cgggtgagta acgcgtggat aacctgcctc acacaggggg ataacagtta 180

gaaatgactg ctaataccgc ataagcgcac g 211

<210> 3733
<211> 219
<212> DNA
<213> Clostridium sp.

<400> 3733
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actgggaatc ctggcttgat catttataac taacataagt aaacggacat gtcgcctgat 120

ggtgacatca ccataatgac ggttctgcct gtcttatttg gcaggcagag cccttttta 180

ttcaactaag gggagattat catatggttg aagtaagcg 219

<210> 3734
<211> 197
<212> DNA
<213> Clostridium sp.

<400> 3734
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ccctgttatc aaagcaatct gccagaatat gcagaaaaca agcgcgatgg tgattgccct 120

gtcaggtatg taataccagc cgccacccag ccaactttcg ccagtaaaaa agagaacagt 180

aagtacacca atcatgc 197

<210> 3735
<211> 241

<212> DNA
<213> Clostridium sp.

<400> 3735
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atcggtgcta agattgtgga gggtgtcatt gacttcgtga ttttcttttc ggatccgctg 120

acagcgcagc ctcatgatcc agatgtaaaa gccctgatga ggatttccca ggtctacgat 180

attccaatgg ccgtcaataa atccactgcg gattttatga ttacatcctg ttatatgaat 240

c 241

<210> 3736
<211> 346
<212> DNA
<213> Clostridium sp.

<400> 3736
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ggagacggta tgggagagca ggtgagtgcc agatcataac cgggcttata gctcagccgg 120

ttagagcgca cgcctgataa gcgtgaggtc ggtggttcga gtccacttaa gcccacttga 180

gttgaaaaac tcatacaaat gaatacaggg attgcttttt gaaaaacaaa aaggaagacc 240

cgcatccaat gggggtgtag ctcagttggg agagcacctg ccttgcaagc agggggtcaa 300

gagttcgaat ctctccatct ccattggccg aaaggccgtt cgcaaa 346

<210> 3737
<211> 1046
<212> DNA
<213> Clostridium sp.

<400> 3737
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gaaggaagcc gcatgggagt ttgagaaata cctgtacagc gtggaatcca tggctgcatg 120

gaccatcgga accggttatg taccgccaag aaaggacgtt gcagacgcag agaacggact 180

gaaatccttc ctggctgaaa atgagatgat gaaggctgcc attgagcaga tggacggcgt 240

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tatgagagat cagatcttcg gtggacaggt aactgccgag gagggtatga cttccaccca 360

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ctttcccttt tgctcacggg aaggtaccgg ttttcctgaa tttacggagg taatcacttg 480

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tggaacatgg taaagcctgt caaaaaattt gtcggtctga acaactacat tgccgtattc 660

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tgcatcatta ccacctggaa gaccttcggc tacaacttca tcaatatttt agccggtgtc 1020

tccggcgtat cccaggaagt tattga 1046

<210> 3738
<211> 250
<212> DNA
<213> Clostridium sp.

<400> 3738
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agtcttttta tataaagcaa tcctacatcg acagtaacgg aaaatctacc tctcggacaa 120

tccgcaaact tggaacatta aaagaattgt tagttgaaca tggtcccacc agagacgatg 180

ttatggcctg ggcaaaagaa caggctcgca ttgagaccga aaagtttgaa caggaaaaag 240

cgaatcattg 250

<210> 3739
<211> 5143
<212> DNA
<213> Clostridium sp.

<400> 3739
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taatgtgcat agatccgccc gataccaacc cttttatcaa tcttttcatt atatagcgtt 180

gtttccccag caatggttcc gtcatatgaa acaaggaact gccatggtgc ttcggaccgc 240

tcatatccgt ttgccggttc gatctccacg atacggtaag ttcctgcctt accggccgga 300

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acgccgatct ggtttactgg atcgtacttg cgaatggaca actggcgttt ccccggagtg 720

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<210> 3740
<211> 213
<212> DNA
<213> Clostridium sp.

<400> 3740
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ccgtatccgc actatatacc cgtctggccg gatacagcgc cagttttgct ccagaaacag 120

aactgtatgt ataggaagca atatcaccag tcaccacctc gcgctcatac ggtttctctc 180

ccgtttccgg atgttcatgg tccatatcca gaa 213

<210> 3741
<211> 197
<212> DNA
<213> Clostridium sp.

<400> 3741
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ggtattacat acctgacagg gcaatcacca tcgcgcttat tttctgcata ttctggcaga 120

ttgctttgat aacagggaca tttttcttat caatgcgggt aaataaaatc ttctgtgggt 180

ggaggaaaag aattgtt 197

<210> 3742
<211> 227
<212> DNA
<213> Clostridium sp.

<400> 3742
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ttaagaaggg aagaattccc tatctccgag ctgattttag gaacgaactg tggaggcagt 120

gacccatcct ccggactagg ttcaaatccg cttgttggtg agttgagcga tcgctttgtg 180

gaaatgggcg caacatcggt gctttgtgaa acgacagaat ttctggg 227

<210> 3743
<211> 234
<212> DNA
<213> Clostridium sp.

<400> 3743
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atagaggcca tcgtactgtg cttcctgtgc aatcttttct tcatccagaa aatataggat 120

atcggccatt tctccgtctt ttgtaacagc tgttttatca ataaatcttg ctgggtcatt 180

cggatttttc cggtttttct tatgcctgcc atttgaaagc attgcttttg ctcg 234

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ttgaagactt attttgacct gattcttatc gataccgata tggcatccac ggatgcttcc 180

gcaaaactta tggaaat 197

<210> 3745
<211> 197
<212> DNA
<213> Clostridium sp.

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gagtcaatag cgtatccgac aaagcaactc cttttgtttc tgcaaagtat ggattctggt 180

ttgtatgaaa aatcagg 197

<210> 3746

<211> 225
<212> DNA
<213> Clostridium sp.

<400> 3746
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attaataaaa aaagcctgaa caccagcatt aaccctaaga tgccgtatct ttctttcctg 120

tccattaact atgacattcc ggtcatcagc gaggttatta catggtttga aagctgcatt 180

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<210> 3747
<211> 210
<212> DNA
<213> Clostridium sp.

<400> 3747
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<210> 3748
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<212> DNA
<213> Bacteroides plebeius

<400> 3748
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<213> Bacteroides vulgatus

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<211> 192
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<213> Bacteroides vulgatus

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tggccgtaga aaatgtacaa ttatccaatg cttccataga acaggtatta aacactgtgc 420

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<212> DNA
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<211> 670
<212> DNA
<213> Bacteroides stercoris

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tatactcccc aacgaagaga ccacccgtac ggcattggta ctggaaggaa cgttcaagaa 180

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<211> 731
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<213> Bacteroides stercoris

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<211> 2559
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<211> 1403
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tattctctat gccagggaag gacggcatca ggttctgaag gccatgaagg aatgcataga 480

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attaaatgtc atcagatttc atcggaccgg attccggctt ccagtccttc agcttgttct 420

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<211> 674
<212> DNA
<213> Bacteroides stercoris

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caatcattct tcccggtttg tccggctgtg tgtgggcgcc tgtttcattc atggggcagg 180

ctgacacact ctgcattcac tttccgcttc cggcaaaaga gacagcgaaa aaagaaaaat 240

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atgcagtaga taactaacta aatcgtaacc tattactatc aagagcaatt aacctacgct 600

catttccaat aaattacact cttttcgtaa cttcagtgac gcaaagatac aaaacatatg 660

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<210> 4198
<211> 3471
<212> DNA
<213> Bacteroides stercoris

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ggctgaaaca gataatcagc catactgata tgtcagtaaa aaaccatgca gatacattgg 180

cggagtacaa agactatctt tggaacaata aagatattga tccgcatgag atacgctcca 240

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agaaccgtcc ggtaatccct gtttatatcg gtatccatac ctttcacgat actgaaagcc 420

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tgggcgaagc atcttatcaa tccccatcgg gagaaattaa tggagaaatt tccctgaaac 540

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ttgccaccat tcagcgggag caaaaccgga ttatccgtaa tgaggaagcc cgaacgctca 720

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<210> 4199
<211> 220
<212> DNA
<213> Bacteroides stercoris

<400> 4199
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ggaagttttt tttcattctg ctttttcaaa ggaggaattt cagaaagaaa caagccccaa 120

gcagaagaaa tatgtaagag ttcctacgcc gttcctgtca gaatgtcaaa acatcgctgc 180

tcccgttctc gaaagcgggt gcaaaagtag gactttataa 220

<210> 4200
<211> 1078
<212> DNA
<213> Bacteroides stercoris

<400> 4200
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gaaaatccga tacggaacag atattgcaac ttcgaggaca tggtgtcagc agtttaaccg 180

tcagctacat taaagctcct tctaagggag caatggaaca tatgtatgat ttattgatta 240

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tttcgggaaa gatggaatgc gctgtagcag gcggtggaag tatccatata aatcagaata 360

ttgttatcca tatgaatgag gagacactgg aaaacttcat cattacttcc acaacatctg 420

atgacagttc tgaatccgaa gttcaggaga ttataaaaac cataagaata aattagacag 480

tgaaaaatat aaagtattca acgcttatga ggaaaagact attatctctg ctgctccttt 540

caatttgcgg gagtatgctc tttgcacaag agccgctgga tattgatgat gtggaacaag 600

ttccattggg agatttcaca taccaatggc ggaatatata tgaccgtact ccactacatg 660

gaaagtgccg gattatatta agctacagat cttacacgat agcacatttc aacaaggatg 720

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tccgcatcta tgaagaaggc ggtactgata tgccgccttt tataagagag gggtatgc 1078

<210> 4201
<211> 651
<212> DNA
<213> Bacteroides stercoris

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tcatggatac ttctccttta tgcaatggtt attgaagaat ccagatatac gtcctgaatg 180

gtgttcagaa gttgaactcc gtctttcatc ggtttctgga aagccttacg accgctgatc 240

agccccatac cacctgcacg cttgtttact actgccgtta cgacggcatc atgcaggtcg 300

gattccccat gggattcccc gcccgagttg atcaatccga cacgtcccat atagccattc 360

gccacctgat aacgacaaag gtctatcgga tggtcagtgg tcagttccga atacatacgc 420

tcgtttgtct ttccgaatcc gatagccttg aaaccgccgt tattggatgg gagcttctgc 480

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gcggcatgat agtcggttcc atcctttttg aagctgctgt ttctcaaata gcaccataaa 600

atagtagcca ttcccagttc gtgggcatat tcaaaagcct gtgacacttc t 651

<210> 4202
<211> 357
<212> DNA
<213> Bacteroides stercoris

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cagttctctt ttagcagttc cgataccgat gatagtttcc gacagttttt tggcagagga 120

aacatggata ggcttgccat tcaagaaact accttctttt ttgactgcag agaaaacctc 180

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aatccaataa ctatctgtgt tcatctgttg caagccggtt tcttctccga gaaattg 357

<210> 4203
<211> 230
<212> DNA
<213> Bacteroides stercoris

<400> 4203
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gtcctgcgga gattcaaccg gaaactcaaa ctactggcgg cagccctcag actgggcaga 120

aagctgtcgt cctacaccgc aaggcacaca tgggcaacaa cggcgttcca caccagagtc 180

gccgtgggag taataagcaa cgcactgggg cattcatcgg taaaggttac 230

<210> 4204
<211> 656
<212> DNA
<213> Bacteroides stercoris

<400> 4204
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cacggcgtac ccatcgaaac cgtaagccgc cttttgggac acacgaacat aaaaaccacc 600

caaatttacg ccaaaatcac cgcccagaag ataagccaag acatggaaac cttgtc 656

<210> 4205
<211> 968
<212> DNA
<213> Bacteroides stercoris

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accgccatga ccgagtggga aatctgcgaa ctgttcgggg ttatcgcccc gacggttcgg 180

gcagggataa aggcactctg caaaagcgga gttttgagta tatatgacat aaagcgcatt 240

atccgcatat cggacagata cagcgcggag gtttacaacc tcgaaacgat agccgccctc 300

gctttccgtg tcgaatcgtt cggggcggcg aaagtccgca aggcattgct ggaaaggatt 360

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aacagccgtt ggaaagcgtg atgatatacc aacatagcaa catgcaaacg taccagcatg 480

ccaacatgcc aacatgcaaa cctatcacta tggtgatata tattgcaggg tctatttctc 540

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ctgcgagtgt atttatcggg aaaaccttgt atccgaccgc cccatgcaaa agagcctttg 720

aaaacgaaaa cgaccgcccc gccacccacc gaccgaaagg ggaaaaataa ggtggggtta 780

tatgggtaag cagacggcag ggacagccat agccgaaagg caggcagacg gcacgccgca 840

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<211> 197
<212> DNA
<213> Bacteroides stercoris

