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<120> Microbiota composition, as a marker of responsiveness to anti-PD1/PD-L1/PD-L2 antibodies and use of microbial modulators for improving the efficacy of an anti-PD1/PD-L1/PD-L2 Ab-based treatment

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<213> Firmicutes bacterium CAG:95

<400> 85
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<213> Firmicutes bacterium CAG:95

<400> 86
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<212> DNA
<213> Firmicutes bacterium CAG:95

<400> 88
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<400> 91
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<213> Coraliomargarita sp. CAG:312

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ggctacttca actcattgat gctgtatccg ctaaacagcg caaaagcaaa attggccgca 180

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aatctttcag gaacaacagg ggcaaaagag ctgtctgaat ccaagggcga aggcatggac 1500

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<213> Coraliomargarita sp. CAG:312

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cgacttaaca ttcccgcgat atttgtttcg ggcggcccta tggaagcggg cgtcggcaaa 420

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<211> 1599
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<213> Coraliomargarita sp. CAG:312

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gcgcagataa aaatgctcat agccgacagc cggcgcgttt ctccgggagc ggcgtttttt 240

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gaagccatgc aaatctacgc cgtgaccggc acaaacggca aaactagcgt atcgtggatg 480

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gtcgcggagg agcttctgag cctcaaggga ttattataa 1599

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<213> Coraliomargarita sp. CAG:312

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<211> 1767
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<213> Coraliomargarita sp. CAG:312

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aacagcgcct tcgacatgga caagcaaaac ggaatgtact tcacattttg gtacggagtg 840

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<213> Coraliomargarita sp. CAG:312

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<213> Coraliomargarita sp. CAG:312

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cgcatacaca ataatatgtc tgtgacttcg ctctttaagg tgaagggatt ttaa 954

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ggatttcgcg tagccgcagg aggcgcccag gctagagagc gggttatgcc tgatctttgc 780

gctcttggta aaattatcgg cggcgggctt cctgtaggag ctttttgcgg tcgcaaggaa 840

ataatggaat atattgcccc tttggggccc gtgtatcagg cgggaacttt aagcggcaat 900

cctcttgcta tggctgcggg agtagctgcc ttggagcata ttttgcaaac taatccgtat 960

gcggaattgg aacgcaaaag ctcttttatt gtaaaagccg tttcagaggc tgcaaaagag 1020

aagggtgtgc ctttgcaaac cccgcaggcg gcatctctgt tctctttctt ttttaacgaa 1080

aacaaagtgg aaaattattc catagcgtta aaatcgtcta cgcagttgta cggaaaattc 1140

tttaaggaat gccttgcatg cggagtatat ttggcgccct ctgcattcga aatatgtttt 1200

atgagtactt ctcatacaga cggcgatttg cagaaagcag cagaagttat gtgccgagca 1260

atttctaacc tttaa 1275

<210> 142
<211> 1767
<212> DNA
<213> Coraliomargarita sp. CAG:312

<400> 142
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atggcagaaa aaaataaaat tgtcggcgga agtaagccta attactccta cgctcttgcc 120

ggattggcca agagagtcca gaatcccaac gggacttggt cgtttaagat attgtggggg 180

cgtgttttta tagcttttat attattcatg gctcttttgt ggggcgcaat ttccagcgcg 240

atttattgca tatttaagta tggaagagac tatgatgaaa tgactttcta ccaggctttg 300

attgcgcctt tagacatgca ggcccaccgc gagcggatag gtgaatataa cgccagaaaa 360

gctaaagaat acataaaaga gcgcaaatat agggaggcgt atatgagcct tgccaatgcg 420

gtcgggcgct cgcctaaaaa tatagaggcg cggcaaatgc ttgccgagtt taatttgtct 480

tttggtcgtc cggatatagc attggaaatc atggaggttg ggcttatata cgctacggaa 540

aatacgaaat atattcgctt gtatatgcgc cttttaatag accagaacga agacaaacgc 600

ttggttttgg tcgccgaacg ccttctttca aagggcaata taaaaaatcc ggaagttgtc 660

gcgtatttgg cgatgtcgct gtcttctatt tatgcgcttc atggcaatta cgacaaatca 720

aaggagtacc ttgtaaaata caagcttgat aagactctgc ctggaatctt gcggctgtct 780

aaaaacgaat gggaacaggg caaccgcgat gctgccataa aggttattgc cgacaatttt 840

gattatgcgc ataacaagga gccgttgtat tccttgctag tgaattatta taccgtgatg 900

aaagatttgg acaaggcccg gcagtattca atgctcaggt ctatcgaaaa tccttttttcg 960

cttgaacagc gcatggaata tttgaacctc ctaaaaaagt caggggatgt agaaaatctg 1020

aaagcagatt tggataaatt gttcaatcaa tataagaaca acaacaaggg gatgttgtac 1080

cttgcaaatt acgccgcaga caatggtgat gttgaattga tgcgcaagat ttacgacact 1140

gcaattacaa acaatttttc catagctccg tattgccttc tatcccttga aacaatgctg 1200

acaaacggtg aatataaggc tgcgagcgat tttgccgagg agattctcaa agataaaccc 1260

atgtggataa agcgttatga ggacgtatta agctgcttgc gcgccatagc ttattatgga 1320

ataggcaata acaatatggc cgatattcta ttgcgcgatg tagtaaagcg cggaacttgt 1380

tcccccaaag ttttggtggc gacagctaga agattggata atttgggcgg gactctcatg 1440

gcgcatcggt tgttggaaaa tacggttgat agatatccgc gccaccagct ggctttggcg 1500

aggctggttc agatggagat aaaaataggc aattcgacaa atcttgaaaa gcatgttttg 1560

aagttgctgc aaatgcgcag gccgtcgcgc gagcttatag aagacgcccg gagaaagctt 1620

gcaagcgata gatttatatt tacaagggac aggggcagga ttctcgccga gatagacggg 1680

cttataaaga acaatacgag ttttgatctt ggcggcgaat ccgagtccga cagaataacc 1740

gattctgacg agcctttgga tttttaa 1767

<210> 143
<211> 1020
<212> DNA
<213> Coraliomargarita sp. CAG:312

<400> 143
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ttgaaaattt gcggatatta ttttagcttg cgttgtatgg cgacgaaata tgtatgggat 120

aaaaagaccg acgaagagct gcagctctgg ccgtcttcta gcaccgagcg ctatatgaca 180

cgccctttc tcccgaccgg ggacatcaac tcgcgcaata gaaaaaccat agtcacgtcc 240

ccgcaaaatt tgcctgtgga ttcgctcgcc aggcgcggaa tttctgctgc ggctttgaca 300

tcccataaga gcggatacta tcaatccaga agcggggcgc cgtttcacct ggtaatctat 360

acgcttgtgg gaagcgcaac gctgaaattg gaaagaaaaa aaatcaagat atccaaaggc 420

agctttttg ccgccccagc aggcagccca tacgagttct cttcggacga atcggggtgg 480

cgcgtatttt ggttccatct gactccgtcg cgtttgatag acagggcgct gggagagagc 540

gcatttgttc gcgtctcagc gagttttgac tctgtagttt ccgcgtccga aaaatatttg 600

ggcgaggttt atcgcacgcg cccaaggctg aatattctgg agtttttggc ggataaaata 660

ttatgtctgg taaaaaaaga catttttttct gggactcggc tgggttgcgc tccgatagat 720

aaaataatat ctgaggtaga atcggatccg ctaaaacatt ggagtgccgg agaactgtcg 780

aaacgcttgg gagtttcatg cgcgaagttt aatagaatgt gcgaggaaaa ttattccgaa 840

acgtttgcca agattgttct tcgcctgcgc atgagggcgg ctttggatat gatggccaac 900

ggttcgcgtt tttctgaaat cgcggaaaaa ataggatacg cagacgcata tacttttttca 960

aaggcgttta aatcctatta cggcagcccc cccaagtcca taagggcgtc tctgctttaa 1020

<210> 144
<211> 798
<212> DNA
<213> Coraliomargarita sp. CAG:312

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ctaaacgcgc agacctccgg agaatccacg gacaagcttg cgcagggata tgtttacatc 120

catacgctca gaaacgagcc gtccatcgaa agaaatggag ccgaattaag attgaagcgg 180

cgcgacatag tccccgcaaa cggattgaca atcgaaacgg ttaaaggcca atgcgcaatg 240

cttgtcctat caaatcgaac ggtcattttt gtgaaaggaa acgccaagct taccattgaa 300

aactttgagc aggcaacccc ctttgatttt caacttgacg acgaatacga atctacccac 360

tcccaattga gaataagcct cgattacgga gaaatatata tggcgatgct ttcgccgcgc 420

ccgactagcc gcacgataat aaaaacgaca ttcggcgcag tagaacccaa aactaccgcc 480

atgtacattt cctgcgacaa aaagaactca aagttcgcaa tattcaacgg gcaggcggtg 540

ttctgcggac ttgacaacaa gcgcgacttt atacagcagg gacaaatcgg tatagtggaa 600

gagctggaaa gcaaaaaaat gtatcccttg aaaatagagc cgatgagctc gctccaagag 660

gacaggcatg aaaaagtcct agaactctgc aaactggcaa tgcaatcgac tgaaattaag 720

ctctcccgcg aagggaattt ctcggctaga agactggttc ctaaggactt ctttttgcgc 780

aaacacaata tgaactga 798

<210> 145
<211> 1101
<212> DNA
<213> Coraliomargarita sp. CAG:312

<400> 145
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ttgtcgttta gatgcgcaat cgccatggca gtggcttttt ttatcggggg actttgcgcc 120

ccgcgcgcca tagaaatttt gcataagata aagttcgggc aaagccttag aacaaaggaa 180

gaagtaggga aacttgccga gctccacagc ggcaaaaagg gaacgccgac tatgggagga 240

ataataatct acgcctccgt tatggtatcc tcgctactct tggcaaagat aaacgcgctc 300

gttttcacag ccctgtttgt ttacaccgcc ctgactttat tgggattcgc agacgactat 360

ctaaaaatag taaagaaaaa cagcaaaggc gtatcaggca aaacaaagct tgcgattcag 420

gctttgacaa cgcttgtggc tcttgccgta ttgctgtttt caaaagacta cggatatatt 480

atgcgggaat tgtggatacc gtttatgaag tatccgctaa ttgaatgcat gccggtttgg 540

tttgcggcgc tgtttttatt tttcgtgatt gctggatcca gcaacgcaat aaacttgact 600

gacggagtgg acgggctggc aataggatgc actgtttcag tcactctggc ttacgcgatt 660

ttcagctatg ttgccgggaa cacaatcgca accgaatatc tattcattag atacattccg 720

ggagccggag agctgacggt agtgtgctgc gcactattag gggcgtccct cgcattcctt 780

tggtacaact catatccggc ggaagtcttt atgggtgaca ccggatccct ggcgctagga 840

ggactaattg gaatcattgc ctttatgact ttgcagccaa cgacactcgt aattgtcgga 900

ggagtattcg taatggaggc gatgtctgta attttacagg gtgcatccta caagtccaca 960

aaacggagga tattcctgat gtcccctatc caccatcatt ttgaactaaa aggctggccg 1020

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gcgacgttga aaataagata g 1101

<210> 146
<211> 1125
<212> DNA
<213> Coraliomargarita sp. CAG:312

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ttgtttctaa gcgcgctggg attgcttata ttaatgagcg ccggcgcgaa tagagctgat 120

ccgtatgcca ttgtccgcaa gcaaacaata tggctcggag tggcatttat tgccggaatt 180

tgcgccacgt ttgtggattt aaaacttcta aaacgcattt ccataccctt ggcaatcgca 240

actattgtgc ttttattgct ggttcttatc ccgcaaattg ggaaagaagt caacggatcg 300

cgcagatggc ttgaaatagg gccaatagtc gcacagccaa gcgacatcgc aaagttctcc 360

ctcatcattc ttttgtcctc gtatttgcac gacaaccagc ggaaaattaa agacgttgca 420

agggggttgt ttgcgccgct ggcaattgtg ggatgcttct gcgtgcctat tatattggag 480

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atggtgtatt ttaaccccgt gcgccttcag cgcgtgctga gctttttgaa cgtagaagaa 660

acgaaatcag acgggtctta ccaactgtac caggcaattc tggcattcgg caacggagga 720

atttcagggg ttggaatagg acaagggagg cagcagcttt ccttttgcc ggaagctcat 780

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tatggaggat caaatttggt ggcaatgttc gcgtttacgg ggctgctcgt aaactgcatc 1080

cgcgcgtgga gcaaaccgac aacaatcaga gtatccgatt tatga 1125

<210> 147
<211> 1344
<212> DNA
<213> Coraliomargarita sp. CAG:312

<400> 147
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gattctccca tgtttgacgg ctgcaagggt aaagttgttg cgggatatca agggtggttc 180

cggttcccgg gtgacggttc aggcgccaac ggctcaaact gggggcattg gggaagtcgt 240

gggcaagagt tcggaacgtc tcattgcacc attgatatat ggccctacac aaaagaatat 300

cccaaggtat atgcgacaaa ttttaaaaat ccagacggtt ctgcggcatg cgtgttcagt 360

tcttacgacg aaagcactgt tgatgtccac tttaaatgga tgaaagaata cggaatcgac 420

gctgcgtttc ttcagcgttt ctattcctac acaaaaaatg cagttgcgcg tccgcatacc 480

gtaaaaattt tagagcattg cctaaaagcc gctaaaaagc acggagtggg aattatattg 540

atgtacgatg tttccggaat gccaaagggc gaggtcgcgg acggtttgat tgccgacttc 600

aaaatgatat tggattcttt aaatcttacc ggcggcaaga atactcccta tcttttccac 660

aatgggaagc cattggtttg catatgggga ataggattta acgacaggca ttattctccc 720

gcggatacag acatattgaa gtttttcgac tttctaaaaa acgacaagac ttacggcgga 780

tgttcagtta tggtaggcgt tcccacttac tggcgcacgc tagacaggga ttgcgttaag 840

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gggcgccttg agatgcttga cgacggaagg attttgcggg gcggaatgga ctatgtaaag 960