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tgcgatgccg ctgttttaaa gcaaaaggaa acaggacgat agaactgaat cataggctta 180

gacaatacaa gcggaga 197

<210> 4207
<211> 419
<212> DNA
<213> Bacteroides stercoris

<400> 4207
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<210> 4208
<211> 696
<212> DNA
<213> Bacteroides stercoris

<400> 4208
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atcgtggcgg ctcacttgca cagggacgag gaaacgccgc acatacacgt cacactcgtc 180

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<213> Bacteroides uniformis

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<211> 262
<212> DNA
<213> Bacteroides uniformis

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aaagcccgga tactaaacga gaactactga acaacttttc tcactacaga tatgtttctt 180

tcttaccaca cccgcgtttc tttctttcca cagctgtggt aagaaaagag cactgctgtg 240

gtaagattag tttttagaga aa 262

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gtgatctatg aaaacggtac tcagaagttg ttactcacag aagagggtta catcaacctg 180

<210> 4484
<211> 651
<212> DNA
<213> Bacteroides uniformis

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agaaaaaagt aaagtgtcca tatattgctg aacgtatata cctccataca cggaaggcaa 180

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aatcagaatc caacttatcc ttgattttga aaagtgcacc ggcattaccc agcggctcct 180

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aaccatctcc gaaatagttc atgatgatgt ttccgagatg agaaacggtc aaaataatgt 300

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ctgccattat tactgttttc atcttagacc atcctcactc gaatttagtt cttaggctca 480

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<213> Bacteroides uniformis

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<210> 4493
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<212> DNA
<213> Bacteroides uniformis

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tggcatagat tgccatcaag acaattactg ttgcaaaaa 339

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<211> 414
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gctcaggcgg gactaagctg gataaccatc ctcaaaaagc gggaaggcta ccgcaaagcc 180

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<213> Bacteroides uniformis

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gagaaatgaa aaagcagcct tgtcatctgt ccggtggatt ttatatcgtc cacgaagctg 180

atgaacgtca ccagtgtcaa ggcaagcagg aaccagggat attcaaag 228

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<213> Bacteroides uniformis

<400> 4497

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cgggagatga cattgcagaa acggtttatt ttgccgcgtc ggctcctgca catattcaga 420

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<212> DNA
<213> Bacteroides uniformis

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<211> 624
<212> DNA
<213> Bacteroides uniformis

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<210> 4500
<211> 988
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<213> Bacteroides uniformis

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cgtcaatgta ttcctaagcg cagtcaatgt aacagaagga aatagaaaaa ccgccacata 180

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<210> 4501
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cggagaggat tgcttttctg tttttcaaga tgttcttgtt cataaactgt tcttgttttt 660

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cctctccaac ggtgttccca tcgaaacggt cagctccatg ctcggacaca agagcataaa 540

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gccatcagag ccgtccgcaa gtcggacgtg ctgaacgact acgaggtgtg ccgctacatg 840

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<210> 4518
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<212> DNA
<213> Bacteroides uniformis

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ataaaacaat tgttctatat atctttttca tactttttct ctccttatta attagaattg 300

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taaatgtttc tttatccact cacgattaaa gtcatagctc agagtcaaag cagtgagacg 480

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cgcatcaaga ccgaaattga atttatccgt tttttcccat gttaagtcat tatttcccaa 1320

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aataccgcaa cttcaacccg atataccaat tcggttctac aagccgtaat actaatacca 180

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<211> 370
<212> DNA
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<212> DNA
<213> Bacteroides uniformis

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gagcgttttc cggctggaag agtttatggg ccgccggtat gagttccgct acaacaccgt 180

tctggatgat ttggaatacc gtcagcgcga ctccgtccat ttctatttca agcctgctga 240

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<213> Bacteroides uniformis

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<211> 95223
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gctgcctata agcatgttcc attaatggag gaaaaccctt gtgaagctgt actggtcaat 180

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<212> DNA
<213> Bacteroides thetaiotaomicron

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caaaaatatt ttcgtaattt gccaaacaca atatttattt ctacatttga attttaacta 420

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<212> DNA
<213> Bacteroides thetaiotaomicron

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<212> DNA
<213> Bacteroides thetaiotaomicron

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<212> DNA
<213> Bacteroides thetaiotaomicron

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gagtacactg gggaagcaag catcagatgg ctccttccga agagatgact gcgctggctg 180

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<211> 601
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gacttgaata aaagctctga tatgctgaaa acatatacaa gttcttggaa aacacatatt 660

gtcgatagaa ataatatttg tgataaattg actggattgc ttacgcaaat agagtttgac 720

gaccgctctc caaggaatat tatagtttgc ccgggtgaga caggtgctgg taaatggcat 780

tatgtaggtt ttgtgataaa tgctacagcc aatgatgcaa ccggttgtgt ttatcttgaa 840

aatacgggaa ttaattatat tcttggaagt tatggtgatg atgcaggagt tgtacgatca 900

atcccgatct atagtgcttt cttggatttc tgtttttcgg ataagggtgt ttggatgtat 960

gaagattctg attcatattt ttatgtgatt agtccggttt ctgatgaatg gtttagaatg 1020

aagatataaa gtgaaataac tatttttga atcaagcaag aaagtaagaa gtacaacttt 1080

tctttcttgc ttgtgctttc tgttctcgac aaatcatttt atcatgataa ttttggctaa 1140

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cttaattcgc aaaccatgaa taaaaagaac ttattgtctc ttggaactgc cctattactg 1260

ggcacttctc ttctttttgc ccaaaaagaa cctgttgact acgtcaatcc cttgatggga 1320

accgactcca aaatctcgtt gtccaatgga aa 1352

<210> 4717
<211> 451
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4717
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ctttctcctt attattattt gcaacagaat gatattattt acgtaactcc gaataaggcg 120

aaagctcgaa attcggatat cggaactagt acaagtttat ggttctctgc tacttcgatc 180

cttgtttcta ttgctagttt gttgtttaat attttgaaat aaaaggaaga gttatgaagg 240

aagaaaatca aaacgggaaa ggacctgaaa tgactgagga gcaaattgat ttccgggcat 300

tgctttttaa atatattatt cactggccct ggtttgtagg tgctgtgttg ctatgtttgg 360

ttggtgcgtg gttttatctg cactgggcta ccccgatcta taatatttcc gccactgttc 420

tgataaaaga tgagaagaag ggcggaggtg c 451

<210> 4718
<211> 385
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4718
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tgaataccgg cttcatggaa cggttttgtc cattcgcgca cggctgtatt cgggttttca 120

ccaaacaata aatttacctg ttcaaaacct ccgccatttg tttctacgcg ggcgaaacaa 180

cccatttcaa tgatggccgg agctaccttt acgagttggt ctacacgagg tacatatttt 240

ccggctgatt gccacatatc tcggaaaacc aagctaaact ttacttctct tttcatgtct 300

ttcagtgata ttctttatag atttataatt tttctacttt agtgattttt cctttaccct 360

gtgtcaccac attcacagca gcagt 385

<210> 4719
<211> 559
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4719
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agtcgatgtt ccatttgccg aaagtgccgt tgtagtatcc gttggctgcc tgccaccagc 120

cggtgtgggc atctgtttgg cggagagcgt gcaggtggtc tacttctttg ccgtcttgta 180

ggatgagggt tgtcccttca ttggtagtat gtgcattgcc tatgttcgtg ccgggcatgt 240

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aggtgcgata ggtttgtttg cttttgtctt ctgtcgattg gttccagttg gatgaagcat 360

aaatgtcctg gctggaggtg cccgttctgt aattgttgat ttccgcaaag tcgcctttta 420

cgaaaatatc cagtccgccg gtacggtagt tcagggatat gccttcgttg ccgatcggtt 480

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tggtgcgcag acggatgac 559

<210> 4720
<211> 2923
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4720
ggattatata gaaaagactg ataaaattga caaactgggt tcgaaacgtg gtgctgcctt 60

gtataagttc aatagcaagg cttaccgcaa ggacccgaaa tttaaattat aatcattatg 120

ctggaagaac taaaagaaaa agtatttcat gccaatctcg aattggtaaa gcatggatta 180

gtcatcttta cctggggaaa tgtttctgcc atcgaccgtg aaagcggatt ggtagtaatc 240

aaacccagtg gtgtaagtta tgatgatatg aaagccgaag atatggtagt agtggatctg 300

gatggcaagg tcgttgaagg acggctgaag ccatcttcag acacccctac tcatgtagtg 360

ctttacaaag catttccgaa aatcggagga gtggtgcata cgcactctac ctatgctaca 420

gcctgggcac aagccggatg tgacattccg aatatcggaa ccactcatgc agattatttc 480

catgatgcca ttccctgcac agcggatatg acagaagcgg aagtgaaagg tgcttacgag 540

ctggaaaccg gtaatgtgat agtgaaacgt tttgaaggct tgaaccctgt acatacaccg 600

ggagtattgg tgaagaatca tggtcctttc tcttggggaa aagacgcgca tgatgccgta 660

cacaatgctg tggttatgga acaggtagct aaaatggcaa gtatcgctta tgcggtaaat 720

cccaatttaa caatgaatcc gctgctgata gagaaacatt tcagccgcaa gcatggtccg 780

aatgcttatt acggacagaa ataattaaaa attaaagatt aaaaattaga acaataacaa 840

ttaaagcaat aacattatga acgcatttaa tcaatatgaa gtatggttcg taacaggagc 900

acagcttttg tacggaggtg acgcagtaat cgcagtagac gcacactcta atgaaatggt 960

taacggattg aacgaatccg gtaaacttcc tgtaaaggtg gtatacaaag gaacagctaa 1020

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tgttatcact tggatgcata cgttctctcc tgctaaaatg tggattcacg gcttgcaaca 1140

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tatgctgatt atccgtttcg gcgaccagat gaacaacgta gccgtaaccg atggtgataa 1440

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ggaatacgat cacgatgctt ctctggaaga taaatcaact gaagcttacc agaaagtatg 1620

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cctcggtata ggtatccgca agagtcagac tgcacgtctg gtcttcactt caaaagtagg 2040

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tcgcatggct taattatttc gttaagtttt tgcgaaactt gatttttta taatgatcgt 2460

tataccttaa aatattgatt tcaacatgaa attagatgca aaatcaacca tcgaggcagg 2520

taaagctatt cttggtatag aactcggttc tacacgaata aaagctgtct tgatcgacca 2580

ggaaaacaag cctattgctc aaggtagcca cacttgggaa aaccagttag ttgacggact 2640

ttggacgtat agcattgaag ccatctggtc agggctgcaa gattgctatg ctgatcttcg 2700

tactaacgta aagaatgcat acggcataga gatcgagact ctggctgcca tcggtgtcag 2760

cgctatgatg catggttata tgccattcaa caaaaaagaa gaaatcctcg tgcctttccg 2820

cacttggaga aacaccaata caggccgcgc agcggctgct ttgtccgaac tatttgtcta 2880

taatatccct ctgcgttgga gcatttccca cttgtatcag gct 2923

<210> 4721
<211> 1139
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4721
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agttggcagg aataagcatt cttattaatc caagagcagg cacgatgcac tattgccata 120

gctaaccaat aatttactaa tgctcctcat ttcctttgaa agaatcttta gggaaagaca 180

taggacagcc taagatacaa gcgaagaaat tcacttgtgt tttaggtttg ttcctattaa 240

atccattcaa tcaataacca tttaattcaa tttcattatg agagatttag taattatgcc 300

agctatggca cagcgtagag aatcattaaa catgggtgag tttgcagaag aagcaatcat 360

tgtggaagaa gtagcagcac ccaagagagt aaaccatttc attgaagcca acacgcagga 420

agtaacctta cagcacttac agcaagactg catcattcca agttttgcat caatggagga 480

aaccataagc caccaatcct ttataggtgc agtagtagat gcagctaagg attactttca 540

tggagaacag tttgatatgc cagagattag aatctcacac cctatcaatg gcagaatacc 600

aagtgcatta ggtaagaaag catctgaatt gacagacgaa gagaaaactt tgttctatca 660

gagaatgtgt ttctgttttg aaattccatc cattgtacat gatgaatacg gtaatcgttt 720

agcattatcc attggtggag tgagagcata taacgagatt aacttgtaca gtaagaagtc 780

tgttgagaga tttaaaatct tcataggatt tagaaataga gtttgcagta atctcatgct 840

caccactgac ggtttgcagg ataagataga agtcctaagc gtacaggaac tatatgcagc 900

agcattgaat ctgttccatg cttacaaccc atccaaagac ctacatttgt taagaacact 960

tgggcagatg tcaatctcaa caagcgagtt ctgtcaaata ataggcagga tgagattata 1020

tcaagctctt acacccaacc aacagaaacg cttacctcgt ctattattag gagacagtca 1080

gattaatgca gcttgtagag cattcatttc tgatgtgaac tgtcttttcc tgatttagc 1139

<210> 4722
<211> 726
<212> DNA

<213> Bacteroides thetaiotaomicron

<400> 4722
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agccgccgtt tttaagaagc cccttgattc attttgaatc aaggggcttt ctgtcatttg 120