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tatcctggtt tttcttggta taacaaaatg cacgaacata taaaaggaac taaattcaac 1080

catacccccgc gggcaaaggg aagatttttc tggaatgtag cctcgggggc ggctgaggcg 1140

ggcgctgaaa ccctttatat agctatgttt gacgaggttg acgaagcaac tgcgattttt 1200

aagctggagc ctaatcctcc acgcgcagat ggagttccga tgctggacac tgaaggtttg 1260

cctcccgatc actatctttt ccttgcggga aacttcaaga aactccttaa aactgggaaa 1320

tcagctccga tgccgtcgcg ttag 1344

<210> 148
<211> 1056
<212> DNA
<213> Coraliomargarita sp. CAG:312

<400> 148
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gctatcgagg ataatttgct gaagaactcc gatatttctg aaatactcat tttaagcacg 180

tgtaatagat ttgaatttta ctttgcggca gattccgcgg aatcctcaga aaagattcta 240

tacgagctgg ctcgcattgg caaacccgcc ggggatttta gggaaaattc atatgaattt 300

tcgaacaagg gcgctttgca gcacatattt gaagtagcct ccggactaaa atcccaaatg 360

gttggagaaa ccgaaattct agggcaagta aaagccgcct atgcgcgcgc atgcgcggcg 420

ggacattgcg gggcaatact aaacgcagca ttccaaaaag ccgctcaatg cgcaaaatgg 480

attaggacaa atacggatat cggccatggc aaaataagcc ttggcagcgt ttccgccgaa 540

ctggctgcga gaatttttga agatatatcc aaagcaaaaa tattgctgat aggatccggt 600

gaagccggaa aacttgttgc agacgccctg tttgtaagag gcgcgcacaa tataaccgtg 660

gcaagccgca catgggcaaa ctcaaacgaa ctggctaaaa aggtcggggc aaccgccgca 720

tatttgcagg acgcgctttc tgaaatatca attttcgaca tagtaatatg cgcgagccgc 780

tctcctagct acttaataac gctcgagtcg gcgcgcgatg ccatatgcgc gcgcgcaagc 840

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ctggaaggaa tttttctcta caatctcgac gacctctcca agatagccaa tgaaaacata 960

caagcaagaa tgggagaaat tggcctcgca aagactgaaa taaccaggcg ttcttctatg 1020

gtagccgaaa ggctctttac aaaagtctcg ctttaa 1056

<210> 149
<211> 1782
<212> DNA
<213> Coraliomargarita sp. CAG:312

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gtcataacat gcctcgcgct cgtttttttgc gccgtgttcg ccaggctcta ctatttgcat 120

gttgtccgca gcgacgccag catacaagca gccgacaaag tcagaaacaa atttatgaca 180

atatccgcaa ggcgcggcga catagtcgac gcccgcaaaa atcttctggc aacaagccgt 240

ccggtgataa ctatcggcgt ggatccagtg gattttacat taaaagcgga ttcggaaact 300

tttgaaaagc tgcaaaaagc cgcggaaatt cttaaagttg attttcaaga actgaagaaa 360

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aatacataca agaaaattca agatctaaaa atcaaaggga tttacggcaa tagaaattac 480

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tggattgaaa cagaacgcga cggtaagcgc agggagctaa cccatttccg cgccagagaa 660

gtaaagccca cagacggaat gaatgtggag ctgacaatgg atctggttat ccaggaaatt 720

gttgagaaag aagtccgcag gctcgccgga gaatacagcc caaagtctat atccataata 780

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agcagcaaca agggatctgc ccagctcggc gggcttttag gagaaaacaa gctgtacgaa 1140

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ggatttaaaa tagctgggaa aaccgggact tcccaaaaaa taattaacgg caagtacagc 1560

acgcgcgaac atgtcgcgtc gttttcaggg tttttcccag cacaacgccc gcgtttggtc 1620

ataactgttg ttgtggacac accccgcatg aaaggggtcg gatacggcgg aatagtggct 1680

gcgcccgcgt ttaaaaacat agccgaacag tcggcgaact atttaggcat tcaaactgac 1740

gacaagttcg aaaaaactgt cgcatggaaa ggttttcaat aa 1782

<210> 150
<211> 1581
<212> DNA
<213> Coraliomargarita sp. CAG:312

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gacgccgacg caatatctgc aaaatccgga aagccatcaa aagaaattct aaaaataaaa 180

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aatgcgccta aaagcgcatt tacagaggat gtctaccgcg cgacaatatt tcaaacggag 360

aaaaattcaa caacgccaat aaacaaactt aaatgcgtcc ctgtgcgctc aaaagtcccc 420

gcagcgcccc tgtcattaaa aactatcgaa cttgaatcct gctatccggc aaaacccgga 480

cttccggtaa tagtgtcaat cgaacggcta aaccgcgacc cttcagatac cttcgacgca 540

gcatccgctt tgctcgagat aaggctgact cccgtaaaag accgccctac ccctttcgtt 600

gtggaagact caaaaggata caactcgtgg cccatgatgc aggcgctggg aaacaaatta 660

gtatgcgttt acagcagggg gcaagcacat acaataaatg aaggcgcccg caacgcgtat 720

gtaaaaacat ctgatgacgg cggaaaaacc tggtcaaaag aaaccgtact ttccgactct 780

cccgattacg gcgaagttcc aatcgggaaa ggcctggacg aaaactccga gatgctcgta 840

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aatttcacgc acatatcaac cccggtacta gaccccatgc cgatgcaaat cacagatgta 960

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acagtggaat ccggcttgaa aaatatcgac tggaatacgg aacaatccgc cgtataccta 1140

gggaacggga aaatactggc aatagcgcgc gtagagcaca gctcggattc cacaaataga 1200

gcccaattcc agcttgaatc ctccgattac ggcaaaactt ggacacgcca aagaacaaat 1260

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tactattcag gggacagcaa aaacgcatca atcctcgtat ccgccgcaaa agccccggat 1560

tctgaagaca agggaaagta g 1581

<210> 151
<211> 201
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 151
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cagacacaac agcagcgcat aaacacacca cagacttaca acattgattt ttttcataaa 120

tattattatt taagcgagtg gaaaacgact tccaacatcg ctgcaaaaat aatctatttt 180

ttccatatca gtcaaggata a 201

<210> 152
<211> 417
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 152
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aagattggtg taaaggatat caatcccgat ttggctacgg ccatccgaac gactgttatt 120

ttgataataa cgtggggtat tgtctgttgt gaacgtcaga tagccagtat cagggaagtg 180

agtacccata cgtggttgtt ccttgtattg tcgggagtgg ctactggcct gtcttggctt 240

ttctatttca aggctttgca gacgggtgat gtttcgcgtg tagctcctgt tgacaagttg 300

agtgtagtga tgaccatttg cctctccttt ctgtttctga aagagcctac cactcctcgg 360

gtcatcattg gagcgctatt cattacttgt ggaagcattc ttatgctttt aaaataa 417

<210> 153
<211> 846
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 153
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gtgaagcgca gtgtggccga gaacgatgcc acggttgtca gtgtgttcgt caatcctacc 180

caattcaacg acaagaacga tttggctaaa tatcctcgta cgctggaggc cgactgccgc 240

ttgctggagc aatgcggagc cacggtagtc tttgcgcctt cggtcgagga aatctatccc 300

gaacccgata tgcgccactt cagtttcccg ccgctcgaca cggtgatgga aggggcttac 360

cgtccgggtc acttcaacgg cgtctgccag attgtgagca aactgttcga cttggtgaag 420

cccgaccgcg cctacttcgg cgagaaggat ttccagcagt tggctatcat tcgtgagatg 480

gtccgtcagc tgaagtttcc cctccagatt gttggctgcc ccatcgtccg cgaggccgat 540

ggcctggctt tgagcagccg taacacccgc ctctcagccg agcagcgcca gcaggccctg 600

aagatttcgc agaccctctt tgccagcgtc gactacgctg ccactcacac cgtggcccag 660

acacagcagt ttgtcgagga tgccatcgcc gccgctccgg gccttcggct ggagtatttc 720

gagctggtgg acggcaacac gctgcagaag attaccgact gggccggcac cgactatgcc 780

gtgggttgca tcaccgtctt ctgcggggag gtccgcctga ttgataatat caagtacaag 840

tcttaa 846

<210> 154
<211> 141
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 154
atggagatta cagaaatatt gcatatcttt gtccctgtat tcagattcgg atatgatggt 60

tacttcattc aaacggttgg tgacgttgct ccgcagccct tatcccgagt tgcggcaacg 120

gtggaagacg gtggtgctgc c 141

<210> 155
<211> 189
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 155
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gacagtggtc tgccgggaac ttctcgttac atcactacaa agaacagaaa gaacactacc 120

gaaagattgg agctgaagaa gtacaatccg atcctgaaga gagtgacagt acacaaagaa 180

attaaataa 189

<210> 156
<211> 654
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 156
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atcgtggcgg ccgttgtgtt tgtatatgcc ggttgggccg gcgaggaact ggcgctgacg 180

cttgccggat gggcgggcgg cattgtgctg tttgccggcc tgttcgacat gatggacggg 240

cgtgtggccc gggtgggagg catgtcgtcc actttcggtg ccctctacga ctccgtgctc 300

gaccgctaca gcgaactttt caccctttc ggcattctct atttcctgct ctttcaggga 360

tatttctggg ggagcatcat tacggctgtc gctctggtcg gctcgttgat ggtgagctat 420

gtgcgtgccc gtgccgaggg tctggacctg gattgcaagg tgggcctgat gcagcgtccc 480

gagcgtgtcg tgctgacggc tctgggtgcc atcttctgcg gtgtcttcca ggactgcacg 540

gctttcgaca gcgtgtacat cctgattgct ccgttggctg tgatagccgt gttggccaac 600

tggactgcct ttgtccgtat caaccattgt cataaactgt tgaagaagca ataa 654

<210> 157
<211> 228
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 157
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caaggacggt ctactggtga acaagcggat ggaagtcaga aagttttgaa aaagaaaggg 120

atattcttgt ttcgtgagca agtaatgtct acctttgcga catatttaat agaagaggcg 180

cgtggcggtt cgaaaccatg ggccggacgc gctcccttct ttctgtga 228

<210> 158
<211> 519
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 158
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gggaagcaga aaactgccgt cccctccgca gttttttgcc tgaaaagaga aaaaattccg 120

cccggcatcg aagcacaacg gccagccccg cagacaggcc gaccgcaccc gccggcccga 180

acaaaaacgg gaaaacaccg ccgcggctat cggaaagcac cgctttccgc cctgcaaatc 240

agcgcgttag ttttattaac agtaaattcc cgttttgtta acagattttc acaagaaatc 300

gataccccat ttttggccgt acgccaccga agccgtacct ttgctacaca ggcacgggga 360

aaagccgcat cgccaccacg gaaggggatt caaaaaaaga ccagcaccct acccttccg 420

tccgcccagc accagatgca gccatcccca gaggccgagg acgatgacga gcagcgtctg 480

gatgccatgg accaggaggg caaagagaga cgcatcggc 519

<210> 159
<211> 432
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 159
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ggctgtggtc gaaggcctgg agggctacct catcgccgag tcggacaacg tcctgctgat 120