gtactttgcg aaaaaagtgc tatatttgcg accgacaatt attttattaa acgtttaaag 180

caaatttaaa aggtatgaaa actaaattat ttttggctgc tgtagcagta acattttctt 240

ttgcaatgat gtcttgtact ggtaacaaaa ctactaacgc tgcttctgaa ggtgaagaaa 300

caactgtaga aacagtggaa gctgttgttg aaactgattc ttgctgccag gctaaggact 360

cttgtgctac tgcttgcgac aaaaaagctg attgcgcaga aaagaaagaa tgttgcgata 420

agaagtaatc tattgattta gaacaataaa gaaggagagg gagagaatgg ttcaaacatt 480

ctactccctc tttctgtttt aataaacata tcgctttatt cgtgatacat ttttgataat 540

aatcggcttt aacttatgaa atgatatttt ttttgataaa aaagtaacgt attatttggt 600

ggtaaagaaa taatccatac ctttgcaccg tcaaactaat aaaagagaca agaaatgaat 660

cagatgttta tacatattct actatgcggt attattattc tactatcaaa ggttagtgga 720

agtgag 726

<210> 4723
<211> 637
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4723
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taccatttct gctgattgga tattatattt tgacattagt tccgccattg attccgcttt 120

tgtgtttcta tctggcgatc cgattgaaat actgtcgaaa agagcttcca tttcaaaatg 180

gtgaagcgta atatcacaac tcctttgacc tttacctgtt atcaaagata caataattga 240

gttctccttc aactctgtta tcaattctct tatccccaca aatggttgaa tgttgactgt 300

gtgcatttct ttgtatatca cataaaaatc aaccagagct ttttcccaat cttctgaaac 360

gacctcttta atcattccct cttcattaag tccgaatgtt ttcacaatat catcttctga 420

caacattttt gatgcatagg gagatactgc ctgcttaaag gcttcgatac acattgggat 480

tgtatcggca attgtaccat ccaaatcaaa agcgaccaat tttatcatag tttcttagtt 540

tgattgattt gacgtatcac ttcacatgga tttccaacag ctaaactatt tgccggaata 600

tcttttgtaa caacactacc tgctccaatt acactac 637

<210> 4724
<211> 1316
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4724
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atcccctata tgtatattgc agccataatc acaaataaat ggactggcaa ccgaaacttt 120

cattccgata ctacctagca tctttttag caagctgtgt ttttcttctt tctcctcata 180

aggtaatgaa ttatatttta tcaataactt atgtgttcgg gtctttaaat ccaagaaaac 240

ttggttgtga caatcatacc attcaccagc cagacatttt tccatttctg ttttcataat 300

tgttacgttt ataagattga aactatttcg gttatatctt ttctgtttct tgctgaataa 360

cgttgttttg atagttctaa aaagttcata agtaatctaa ttttgatttg tggcaaagtt 420

atacctattt tgtttcaaat ataggtatat gttttcgtta tattggtata attctgcttt 480

atgtgttata tttgaagtat gaaaaaagaa aatcttcatc aaccatttga gatcagcttt 540

aacgagcata atgaatcgtt attaactgag catgagcata ctttttttga actggtctac 600

atcttaacag gaacaggtat tcaatggatt aacaataata tgttcccata tcatgatgga 660

cacttgttct tgataactcc aaatgattct cattcctttg agattcatac aactacaaaa 720

ttcattaaca tcaagtttaa tgacatctat atacattcag ccatatttgg ttcagagaat 780

atccagagat tagaatttat tttgcaacat gcaaatcatc aaccgggttg catccttaga 840

aataaggtgg ataagttatt agtgaaacca atgattgaag caattattcg ggaatatgta 900

aataggaatc tgtatagtaa agagattatc acgcagttga taaatactat aattattgtt 960

gtggcaagaa atatagctat gtttttacct caacaagtcg atgaatgttc agatgataag 1020

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aaagagatca gtcagcactt cggtatatct gaaagttact taggacgtta tataaaaaag 1140

cacactaacg aaacaatgca gcaatacata ttaagctata aactgaaatt ggtcgaaagc 1200

agattgttac atagtcaaat gagaataagt gagattgccg aggaactagg atttaccgat 1260

gaaagccatt tgagtaaatt ctttaagaaa tacaagggat gtagtccttc aagttt 1316

<210> 4725
<211> 2229
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4725
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tcaaaagggt aaagaaggaa acggggctga atatctggtg ctatacggga tatacgtacg 120

aagagattca ggctaatccg cgcttgaagg ctgtactcga ctacatagat gtgctggtgg 180

acgggcgttt cgaacaggcg ctcttttcac cttatctgga atttcgggga agcagcaatc 240

agaggatatt gagaataggt aataagtaat aggttatagg taataatggt gggggaggtt 300

ttgtattagt ttagtgcggg gggagctact acgaactgtt gtgggcgtgt ctcctgcgct 360

aaaaaaactt atatttcaaa gaagattgaa acacgtactt ctttgttttg tttacattta 420

caaacaaaat aaggttctac tagaataagt ttttttatg atacaagcca ataataccac 480

ttctatagat gaaaccgatg gactgccaat gccgagacgt atctgggcag tggtttccat 540

cggattcgca ctttgtatgt cggtgctcga cgtgaatatt atcaacatcg tactccctac 600

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aatgggaatc aatgcgatgg tagtggcgat atcggcggct gccggtccgt cggtggcaag 960

cggcatactt tcgatagcca gctggcactg gctgtttgct atcaatgtac cgctggggat 1020

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tcggtcatga cgaataaaac tatctgtcat cgggagcgaa aatcatagga gaagaaacta 1920

ggatcaatcc agaaaaccgg ttgtttccga tttgtttctt tcacatattg ttatgagcta 1980

aatgatagtc ggttctatct tcaattctcc tccttcggga aggaggagag ttaagttact 2040

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agaaagggcg tatcatcgtt ggcagactaa ggcatttatc gtatatagaa acggcgcttt 2220

aacgtagtg 2229

<210> 4726
<211> 87197
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4726
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cgccagcagt ccgctgtcgc cgggattgct gttctgacaa cttccggtct gcacgagggg 120

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tattcctttt tcaccatagg cagcagacga tccgttgtca gactggcaac tacgcccatc 600

agataagcgg aatccacgcg cagggaagtc gtatcggtca caccgccacg cacatacgtc 660

agcgtgatca gacgagggtc gatgctgtct ttcagaagcg tttcggcgtt tttcttgcgt 720

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ataaagagcg ccaacaggaa gttgaacagc acaccgccca ccatgatcag aagacgttgc 1200

caagccggct tggaacggaa ctcccaaggc tgctcaggct gtttcatctg ttcggtgtcc 1260

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gcatactccg tatcacttct cttgggtttg aacttgaaca aggtaaacca cgggtcaaag 1380

aacaagcaga atttttctac acgcaccttg aacaaccggg caaaaaggaa atgcccgcct 1440

tcatgaataa taacgagcaa ggataagctc attatcagtt gcagggcacg aattaaaaat 1500

gtttccatat agtctattta caatttaaag cctcatccaa accctctgct cataagagga 1560

aaaccgaggc gctttctaat ttatattact tatttatatt tttcattgtt cacgaaatca 1620

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<210> 4729
<211> 4103
<212> DNA
<213> Bacteroides thetaiotaomicron

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<211> 573
<212> DNA
<213> Bacteroides thetaiotaomicron

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<210> 4731
<211> 611
<212> DNA
<213> Bacteroides thetaiotaomicron

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<210> 4732
<211> 270
<212> DNA
<213> Bacteroides thetaiotaomicron

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<210> 4733
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<213> Bacteroides thetaiotaomicron

<400> 4733
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gaataaaaga tgaaaaagag tgacatgacc tttagtcctt atcagcttga acttcttggc 180

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<213> Bacteroides thetaiotaomicron

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<213> Bacteroides thetaiotaomicron

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<212> DNA
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<213> Bacteroides thetaiotaomicron

<400> 4739

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tccgtttcta agccaaaaag tagaagcacg gttattattt gaattatttc cgtaagttaa 180

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tataaagctc ggtgatgccg attctgcatg gttgactgat gctgataaca ataaaatacc 33360

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tggtaagga 33429

<210> 4757
<211> 1105
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4757
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aaagtggctg ccaccggtga aaagggagat accggttccg ctgggaaaga cggggagaaa 120

ggtccgcaag gtgagcaggg ggattctgtt ttcaaaaaag acggtgtgaa aatagaagac 180

ggcaaagtga tcttcacatt agcaaatgga aaggaattca cgcttccgat gctagttgac 240

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attacgaatg gtaatgaagc agactggatt attaaaagtc gtggtgcggt agatacatgg 420

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gcaaagatta ctattacccc tccggcaaat gtcaaactgt cggatacagc tctattgacg 540

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gatggtgaga tagtggcatg taccggaggt gatttaagta tcaaaggatt ggatacatct 660

gtgaaaagac tggccctaaa gggctctatt acggtagaag attttaaata tatcagagaa 720

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gatactgaga atgtggaaat cataggtgaa tgggcattcg aacaatgccg cggtttggtg 960

gaagtgaaat tgcacgacgg attgaaagag attcgtagac aagccttcaa taactgtatt 1020

tcactgacat tgatagatat tccaggtagt gtaacagatt tgggcaaaaa tacagaagta 1080

tctacgtcac agtatgaagg ttggg 1105

<210> 4758
<211> 1065
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4758
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taaggtcggt aatgataatg taggaacccg tttcccatat ctttattcaa ttgccgataa 120

ctataaagaa aatgatcaga cgaaatatta tgcaggttac aactgggcca cttatggaag 180

taataaatct tataatggtt tacgctatac aaaacttgct tctaatgata taacatggga 240

aatagcaacc aaaagcgacc ttggtataga tatggcttta tttaatgaca aattcacagc 300

tacgatcgac tattttgatg aaagtcgtag tggtatttat atggagcgtg cattcttacc 360

aggaatggtt ggtctggatg gcaataaacc ttatgctaat gtgggtgaag taaattcaaa 420

agggtttgat ggaaacttta gttataaaca aaaaattagt gatgttaagt tcactgtacg 480

tggtaatatc acatatagta agaatgaaat catagaacgc gatgaagaga acaatgttta 540

tgcttatcaa atgaaaaaag ggtatcgggt taatcaaaat agaggcttga tagctttagg 600

attatttaag gactatgatg acattcgtaa cagtcctaca cagaaatatg gtcctgtaat 660

gcccggtgat attaaatata aagatgtaaa tggtgatggt gttgtcaatg atggcgatat 720

cgtagctatt ggttcaacta gtaaaccaaa tctaatttat ggtttaggtc tttctgctac 780

ctggaaggga ttggatgtaa gcttacattt ccaaggtgcc ggtaaatctc agttctttac 840

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gctggataat cgttgggtgg atgcggagac tgcacaaaag cttggcatcc ctgctaatga 960

gaatccgaat gcatcatacc ctcgtttgag ttatacggat aatggtaatg gtaatacaac 1020

gatctatgaa tataaaaata attaccgtaa ttcgacatat tggtt 1065

<210> 4759
<211> 1431
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4759
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cggggaggta ttgaaataga tgcgagttgg aaaaatagcc aaatagtaaa tgcagtacta 120

aaagctaccg ctccaataga atttactctt cgtctatcaa atgcaaaact atactgttgg 180

aagctgaaca aaaaaacatt cattcctaaa ataaaggatg atggactaat ttatatatcc 240

atgaataaag gagataatct taccataatc atcccttaat aacaattttg cagtaaatgc 300

gttatttttt gctgcgttta tacactatta aaataacaca tttacctaat tttgactcgt 360

tgaatttaga aaattatcac attaaatcta ataatatatg aaacgaattc gagatttccc 420

caccactgac aagacaacga tctagttgcc tgaaatgtat taacctaata ttaattttaa 480

attatccatg aaaaatatga aagaaagact cttttcattc tttaaaatga atcgactgat 540

tccagtcata ctctgtcttt tctttgcgac aagtatatat gcgcaaaata gagaagtgaa 600

gggtatagtg acaggtgacg ataatgaacc tatggcagga gctaccatca aaataaaaaa 660

cagtcaaggt ggtgcaattg cagatattga cggaaaattc actatgcgag taaaaaccgg 720

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cgacttttac tctattaaat tatttcctga agctaatgag tttgacgaag taacggtagt 840

tgcttttgcc aagcaaaaga aagagagcgt aattagtgcc atctctacag taaatccaca 900

ggaactgaaa gtaccgagta gcaatctgac aaccgctctt gccggaagaa tgtccggact 960

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tgccacaaca tttggttata aaaaagatcc tcttattttg attgacaaca ttgaattgag 1080

tacagatgat cttgcccgct tgaatgtgga tgacattgct caattttcta ttatgaaaga 1140

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taaacaagga gtcgccggaa agccgaaagt atccgtccgt gtagaacaat cagtatccac 1260

tcctcgaaag aaggtggaat taacagatcc tatcaccttt atgcgattaa ataatgaagc 1320

tgtaaactct cggcgtgatc ctaacaatcc tgccgccagc gctaattaca cagtttatag 1380

tcaagaaaaa atagaaaata caattgctgg taccaaccca tattgttatc c 1431

<210> 4760
<211> 1110
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4760
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ttggcaatgg cataaagcaa ttccttttgc ttttcgggaa tattggataa gatttcccga 120

aagattgtat cattatatgc aataaggtta tctatagctg ttttgataat ttccagtgta 180

cattctttcc ctttcggtgt atctgcaaaa gcttcattga atgtttttg gatataaaag 240

gtatgtcctt tgaatagccg atatactttt tctatatttt cgatttcaat atgccgtttt 300

ctttttgga aatggtctgc gataaatggt atatagattt ccggtgcaat ggctttcagt 360

tccaaaatat cggcactgtg gtagaatgga cgggatgaag atagaaacat ttcctgcatc 420

atgtgccgtt cacttccggc aaagatgaag ttgctgtttt ctattttctg tatgtgtgtg 480

cgtagtaatg cttctatatt tttctcggga tatttagcaa tttgttgaaa ctcgtcaatg 540

gcaacgatac aaggtttgtc tgctgctatc agacattgaa atatttcttc cagtgtatat 600

tcgggtcgat caatatcccc cagttccaga ttgaaagtag gtagattggt cagcgggtca 660

aatccgaatt taccattgat tgatttaagt gtgtggataa acaggcttgc cattttctta 720

ctgcggggca atagtgtttc ataaatttct ttgccaagca gataagtgaa ttctcttaag 780

cttgatgtat ggagtatgtc aatgaagaaa gtataatatt cttcttttat ttcaggtttc 840

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ttattgccat tggttaatga tttaaccagc ctctctgatt ctttcacgcg atcgcagaag 960

tactcgggtt ctatttttcc agttactata aatgggttaa tttcttttgc catacctgtt 1020

tcaattttcc gtaaaggtag ttatttaaat agaattatgc aaatcgaata atgttaataa 1080

agtgtctagt ctagttttat atttatcgga 1110

<210> 4761
<211> 224
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4761
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gggcctgtca accttagcgg tatgacagtc tccgccgcca acgactatct gaagggcgcc 120

ctgaataaga tctataacgg cctgaacaat actaccgacc ctacttccga catccgtctg 180

actttgggta atatccgtac tatccagatc aatgtgatgg gaga 224

<210> 4762
<211> 425
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4762
ccattctcat cggacaccgc tacgcggaaa gtcacttcac catctttcag cttacttccg 60

gcatagaccg tagccgtata gcggataccc tcacccggaa gaatttcttc tatcattaca 120

gtaggagaaa tgccgatatg tttcactttc ccgaccgtct ctacaatagg aaccacgtca 180

taaaccggat tccgtccttc attcatgatt tcaaagatga tcttgctgct ttctcccccg 240

tctatcgcat gattgcggtt atcgtcaata aagcgaatct tgcgcagttt caactgagtc 300

agttgctgct gagtctgtgt ccgaggttta aacttagagt gagactgccc ctgtctgact 360

tccggaacgt aagcatattc ctctatcggg tccggtttcg gagcagtcag cgcattccct 420

atcgc 425

<210> 4763
<211> 168
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4763
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tgaatcctgt cgcggtcact tctaccaaca tttaacaagg tcgcgtagct caactgaata 120

gagtagctga ctacggatca gccggttaca ggtttgaatc ctgtcgcg 168

<210> 4764
<211> 710
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4764
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ctctatctct tatatttgat aatttatcca atattaatca atagacaaaa ctatttaatt 120

cccagcctcc cagtcaatag cttgatcttc atctggtatt tgagtattga tctgacgctc 180

taaagccaaa gaacctatta catgatattc ggtttctacc cccggaattg tagtatagtc 240

aacataagtg taattaatat ttctaatgat tatagtctta cgtttcaaat aaggacgaat 300

aggatccatt gtttcagtta cactataggt aggggttacc tctttcccat agtcatcttt 360

acctatttga aatttcattt tattgtcaga atctgcagga gataattcca cattgccgat 420

ttctccatta tcattattta taaatttagc aagaatccta tatcctttcc tatcgacacg 480

ggtttcatca ataatgccag catagaaaaa aaggctttga tcgtccacca cataagtcat 540

tacatagttt ttgacaaatg gggcctcact ttccgctcct ttgatataac acttataatt 600

tactgcacta taattgcccg aataatcatt aaaaggcata acacggagta atgctttgcg 660

ataatgctta cgataattag gggtatagct accatctgaa gattcttcaa 710

<210> 4765
<211> 726
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4765
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ccacgatgat attgtgactc cacatacaat tccatctgac ggaaatatac actgtcagac 120

aatacggtct gcggataatt gttcataaag ttagccattg ctgtcaatgt ctgtgcagaa 180

gcaaacggcc agatagctcc gtcccactca cacttaccca ctccacgtgt acggaattcc 240

ggatgacgac gctctgcagt agtcaatccg taaggagcag agaaaccttt ttcatccaga 300

atctctttcc aggcaacttc atatttcttt gtcgtatccg gcaggttgaa ataccaggga 360

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tggtgacggg tattccacaa ctcattttct accagatttc tcaacgtgtc tgctctcata 480

ccatatttca tagccatccc ctcgtcaccg gaaagaattc ccatacatga aagtgctttg 540

gcattgccat acatataact attgattgtc gggcgggcat atttttttctt ccgtccacca 600

ctgatagatt cttccatacc atcctgtaca tccccctgcc agtacaatcc attcttcaaa 660

cgattcgtac gttcccaacg ttgatattca gtttccagat ctttttttcat atccagcata 720

aaatct 726

<210> 4766
<211> 519
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4766
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cttgccatcc acatgaacca gttcgccaac aagacccgtc agggggcctt taatcacgcg 120

gaccttttcg ccacgggcca aaggggcact gttcatgctg atcgattctt cagaataatc 180

aagcatgaaa cggaaacggg ccatctgctc gtcaggaatt acggcaggac tactctcgcc 240

gcgcatcacc atgtaacggc tcacagtaga aaaactcagg acttccatgc gttccctagg 300

gtcaacgtgt acgaagacca tcataggaag caagacggag gtgaccagct tgcgacggtc 360

gctccattgg tggaactcct gttgaacggg aacgaaattc tcgataccca tcttgtccag 420

atgctcggaa accttctttt catgatgcat ccgaaccaaa gcaacatacc agcgttttga 480

gtgtgctacg ccttcccctg tcccattaat aggcccagc 519

<210> 4767
<211> 227
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4767
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ttgtcaatag aaaattcatc tgcaaaatac atataaagcc cttgaccgtc agcgcccacc 120

cagattatat cctgaaaccg gtctttcata agacaaaaga taccggactg aacatttatg 180

gactggaggc tatattttac ctttgaatcc ggcatatact ttaattg 227

<210> 4768
<211> 547
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4768
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tgtaaaaatc aaaagcactc attgcatagc gatgagtgct tatagatact aacctacaat 120

tccctgtatt cttctacgca agggtaacac ggacattcct ttatcggatt taaatcatga 180

tgtcctataa tcaacgcttc tggaaatttt ttctttagct cacggagcag agctaacagc 240

gcccctcgtt gctctagcgt acgtgtgtct ttcgcttgtc cttctgcatt cagtcctcct 300

tcgtaacaga ttcctatgga atgtgcgtta tgattccggc aatgtgctcc gaccttctct 360

agtggtcgtc ccggatgtat ttccccatca cgtgtgatgt agaaatgata cccgatgtca 420

cggaatcccc gatgtcggat atgatcctgt cggcaagcct ccgccgagag ggcttttccc 480

tccggcgtgg cactgcaatg aatgataatc agtgtgatgg tccgcataag tttacataca 540

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<210> 4769
<211> 432
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4769
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tgtgatgttc ttctccagcg agaactcttc cagcgtttgg gcagccttgc tgcggattcc 180

tactccgaag atggctagat catcaatttt cacacttttg ccgtcgagca gcagctcctt 240

gatgcagtcc accatatcag tgagcacgcc tttgatcacc ccactggaat acggtgaatt 300

gtgtttcgac atgtgttccg caagtttggc aaggtcgaat gtctcgtcgc ttaccgctcg 360

ggcgaaccat ttgcccgcat tcaagccttt cttctgttgg ttctgataaa ttttgtaacg 420

aatcataaaa ta 432

<210> 4770
<211> 5082
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4770
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gaacttcggc accatcgcca gcaaatggtc gaagatatcc gactgaatcc gctcgtactc 120

tttccacacc ttattgcggg aaaagaaata aacctgaata ggaactccgt acatggtagc 180

ctctttctga ctgataatca aatccaaatc ctgattcacc accggcagac tgcaaagata 240

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tgagaccata atactgtgca tttttccttg cttcaaaccc gaacaagagg aatagatcaa 208020

tttcaccaag tgacgttact aaaaaaacag attaatatga aatatttaat tataacgtca 208080

ttatacactt ctattatcgc agttacaacc acccaaagtg aattatttcc aattttattt 208140

tcaacagcag gaatactttt attgtattgg ttcttgtctc attcttttgc catgcggaaa 208200

gaaattgctt tcttaaaaga agaaaatcag tacttcatgg attccttccg aaacattcgc 208260

accccgatca cattgcttca tacgcctttg aagtcaacct atagtaataa ctgtccagac 208320

aatatcaaaa aagagctgtc actggctatc cgcaacatag attgccttaa tgatcattta 208380

accagattaa tggacctgaa gcaaatagcc gctcattccc aaaaaatgaa tattacggaa 208440

catgaattag gaaatttcct taaaaataaa atatcttctc tgaaagatca cgcagcaaac 208500

agacatatta aattagaaat ccaaacagaa ttcaaatatg caagcgtgtg gatagatcaa 208560

agtaaaatat ctcccgtaat agagaaattc ataaagaata taatagatca tacagaatat 208620

tcaaaaaaag ttattataca cgcatcttta tgcaacaaat attggataat aaaag 208675

<210> 4784
<211> 1478
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4784
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gaacgcagtt tggttcatat agagaagaat atagaagaag aaaagatcga tgccttattc 120

cataaaagtt cgcagaaaag aaattcatcc agacctgtcg tgattatggt cgacagtaac 180

gaagaattca gatcctatct ggagacctgt ttgtcagagg aatacatagt cagaggtttt 240

gaaaacggag cggacgcatt gggatatatc aaagatgaac atccggatct ggtaatatgc 300

gatacagtgc tcaacggaat gggcggtgat gaactttctt caaggctgaa gacgtctaaa 360

gaaacatcta ttataccagt catcctttac ggatcgcata tagatgccga ccaacgcagt 420

aaaagggaag cgtcattagc agacacattc atgcatactc cttttcatgt ggaggattta 480

aagatagaga ttgctgttct tatcaggaac agccgccttc ttagaaaagc attcctgcac 540

aaagtattcg gagaacattt tctgcaagta caaccaaccg aaatgatcaa ggaagctact 600

gaaggaagca aaagcctatt gatcaatgaa gtaaaagagt atattcttga acgcatagag 660

aaagaggatt tgactatcga tgcgattgcc tcacatttga aaatgagcag aacgaaattc 720

tacaataagt ggaagtcagt gaccggcgag gccccgaccg tctttattga agcggttcga 780

atggaaaagg cacacgagtt gttagaaagc gggaaatacc ctgtcggaac cataccggaa 840

atgatcggat tgaaggatgt aaaaaacttc cgcaacaggt ataaagaata cttcggaatt 900

acacctaaag aatcgatcaa gaaaaaatag tcggaataaa acggacaact aaaagcatgt 960

ccgaatgtac tccagcacgg tcttcacgga gaaagtgact ggagtacttt tttatttcca 1020

tgatgcagta tttcgttatt tccggtattt actctatgta cgtacacctt aattttgaga 1080

attaataacc taatttgttt aacaagtatg aaaactttaa ctaaaatgaa aaaagtatgt 1140

tgcttaagtc gttttgtttt attggtaatg gcattgggta tgaccagtat ctttacctct 1200

tgtagtagtg atgatgatga aaatattccg gtatattctc tcaaagatgt agaaggcacc 1260

tattccggca aaatgcagac aacctctatc gctcctttgg aaaatgcaga gaatgaagct 1320

gaagacggag tcaccgtaaa tgccgaatta aaagataatc atatattaat cagcaaattc 1380

ccggtagagg atctgatcaa aagcattatc gaagatccgg acgcagccga agccatcatc 1440

aaagcggtag gagatgtaga atacaaaatc ccttatca 1478

<210> 4785
<211> 166
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4785
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gttgccagtc catttatttg tgattatggc tgcaatatac atatagggga taatgttact 120