ttgcaagaag gacgaggagc acgccatccg caagtacgtg aacgatgccc agatcaagat 180

gggcgaagac tatatctaag ggaaaaagaa caaaccgata cctacaggaa aggggcggcc 240

ctcatgcggg ccgccccttt tttcggttat cgtcgaagga ggttaggagt ctcagaacgc 300

tgtgcggatg gcctcggcca cagccttgaa ctcttcatcc gtcaatgtca gcttggggtt 360

ggagaagagc atgtccttct cgctctgcat ggggatgagg tggatgtgtg cgtgaggcac 420

ttccagtccc ag 432

<210> 160
<211> 180

<212> DNA
<213> Bacteroides sp. CAG:661

<400> 160
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ggaaaatcgg aagtgccggt gatggtttgt accggctgtc ttctgtcatg cttgatggga 120

ggaacagctt gtgccctttg tgcttcccga aaatattttc tactctttta tacttattaa 180

<210> 161
<211> 207
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 161
atttccggcc acggtgagaa gaagcgcttc accgtacgca agatgtcggg tactgtaggt 60

gtagagcgta tcttccccat cgagtcaccg gccatcgaca gcatcgaggt gaacaagatt 120

ggtaaagttc gccgcgccaa gctgtactac ctgcgcaacc tcaccggcaa gaaagctcgt 180

atcaaagaga aaagagccaa cgcctga 207

<210> 162
<211> 405
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 162
gtgcgtctgc ctgaataccc ttatctttgc gccctcaaac caaccataaa cagacgttct 60

ttggagaagt tgcgccacat cctgaagtat ttccttcccc tgctgtttct gtcgtattgg 120

ggaggagtga cgctgttcac ccactcgcat gtggtgaacg gtgtcatcat ggtgcactcg 180

catcccttca aagccggtca ccagcacacg tcgggccagg ccgagaccat tcttttcctt 240

gaccattacg aggcctcttc cgtgcctgtg ctgcttgctg ccgtcccctg tttctgtgcc 300

ctgctgggct tgctggcggt ggtgcgctgc acgcgcctct gcctgccgcg gctggaggac 360

ggcatccgtc tgcgcgctcc tcccgccagt gtcttcttcg cctga 405

<210> 163
<211> 324
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 163
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aagggcaaga ctggtcgcgt attgaaggtt ctcgttaaga agaatcgtgc gatcgttgag 120

ggcatcaaca tggtttccaa gagcacgaag cccagcgcaa agaaccccca aggtggtatc 180

gtgaagcagg aagcttccat tcacctgtcg aacttgaacc cggtagaccc caagactggc 240

aagggtactc gtattggtag aaaattgagt gcggacggca ctttagtgcg ttattctaaa 300

aaatcaggag aggagattaa gtaa 324

<210> 164
<211> 1227
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 164
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ctggtgtaca tcgtgcgccg tacgaagaac tttgcatggc gtgcagcctt ctggctcccc 120

tccgccgtgc tggtcgtgct gtacctgtac ctcatctacc tgacgggcga caatgccctg 180

gcccaccatc cgcaggccat cggccgcctg gccatcgccg tcatggcact ggccgtaccc 240

aaaatcttgt tcatgctctg ctcgctgctc ggcatcctgt gccgcggact gggtcgctgc 300

ctgtcggccg ccctgctgca cacgccgttc cgcaagccgc aggcaccgtt catcgtccac 360

cgcacgccgt tcacagccgc cgggctggtg ctgggcgtcg tgagcttcgt caacgtgatt 420

tatggagcca cagccggcat cacgcgtttc caggtgaagc acgtgaccta cgaatcggag 480

cggctgcccg agggcttcga cggctaccgc atcgcccagt tgtcggacat ccacatcggc 540

agttggcagg gccgccccga agccgtggaa aagctggtga agctcaccaa cgaacagcag 600

gcggacctca tcgtctttac cggcgacctg gtgaaccagc agagccacga gctggacagc 660

ttccgcccga ccctgtcgcg cctccaggca cccgacggcg tctactccgt actgggcaac 720

cacgactacg gcacctacta ccgctggaag aacagccgcg aggaggccga caacctgcaa 780

tacctgcggg agcagcagca ggccatgggc tggcggctgc tggacaacag ccacgccatt 840

ctgcaccacc gcggagacag catcgccctc atcggcgtgg agaacgacgg agaaccgccc 900

ttcccccaac atgccgacct gccccgtgcc accgagggaa cgcaagggat gttcagcatc 960

ctgctgagcc acaaccccac ccactggcgc cgcgaggtgc tgcccgagtc ggacatcgac 1020

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tcgctgaagt atcccgaatg gtcgggcatg taccgcgaag gctcacgtgc cctctacgtc 1140

aacatcggca tcggctacgt gggcctgccc ttccgcttcg gcgcctggcc cgagattacc 1200

gtcatcacgc tgaagaaaaa gaaatag 1227

<210> 165
<211> 864
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 165
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aagctgacca tcgtcaacga gaatacgctg gaagaggtgg taggcctgca cgtgtccaag 120

ctgaacggca tctccgtact tctgtccgta ctgaccgttc tgtttgtgat agcctcgctc 180

atcgtggcct tcaccccgct gcgcaactat ctgccgggct acatgaacag cgaaatacgc 240

gcccaggtgg tagacaacgc cctgcgcgtg gactctctcc agcgactggt agagaggcag 300

aacctgtaca tcatgaacat ccaggacatc ttccgcggcg aggtcaaggc cgacaccatc 360

cagtccatca actcgctgac caccctgcgc caggattctc tgatggaacg tacccaacgc 420

gaagaagaat tccgcaagca atacgaggaa aaggaaaaat acaacctgac caacgttgcc 480

accggaccaa ccgaaggact gaatttctac tgccccacac gcggcatcgt atcgtcttct 540

ttcaaccccg aacagcgaca ttacggaacg gatattgccg ccactcccgg cgaaagtata 600

ctggccactc tggacggtac cgtcatcctg agcgcctaca ctgccgagac aggctacatc 660

attcaggtgc agcacagtca ggacctcgta tccatctaca agcactgcgg ttccctgctc 720

aagaaagaag gcgactcggt gaaggccgga gaagccatcg ccctggtggg caacacggga 780

cagctgacta ccggcccaca cctacacttt gagctgtggt accgcggaag agccatcaac 840

cccgaaattc acatcgtatt ctaa 864

<210> 166
<211> 594
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 166
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gccaaaggca tctcggtaga cgacttcgca cgcgccatca gcgacgtgct caacggcaac 120

ccaacggaaa tcacccatac cgaggcacgc gacatcgtaa acaaatattt cgaagaaatg 180

gaagcccgca tcaatgcgga aaacatcgag aagggcaaga agttcctcga agagaacaag 240

cagcgtccgg gcgtggtgac cctgcccagc ggcctgcaat acgaagtgat caaggaaggc 300

aacgtaggcc actatgccaa gatagacgac caggtgcagt gccactacga aggcactctc 360

atcgacggta ccctcttcga cagctccatc aagcgcggcc aacccgccac gttcggcgtc 420

aaccaggtca tccccggctg ggtggaagcc ctccagctga tgcccgaagg agccaagtgg 480

aaactctaca tccccagcga gctgggctat ggcgcacacg gcgcaggcga gatgattccg 540

ccccacagca cactgatttt cgaagtggaa ctcctgaaaa tattatccaa ataa 594

<210> 167
<211> 630
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 167
atgttgacag aactgaaagt aaccgatttt ttggataaag tggcgggcaa cgaccccgtg 60

cccgggggcg gcagtgtggc cgccttgagt ggcgcgttgg cctcggcctt gggagccatg 120

gtggcccggc tcaccgttgg caagaagaac tacgaagcca gctgggacga gatggagtgt 180

gtggcggccg atctttctgc cgcccgtgaa ggctttacag tcgacatcga ccgcgactcc 240

gaggcctacg accgcgtatt tgcctgcttt aagatgccca aggccaccga tgaagaaaag 300

gcggcccgca gtgcggccat ccaggaggct acccgacagg cggccctggt gccaatggaa 360

gtggcccgca aggcctttgc cctgatgccc gccctgacct acgtggcccg taacggcaac 420

cgcaacgccg tgaccgatgc ctgtgtggcc atgatgtctg cccgcaatgc ggtgctgggc 480

gcgttgctca acgtccgcat caatctgggc tcgctgaaag acaaggagtt tgtggctgcc 540

ctgcaggccg aggccgacga cctcgagcgg aaagcctgcg acgaagaagc ccgtttgctg 600

gaatccatca cccaagaatt acgcgtatga 630

<210> 168
<211> 270

<212> DNA
<213> Bacteroides sp. CAG:661

<400> 168
gaaggtatag tgttcggcat agtagcgtcc gccttcgtgt tcacgctgga ggcgcatgct 60

catgtagacg aagaggacga ccacgaagat gacggcgaag gccaggatgc cgttgcctat 120

catgaattgt ttgttggtgt tcagacggtg tgccatagcg gtgttctttc attgattgtt 180

gcggcaaatg taccgataat ctccgaactt tcagcacgaa atgaacatat tcttggattg 240

ggcggttttt tgcttgcatc ggacgattaa 270

<210> 169
<211> 354
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 169
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aattacatgg gcagcatcac cattgacgag gacctcatgg atgcggccaa catgattgcc 120

ggcgagaagg tctacattgc cgacaacaac aatggcgaac gttttgagac ctatatcatt 180

aaaggtgaac ggggctccgg caaggtctgc ctcaatggcg ccgccgcacg gcgtgtgcag 240

cccggcgaca ttgtcatcat catgtcctac gcactgatgg acttcgagga agccaagact 300

ttcaaaccga cggttgtttt ccccgacccg gacaccaacc gagtggtggg ctga 354

<210> 170
<211> 504
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 170
atgatccatt ctccattttc cattatgaaa atacgtgtag gtttcggctt cgatgtccac 60

cagctggtgg aaggccgtga gttgtggttg ggcggcatac gcctggagca cgagaaagga 120

ttgctgggac acagcgatgc cgacgtgttg atacatgcca tctgtgatgc cctgctgggg 180

gcggccaata tgcgcgacat cggttaccat ttccccgata cggccggtga gttcaagaat 240

atcgacagca agattctgct gaagaagacc gtggaactga ttgccaccaa gggctacacg 300

gtgggaaaca tcgacgctac cgtctgtgcc gaacgcccca agctgaaggc acgcatcccc 360

gagatgcagc agacgctggc ccgcgtgatg ggggtcgacg aggacgacgt gtccatcaag 420

gccaccacga ccgagaagct gggcttcaca ggccgcgagg aaggcatttc ggcgtatgcg 480

acggtgctgg tggtgaaaga atag 504

<210> 171
<211> 363
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 171
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agcccctccg aatggaaatt cttgggcgaa agaccggcca tcattgattt ttatgccacc 120

tggtgcggtc cttgcaagat gctgtcgccc gttcttgaag aactggcagc cgaatatgca 180

ggaaagatag atatctataa gattaatgta gaagaggaag aggaactggc aggtgtattc 240

ggcgtcagaa gtgtccccac cctgctcttc gttcccatgg aaggagctcc gcaaatggct 300

caaggggcgt tgcccaagaa cgtgttgcag gaagccatcc ggaacgtact gctgccagaa 360

tga 363

<210> 172
<211> 354
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 172
ttaaaaacta acagaagaac ctttatgaat ttaatgaccg tatttctctt gcaggcttcc 60

gtatcgggag gcggtgctga atggacgtgg atcatgctga ttgccatgtt tgccatcatg 120

tatttcttta tgatccgtcc gcagaacaag aaacagaaag aaattgccaa tttccgcaaa 180

tcacttcagg ttaaccagaa ggtaatcact gctggtggta tccatggcgt gatcaaagaa 240

atcaacgata acgatgtaat actggaaatc gcttcgaacg tcaagatccg tatcgacaag 300

aattctatct ttgccgctgc agccgatgcc aacggcagcc aggccggtaa ataa 354

<210> 173
<211> 738
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 173
atgatacaga ccgacctgct gacagccgac aaagacccca tgggggccgc catcctcgac 60

tacctggagc acgggaaagc cgacaagctg cgtgtgttct cctcccagtt tgacgaggac 120

gagatacccg tccgcaccct gttccgcacc gagaagcaga tgtctccgct ggaacgcacc 180

gccctgcaac tggcctccgg ccgcatcctc gacgtgggag ccggaagcgg ttgccacagc 240

ctggccctgc aggcggcagg caaggaagtg gaagccatcg acatctcccc gctctcggtg 300

gaagccatgc gccggcgggg agtggggcaa gccgtgcagg ccaacctctt cagcgacagc 360

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ctggagaacc tgcccgcctt cttccgcaag gccaaacagc tgctccgccc gggtggcagc 480

atcctgatgg actccagcga cctgcgctac ctgtacgaag acgaggacgg cagtttcgtc 540

atcgacatcg caggcgacta ttacggcgaa gtggacttcc ggatgcaata caagcaggtg 600

gaaggcgacc cgttcgactg gctctacatc gacttccaga ccctttccct ctatgccgca 660

cagaacggct tcacggccga actcgccaag gagggcaagc actacgacta cctggcccgg 720

ctgcgcccga aagcgtga 738

<210> 174
<211> 129
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 174
atgtatttaa ttttgttctt gctcagtgtc atacaggtgt ggaattgctt tttccgcaaa 60