gtaaataccg gttgtacctt tgtggattgt aataaaatca ctatcg 166

<210> 4786
<211> 524
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4786
ggattaatac gcttatccga tcctaaaaag gaggctgata aattcttccc tgcgccgggt 60

acggtccttg tgttacgaca cagcaccaga gatcacgccg gtatcttcat ttaccacagt 120

atggatacaa agctagagaa cgtaaagcta ttccatacct gcggactggg aattctgtca 180

caatatagca agaatatctc tttcaatgat gtacatatca tccctaacac ttccaagaaa 240

cgtgtgctga gcggacatga cgacggtttc cacttcatgg gatgcagcgg attactcaag 300

attgagaact gtagttgggc aggattgatg gatgacccta ttaacatcca tggaacatgt 360

tcccgtatta tggaagttct ttctcctacc cgtatcaaat gcaagttcat gcaagacatg 420

agtgaaggga tggaatgggg acgcccagac gaaacaatcg gatttataga gcataaaacc 480

atgcgtaccg tagctaccgg taaaatgaat aaatttgaag cact 524

<210> 4787
<211> 1297

<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4787
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ttattgagaa caatgtattc gaatccagcg gctctgccat tctgattgcc ggagacgcaa 120

acgcatggta tgaatcagga gctgtcaaag atgtgctgat acgcaacaat gatttccgtt 180

acccttgcaa ttcttcaatt tatcaattct gtgaagctgt gattagcatt gacccggaaa 240

taccgacacc ggaacagaag taccccctatc atcgcaatat ccgcattatg gataatacct 300

tccacctatt tgattatccg atactcttcg cacgttcggt aaacgggctc accttctcct 360

ccaatacact catacgtgat acgacttacc agccttatca ctatcgcaaa gaaggtatta 420

cgctggaagc atgtaaatct gtagttattt caaacaataa gattgaaggg gatgtattag 480

gacgtactgt tacaattgaa aagatgaaac cttcggatgt caagattagc aagaatcctt 540

tctttaaact gaaaaaataa gaaacaccat ataggcaatt aaacgtattc agactcaagc 600

atgggtatga atacgtttga gcctttatcc cataaatacg acaaataaag gaaggttctc 660

tttgatgaac ttcaatgcta atgttatctg ccgttctatt gctttttcac tgactgcaca 720

acgttccgcg atttcccgat tagatagatg ctcttcgcgg ctcattctaa agatctgctg 780

tcgtctggcc ggaagttgcg aaatcaattt atcaatatag ttcttcaaat cagcagcatc 840

caattcctct tctatatcat aagaattttc aagtcctttc agaactgtca ttttaaaatt 900

cagctcgtta aaatgtctac gcgaataatt gaatataata ttacgggtaa tcataaaaag 960

caacccatca aaattcttgg taatatcaag aaactctttg gactcccaaa ctttcacaaa 1020

aacatcctga actacttctg aaatcacgga agatgaagtg atataaagtc gtgcaaagtt 1080

ataaaccttc agccaataaa ggtcatacag caaagaaaat gcagccgcat ctcccgcttt 1140

taccttttcc agaattattg tctcctccat ctcttttcaa ttgtgttaca aaaataaaga 1200

aataactatt aaccgcaaca tttttttga tttttattta taataaagtt accttttttc 1260

ctttaataat gtcttcaaaa tctattctaa ttattaa 1297

<210> 4788
<211> 457
<212> DNA

<213> Bacteroides thetaiotaomicron

<400> 4788
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tgccgatacc agtttcacgc cgtttcgctt cagctgagtc ttgtaccggg cactgtcgta 120

gcggtttcgg gcgaaacggt caagtttcca gaccagcacg atgtcaaaca gccgtttctc 180

gctgtccttg atcatctgct ggaactgtgg gcggttgtct gtttttgcag agattgcccg 240

atcaatatag tgtttgacca ccgtgaagcc gttcttctcc gcataggcgg tgcattcccg 300

gatctgaccc tcgatggatt cttcgcgctg gttgtccgag gaataacggg catagatcac 360

agcggtcatg gcaagcacct cctatttata catcattgaa cggtggagtg ttctttcaag 420

gcaatgtttc gtataattta tataccacat tttgcaa 457

<210> 4789
<211> 548
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4789
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agtgccgaaa gtgagaatcc gccagttcaa ctattacagc aagaaacata tcgatgctgc 120

ctttgctaaa tacgaggtag attccgacct tactgaatgg tacacaccgg aagagattca 180

ggagaagtac ggcatgacac gtgtcgccat ccgttcgcaa gtgtatcgga acaacattcc 240

ctccaagaaa gagcatgggc agatattcta ctcaaagctc cacttcgacc tctcgaagag 300

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gctctctcgt gattcggttt acggtattct acaattccac cagatcaacc gtgagaagaa 420

cggacgattc gtcagattcc tgaaagtgga gtttgaccgg gtaatgggtg ttcgcaaata 480

gtctaattta tggctatccg taaattattc aaaaattaat ccctgctgta ggtaatctgc 540

atgattac 548

<210> 4790
<211> 659
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4790
gtagaaccgt aagtcggttc gctgccgtct gtggtgtatc tgatttccgc attcgggtag 60

aatgtttcca gcaataccat caacggaccg ttttcatccg catgagtatt gatgtttacg 120

tcgaagaagt tgaggcaggg tttggtatcc atgacttcca ggcgctcaaa ttccgtaacc 180

atgcgttcgc agaaactctt ccagtttttg ttggcatcca gcgtccatcc cgtttccgcg 240

attgccattg cacgtgggaa ggcctgataa tctacccggt cggaagtttt catatattct 300

ctccagaggt tgccttgcat accgataata tgctttttca ctagttcatc ggcatcatcc 360

ggaacaggat tgtagctata agtcttcttc agcgttgtgt atccgccgat ggtagtcggg 420

gcgatttccg gatcttcctg atagaagtcc agataagcat aaggcatggg agccatgatt 480

gcgttgtgtc ctgctttagc tgcattcaat ccgccttcaa cgccacgcca tgataagaca 540

gtagcgttcg gagccagacc gccttccaaa atctcgtccc agccgatgat attgcgtcct 600

ttgccgttca ggtatttttc catgcgggta acgaagtaac tttgcagttt atcttcctt 659

<210> 4791
<211> 289
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4791
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ttactatata tatataagac aagtattgac ggttctattt tttttcttgt actacttgta 120

ttgtttatca atatttcaaa gaacttgctg ctttcgtttt aaaagcgggt gcaaaggtaa 180

gaggttttat tttaaccacc aaatgttttc ggaagttttt ttcgcttttc tttttctatc 240

gtttctcaga ctctcttagc gaaagggaaa gaaggtaaag aagaaaaac 289

<210> 4792
<211> 720
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4792
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ttgcaagaaa ttggattttg cttcttttag tgttattcca tgattggagt cgcttggctc 120

gttatcagaa gtgatgaacg ggtcattctc ccaaaagcaa acgggacaaa tatacccaca 180

atcttcatct gccgggacat tgtaggtaag aaatccacaa caaggacatg gatatttttt 240

cattacggag tttgttcgcc cctttcattt ttcaaattta tagacctatt ttaatgctgc 300

caaatattgt tttccaaatc ccgcagccgt cccttatagt catctatcag agcctgaaca 360

ttttccccct gcgggaaggt caccagatag ccgtccccag cttcatgaaa gccgatgatt 420

ccggcaagcc ctgccatctc ggccactttc agcagggtgt ggtagtcata ctcggcggca 480

ctgatatata aattcatggg agaaacctcg cgtttcaaag agatgattct attatagcaa 540

catcttttca taattgcaaa gaaaatgctg tatcgtccag aatcggaaga tacagcattg 600

ctttttttata tgtaatggcc ctttagccca atttgttgtc tggccttgac cgagcgattg 660

ctctggcatg gtctaaggcg cagtggtgtg cgggatgctt cccgcgtttg ttttgattac 720

<210> 4793
<211> 972
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4793
tttacagtca gcaaggaagc gacctatata gtcaaggtag acctgctcga cctgacaatg 60

accatgaccg aaacggaaaa catcggatgg cgctttgaag aattctatat tgtcggctcc 120

tttaccggcg acaatggctg gggattcgag gcactgtcta aagatgccgt tcagatgaat 180

ctgttccatt atggtgccgt gattccgtgg aaggcggacg gtgattttaa gtttacttcc 240

gtgacggact tcggtcagtc ggatgctttc ttccatccca ccgaagggaa tgctccgtat 300

acttccactt cagttgtact gggaggtgaa gacaataaat ggcaaatgaa ggaaagcgaa 360

tgcggcaagg cctataaagt gctgttcctc acagccaagg gaaaggaaaa gatgctgatg 420

cgtccgttta ccccctacga aggactgtat ctggtaggcg atgccactcc gaacggatgg 480

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ggagactggc tgatggcgga caagagcgga aaggcaccga ccggtgaagt ggagacagcc 660

ttatttacca gtaaaacgga tgcggaactg aagaatatgt atccggatac agacctcggc 720

agtctggaca ataaatggaa tattcaggaa gctggctcgt atcggattac gattgaccag 780

ttgaaagaaa cgatttcgat tgtaaaacaa taaacaagta ttcaagatga agaagataat 840

atatttggtg gctgccttcc tgtgtctggc ttgcagcgac gatcatgaat cgaacccaca 900

gaacggagga gcgtcgggca gtgtgaccga agtaactccg gtgacatcgg acttatgcgt 960

ggaactgaca ac 972

<210> 4794
<211> 756
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4794
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gtcgtggtcg aagcggtgca ggccaagttt gatgaaggat acaaatcggc ttatcaggca 120

actattgatg caatgggtgg cattacttcg gcactggtta caactacctt tgtttttatg 180

gcagtattta ttcctgtatg ctttatggga ggaactaccg gaactttcta tactcagttc 240

ggattgacca tggcagttgc cgttgcaatt tcgctggtca atgccctgac cctgagccct 300

gctctctgcg cattgattat gactccccat atggaggctg ttaaaggaga aaaactcagt 360

ttttcttccc gcttccacat ggcgtttgat agtgcgttcc atcgactggt actgaaatat 420

aagagtggtg tgtttttat gttgaaacgt aaatggctgg ctggcgcatt attattggtg 480

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agaatcgtca tggacgacat agataagcgg atcaatgata tcccgcaaat cagaatgttt 660

tcgaaagtga cgggcaatgg tatgattagt ggccaggggg cttctaacgg tatgtttatc 720

atccgattga aaccgtggga tgaacgcaag gaaaga 756

<210> 4795
<211> 889
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4795
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cttcttcaaa actcgtttat attcgttgat gggatctgca tctggtatta cagaaacaac 120

ccgtacttat aatacagtga acgtaaacgg ttatactaca atgacttata cttgctatgc 180

taagactcgt actactacat tatcaactac agtgaagtat aatggtaaag atgtgaaaat 240

ctcagtaata gcaacacgct ataccggaac tgatcatcag tataagacag ttactactaa 300

tcctactcat agtggtggtc agggtggaag taactaataa ataataaaga tcataaaaat 360

aaccctttt taataaaacc ctttttttata aaccctgttg ggtaataatc atatgggata 420

tgaggaggaa gaggtcactg tgaagtggtt tcttcctttt cgtttatgag atatatggat 480

gtttcttgaa tgtccatttc aaacagaatt ctactaatat aagttaatgt ttataattat 540

gatttgtatc ctgtaaataa agcctatctt tatcacccaa tacaacatag gacaaataaa 600

atgtcatgag cataattatt aagaacctta ataagatcta tccaaacgga aatcatgcct 660

tgaaagatgt caatctggaa atacctgcag ggatgtttgg cttattagga cccaatggcg 720

ccggcaaatc tactttaatg cgtattcttg tagcccttat ggaaccaact tccgggcagg 780

tagaaatttg cggttatgat ttgatgaaac agcgaaaaga aatacgcggt attctggggt 840

atcttcctca ggactttcgt ttttttgcca aatacaaaac gtatgagtt 889

<210> 4796
<211> 912
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4796
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tagggatata tcctcccaag tccggtccca ccccatagtt tttggctgct cccggggcac 180

aaatacgcaa gtcaatcatc ggcggaatcc ggttgtcatt tttcactttc atcacaccgt 240

cagtagtgcc tccccaagga ttacgcatct tgaatagatg agagtcatcg tccggtaaaa 300

taaaggtaaa cgcatgtcca ctagtcgtct gccagttttc atccacttgt tcaccacttc 360

ttgtaaaacc accaataacc aatcgacctt gtttaagtga cacttctaca gcacgttgca 420

agtcttcagc aattaatgca cctgcaccaa aacctacact ttctccatcg ccggtaaaga 480

tggcagatac atattccgta ccgatacctc cgacattaga actacccaga taaacctgac 540

gccacttcat catcgccttc tcaaggattg tagcccaagt aacctcctta tttctaccgc 600

ctaatgctcc taaatcacca ctgttaccga taaaatagtc tccacctaca cccacaggta 660

tttgtttccc tgtcggatca tacatagtaa ccgtgtatgt tttatcctta ttatccttaa 720

taatatgctt aatgaaacgg ggatagagat aagccatcga agcaaatact gcacatgcgc 780

aacagtcacc tacccaacgt tgatttacat cagacaaagc gggacttcca ttcggataaa 840

gcgatacaac gttgaatgta ttccaagcca tcttcgttcc attgtctcca aaaggttccg 900

gctcttctgc ag 912

<210> 4797
<211> 1151
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4797
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aaagcaaatc acaactaact taaacgctgg tagcagaacg atttagttgt gtccaatggt 120

tcaaagatac taaattgaaa gcaaatcaca actattcact caaatgttcg cgaagggata 180

tggttgtgtc caatggttca aagatactaa attgaaagca aatcacaacg aagactggat 240

acggttttat ggtttgatgg ttgtgtccaa tggttcaaag atactaaatt gaaagcaaat 300

cacaactact tcattgaaga acttattcag ctctggttgt gtccaatggt tcaaagatac 360

taaattgaaa gcaaatcaca acatatccaa tcaactaaaa tattagcgac cgttgtgtcc 420

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gcaaatcaca accaggttca ggttccggca attccggtat cgtgttgtgt ccaatggttc 660

aaagatacta aattgaaagc aaatcacaac ataatcaaga tcctgaaagt ttggttgaaa 720

gttgtgtcca atggttcaaa gatactaaat tgaaagcaaa tcacaacaat ctcggcggcg 780

gggatctcga tatggctgtt gtgtccaatg gttcaaagat actaaattga aagcaaatca 840

caactccggt cagcatatac ccaatcgtcc caatgttgtg tccaatggtt caaagatact 900

aaattgaaag caaatcacaa cagcttctgc gctgtctatc ccatatttct tgttgtgtcc 960

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caaatcacaa c 1151

<210> 4798
<211> 42263
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4798
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gaaagcaaat cacaactctg atatcttcat tattttgatt ttatagttgt gtccgatgat 120

tcaaaaatac taaaatgaaa acaaactata gtaacaaatt ttagttatat ttctctgcct 180

gttatttctg ctgcctcaag tattgtagtt tgttcatatg atgttaaatt gctaatgatg 240

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tggtttccaa tggtccttgt ttatgcttcg acagccacca tttacagaac tgtacctgta 360

ataggaacag aatgattccg ataatcagac tgagcgtata tccgcaatag ggagccagat 420

aaaatccgaa tgggaagtag atgatagctc ccataataga ttgtgtgatg tagttagtca 480

gactcatttt tccgtaaaag cgcaggttgg aaacggtttt ctggaactta gccttctgat 540

aaagtaagat gaaggaagca atcagtacga tagtaaatgc gaatttctgc cacatatcaa 600

aagctgtccc tacggtctgt tgaatcaggc tgctgtcact ttgcatgatc tgctctttca 660

aagagtaaag cggagcgaaa ctgatagctg caatgatcag tgctttggtc cagaatttca 720

gatgagactc ggaagtgacg aacagttctt tgcgtccgat gtacagaccg aacaggaaaa 780

gtccggcagt ctgcaagaaa cgtccggcac caatggccca gaacaagctc gctttctgtc 840

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cttcgctata catggctccg acattcagat cgggcaaggt ataggcagga ttgaacagac 960

tcattatata atggaaccat tcaataggct gtaatgaaaa taagatagca gtgattaaaa 1020

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gcaaaacatc tccagccgga aagaaagccg cgttaagagt ggcaaaaccg gcaagtaaaa 1140

ccagtctcca taaaaaacgg tagccgaaat ctttgccttt caactgctga ttatgcgatt 1200

ggatatagaa agtaaatccg aaaagcaagg cgaatatggc ataagatttt ccggcaaaca 1260

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<210> 4807
<211> 1019
<212> DNA
<213> Bacteroides thetaiotaomicron

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aagaattata tcaaggcaca acaacatttt ggaatgaagt ccatgttcta taatctttgt 120

ttcggggcat tgaaggatgc ggcttccgac ggggtgaaag aagaatggta tctgtttaag 180

gacgcttcgc ataccacgaa agacagtcac gacctgccaa gcggatggaa gagcaatatc 240

tatctggtag atccttccga caaggaatgg cagcaatata tggcggaacg gaatgacgac 300

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gcccgtcaga tcggagaaac cggtaaagta gatttcttct ataatgagat gtgggcggat 540

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atgaaactca acgtatggcc tccaaagttg gggtcggtca ctacttacgc caagcaggta 960

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<210> 4808
<211> 1808
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4808
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gtacacccgt ccgcaggacg gattcatcga tgcaggcagc ggaggcggta tttcatgggc 120

attgatagac gatatcactc atgcagtggt caagaaggaa atcgttatag aacagcgcca 180

ttatcacacg atcaaagaag tgaaaaacgg tgaagggcct catcccatca agactcccga 240

aggatggcta catctggcac acggagtccg tgcctgtgct gccgggctca gatatgtcct 300

atatctgtat atgacgtctt tagatgaccc cagtaaagtg atagcccagc cgggaggtta 360

cttcatggca cccgtgggag aagaaagaac cggagatgta tccaacgtgt tattctccaa 420

cggatggatc gcagatgaag acggaacggt atacatctac tatgcttcct ccgacacacg 480

gatgcacgta gcgacttcta cgatcgaacg gctaatcgat tactgccggc atacaccgga 540

agacagactc cgttccacga cttccgtgaa aaacatatac gatatcatag aagccaataa 600

gctcgtgatg tcggaaaatg ccgttatatt atagttccgg aagcagtatt atcatctgtc 660

tctcaggatg ttccattctg catgatggat attaacaact gagttgcagg gtattaacag 720

ctgacacgtc aagtattaac acctgacgtg tcaggtatta aagcctgaga agtcagataa 780

atagtatcag atagtatcag tatgagttaa aataatattt gtttcttccc cacattcgac 840

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gtggcgccgg atatgataca ctcctttgta cctgccggat gggattcccc tttcttcgga 1620

tggacgctcg atattgactg gagcagccgg atgagtttgc tgaccgaacg aatggcgaac 1680

gaaccttaca gtctgatagg catctttgtc atgatggcgt tgctcaaagg catcttcatg 1740

agtatggcag ggcctgcgcc caactatgat atgcagaaaa ttctgtcctg caagtctccc 1800

aaagaagc 1808

<210> 4809
<211> 480
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4809
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aggacttgca ggattattat tggcaggact actggcagct ttcatgtcga cctttgcttc 120

taccgtcaat gcagcccctg catatatcgt aaatgatatt tatctgaaat acatcaatcc 180

gaaagcaagc gtgaaaactc agatacgcag cagttatgtc atctctgtgg cagtagtggt 240

ggtgagcact gtcatcggat tcttcctgaa agatatcaat gaaatcttcc agtggattgt 300

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caacggtgaa ggttatttct ggggaatgac tgccggagta gtggccgcta ttgtgatgaa 420

atttaccgtt ccggatgcat gggtacttta tttcttcccc gtactgttcg gcgtctctct 480

<210> 4810
<211> 1918
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4810
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taaatacggt ccagtccgtg agctaacacg ccgactgtag gcaagtcatt gtccaatgca 120

ctccggtggg cattgatatc aatgccgtaa gcaagaccac tgacaactaa tacgtcagga 180

cacaaagttt ttaagtcacg gaggaaagta gtacagagtt gcgtaccgta atcagtagcg 240

tggcgggtgc ccaccatatt aatgatatgg agagcgttca aatcggcatt tcccttatag 300

aacagtacaa caggagcgtc ttcacactcc cgcaagcggg aaggatacgc ctcatcatga 360

aaagtcaggc actggatatg attcttttgc aggaatacaa gttcctgttc agcacggaca 420

ataattgacg gacagtccag tgcacccgac acccgttcat gtactccgga taatcgctgc 480

gccagttctt tccggaagcg gaacacatcg gtggcactct tcatgccctc taccagacgt 540

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cctgttccag attcaactca cgggccagca ctacgacatc ggcaaactgg gcgtagaa 1918

<210> 4811
<211> 2583
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4811
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catgttaagg ttttctatac caaaatagat agaatcggct ccagcctgaa tggctgccgc 120

aagggattca cgcgaaccga caggcgccat tatttcaaaa tcttttatat tcattttact 180

atctgataat catttaaatg tgataggaga atgcaaaggt acgaattaat ccgtatccgt 240

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cgatggagga cgtgacagat cctgctttcc gcctgatgtg caaaaagttc ggagctgaca 420

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agaaactgag tatcagcgat gaagaacgcc ctgtagccat tcagatttat ggtaaagata 540

cggaaacgat ggtcgaagct gcgaagatcg tagagcaggc gcagcccgat attctcgaca 600

taaacttcgg ctgccccgtg aagagagtag caggaaaagg agcaggagca ggaatgctgc 660

agaatattcc gaagatgctg gaaattaccc gtgccgtagt ggacgcagtc aaaatacctg 720

tcacagtaaa aacccgtttg ggatgggacg ccaacaataa aatcattgta gatctggcag 780

aacaactaca ggattgcggc attgccgcac tgaccattca cggtagaacc cgtgcgcaga 840

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atcccatatt gaatgcttca ctgaccaaaa gatgcgggaa tgtatgacag aaccagatag 1920

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agaaccggtt aaactcaaac gtatccggat accagtagga aagcaggctc atctgaatag 2040

caacacgtac aaacgccgaa aacttgcaag gagccagccg ataaagatac atcagcagaa 2100

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gaaacaggaa cagaatcaaa atggaggtca acagattata aatcaatgtt atcttctcca 2220

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agatataact tttagcacaa ttaatggaca tttcacatga ataacaaacg gattacccag 2520

ttctttttgt attaagtccg aaaatacacg actattatac accttcccgt cagtcagaaa 2580

ata 2583

<210> 4812
<211> 298
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4812
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ggccgttaat acattaagtt ccatacgttt tcttagataa ttatcagact gcaaaattaa 120

ctctttttcc tgagttatag agcaaaagga tagagaaagt ttgtataaaa gcggtaagaa 180

ataaaaaaag tctcacgaat tgcttcgtaa gacttccttt ttggtgtggg cgctgaggga 240

ttcgaacccc cgaccctctg ggtgtaaacc agatgctctg aaccagctga gctaagcg 298

<210> 4813
<211> 617
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4813
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cccggagccg gacgtgttta actgataaaa atacaaaagt tatgaaaatc ctgaatgaag 120

aacatttcga gaacgtaaag cgctatgccg aatccatcgg tgacacctca cttcaaaagt 180

gcttggaacg gttgaagagt tgggaaggga atcctgatta tccctgcgaa atctcactct 240

actatgacca tgccccgtac tcgttcggct tcacacagca ctatcccgac ggaaggacag 300

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cagacaggaa agacatc 617

<210> 4814
<211> 548
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4814
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ccgaagcccc atccttataa tcactctgtt gtaatgagct accttacttt cccattatac 480

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<210> 4815
<211> 1917
<212> DNA
<213> Bacteroides thetaiotaomicron

<400> 4815
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attgaagggg ttgatattca aatcttgcaa aacttactgc aatcgtccat cgcctatgcc 120

aaaagaaaag tggccggaca atttgcgact cctcctcaac tagccgattt attaacaagg 180

ctaacaatag ataagaaagg tggaattacc ttcgaccctt gctgtggaac gggaactatt 240

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aatcccggca atattggaaa aattctgcat atcttcaggt cggatgtaat tgagttgcac 420

gcaggacaaa ctattgtatt taaagatccc aataatggaa atcaagtaga aaagcaactg 480

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<213> Bacteroides thetaiotaomicron

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<210> 4827
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<213> Bacteroides thetaiotaomicron

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<213> Bacteroides thetaiotaomicron