agtacgccat tattttcaga taatcaaaaa ctctttggca tcagtttgtt tttaggaacc 120

gaaaattaa 129

<210> 175
<211> 360
<212> DNA
<213> Bacteroides sp. CAG:661

<400> 175
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aagaaaatcg tagtggccga cctcacccgc atagacgaca ccatctgcaa ctacttcatc 120

atctgccagg gaaactcgcc cagccaggtg accgccatcg tagagtctgt caaggaattt 180

gcacgcaagg gcgccaacgt caagcccttc gccatcgacg gcctgcgcaa cgcccagtgg 240

gtggccatgg actatgccga cgtgctggtg cacgtcttcc tgcccgaaac gcgcagctac 300

tacaacctcg aaaacctctg ggccgacgcc caactaaccc aaatacccga tatcgattaa 360

<210> 176
<211> 732
<212> DNA
<213> unclassified Intestinimonas

<400> 176
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ctggagggca cagtggagcg ggccaagtcc cgggcccgga agcggaccct caagcggtgg 120

ctgggcatcc ctgtggcctc cctgggggggg gtggcggcag ccttcgtgct gctggtgaac 180

tgctgcgtcc cctttgccca ggcctgcggg cgcatccctg gcctccggga cctggcggcg 240

gcggtggccc tctcccccag cctgaaggcg gcggtggaga acgacttcgt ccaggtggtg 300

gaccaggagc agacggaaaa cggcatcacc ttccgtctgg actacctcat tctggacacc 360

atgcagatca acttcttcta ctccgtctcc ggcggggact atgaccgcta ccacgtctac 420

cccagcatca ccggccccga cggagaaaag ctggagggtt actccatcgt cagcagcgag 480

accacgcccg gcgatctggg cgacttcaac gtcaactacg ccgacgacct ccaggtgccg 540

gaggccctgc gcctcacctg cgcggtgacc gcccagcggg aggacaggga cggctccgcc 600

gtcgccccg ctgactccag catctgggac gagccggaac ctgcccagga accggaggtg 660

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atctccctga ac 732

<210> 177
<211> 633
<212> DNA
<213> unclassified Intestinimonas

<400> 177
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gagcggctca acgccgccgc ccccgacctg ggcctcttcg gcaaggtgag ccgcatctac 180

cgggacgccc ggcggctcta tggccgggga ccctataagg accacctgtg gtggagcatc 240

cagcggccca ccgacgagga gtttgcccgg cggccggtgc tctggttcga gctggagccg 300

gagggctggt cctacggcat gggctactac caggccccgc cggtcaccat ggccaagctg 360

cgccaccggc tggaccacga ccccgccccc tttgagaagc tgcttcggca gatcaagaag 420

caggaccgct tcaccctgga gacggaggcc tacaagcggc ccaagggcca tctgaacgcc 480

ctgctggacc cctggtacaa cgcccgcagc ttcgccctga gccgggacca caagggccat 540

cagcccgtcc tctactccca cgacctggtg gacctggtgg gggaggacct ggagaccctg 600

ctgcccatct accggtatat cctgtcggtg gag 633

<210> 178
<211> 537
<212> DNA
<213> unclassified Intestinimonas

<400> 178
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accatggcag cgcccgcacc cgcgcccgcg ccggcgccta taaagcccaa gttcgtggat 120

tatgagacag gcgccttcta tatggagaag cccgagcata tgacccacct ggtggggaac 180

gtgctggtgg tgaagaacca tccccggatc ctgttccgcg gaaagctgga ctcgctgcag 240

agtgcggtgg tcctggccca ggtggacatc catgaccggg gcggcagcca ggctctcatc 300

gacgacctgg gggacattct gaagatcctg cgggagatga tgcgctgcga cgtgctggat 360

gagcccttcc agatggacac catcatcgga ctcacccacg ccgagctgcg ggagcagtcc 420

cacgatcccc agcggttctt cggggtcaag gccatggtcc tgcccgacta caccatggga 480

cgggacttcg cgctgctcaa ccagctgcgc accgacgtac gcgagacgga agtggcg 537

<210> 179
<211> 1347
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gccttcgcca ccggcctggc ccaggtcacc tccacggcgg tctttgccgg gtactttctc 660

acccaccgcc agcggctccg gttccagccc ttccgctggg agctctccgc ctaccggcgc 720

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acggcggact tctccgccct catcaccggg gacatggacc agatcgtgga gggacggctg 660

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gagcctgtgg aggaccgggc cgatatcccc gatgtgatcc ccacgccccg ggagatccgg 360

gatgtgctgg acgagtatat catcggccag gaggcggcca aggtggccct ctcc 414

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tctgctgagg gctga 495

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gccctctccg acctggccgg agatttcgtg gtggccaccg ccggacccga cctggagtcg 480

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gagatccgcg ctctggagga ggcctacgcc cgccacgagt gtccggtgat ctccaacaat 180

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<212> DNA
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<212> DNA
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<400> 186

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ggagaggaga tcgactatgc accctga 507

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cgggagatca ccgatgagcg gtgggtcccc tttttccggg acgactaccg cctcaagcgc 180

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<210> 189
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<213> unclassified Intestinimonas

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atgtgcgcct tcaagcagcg gcagatcgtg gccatgaagc gcatggtcaa ggaggtggac 660

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ctcaag 726

<210> 194
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<212> DNA
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<212> DNA
<213> unclassified Clostridiales

<400> 209
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<210> 210
<211> 2034
<212> DNA
<213> unclassified Clostridiales

<400> 210

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<210> 211

<211> 624
<212> DNA
<213> unclassified Clostridiales

<400> 211
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<210> 212
<211> 741
<212> DNA
<213> unclassified Clostridiales

<400> 212
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<211> 1596
<212> DNA
<213> unclassified Clostridiales

<400> 213
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<400> 217
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<210> 218
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<400> 218
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<211> 1383
<212> DNA
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ggccgcaaca aggatggttc aagcaaatcg tccatctgca ttcacggcgg cgcagcgttt 180

gtctggccgc tcgtgcaggc ataccagttt ctggatctca cgccgatgtc cctgcaggta 240

gaccttgtca acgcgctttc ccgccagaac atccgcgtag acgttccctc ccgcttcacg 300

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gcaaacgcca atatggacca acgcatcaag gtggcgcagg caaacgcgac cgccattcag 720

ggtgaaaacg atgcgcgcat cgatgtgacg cgctccaacg ccaaactgcg cgagcaggaa 780

gcggaagccc agcgcatcgc caccgcagcg gaaaaggtac aatcggcaaa agcgctcgag 840

gaatcctact ccgcagagcg cgcggcagaa gaagcgcgcg cggcgcgtga aaaggctacg 900

cttgaggcgg acatcatcgt gaaaaccgaa gtggaaaagc gccgtattga gctggaagcc 960

gaggcgcagg cggagcagat ccgccgcaaa gcccgcggcg aagcggacgc aatctacatg 1020

cgcatggaag cggaagcccg cggcgcgcag gaaatgctca tcaagcaggc ggacggtttc 1080

acgcaggttg tggctgcggc aggtaatcct tccgatgcgc tccggctgat gcttgcggac 1140

aagatggaag ctctgatgca gattcaggtg gacgccatca agaacatcaa gatcgacaag 1200

gtgaccgttt gggacggcgc gaacggcgaa aagagcgcca cggcgaactt cctttccggg 1260

atcgtcaaga gcatcccgcc catgcaggag ctgttcgaca tggcgggcat gcagctgcca 1320

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taa 1383

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<211> 699
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<213> unclassified Clostridiales

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gagcgtgccg tgaaacgcgc ggaatacgtg ccgcttacgg cggaggagat cgactatgct 180

ctgctgcgtg gtcaggaggc tgagacggag gatgcgcgcc tttcggttgc gcagtgcgcc 240

gtaagccttg tggacaaagt acattacttc tggggcggta agagcagcgc catgggcgag 300

gacccgcgtt ggggcgaact gacggaggtc acgagcgcag gcagtgaaag cacgggcaca 360

gaaaagcctt acgggctcga ttgctccggc tttgtggcct ggtgctttat ccagcagggg 420

ctcagcgccg ccgaggtgga ggagcagatc ggcatgggca cctggacgca gtgggacagg 480

acggagggaa tcgcctggaa ggatctgcgc gtgggagatt ttgtgtttca gaatgcatac 540

cccaccaaca agggcaacca catcggcatc tgcatcggct ttgatgaggc aggcgcgccc 600

gtcttcgcgc attgcgcggc agggttcgac aatgttgtcg tgacccgggc gggagacgtg 660

ttccgctatg cacggcggcc caatttttat gcacaataa 699

<210> 221
<211> 816
<212> DNA
<213> unclassified Clostridiales

<400> 221
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gggtgcgcat tcggcccgca agccacgcct gcgcacccgc cggtagacgt gacgctcgta 120

cccgaaacag cagcgcctgt actcacgccc agcccaactc ccgtgcccag ccccactccc 180

gcgcccacgc cggaacccac accttcccca acgcccacgc cggaaccaac cccttacaaa 240

agcgcagact atccccttcc ccccaaaagc ctgcgcacgc gggagggtgg acgttacccg 300

gaagaagcgc ggctcaatga aaatcccgat catttttaca ccgtagtgga tctcacaaac 360

caggcggtat tcgtatatga aaaggacagc gccggcgaat acaccgtgct cgtgcgggag 420

atgatctgct cctccggcat cgaagacggc caccgcagcc cacgcggcac atttaagatg 480

ggcgaggatt acaagcgctt cgctttcttc gtgcattttg attgttatgc gcaatattgg 540

tcccagatcc gcgggcggat ctacttccat tccgtgcctt attccgaacg ggatgaccgc 600

tacctgatgg aagacgaatt ctggcttctc ggccagccgg cctcacacgg ctgcatccgc 660

cttctgccgg acgacgcgca atgggtctat ctttaccttt gccccggctc caccgtgacc 720

atcacggacg agcttccggc ggatgcggcg ctcgtggccc gcctactgcc caaagaaacg 780

cccacgccgg attgttatga aatcgcatcc gattaa 816

<210> 222
<211> 738
<212> DNA
<213> unclassified Clostridiales

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ctgaaaaaag gcaccatcgc cggcaagggc gcaatcaaca accgcatgac caacagcatg 180

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tacgccatgg gccttgccac gaaggaagag cttgaaaaga tcgcggcata ctccttcaaa 480

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ctggaatacg gaatcaccaa cgacggaacg ctcgtgcttg cagatgaaat ttccccagac 600

acctgccgct tctgggatgt gaaaacaggc gaaaagcttg ataaggaccg gttccgccgc 660

gaccttggcg gcgtggagga agcatatcaa gaaatgatga agcgcctctt ggcgcacaat 720

gcgggcgggc agaactga 738

<210> 223
<211> 1215
<212> DNA
<213> unclassified Clostridiales

<400> 223
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gagcgcaaca aggcgcgcaa gaacgtgccc gaatcggaat acctttccca aatgcgggac 180

agcaggaacg ttgttgagtt cgatgatctg cacacgtatt tttataccga tatcggtacc 240

gtgaaggcgg tggacggcgt aacctacgac gtgccgcagg gcaccacggt ggggatcgtc 300

ggcgaatccg gctgcggaaa atccgttact tcgctctcgc tgatgcagct cgtgcaggcg 360

ccgcaggggc aggtcgtctc tggcgaaatc cgctatcttg caagcgatgg aaaatgctac 420

aacatcgcaa agatgcccag aagcgagatg ctgcatatcc ggggcaagga gatctccatg 480

atcttccagg agccgatgac aagcctgaac ccggtgttca ccatcggcga gcagatggac 540

gaggttgtgc tgctgcatga agaaggcgct acggcggaaa gcgcgaaagc gcattccatc 600

gagatgcttc agctcgtcgg catcgccatg ccggataagg tgtatgcaag ctatccgcac 660

gagctttcgg gcggcatgcg gcaaagggtt atgattgcaa tggcactttc ctgcggcccc 720

cgcctcatca ttgccgatga gcccaccaca gcgctggatg ttaccattca ggcgcagatt 780

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ctgatgcgca gcaaaccgag cgtaaacaaa gcggtggatc ggctttacag catcccgggg 1020

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gccgcctgtt acctttacga ggaagaccgg gatgcggttt actttgatgc gctcacgggc 1200

aaaaagagcg aatga 1215

<210> 224
<211> 705
<212> DNA
<213> unclassified Clostridiales

<400> 224
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acagcctgca tcccaattgt gacggttccg atggcggtta cggcagggct gcgcatcaca 180

agcagccttg cggcaggcaa acagcccccg ctttggcgcg cattctgcag cgcgtttttt 240

ggtgaatgga aacgcgcgct ggcctgcgga tgggcgctta ccctgttgca ggcgctggct 300

gggttcggcg tgtatgcata tgccgtaatg atggaagcaa acccgcttgc gctgcttgcg 360

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tccgtgctgt tttttccggt tacgctgccg ctcgccatat tccttctgcc tgcgcttgcg 600

ctgcttgcgg cttcttgcgc aatcaggccg ggccttaagc gctgcatgcg ggaggatgaa 660

aacactccgg gcggcgcagg tgcggagccg caagaaggac ggtga 705

<210> 225
<211> 891
<212> DNA
<213> unclassified Clostridiales

<400> 225
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ggaagcctgt atgtgacggc gggcgccatt ctcatcggcg tgccggtcgg gattctctgc 300

gccgtgtatc ttgcccgttt ctgttcaaag aggctgtacc gggtgctcaa gcccctgatt 360

gacctgctcg cggggattcc ttccatcgtg tatggattct tcggcctcgt tgtcattgtg 420

ccgctgattc agcagctcac ggggggcagc aacggtaaaa atatcctcac agcatccctg 480

atgctcggca tcatgatcct gcccacgatc atcagcgttt cagaaagcgc aatccgcgcc 540

gtcccggaaa gttattatga aggcgcgctt gcgcttggcg caacgcatga gcgcagcgta 600

tttttcgccg tacttcccgc cgccaaatcc ggcattctcg ccggggtgat tctgggcgta 660

ggccgcgcca tcggggaagc gaccgccgta aaaatggtgg cgggcaacca gccaatcctg 720

cccacaagca tcctgagcgg cgtgcgcacg ctgacttcga acatcgttgt ggaaatgggc 780

tatgccgaag gcctgcaccg ggaagcgctg atcgccacgg ccgtcgtgct ctttgtgttt 840

atcctgttga ttaacctttc cttctcagcc cttaagaaaa aggagggata a 891

<210> 226
<211> 1785
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 226
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attattatgg cgacaataac agtagcatcg tcactgtatg tgcctatact tgtcggtaat 180

gcaattgatt atattattgg accatctaat gttaatttca ggctgattgc acagattctt 240

gctgaaattg gcgttgttat aggaataaca gcactttcac agtggattat gaatatatgt 300

aataataaga ttacatatca tgtaacaaga gatataagag atgaagctat agaaaagata 360

gaacatctgc cattaaaata tatagatgga cattcatacg gtgagattgt cagtcgtgtt 420

attgccgatg tagaccagtt cgctgacggc ttattaatgg gatttacaca gtttttctca 480

ggtgttatga caatacttgg aacactcgga tttatgttat caataaatgt taaaattaca 540

cttgttgtag ttcttattac accggtttca ttttttgttg ccagttttat tgcaaagaga 600

acatataaaa tgttcaagct tcagtcagag actcgtggag agcagacagc tctcattgat 660

gaaatgattg gaggtcagaa agttgtaagt gcttattgtc atgaagaaga ggcagtaaga 720

cagtttgatg aaatcaatga cagacttcag aaatattcgc ttaacgcgat atttttctca 780

tcaataacaa atccttcaac aagatttgta aacagccttg tatatgccgg agttgcagtt 840

acaggtgcta tatcagctat atatggaaga cttactgtag gacagctttc atgtttttta 900

agttatgcga accagtatac aaaacctttc aatgaaattt caggtgttgt aacggaactt 960

cagaatgcta tagcatgtgc ttcgagagta tttgaactta tagaggaaga gccggaagct 1020

gcagagatca gtaatgcggt taatcttgaa aatgttgacg gacgagttga tttaaatgat 1080

gtagaatttt catatgtccc tgataaaaag cttattgaag attttaatct tcatgtaaaa 1140

aaaggtcaga aaattgccat tgtaggacct acaggatgtg gtaaaacaac aattatcaac 1200

ctccttatga gattttatga tgtaaacagc ggctcaatag atgtgtcgag tgttgatata 1260

agggagctta caagacgttc actcagggcg ggctatggaa tggttctgca ggatacgtgg 1320

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ggaagaacaa gttttattgt tgcacacaga ctttctacaa tccagtcagc agacgtgatt 1680

ctggtaatga aagacggtca tattattgaa cagggtaatc acgaagaatt acttgctaag 1740

aatggatttt ataagaaact ttatgaaagc cagtttgcac aatag 1785

<210> 227
<211> 1488
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 227
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cagggacaca aatttgtaat taaagctatc aagaagggtg aaccggttgt taaatatggt 180

ttcagaattg gatttgcaca ggctgacatt cctgttggag catgggttca tactcataat 240

ttaaagacag gtcttggtga attacttgat tatacttatg agcctgaagg acataaagat 300

gtagagccaa cagaaccagc ttattttgaa ggatatatga gagagaatgg caaagttggt 360

gttcgcaatg aagtatggat tgttcctaca gtaggctgcg ttaattcaat cgcaagagca 420

attgaagcaa cagcaagagc aaataagcct gaaggcgtag atgaagtagt tgcatttaca 480

catccttatg gctgttctca gacaacagaa gaccaggaga atacaagaaa gattcttgct 540

gaccttatca atcacccaaa tgcaggtgca gtgcttgtac tcggtctcgg atgtgaaaac 600

agccgtatag aagttctcaa ggattatata ggtgaagtaa atccggacag agttaagttt 660

ttacaggttc aggatgttga aaatgagcag gaagaagcag agaagcttat gaatgagctt 720

atggcttatg ctgccaactt caaacgtgaa aaagttaatg caaaagaact tattattggt 780

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tgtgcagcat caggtgcaca gatggttctt ttcacaactg gtagaggaac accatttgca 1260

tcaccggttc ctactgttaa gattgcaaca aattcaagac ttgcaggaaa taaatctaat 1320

tggattgatt ttaatgcagg tagaattgtt acagatgacc ttccacttga agatgctgca 1380

aaagaacttt tccagcttgt gcttgatgtt gcttcaggaa agaaagttaa agctgaaatt 1440

gcaggtttcc atgatttagc aatctttaag cagggtgtaa cattataa 1488

<210> 228
<211> 1938
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 228

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tcagatgatg agattgattc tgaagtaagc ctttcggttg accagattcc gttaaggctt 180

gttgtcggaa catgtaatgc ttcaagaact aatgcatttg cgggcaattt catgccgctt 240

cttgactggg gaacggaatt ttctgcaaaa tgggcgagtc ttagtgacag ccaggttaat 300

gaaggaataa gagacccgat taaagtatat gaatatatga acaagtttta tgtacttgaa 360

ggaaataaac gtgtaagtgt attaaagtat tttaatgcag ttacagtcaa tgcagaagta 420

atacgaaaga ttcccaaaaa gtcagataat ccggaagtta agatttatta tgaatttatg 480

gaattttaca aatgcacaag gctcaatgat atatatttca gcgaagtggg aagttttccg 540

tcacttatga agcttgtggg aattgagccg gataaaaaga tggatgagga tgccaaaaaa 600

gattttgtgt catgcttttt atcatttaag aatgcttttg attcaagagg cggcgacaga 660

tttgattatc cggtaggaga cgcattcctg agatttattc acattttcgg atatgataca 720

gttaaaaaga tgacaccgtc agatatggca aagaatgttg caaaatcatg ggctgaattc 780

gtattgttgt cagaagacag tgcagttgat ttaaagatga atcctactgt aaatgagcct 840

aagaaaaaca ttttgagtta tctccttcct aggccagaca gcggaagcaa gaaactgaaa 900

gttggattta tatatgaaaa tacaccacag gattcggaat ggtgttatgc acatgaactt 960

ggaagacagt atatagatga tacatttggt aagcagatag agacgataag cattactaat 1020

gtcaagccgg aaaaagatga tgagcatgct attgagatga tgataaaaaa tggtgcagac 1080

cttatatttg tcacatctcc ggcaatgact atagcaagtg taaagatggc gattgcacat 1140

ccggatgtaa agattcttaa ctgttcgctc aatacatcgc ataagtatat aaggacatat 1200

tatgcgagaa tgtatgaagc aaagtttctt acaggggttc ttgcaggagc actggcaaca 1260

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gaccaggata tgataactcc acagtgtggt tcaagacgtt ttggattata taataatgaa 1500

ggcgtcggca acagacagca tatagcaatg cctgtatggc actggggtgt attttatgaa 1560

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gaatttgaac cattttctga tgagttatat gaccagaacc gacatcttca gaataaaaag 1800

ggacatgaga tgagcccgga ggatattatc acaatggatt ggcttcttga taatgtagtt 1860

ggtgatattc ctgcaattga tgagcttgat gaaagtgcaa gagcaataat ggtaagtcaa 1920

ggaattacga gagaataa 1938

<210> 229
<211> 1455
<212> DNA

<213> Eubacterium sp. CAG:86

<400> 229
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ggcgatggtg acactatgta ttttattggt acaattgcat ttgcggcaat agcaggattt 180

atcctttcat gtgtaaaagc accggaacgt aagatgggta gccgggatgg atactgtata 240

gttgcacttg catggataat tatatgcata ataggtgctg ttccgttgtt tcttacagga 300

cagttcaggt cttactggtc tgcacttttt gagatagttt cgggttttac gactacaggt 360

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gttctactga tgataatcgg tgcatgctcg ggttcaacgg gcggtggaat caaagtatcg 1080

cgtgttattg ttatggtaaa gagctttttt aatgaaataa gacatattat caatccgagc 1140

tctgttacag cagtgaggac aaatggcaag cctatggata aagagacact tatagcggtg 1200

agagtttatg tagcatcgta ttttattttg atttgtctgt ttacactggt catatcactt 1260

aacggacttg actttacaac aaatctgaca gcagttttat cgtgttttaa taatatagga 1320

ccgggactta atcttgttgg cccaatgtca aatttctcat gttatgccga ctgggcacag 1380

gttatacttt cagttgccat gctcacggga cgacttgaga tatttccgat gttcatgctg 1440

ttttcaaaat cggtt 1455

<210> 230
<211> 1287
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 230
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gaagatgtaa gtagaaaact cgattcagat tctatacaga aatttaatga atatagtgaa 180

gatgaatgga ataagattat caagacggca gacggccacg gggttctgcc gttaatagca 240

gatgagttat attttatgga ttgcgtgcct gataatatta agattaaggc ggttgcaaaa 300

gcaaaaaaaa ttgttatcca gaacagccgt ctttcatacc tgactaatga gtatatgagc 360

attttaaatg atgccggaat tacggcagtg cttttaaaag gtgccggaac ggctgcatat 420

tatccggtaa agagtcttag aaaatcaggt gatattgata tactcattcc tgataagctg 480

cagtttgata aagctgtaag tgtgcttgaa ctgcatggcg tggttataat gggggaacag 540

catgcatggc atcatgttga aatgcataat gagaccggcg taataataga acttcacagg 600

gcactggcag aacagttcga tgatgacgat gtgaataaaa agattgagca gtatactgaa 660

gaaatgtcag ttcataatat tttaaaaaat attgatggaa tgaatatagt atgtcctgag 720

atggcatggg aagcattaag tcttgctatt catatgctgc accattttgt gagagcaggg 780

ttcggactca aacttttgtg tgactgggtt gtattctgga atagcgaaca tgatgaaagt 840

cagaaaaata cattttattc aatgataagc agcattggaa taacaggttt tgttaaagct 900

gtgaatataa tctgtataaa gtatcttgga atgaaaaaag aaaatgtttt ttttatgata 960

caggatgaaa aaacagaagt taataccgat atattcctta aagatattat cgaggcacag 1020

gaatttggca gtaccaaaga tgaaagaatg gttgtgcttc gtggcagcag gtttgcagac 1080

tatgtaagag agttccatca tcagatgaaa cttaacaatc ccgataagaa agataataag 1140

ctgttgtggc cttatctctg ggttaaaaca tttgcagttt ttgtaagaaa taacaggact 1200

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cttgcactct ttgcattggc agtgagaata cttctcatca attataatca cggagaagct 180

tattctaaga cggtacttga ccatcagagt tatacatcta caacaatacc ttacaagaga 240

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atacttgacc cgaaacttat attgtctgat gaaaagtata aagaaccgac acttacggca 360

ttgacagaat gttttgattt aaaaagaagt gatcttgagt caattcttgc aactaaaagc 420

acaagccagt atgagaagct gttaaaagag ctgacaaaag atgaaatctc agaatttgag 480

agccgtgtgg aagatacaaa aaataatcca tatataaaag gtgtgtggtt tgaagacagc 540

tatataagaa aatatccatt ttctacactg gcggccgatg taattggatt tgcaagtgct 600

gcaaatggcg gtgagcttgg gcttgaaaat tattatgatg aggaactgtc cggaaccgat 660

ggtatttcat acagttatgt aggtgaaaat cttgatgttg agacacagga gaaaaaagct 720

gaagatggct ataatcttgt gacaacaata gattataaag tacagagcat aattgaaaat 780

aaaataaaag aattaaatgt cgaaagacca tcaaagtcaa cggctgtaat tgcaatgaat 840

ccaaagacgg gggagattct tgcaatggca agttatccga catttaatct taacaatccg 900

agagacctga gtggtgtgta cacacaggaa gaattgagca caatgactga tatagagatg 960

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tcaactttca agccatttac ggtagcagag ggacttgagg aaggtgttat acatgatggc 1080