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gcctcttcga atggagcaaa ttctatttca atacttattc cttgtcacag ggtgattggc 180

agcgatcata aactaaccgg atatgccggt ggtcttgtag ctaaaaagac tttattggag 240

ctggaatcga acgaaagaag attattgtaa cagaatcgtc tcattaaatc cagacaaaaa 300

gatagtgtca ctatatactc agcatagtga caccatcctg aaaagctatt at 352

<210> 4841
<211> 428
<212> DNA
<213> Bacteroides thetaiotaomicron

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ttacaccatt tttcccatct cataggcttc ctgcatatag ggagtatctt ttatttctcc 180

taccttccag gcacctattc cataaatcac tccttttcc tgcggatttt ccagacaatc 240

gaggaagcca cggaaaccat caatcgtacg ttccatcatc cccttatcat tctccgccgc 300

tgcaataatg aaataaaatt ccttattcgt tatttccgta taacgtgcac aacaacggtc 360

aatcataatc ttcatctgtc cgcacatcgt atagaaataa acaggtgttg ccattacgat 420

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<210> 4842
<211> 832
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<213> Bacteroides thetaiotaomicron

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tttttcgctc agtaagtgcg gagcatggtc ggtcgcaata gcgtcgatca gaccgctgtt 660

gactgcctcc tgcaaagcct tccggtcttc tgccgttttg atggcaggat tacatttgat 720

gcgcgctcct aaggtctgat aatcttcttc ggtaaaaatt agatgagaca cacacgcttc 780

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<210> 4843
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<212> DNA
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cagttcacct acaagccccg tcagggggcc tttaatcacg cggacctttt caccacgggc 180

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<211> 1858
<212> DNA
<213> Bacteroides thetaiotaomicron

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tcctttggtg ataaagtcta atttctgttc taatgtcaca ttcgtttgaa tattattctg 180

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acggtaggtc catttccgaa aattcgcatt ggtattatag tctttcaatg atttatcagt 480

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<212> DNA
<213> Bacteroides thetaiotaomicron

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taactctcca ctattactga aactcaaaat attacattct ccagcagcct cacctgtaaa 360

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accaccacaa tcgccccatg gaccatcttt tacatcaaaa ttattattct catctgctat 540

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<210> 4846
<211> 698
<212> DNA
<213> Bacteroides thetaiotaomicron

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cgagtgccac tatggacaag catatacgtc ttgtagtaac gttcgcaagc ttgatgtaaa 240

aagaatgaac ctaatttata ttctttttcc acttgagcca attttccatg tcttaataat 300

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tatggcaact tctccggttt gccaatctga aacgtgccgt catcatataa cagaatgccg 420

tctcttaagg cctcataaaa gaaataatgt ttccttcgga tagcccgatt aaaagttgtc 480

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<210> 4847
<211> 971
<212> DNA
<213> Bacteroides thetaiotaomicron

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<211> 151
<212> DNA
<213> Bacteroides thetaiotaomicron

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agtatcagaa accgacaacg cccggaggag g 151

<210> 4850
<211> 185
<212> DNA
<213> Bacteroides thetaiotaomicron

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tcaga 185

<210> 4851
<211> 28695
<212> DNA
<213> Bacteroides thetaiotaomicron

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tgacacatct tcttttctgt ttcttatttc agtaaatgtc ccccttccct gtgttttgat 180

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<213> Bacteroides thetaiotaomicron

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aagccgtgtt cttctcaaaa aatccgcagt tttattctgt gtgtttcttt tttttagtag 180

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<213> Bacteroides thetaiotaomicron

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<212> DNA
<213> Bacteroides fragilis

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cttatcggaa tacggttcgt ctggtgcgtc gtagcggaag ggagaagcaa atatataatg 180

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cataattaga cttcggttcc tcaggcttct cttccagact caagacattt ccttctttgt 180

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gataagcgcg aggtctttga cggcatgtgg tccagcagcc tgaccgactc tacgagtaag 180

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<213> Bacteroides fragilis

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tagaaatgat tattcaaata tactatttcg gccacatgcg catagatatc ttcacaagcc 180

ccttgaccct ggctcccaat acggaacaag aactgcccat tccaatcaaa acaatagttt 240

<210> 5112
<211> 383
<212> DNA
<213> Bacteroides fragilis

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<210> 5113
<211> 335
<212> DNA
<213> Bacteroides fragilis

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<212> DNA
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cgg 423

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<212> DNA
<213> Bacteroides fragilis

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caggaactgc acccgattta cctctgcaaa agaatgatgt actctatatc tcaagtataa 180

aggaattgga aaaagaagga gttctcttca tttatggtga cgtggcaaaa ccggg 235

<210> 5116
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<212> DNA
<213> Bacteroides fragilis

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gctccgcata gtgagggtgc cattacctgg gatga 275

<210> 5117
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<212> DNA
<213> Roseburia intestinalis

<400> 5117
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taactgcatt taagggaatc ccttttgcgg ctcctccggt aggagagaac agatggagag 180

caccccagcc ctgtgaagac tgggatggag ttcgtgaatg ctatcgcttt gctccgattt 240

ccatgcagag cgtcccggga atcggtgata acgtgtatat ccgtgagtgg catgtggatc 300

cggaaattgc catggatgag gactgtctgt atttgaacgt atggacaggt gctaaagaag 360

taacagaaaa acagccggtt ttggtatggt ttttcggagg aggactccag tgtggatatc 420

ctgccgaaat ggaatttgac ggagagagaa ttgcacgtcg cggtgtggtt gttgtaacgg 480

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ctgacgcacc gactaatttt ggaagtctgg atcagcaggc agcacttcga tgggtacaga 600

gaaatattgc tttctttggt ggagatccgg gtaatgtgac cattgcagga cagtcagccg 660

gaggcggaag tgttatgagc cagatggcat gtatggataa tgaaggctta tttcatcgtg 720

cagtagtgat gagtgcaatg attcgctctc cttatcaggt tggaggaatc ggagtgccgg 780

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ctattgagca ggctcgtaag ctggatgcgg ctacgattcg tgacaagtat gaggaatata 900

ccaaaatatt tccggctatg tttaccgtat tggatcacaa gttctgtgta ggtgacccaa 960

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agattttcgg aaagaatgct gagacctttt tgcgctttcc cgaggcaatg cgggaggatt 1140

ctgatggaaa gtatgcgaag gtaaacggaa ttgaatgtac gatcaagtgt ctttttcag 1200

ataaaaaaag tgcaggtgaa aaaaagccct actattatta caggtttgat gcagatattc 1260

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caatgccata ctggtatcca tatgaaaaag aaaagccctg tgagatgatc ttcatgtcag 1500

atagaccggt agtgaactgc ggaggggtga cacccttaa ggaattttta caagaacaga 1560

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<210> 5229
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<212> DNA
<213> Roseburia intestinalis

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atagtgacag taggaatgac agttatggta gtagggtgtg ggaatgttac accatacaat 180

gcaacaataa tggaaggatc aagtgagtta gcagctgaag tcgcagattt aagtactgga 240

aatcggtata gttacgagga agaacaaggg gaacttggta ttggagatgc tgacacagaa 300

tttgtgaatt ctacagagtc tgttggaaga gtagatatag acgattcatt caacagttat 360

taccatgtag aaggtggtac cgcagtagcc aatacaggat cacaagaggt agaggacgtt 420

gctaaatctg aagatctttc aaaaagcagt aaagactcag atgatgctac agagtcaata 480

acagagtcca aacggaccag tgaacaaaaa ggtgaggaag aaacggaaaa gaaagcagtt 540

ataaaatttg tagacgagaa tgatagtcag agtagtcaga gcagagcgac tgtaactatg 600

atacaagcaa ctgttgattc cgtaaataaa acaatcccgt tagttaacag tagtcaaaat 660

gaaataagat atcaattcga agaaaatgga gagataattt acgatacggg tttgatcaag 720

cctggagaaa cggtgtactg ggatgcatac agtttactaa cggatggatc tcatgaattg 780

acatatcatt ttgagcagat tgatgacggg gtgacaatag tagaatatca ggcagttgct 840

aatatacaaa ggagtgaata gagatg 866

<210> 5230
<211> 501
<212> DNA
<213> Roseburia intestinalis

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atgactgcaa aaccggagcc ggaattgaca ccgatcgtgc ttggacttgc cagcgaattg 120

ttcatcacac cctgtaagat cacacccgaa catgacagac cgattccggc aaaaagtccg 180

ccgagcacgc gcggaatgcg cacggtagtg attaaaatat aagaagtaga actgtggtct 240

gccccggtca gacaatgtaa gatatctttg aatgcaatat tcacgcttcc aaataaaatg 300

cctgcgcaga cagacacgag gagtaacata cacatcagaa ggatggtaat gcttttgtgc 360

tttttcatag gggattcctt cctgcaaaag tcttttgtat tggttaaaaa aagatggcaa 420

atttgctcat tatggtatca caggcagggg aaatgcgcaa tgggttggtt ttcatttaaa 480

tgttaaggtc actaataaat t 501

<210> 5231
<211> 1835
<212> DNA
<213> Roseburia intestinalis

<400> 5231
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gaaatagatc agtccgcgga tcggcatgtt tgggtttaag gtactctggt gctcatacag 180

attcagcgtg cctcggacga taaatgacac gtcattttta tatccgagat agatcacatc 240

atcgattgta taaaagatca gttcatctgc atcgctataa tctgtctgat tcagggcatt 300

gtacaattcc agcaaaaccg gtttctcatt aaaaattctg cggaataagg catcccggta 360

cttcttctgc acaaaaacat gttttgtgtg actgcgtttt cttttgtttt tccccatgta 420

gttttctcct ttgattataa aaaatttaaa cgtttttcac aatagttttc tgaaatagct 480

ggcgaaatgc cggaatgaaa aagagtgata ttcagaaaat gatcttatgg aaataaaatc 540

gaattgcgat agatgtagta tggcatgaag atgctattat agacaagcag aatatataga 600

gaaaaaatcc ctgtaagtat gcgataatgg atatatgctt acagagattt ttatagtgaa 660

atccattttt cttttaatgc atggtaaaga tcttcatctg accagtcagg gtgagcctga 720

catagagaat acactttgct gataaatgta acgtccttgt caagcaactt agcacagctt 780

tgtgcaggaa tattttcctg gaacatgttg tggatgatgt gtaattgctc aagacgtttg 840

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atagaatatt cctctaaagt ccggcatcgc gccatcagtt cctgattgtg tccataatta 1140

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atggaaataa aatcgaattg cgatagatgt agtat 1835

<210> 5232
<211> 1164
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<213> Roseburia intestinalis

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aattgattca acgataagaa gagataagtt acgatgagaa caatatttgc agaatacaat 120

ccacaacgca acagcattga tgtatatacc agtgctggct atatgctccg tattgactgt 180

tgggaagctg agaaggattt aaaaaccaca cccagatcag tctgttcatt aaacgcactt 240

gccattgatg aaccacttga atatgcaaaa ttatatcttg atggaacgat gcaaatatgg 300

gtggatgcag aggacactct ttatttataa tgttaaataa tcccgaaaaa ttctaaaatt 360

tttcggggat tatttttggc ttatatttat gattcaattt aactgataat gattctcata 420

tgagatttat ctttagaaat catgtcatca atcacgccag tctgcatctg attcccattt 480

acattccgta atctgcatat ttgaaaatgt tgccttatat gagccttctg tcgggctgca 540

tgcatatatt ccataagtaa ttttttctgc accttcccac atatggaaaa tacgcatttg 600

tctgaaattt atgccatcct cactgcattc aatacagtag tcactgtccc ttcgtgaaaa 660

acgataccac atacttttaa tatcagagga tatgtctgtt gttgcccagt cagaatatcc 720

atgattggtt acaacgcttc ccaatcgctg tattttttta ttctcatatt ctatagatgc 780

cttaaaccaa ttatcactat ttaaatacat agccacacca cactggtcaa aacgacaggt 840

actctcgaat tctgttttaa caataaaaga aaagtacttg tccgttgttt caacttgaaa 900

tactggagca ttatcatttt gaaaaccata ataagtgcgt gcccataagt cggtacccct 960

ttctgtaaga attacaactt tatcctcact aatttgtacc tgctttggtt gacgtatcca 1020

tttaggattg tttttcaaaa attccatctt ttttctcact ttctttttta ttttaataag 1080

cagctatatt tagtgcctac ttttcactgt attataatta gtaattttct tttgtcttct 1140

gcaaagaatg actcctataa gtag 1164

<210> 5233
<211> 1173
<212> DNA
<213> Roseburia intestinalis

<400> 5233
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aatcaaagtg ataaatcccc atctcttcaa gtgccgcttt ctgcaagtaa agctgcatga 120

catacatctc acacatggta ttggatatcg gtgtacctgt tgcaaacaca atgcctctgc 180

catcatttat ctctgataga tactggcatt taagctgcat atccgttgac tttttcgctc 240

cactgctgct gatacctgac acattattca tcttggaaaa aatcgcaagg ttcttgaaat 300

tatgtgcttc gtccaccatg atagaatcca cgccaagttc ctcaaaggtt ataaggtcat 360

cctttctgct ctcatcagat agagatttca gctgttcctc cagctttttc ttctggcttt 420

ccatctgctt tacagtccat cgctctccgt tacgctcctt catctcatca atcgcatagc 480

ttatctcatc aatctgctca ttgagcattc tttcctttct ctctgcggag attgggattt 540

tctcaaactg cgagtgcgac atgataatgc agtcatagtc acctgtcgca atccttgata 600

cgaactgctt tctgcgactc ttttcaaaat cacgctctgt ggcaactaag atatttgctg 660

acggatacag ccttaaaaac tctgatgcag tctgaccgat aagcggcttt ggaacaacca 720

tgattgtctt attggcaagt cctagtctct tctgctccat gcaggcagcc atcatctcaa 780

atgactttcc ggcaccgaca cagtgtgcaa gcagtgtatt tcctccgaga aggattcttg 840

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aaatagaata agcatccatg cggcttgtac cat 1173