gatacatttt actgcggcgg tttcatggaa gtcagcggaa gcataatcaa ctgccatgaa 1140

cacagcggac atggtactgt tacagtaaaa gaaggtctta tccagtcatg taatccgact 1200

atgatgcaga ttgcagcaaa gcttggtggt gtgaaaattg cgaaatatga ggcacttttt 1260

ggatttggta acaggacagg cattgatttg ccgggcgagg aagccggtct tacaatcggt 1320

gagaagatga aagtcattga tgcagcatgt aactcttttg gacagaatat caatgtaaat 1380

atggttcaga tggcagcggc attttcatca cttgtaaatg gtggtaatta ttatcagcct 1440

catatagtaa aaagaattga aaagagtaca ggagaagtcg taaaaacgat agaacctaat 1500

cttgtaagac agactgtaac atcagagaca tcacagctgc tacgcacata tttaagagcc 1560

ggcgtagatg aaggacttgc cagaaagtca ggtgttgcag gatatgctat cggtggtaaa 1620

acgggaacgg cacagaaaca gccgcgagaa gataagaagt gggttgtatc ttatatagga 1680

tgtgcaccta ctgatgaccc acagcttgtg ttgtatacag taattgatga accatttgag 1740

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gaagacagaa aaaatatgct ggaggatctt attttgcata acgacctcta tgtaccaatg 180

aaaactaagg agcttgcaat acttatgcag gttccgaaag aggacagaca tgagctgcag 240

gcagtgcttg attcacttgt agcagagggc agaataggcg tatcaaaaaa aggcaaatac 300

agtaagcctg aaaatacagc tattattgga atataccaga agacaagccg tggttttggt 360

tttgttgttg tcgaaggcag ggaagatgat atttttatca aagaatctga cgatggcgga 420

gcatttcata tggataaagt tatggttgcc ataacagcag aaaaacatgg agataagaga 480

tgtgaaggca agattctcaa gattcttgag catcagataa aagaggtggt tggaacatac 540

cagaagagta aaacatttgg atttgttgtt ccggacaata aaaaaatctg ttatgacatt 600

tttgtgccac aggaaaagtc catgggggcc gtgacaggac ataaagttgt tgtagagctt 660

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cacatcgcag atgtgagcaa ttatgtaaaa gaatacagtc ctcttgacaa agaagcatat 1020

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caggaaatac cattccttta ccgaagtcat gaaaatcctg atcctgagaa gataagaagg 1560

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cattttgctg ctattcttcc tgaagtcgca aagcagacaa gtgctacaga acgcagggct 1920

gatgatgcag aaagagatac agataagctg aaaatggtac agtatatgga aaaacatatc 1980

ggagagacat ttgagggtgt tgtatccgga atgaccgcat ggggaatata tgtagaactt 2040

ccgaatacaa ttgaaggaat gattagtgta gcctcgcttc gtgacggata ttatatttat 2100

gacgagaatc attatgagat ggtaaatgag acaacaggaa ggacattcaa gctgggtcag 2160

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gcagaataa 2229

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<211> 2130
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<213> Eubacterium sp. CAG:86

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aagtcatata ttatgtggcc gctatatgta ggcataatac ttttaattgt cactgttgtt 180

atgtatgtca aagatacatc ctgtggtaat attatgctgg gttttgtcat gctttatgca 240

gttgtttacg ggattatgat tttttatctc agacccggaa ttatgcatga gatgatagaa 300

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tgcctgcttg acaataacgg acgtgttctg tggatgaaca gaattatgat ggaaaaaact 420

gataaaaaga aagatttccg aaaaaatata caaagcattt ttccacagat taagccggaa 480

gtatttccga caggagaaga tgcgaaagag atgcgtcttg catataatgg cagggattat 540

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gatcttgcac ttggacgagg cggagaccag gctgttgtta aagatggcga gaagacactt 1080

tactatggcg gtaagagcca gcagatggaa aaaaatacaa gagtaaaggt gcgtgtaaaa 1140

gcacatgcat taagacagat tcttgaaccg acgcagacgg tccttataat gggacataaa 1200

cttgcagata tagatgcatt tggttcggca attggtatat atgtaatatg cagacgactt 1260

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agattcatta acaatgatga ttatccgaga gatatgttcc ttttgaaaga agaagcaccg 1380

gaatatgtag attcacagac tgcagttatt gttgttgatg ttaacaaggc taagatgaca 1440

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gaggtaaatg tacagcttgt catggaaaaa ttaggcggag gcggacatat gacaatcgcc 2040

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gaaattttcc gtgccgcaca ctctcttaaa ggtatggcag gaactatggg ctataagaga 180

atgcagaatc tcacacatga tatggaaaat gtattctcag aagtaagaaa tggtaatatg 240

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atggaacttg ctgattttga aaagaatgcg gtaaatgaag cacttaaaaa aggaatgcat 540

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gatatcgaag atgaaaagtt cgattttgat tttcagattg ttattttaac agaggaaagt 720

tttgatgata tcatcaagat aattaagaat gtatctgaaa tcaaagatgc tgatggtgaa 780

gaaataacga aggcttttcc ggaagaaaag accgaagagg agccaaaaga agaaaagaca 840

gaagaaaaag ctaagcaggc ttcaaaagca cagtcatcaa atgataagaa agatgctaat 900

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aaccagagct ttaatgaaca gattgaatat cttgagagag taacaacaaa cttacatgaa 1140

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gaaaatatta ctgttgtcat cgtcagcaag ggagataagc aggctgggct tgttgtagat 1980

agtctcattg gacagatgga aattgtaatt aaatctttag gcaagtatat caacattaat 2040

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<213> Eubacterium sp. CAG:86

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aaaaagcttg ataagctgaa taaagaatac cggaaagtag atgaacttga agtaaagcag 2520

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<213> Eubacterium sp. CAG:86

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attattgatg taggaatcca gaataaaggt gtcggacatg ttatgcctga ggccgtaaca 180

gaggatgaat ataatctggc acagcttttt atgacagaca gtgaaaagac aatctggcag 240

gaaagttatg acaatgataa tggtatttac agatgcaatg taaagagcga aaagaaactg 300

tcatcttatg atgatgaact tgttttaccg cttataatta ataatcagat ggcagatgaa 360

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cttactacag ttcttgttgg acttgtagct tcaagagtag cagccggaat cggacgtgat 660

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gtgatgcaga caggtgcagg catggaatgg attatagcac ttgcggtgct tataataatc 900

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acaatgcttt ttacaaaccg tgtaatgaca tttatgatgc ctcttatgac atttatcatg 1140

tacggaatta atgtacttat catatgggta gctgcacata agattgacag cggaagcatg 1200

caggtgggtg ccatgacagc atttatcaca tatgcaatgc agattgtaat gtctttcctg 1260

atgcttacaa tgatgtcaat tatgcttccg agagcagcag tttcagctaa cagaatagat 1320

gaagttttaa atgaaaaatc atctataaga gaccctgaaa atcctgaaag acttgaagaa 1380

cacaaaggtg ttgtaagctt taaccatgtg tcattcagat atcctaacgc tgatgcagat 1440

gttctttcag atattgattt tgtagcaaaa ccgggagaga caacagctat tgttggaagt 1500

acaggatgtg gcaagtcaac acttatcaat cttataccgc gtttgtatga tgcaacacag 1560

ggaagtgtcc tggttgatgg acatgatgtt aagaatataa caatggaaga tttaagaagc 1620

gaaataggtt atgtgcctca gaagggtgta cttttctcag gtactatagc atcaaattta 1680

agatatggta aagatgatgc aactgatgca cagattgagg aggcagcttc aatagctcaa 1740

gcaacagaat ttatagacag caagagtgca aaatatgaca gtcctattgc acagggcggt 1800

actaacgtgt caggtggtca gaagcagaga ctctctattg cgagagccat tgcaaaggat 1860

cctaagatat atatctttga tgacagtttt tctgcacttg atttaaagac agatgcagca 1920

ttaagaaaag ccttatcatc aaaagttaag gacagcactg ttattatagt tgcacagcga 1980

atcagcacaa tacttcatgc tgaccagatt cttgtaatgg atgaaggcag aattgtaggt 2040

aaaggtacac atggagaact tatgaattca tgtgatgtat atcagcagat agcacgttca 2100

cagatgtcag caaaagagct tggagaggag gcataa 2136

<210> 237
<211> 1572
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 237
ttatatatta aatataatta taggagaaaa acaatggtaa agagtgtatt ggaatatctc 60

gagaattcag cagcaagatt tcctgataaa aaggcagtcg ctgatgacaa aagcagcatg 120

acatattcag aacttgtaaa taatgcacgg aatattgcgg cagggcttct tccttacaca 180

gaaagaagac aggcagttcc tgtatacatg gacaagagct gtcatacact tgctcttttt 240

atgggagctg taatggcagg atgtttttat gtctgccttg atccaagcca gccggcagaa 300

agaatcaata tgattcttga gacgcttgag gcaaaactta tggtcgttga tgaaaaatca 360

gcaaagaagc aggcgaagct tggttttgat ggccctgttc ttaatattga cgagcttatg 420

acacatgaag tgacagaaga agagaacgaa aaacttgcac agataagaag tgaagctcta 480

gatattgacc cgttgtattc aatatttaca tcaggctcaa caggtgttcc taagggtgtt 540

atagtaaatc accgttcagt catagacttt atagattgct ttacagatac atttaacatc 600

agtgaaaatg atataattgg caatcaggca ccatttgatt ttgacgtatc agtaaaagat 660

atttattcaa cattaaaatg cggtgcaaca atccagatta tacctaaaca attattttca 720

tttcctacaa aacttcttga ttatcttgat gacaataatg ttacaacact tgtatgggct 780

gtttcggcat tgtgtatagt tacaacttta aatggctttg agtacaaggt tccgtcaaag 840

attaataaag taattttctc aggtgaagtt atgccgataa aacatcttaa tctctggaga 900

aaagcatatc cggatgcgat gtttgttaat gtatacggac ctacagaaat cacatgtaac 960

tgcacatatt atatagttga cagggagtac gaacttgacg agacacttcc tatgggtaaa 1020

gcatttccta atgagagagt attcctgctt gatgatgacg ataatattat cactgaatca 1080

cagccgggta caacaggtga aatttgtgtt tcaggaacag cagtgacaat gggttactat 1140

aacaatccgg aaaagacaga tgcagcattt gttcagaatc ctcttaataa caaatataat 1200

gaaataatat atagaacggg cgacttagga tattataaca atgacggtct tatgtgcttt 1260

tcatcaagaa aagatttcca gattaagcat atgggacaca gaatagagct tggtgaaatt 1320

gatatggcaa tcaacgcagt ggacgatgtt gtaagagcat gctgcatatt ccatcaggac 1380

gcaaataaga ttcttggatt ctatgaggga gctgcagata aaaagactat tacacatgtt 1440

cttatgcaga aacttccaaa gttcatgatt ccacaggaat ttatccaggt agaatcaatg 1500

cctataacaa agaatggtaa gattgacaga aaacttcttc ttgaaaatta tatcggaggc 1560

gaaaatgctt ag 1572

<210> 238
<211> 1761
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 238
atggatatga catgtgacgc acttattaaa tcacaggaaa ttatggattt tatcatatat 60

aacaatccat ggtactataa ttataatccg tcagataaaa tagaaaacgc atgcgtaatt 120

gaagtggatg agaacttttc aattggatat ggaaagcttt caggtgatat gaaaatgagc 180

ataagcaatc ttggatatca gacaatacct aagctatatg gaataatgga tacatcaagt 240

atggatgcgg ctggtattac gtcttcgtta aaccagccgt ttcttaatgt ccgcggacag 300

ggtgtaatta tgggaattgt tgataccgga atagattata cacatgaagc attcaagaaa 360

agcccaaatg tcagccgtat agctgtaata tgggaccaga cgggtgagtg gaataataca 420

gaaaatcaag agagcagaag cgactatgtt agcagtgtat acaaatatgg gagagtcttt 480

actaatgaag agataaatgc agcactcaaa gcacagtctg acggcgggaa tccttatgaa 540

tatgttccag aaaaagatac tgacggtcat ggcactttta tagccggtat tgcagcagga 600

agccagacag atgaattctg tggagcagca ccggagtgtg aactggcagt cgttaaactt 660

aaagaggcaa aagattatct taaagaatat tttcttgtaa acagagagac agcagtattt 720

gaagagacag atataatgct tggtgtacgg tttctgcttg attatgctgc taaaaggaaa 780

atgccgcttg tgatatgctt cggacttgga acaggaagcg gtccaagaac aggtgcaacg 840

ccattggcaa gtatgcttag tttggttgca ataagaacaa atgtagtagt tgtttcttgt 900

atgggtaatg aagctgcagg aagaacacat atatcaggtg aggcactttc atctgtatca 960

ccatatacaa tagaattaaa tgtaggtaaa aaagaaaaag gattttcaat ggaaatatgg 1020

gcaaatacgc tcgatgtgct gtcagtttca gtaatatctc cgtcgggcga gagtgtgcca 1080

agattatctg caagaacagg catgacaaat gtgttaaagt ttatatttga aaattcacag 1140

gtagaagtag attacagagt ggtagataca ttatcaggat atgaagtgat atttttcaga 1200

tttattaatc cggcacaggg tgtatggaaa attaatgtat acagccttac aaatataaaa 1260

gggagtttta atggatggct tccgattaat aatttcctgc agtcagacac atttttttctg 1320

aattctacgc cggatacaac attgacagaa ccagctgcag aatcaagaat tataagcatt 1380

gcatcatata atcatctgac aggtgctata agtatagagt caggcagggg atacagtgca 1440

gataatgttg taaaacctga acttgcagct cctggtgtta atgtatatgg cccacgcacc 1500

ggaggaggat acacatatag aagcggaacc agcattgcgg cggcacatgc tgcaggagca 1560

gcagcactgt tacttacatg gggcgtatat tacggcaatg caaaatatct tggaacaaat 1620

gacgtgaaat atattcttat tcgtggagca gtaagggatg agagtgtaac atcttccggc 1680

agtgaagagt ttccaaataa catatgggga tatggcagac ttaatctgat aaattcgttt 1740

ctggaactcc gtgtgacata a 1761

<210> 239
<211> 1425
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 239
gtggtggcag gtatggataa tacaagtaaa gattcacttg aacaattaaa taaagacatc 60

ctggtatcta ttgctgatga ctgtatgact gcatatatct gccttaaaaa tccgggaacg 120

gaaatctgtt atggttatga agatgttaaa aaagcattgg cagatgccgg tgtaaaaatg 180

ggaatcaatg atgaacttat ccacagaatt ttatcggaaa aaagatataa cagtatggaa 240

acagtggcag aaggaaaaca tgttgaagac ggtgaagatg caagatatca attatttttt 300

aatacagatg tcagtaacaa gccggtaata cgtgaagatg gttcggtcga ttattataat 360

ctgagacttt atgaacttgt gagcgaagga gacaagcttg cagaatatat acctcctaca 420

aaaggtgtgt ttggatatga cgtaaggggt aagcttcttg tgccaaaacc gggcaaacct 480

aagacaaagt taagaggaaa aggatttacc gtatcggagg atggcaatac atattattca 540

gctattgacg gaaaagttga atacaggaat acggacctta atgttattgg ggttttgcag 600

atagaaggtg atgttgatct taatataggt aatgttgatt ttaacggtga tgttgaaata 660

agcggcaatg ttataagtgg ggtttctgtt actgcaaaag gaaatgttac ggttggcggc 720

ttcgttgaag gtgctgtcat aaaagcggat aaagatatta ttttaaagaa aggctctaac 780

ggaaaaggcg ttgccaagat agaggcaaaa ggcaatgtca cagcgagctt tcttgaaaat 840

ctgcgtgttt actgtgatgg caatgtatat tctaattcga ttcttaactg tgaaatatca 900

gcaaaaggaa aggttatcgt ttcggggagc aaaggcgtca tatatggtgg tgatgtaaca 960

ggaatgcttg gtgttgagtc agcatcaatc ggtaactcgt caaatgtttc tacgattgta 1020

agaataggtg ctgcaaagca ggtacataaa gattatcagg atacgcttgt gaagttaaaa 1080

gaaattacag ctgagataga tacgcttgaa attgttacac ataagtatga aaggctgcgt 1140

gaagccgcac cggaaagatt tgacagggaa aattataata aaattataca gtcaaagata 1200

ataaaaaatt cgcagaaagc caaacttcag gaagaaaata agcagctttt tgacctcata 1260

aaagaagcga cagtttcggg agtaaaagtt tataagacat tatatccggg cgtgaggatt 1320

tatgcggaaa atgttatata tgatgcccag acggaaagaa accatatctt tctaagaaga 1380

ggcggggatg caatgagaat tattgaactg ggcgatgatg agtaa 1425

<210> 240
<211> 2040
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 240
atgaagatta agaaaaatga cctgtttatt ggaatttatc tgctctctgc ggttattttc 60

tttattattt caatcccatc gtggctgctt gatattcttc tggcactcaa tatagcagtt 120

gcacttatta tattatttaa tgcgttatat gcaaaagaag tgcttgatat ggcatcattt 180

cctacaatgt tgttattcac aactattttt agaatttctc tcaatgtatc ttcaacaaag 240

cttatcctta ctaaaggtga tgccggtaaa gtcgttgata catttggaaa gtttgtaggc 300

ggcggcaatc ttgttatcgg tgccataata tttatagttc tcgttattat tcagtttata 360

gttattaata aaggtacaga gcgagtagct gaagttacag cacgattcac gctcgatgcc 420

atggcaggca agcagatggc aattgactct gaccttaata caggtgcaat cacagataaa 480

gaagcagctg aaagaagaaa gaagctacag cttgaaaaca gtttctttgg ttcaatggat 540

ggtgctacaa agtatgtaaa aggtgatgcc actgcaggtc ttattattac cggcattaac 600

attgtcggtg gtattgtaat gggcatgatg tataacgggc tcagtatcaa tgaagcctta 660

tcaaagtata caatacttac aatcggtgat ggactctgta gccagatacc atctttgctt 720

atatctcttg caactggtgt tcttgtaaca aaagcatcaa gtgatggtga acttggcgat 780

gagattgttg gacagctgtt ctcaatggac agggttctta tgatggttgg tggtgctctt 840

acagtattag gtgtatttac gccacttcct atatatgtat ttgttccttt tggtgtagca 900

cttattcttg caggaagaaa gcttggagat aagaagggtg aagaacagat agaggaagaa 960

gtggaacgtg aggagacaga agcacaggaa atcaggaagc cggagaacgt tgtcagtctt 1020

cttaatgtag accctattga gttggaattt ggttatggta ttattcctct tgccgatgtc 1080

aatcaggggg gcgaccttct tgacagagtt gtaatgatac gacgccaggt tgccctggaa 1140

cttggtgctg tagtgcctat tatccgttta agggataata tccagctcaa tcctaaccag 1200

tatgtaatta agataaaagg tatacaggtg agtgaaggtg agatattgtt tgaccattat 1260

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aatgttgtta ctctcgatcc ggcggttgaa caggatatta tgggttcggt aaagaataca 1800

gaacagggat catatcttac acttgaccct gaaaaaacaa aaaaaattgt tgccagtctt 1860

aaagatgcaa ttaagaaact tgaagatatg ggcaagaatc cgatagtaat tacatctccg 1920

atagtaagac tttattttaa aaaacttgtt tcggattaca taaaagatat aattgtgatt 1980

tcatataatg aagttgaatc aaatgtggaa ttacagtcag tagggatggt gacagaataa 2040

<210> 241
<211> 1407
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 241
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aaggtaaaaa tgtatgtctg cggacctaca gtttacaatc ttatccatat cggtaacgca 120

agaccgatga tttgctttga tacagtaaga agatatcttg aatataaagg atatgaagtg 180

aattatgtat ctaattttac ggatgttgat gataaaatta taaagaaagc caatgaagaa 240

ggcgtttcag cagaagaaat ttcaacacgt tacattgctg agtgtaaaaa agatatggaa 300

ggcatgaata tcaagcctgc tacaacacat cctcttgcta cacaggaaat cggtggcatg 360

attgatatga ttcagacact tattgataag ggatatgctt acaatgtcaa tggtactgta 420

tattacagaa caagaaagtt tgaaggatat ggcaagctat caaagaaaaa tattgacgac 480

cttgaggcag gacacagaga tataaaggtt gcaggagagg acgaaaaaga agatccgctt 540

gatttcgtac tctggaaacc taaaaaagaa ggtgaacctt catggccgtc accttggagc 600

gacggaagac caggctggca tattgaatgt tcagttatgg caaagaaata tcttgcagat 660

gagatagata tccatgcagg tggtgaagat cttatatttc ctcaccatga aaatgagatt 720

gcacagtcag aagctgcaaa cggagtacaa ttcgcaaaat actggatgca caatgcattt 780

ttaaatattg acaataagaa aatgtcaaag tcactcggta atttctttac agtgcgtgac 840

ataagcaaag aatatgacct tcaggtatta agatttttca tgctttctgc acattaccgc 900

aatcctatta atttcagcca tgatttgatg gaatcagcaa agaacggact tgaaagaatt 960

gttacagcag tagctaatct caaacattta tctgaaaatg caaaagaagg caacatggca 1020

gcagatgaag cagaaaagat tgcatcactt aaagagatgt atgacaagtt tgaacaggca 1080

atggatgatg attttaacac agcagatgct atttctgcag tttttgaaat tgtaaaattt 1140

gccaactcaa acagcagtgc tgaaaataca aaggaatata tagatacact cataaagaaa 1200

attacaacac ttacagatgt tttaggactt aaagtagaga aaaaagaaga aattcttgat 1260

gaggatattg agaaacttat tgcagagcgt cagcaggcaa gaaaagacag aaactttgcc 1320

cgtgcagatg aaatccgtga tgaacttctt gccaaaggaa ttgtacttga agatacaaga 1380

gaaggtgtaa gatggaagag agcctga 1407

<210> 242
<211> 1734
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 242
atgaaaagaa tttggatgta tttaaaaatg tataaaaaag agtgtgtgct tgcacctctt 60

tttaaaatgc tggaagcgac atttgaactg tttgttccac ttgtagtttc agcaattatt 120

gatgtaggta ttgcaggtgc agacaaggga tatattgtaa agatgtgttt tgtgcttgtt 180

gcactcgcaa taataggact tacatcttcc attacagcac agtattttgc agcgaaagca 240

gctgtaggat gttctacaca gatgagacat catttgttta aacatataca gagtctttca 300

tttactgaga tggatacaat cggaacatcc actcttataa caagaatgac aagtgatatt 360

aatcaggtgc agaatggtgt aaaccttgtt ttaagactgt ttttacgttc gccatttatt 420

gtatttggtg caatgattat ggcttttaca atagatgtta aggctgcact tgtatttgta 480

ggtgcaattc ctatacttgc ggtaattgta ttcggtataa tgctttcgac aaggccttta 540

tacaagaaag ttcaggctgg tcttgataag attcttggaa taacaagaga aaaccttact 600

ggtgtgcgtg taataagagc atttaataag gaaaatgaag aagtatacag attcaaaaag 660

tctaacgaag agctcaatca tctgcagaag tttgtaggca agatttcagg acttatgaat 720

cctttgacat atgctgttgt aaatatttct ataatcctgc ttatatggat tggtgctgta 780

cgtgttaatt ccggcacact tacacaggga caggtagttg ctctttacaa ctatatgtca 840

cagattcttg tagagcttat taagcttgct aatcttgtta ttaatatcac aaaggctctt 900

gcatgtgcaa acaggattga tggcgtattt gcagttaaat caagtatggc agatggaaaa 960

cttgatatat ctgaaacagg gaaaaataca caggttccgg ctgttgaatt taaaaatgta 1020

tgtctgaaat atgccggtgg tggagaggaa gctcttacag atattaactt ttcagttatg 1080

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aaagagtata atatagagtc gcttagaaat catgttgctg ttgttatgca gaaagcactt 1260

ttatttaaag gctcaattcg tgacaatatg aaatggggca aaaaagatgc gacagatgat 1320

gagataatgg aagctcttga tatttcgcag tcaagggaat ttgttgagaa aaaggacgga 1380

aaacttgatg cgtttatcga ccagggagga aagaatcttt ctggcggtca gagacagcgt 1440

cttactattg cccgtgcaat ggtgagaaaa cctgatatat taattcttga tgacagtgca 1500

tcggcacttg attttgcaac agatgctgca ttaagaaaag caatacgagg gatgaagtta 1560

tcgccgacac ttttcatagt atctcagaga gcagcttcgc ttatgcatgc agataaaatt 1620

attgttcttg atgatggcaa agttgcagga attggtacgc atgatgaact tcttgcagga 1680

tgcgaagttt atcaggaaat ctattactca cagtttaaaa aggaggcaat gtaa 1734

<210> 243
<211> 1770
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 243
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cgacttatac atccaagtga tataaaccag cttgagacag ctgtaaagaa tgtccagagt 180