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<211> 519
<212> DNA
<213> Roseburia intestinalis

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atgggcttaa gtggactcga accaccgacc tcacgcttat caggcgtgcg ctctaaccgg 180

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tggaagttgc ttcgcaactt ctgttgtatc caaggttatt ggcacaaccg ttatcaagtt 420

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agccgcacct tccgatacgg ctaccttgtt acgacttca 519

<210> 5235
<211> 1035
<212> DNA
<213> Roseburia intestinalis

<400> 5235
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actatgttta caacctatgt attactaaca ttcttagcag ttttaatgta tttccttatt 180

aggactgtag taaatgagat taaacaacat atcacagaag aaacagatag ggttattaag 240

gctattaaag ataagaacta tgtgggtaga tgaagaagca gttatatcag aatcagatga 300

agcattaaat atactaagtg aatgaaacgt atgtcagaac aaactattaa cgcaattatt 360

aactacttag tccagcaacc ttataaagat gtagctgggc tgttacagat ggtacagcag 420

gatttacaaa ctaaagaaga acctgctaag gaagaataac ccattagcct gtaaatggta 480

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tagcttaaat ggataaattt gatgaattag aactaaatgg aaggaaacta ctagaatcat 600

ttttaataca agtgggtgct actaatctgc atcctacaga agataagttt gcaccagtgg 660

actactattt tacttataat gataagaagg tagtagccga aataaaggta agagatatta 720

agtatgaagg ctatgatact cacttaatgg aagtatctaa atataagtcc ttagtgaagg 780

ataagaaaga tagccagtca gatacagcat actacattaa cttctttaca gatggaacta 840

aagttaatgc ctattggtat agtactaata ctgttaggaa ctttggtact atagattata 900

aatactgtcc gactactaca gcagccgata atggtaacta ctataagaag gttattatga 960

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ataatgatta tcttt 1035

<210> 5236
<211> 205
<212> DNA
<213> Roseburia intestinalis

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aagagtacaa ggtagatagg gcagaggtgg aagcacggta acgtgtggag ctgactgtta 180

ctaatcgatc gagggcttga ccaaa 205

<210> 5237
<211> 357
<212> DNA
<213> Roseburia intestinalis

<400> 5237
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ccgccggttg aagaataaaa cacaggtgtt tctgacaccc aaaggagatc attacagaac 180

gaggctttca cataccttag aggtatcaca gaatgcccgc acgatcgcga aagcactgcg 240

gctcaatgaa gatcttgtcg aggcgatcgc cttagggcac gatctgggac atacgccgtt 300

tgggcatgct ggtgagtttg tgctgaatgg actgtgcgat gaaggtttcc atcacaa 357

<210> 5238
<211> 452
<212> DNA
<213> Roseburia intestinalis

<400> 5238
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atattgacga tgccataagg gcgcagatac tgacagagga gaatataccg ttagaacttc 120

ggaaaacact gggattttcg acgaggcagc gtttaaacac actgatacat aacatcatca 180

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attacatctc cggcatgaca gaccagtacg cc 452

<210> 5239
<211> 365
<212> DNA
<213> Roseburia intestinalis

<400> 5239
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<210> 5240
<211> 2408
<212> DNA

<213> Roseburia intestinalis

<400> 5240
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gatagcttat attctacaaa atcttttact tctttttcca gttcagacag tttggttaat 120

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tcatcaatga ttgcattcac aaaatcattg gtgcattcgc aatattgcat taaatctcca 420

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aagctctctg ttacaggttt cttaccgttc tctacgttgc agtaatgcgt tctggaaatt 540

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cgttcccgga ttccatcttg atttgtcaac attttcatgt actcctttca tttacacatc 660

atatttgctc gtaccatata agaaacagaa ttgcttatat gtactatata gtacataatt 720

agtatagaca acaacagcaa caatgtcaac aaaaatatgg aggagaaaca ggtgaaaaaa 780

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cgggagattt atgcagagtt ggttagcccg gtgatttctg attggagtga aggctgggag 2220

aaagtcagta aagcaatcgg gcattacgga atgtatcagg agaaagcggt aatggaaagt 2280

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<210> 5241
<211> 537
<212> DNA
<213> Roseburia intestinalis

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tagggagaat tccctaaccc ttaaaattat ttgaaaggat ggagcgatat ggcaaaggtt 180

agagccaata gaacgaggaa aaaagaactg aaaatttatt tgagtgataa tgagaaatat 240

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acgcttggaa aaatcagcgg aaatctgaat cagattgcga agagaattaa cagtaccggg 420

aatgtttatg aagaggatat ggcagaagtg aaagcgatta tggacgaggt gtggaggacg 480

cagaaggcga tgttgaagaa gcagccgttg atacataata aataacttga aaataac 537

<210> 5242
<211> 432
<212> DNA
<213> Roseburia intestinalis

<400> 5242
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<211> 2364

<212> DNA
<213> Roseburia intestinalis

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<211> 700
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cagcgtgttg taaatcagta ttataaaaat atgatgaaga caaactatgg cgagtcggtg 480

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<212> DNA
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<213> Roseburia intestinalis

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ttactttatt ctggtaagaa acaatccccc gtgtttgtat acaatagaat gtacgctccg 240

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<213> Roseburia intestinalis

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<213> Roseburia intestinalis

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<213> Roseburia intestinalis

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<210> 5298
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<212> DNA

<213> Roseburia intestinalis

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<212> DNA
<213> Roseburia intestinalis

<400> 5299
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cagaaaaaaa gtaagcggag ataaaacatt actatatttc gtgtatgcag ataaaagtgc 240

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<212> DNA
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<400> 5432

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<213> Klebsiella pneumoniae subsp. pneumonia

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<213> Klebsiella pneumoniae subsp. pneumonia

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<213> Klebsiella pneumoniae subsp. pneumonia

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<213> Klebsiella pneumoniae subsp. pneumonia

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<212> DNA
<213> Klebsiella pneumoniae subsp. pneumonia

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<213> Klebsiella pneumoniae subsp. pneumonia

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<211> 686
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<213> Klebsiella pneumoniae subsp. pneumonia

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<213> Klebsiella pneumoniae subsp. pneumonia

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<210> 5444
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<212> DNA
<213> Klebsiella pneumoniae subsp. pneumonia

<400> 5444
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<210> 5445
<211> 1196

<212> DNA
<213> Klebsiella pneumoniae subsp. pneumonia

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<213> Lachnospiraceae bacterium

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<213> Lachnospiraceae bacterium

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agaagtaata acagaaccac ctatattatg atcttttgca atagtagtat tataagaaag 240

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<213> Lachnospiraceae bacterium

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<212> DNA
<213> Lachnospiraceae bacterium

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<211> 703
<212> DNA
<213> Lachnospiraceae bacterium

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cttaaccccg tagcacctca tattactgag gaattgtggc agactgccgg attcgagggc 180

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catggacaaa taagtgaaat aaaatcatgc ttgcatgatt ttatgatcga atatgtccat 480

gaggtaaacg ccgtcttatg aacaaaggta gtcacgtagt gatggaaagc gtgataacgc 540

gactttgcga atggcgttgg ctgaacgttg aataaaataa ctcttgacag acattaagcc 600

tgccgggagt tattttttg tgatcggctt ttctccagaa tattttcaat ctgacgaagc 660

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<210> 5665
<211> 484
<212> DNA
<213> Lachnospiraceae bacterium

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atgccggaga gatcggagaa gccctccggg aacaattcct gcatggtctg caccatttcc 180

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gtgtattgca actccgacat ttttatgtaa acagcaagtc ctttcagcag ccggggatcc 420

atataataag ccagtatttt cagaatctga atgcggttgg aagtgaataa tgtgtcaaag 480

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<210> 5666
<211> 933
<212> DNA
<213> Lachnospiraceae bacterium

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tgctgtcctt ttcataacga aaaaacacct tccttttcgg tgtcttcgaa caaacagatg 180

tattattgct tcggatgcca tgccagcgga aatgtatata cgtttcttat gaaatatgaa 240

aacgatacct tcccggaggc cattaagatc ctggcggacc gcgccggggt aaagcttccc 300

gaagtggagg agacaccgga acagaagaaa aaagccggca aacgtatgcg gctgctggaa 360

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ggaatgcggt atctgacggg gcggaagctg accgatgaga ccatgcatca tttcggactg 480

ggttatgccg ggaaaaacgg cgagcaggtg gtacagtacc tgcggaaaaa gggctttacg 540

gacgaagaga tcaaagactc cggactggca atgttttctg aacagcgggg actgcgaagc 600

cagttctgga atcgtgtcat gttccccata caggatatca accaccgggt catcggcttc 660

ggcggcagag tcatgggaga cggggaaccg aaatacctga attcaccgga gaccatgatc 720

ttcgataaga gaaggaatct ttatggactg aatttcgcaa ggactgcccg gacgggcaat 780

attatcctgt gcgagggcta catggatgtc atagccatgc atcaggcggg atttacccag 840

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<210> 5667
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<212> DNA
<213> Lachnospiraceae bacterium

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agaatctggg gaaagaggct tttcaggaga gaatcgatca ggcggagaac agtttctact 120

tcgagatccg tatcctgagt gaacaatacg atcagagtga tccggaacag cggacgaagt 180

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agaacaagag cgatccttcg gagagcggac ggaagtccca gagactgctg atcacctgga 420

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<210> 5668
<211> 1243
<212> DNA
<213> Lachnospiraceae bacterium

<400> 5668
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tatcgtaaag gatataagtt ctccacctat gcgacctggt ggatccgtca ggccatcacc 180

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<210> 5669
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<212> DNA
<213> Lachnospiraceae bacterium

<400> 5669
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accaagaatg aactggacaa agaaatcaag gaacgtagag cggaagccca gcggtatgag 180

cgcagagttc agcagaagga agagaacatc gataagaaag cagatgccat cgagaagcgc 240

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<213> Lachnospiraceae bacterium

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<210> 5691
<211> 3171
<212> DNA
<213> Lachnospiraceae bacterium

<400> 5691
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acaattctcc gcttaacatt ttttctcttt ccgtcatttc tgatagcctc ctgatctcgt 180

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<210> 5692
<211> 670
<212> DNA
<213> Lachnospiraceae bacterium

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<210> 5694
<211> 397
<212> DNA
<213> Lachnospiraceae bacterium

<400> 5694
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<212> DNA
<213> Lachnospiraceae bacterium

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<210> 5696
<211> 333
<212> DNA
<213> Lachnospiraceae bacterium

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<210> 5697
<211> 2635
<212> DNA
<213> Lachnospiraceae bacterium

<400> 5697
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<210> 5698

<211> 3288
<212> DNA
<213> Lachnospiraceae bacterium

<400> 5698
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<213> Lachnospiraceae bacterium

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<212> DNA
<213> Lachnospiraceae bacterium

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<211> 1219
<212> DNA
<213> Lachnospiraceae bacterium

<400> 5734
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<211> 393
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<213> Lachnospiraceae bacterium

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<210> 5748
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<212> DNA
<213> Lachnospiraceae bacterium

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<210> 5749
<211> 427
<212> DNA
<213> Lachnospiraceae bacterium

<400> 5749
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<210> 5750
<211> 2769
<212> DNA

<213> Lachnospiraceae bacterium

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<210> 5751
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<212> DNA
<213> Lachnospiraceae bacterium

<400> 5751

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<210> 5752
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<212> DNA
<213> Lachnospiraceae bacterium

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<211> 3890
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<213> Lachnospiraceae bacterium

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acaatgccaa gtggcaatga tatggatgta aactttcgca ggttgaaata cgtgcgctat 180

gccgatgatt tccttatcgg agttatcgga acgaaaaacg aatgtgagac aatcaaagct 240

gacatcacta agtttatgca ggaaaagtta aggctggaga tgtcacagga aaagactttg 300

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tatgccacaa agagaaa 377

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<212> DNA
<213> Odoribacter splanchnicus

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aactgaggat gaaatgagca ttgataggat aaacaaactc atagagagta taaaggatga 240

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<210> 5809
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<210> 5812
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