gaatcgggat ttgttacggc acttagaatg gtagataata caggaagata cagatggttt 240

gtttatatta tagatgaagc tgaacctgcg gataatgttt gtaacagcag aatatgcagt 300

atatcgattt ttgatataag agtatttttt aaacatacag atacaaaggc tgataacaca 360

tatatggaat atttcagtct tatggagtat cttatgttct catatgacgt atcgactgac 420

agattgagaa tttttatgat ggagagccac cagcaggtag atttttaccg gggaacttta 480

gctgattggc gtagaacaat gcttgccaat ggcaatgtat atggtgttac acgcaatata 540

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atgaagatat ttgagaattc acagggaatg gaatggtgtc ttgtcaaagg taagactatc 660

atagatttta atggcaaaaa gcatgtaatt gccacaatgt caaagataag ccctgtcaat 720

gatgaagagc atgtatatct taattcagat gcacttgatg taggaacgga tattcttaat 780

aagcgtgcga ttacggaata tacaaagagg ctgattgagt caaaacccgg atgtcctgtt 840

acaattgcaa ttatagatat cgataatttt aagacgatta atgatgagtt tggtcatatg 900

tttggagatg aggtaatatg caatgttgca gatgttatta aagagtctgt tgagggaaag 960

ggtgtagccg gaagaattgg cggagatgag atgtttatcg ttgttgaagg gctcaagagc 1020

aatgatgaga taagaaatgt gcttcgtaca atccgcaata acgtctcatt tatgtataat 1080

aaccagcctg ataagccgca tgtcacatgt tctatcggtt catctacata tccatgtgac 1140

ggacagacat atgaagaact ttttaatata gcagataaga tgctttatct tgcaaaagag 1200

aaaggcaggg acagatatat aatatatctc ccggatttgc atgaggatta tgtgaagggc 1260

aaaggaatgc ctaattcaga ggcatacatg ttctacaagt acaaaaaaat cggggttgtt 1320

aatgatatag ttaatgctta tagaaaaaat ggaaaagact gcattatgga gtcagctgat 1380

aaaataaaga gagcttttgc attagacagc atatttattt atcaccatac aggagaagcc 1440

tgggagagaa agattataat aggtaacaaa gatattgctg aagataatga ttatcttaac 1500

gataaggcat atatagctga ttttacggaa gatggtattg aagttattga taatatcaat 1560

ttttttgaaa gacgagcaaa aaatacggtt aaggcattta ttaatatggg aattaaccag 1620

gctgtccaga ttatagttaa tgtcagtgat gaaaacgatg ttattgtttc atttaacaga 1680

aacaggcaga tgagcaagtg gagcgagatg gatatagtat atcttgcaat acttggtaat 1740

atatttggaa atggaatata caatgattaa 1770

<210> 244
<211> 1518
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 244
ctgcaaagta gtttacttga aatagcagtt tatgtatgtt acaatggcaa aagcaataaa 60

tttaatatac gaaaggcgga tttgagcatg aatgacagat accagacacc tcttgcggaa 120

agatatgcga gcaaagaaat gcagtatatt ttttcgcctg atatgaagtt taagacatgg 180

agaaaacttt ggattgcact ggctgagaca gaaaaggaac tcggacttga tattacagac 240

gagcagattg aggaactcaa ggctaacaaa gacaatatca attacgaaga tgcaaaaaag 300

cgtgaaaaag aagtaagaca tgatgtaatg tcacacgtat atgcatatgg acttcagtgt 360

cctaaggcaa aaggaattat ccatcttgga gcaacttcat gttatgttgg tgataataca 420

gatattattg ttatgacaga ggcattgaag cttgttcgta aaaaacttat aaatgtaatc 480

ggtgaacttt ctaagtttgc agataaatat aaggcacttc ctacacttgc atttacacac 540

ttccagccgg cacagccgac aacagtaggc aagcgtgcaa cactctggct taatgaactt 600

gttatggatt tagaggatgt tgattatgta ctttcaacaa tgaagctttt aggatgtaaa 660

ggtacaacag gtacacaggc ctctttcctt gaattattca atggagatca tacgaaaatc 720

cgtcagatag atggaaagat tgcacaaaag atgggatttg acaagtgtgt tcctgtatca 780

ggacagacat attcaagaaa agtagataca agagttctca atgtacttgc aggaattgca 840

gcgagtgcac ataagttctc taacgatatc agacttttac agcacttaaa agaagttgag 900

gaaccatttg aaaaatcaca gattggttca tcagctatgg cttataaacg taatccgatg 960

agaagcgaaa gaatggcatc acttgcagat tttgtaattg cagatgcact taatccggct 1020

atcgtatcat caacacagtg gtttgagaga acgcttgatg attcagcaaa taagagaatg 1080

tcagttccgg aaggattcct cgcagttgat ggtattcttg atttatatct taatgttgtt 1140

gacggacttg ttgtatacga gaaggttatt aacagaagac ttatgtcaga acttccattt 1200

atggcaacag aaaatattat gatggatgca gttaaggccg gcggagacag acaggaactc 1260

cacgaaagaa tccgtgagct ttctatggaa gcaggaaaga gagttaagca ggaaggcctt 1320

gaaaataatc ttcttgaact tattgcggca gatccaatgt ttggtgtaac acttgatgaa 1380

cttaaagcta aacttgatcc ttcaaagtat gtaggacgtt caaaagagca ggttgaagaa 1440

tatcttgcag aaattatcaa tcctattctt gatgctaata aagaagaact cggaatgaca 1500

gctgagatta atgtttaa 1518

<210> 245
<211> 1530
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 245
atgcctaata tatttgatgg aatacgaaaa atgtcagacg aagatgtcag gcttgaaata 60

gccctgatta cacagactaa tcttcttaat gctgcaaaag agaccggtaa taagctggtc 120

aactcgcttg cagatgcagc caattcattt atgcaggcgt tcgcttcatc taagtctata 180

gattatcaga tagtgcgtgt ttcagatatg gtacgaaaaa atataataca gcttcatgct 240

gatacaagaa gtgaacttga aatacggctt aaagaactca ttgtacaaaa atgtgggctg 300

acagcacagg aatcattgac agtaagtgag gaaagacttt catttctggc agcagctgaa 360

gcggcaaaat tgtataatat tacaaaatat gatactcctg ctaataaaat agaaaatgtc 420

agcatatact ataacgaagc atttattgcg gcattacatc agtgtcttgt acgtcaggat 480

gcaaaggatg ttgcagatac tgatttgaga atacagaaaa gaatagatga aatatctata 540

gaagataaga gagaattaca taaaagactt atgcctaaag aattttcggg taaaggcatc 600

ggaagaatac tgagattaga gaaaaaaacg acgtatttaa aggatgttat acagatactt 660

ggagtacagg tttttgatga ggtagctgca tatgttacag caagcgtcaa tgtacttaaa 720

agcttcaaaa gaatatcatg tgcacttatg gcacagcttg tatggaaggc aaaaaatgca 780

tatggtacag gatttggcgt caatgaaaaa tctctgccat catatactac ggaagaaaac 840

ggggcgatgc agcgaaaaga aattacggat tttcatgcaa tgctaaaaga gatacagaca 900

cagaaggctg cagttgaaga gtatgataaa aaactggaca ggctttatga gcaggtttca 960

aagacaggtg aaaaacttca gagtgaaaaa gatttacttg aaaaagaacg tgtgcaattt 1020

gataaacttg catcacaaaa agatgagtac aatgcaggga aacattctga gagtgacaca 1080

aaactatatt attcagaagt aaataatata aacagacgca ttggacaata tgagcagtct 1140

gtttcaaaac ttgagcagaa aatgaaagaa cttgatatat caacaggcga gtgtgaaaat 1200

aacaaggaaa atgctgcaaa agaggcagag agaatggcaa aagaggcaga attgcgggaa 1260

catgaacttt ctgagattat aaaaaacaaa tggggtgcat tttattataa aatgacattt 1320

gaagatgaag tatttgtaca ggctgtgaca cttcttacac ttgacggaag aattgcagtt 1380

gaaagaatga tcaaagaatt tcatgataca cctgacagtc aggcatttga tacaccctcg 1440

tcatccggat gcattatatg tgatacagtg gctgatggtc aggtaaagtt atatcacgaa 1500

ggcatacata taactaaaat aggaaaataa 1530

<210> 246
<211> 2094
<212> DNA
<213> Eubacterium sp. CAG:86

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agggccgaaa atgcagtcgc cacgggacat gtgaattcag gtgtttccgg gctgcgtgtg 180

cgtacacagc ctgatacgca aacaggacag attataacgg ttgtcgatga ttcttttaca 240

tttgacattt atgaaacagt atatacaagc gatacttatt attggtacaa aataggcttt 300

gactacaatg gttcatatac ttatggttat ataagtggtg aatatacttc aaaagataat 360

tcttattcgg aagatatgga ttttgaaagc tatcttaatg agcagggatt tccggattca 420

tataaggatg ggctgcgtca gcttcatgca gattatccta aatgggtttt tgttgcagat 480

catgtcggaa aagactggaa tgaagttatt gacaatgaga atgttatagg acgaagcctt 540

atatatggca gtgcaaagag ttcatggaag tctgttgaat caggatgtta taactggaat 600

tcgggcgagt ggacagagat ggacagcggt ggctgggttc aggcttcaag agaacttatc 660

gagtatacta tggaccctcg gaatttcctt tcaaatccat atatatttat gtttgaaagt 720

cttgcatatg attcttcttt gcagaacgaa tccggtgtag agcagattat atcaggaaca 780

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ttacaggagc agggaaatac gggatacggt tcatgcattt ccggtaatgt tgcaggatac 960

agaggatatt ataattatta taatcaggga gctgtaaaga gcggaaatat ttcagctgtt 1020

gtaaatggca tgatatatgc aagccgctcg gattctgatt cgcttcgtcc gtggaacaca 1080

cgaatgaaat caattgtcgg cggtgcaaag atgattggca gcagttacat aaaccgcgga 1140

cagagcacga tttattatga aaaatttgat gtcgtttcat cgtcaccata ctggcatcag 1200

tatatgacta atgttatggc acctagaagt gagtcgcaga aagcagcaaa tgcttattca 1260

gacagcacaa aatataatac aggtcttgta tttacaattc ctgtatacga taatatgccg 1320

caggagacat gtacagcacc tgatggcgac ggagatcctg gtaatctttt atcagatatg 1380

tatgttgacg gacattcaat tacaccgtca ttcaagaagt atactcagga ttacagcctt 1440

atcgttgaca ataatgttga cagaataaat attaatgcat ctgcaatatc aggttcatca 1500

tgggttgacg gagcaggcga acacaggctt aatgttggtg aaaataatat agaagttacg 1560

gtacatgcag aaaatggttc tgacaggaca tattatctta cagtagtaag aaaagagccg 1620

tcagaaaatc caaatcctcc atcacctgat ccggcaccgg aaaatccgtc atttgataca 1680

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ggaactgttc ttggtaatgt gaggacacaa aatgccacag cttatatctg taacagaaat 1800

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aattcaggta atgaatatgc ttcttacaca tttgttgtct atggagatat taatggcgat 1920

ggtgagattg accttataga tattgttaag attaagagac atattcttga attatcacag 1980

cttaagggag aattcctgcg tgctgcggat attaacaggg atggtgagat tgaccttata 2040

gatatcgttg ctgtaaagag gcatattctt ggaatgaaag agattacaca gtga 2094

<210> 247
<211> 1680
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 247
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acgacgttac gtaatcagat taaatcagac aggattggac atgcttatct gttctgtggt 180

acgagaggaa caggtaagac tacgatagct aagatatttg caaaggctgt aaattgtgag 240

catcccatag acggaaatcc gtgcggtgaa tgtccggcat gtaaggcgat tgcggcagga 300

acatcaatga atgtgattga gatagatgcg gcatctaaca atggtgttga caatatccgt 360

gagattcgtg atgaagtaca gtattcaccg acagagggta agtataaagt atatataata 420

gatgaggtcc atatgctctc tataggtgcg tttaatgcac ttttaaaaac acttgaagag 480

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atcttatcaa gatgtcaaag atatgatttt cacaggattt ccatagagac tatttccgac 600

agattatctg agcttatgaa agctgagaat atcaatgttg aggaacgtgc aatacgatat 660

attgcaaaag ctgcagatgg ttcaatgcgt gatgcattaa gccttataga ccagtgtata 720

gcattttatc tgggacagga tttaaagtat gaaaatgtgc ttgaagttct gggagcagtt 780

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aagttttcaa cgcagaagcg tattaaactt gaagttacaa taataaaaat gtgcaagcct 1140

tcaatggaaa aaaatgacag cgtggaagaa cttgccgggc gtgtcacact tcttgaaaat 1200

aatcttgaaa agacatgtaa ggagcttgaa agcggtgcgt ttgcagttag ttcaccagtt 1260

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aagcgtgtca tagaggctct tccggatgat gtaagacaga ttgcagcatc atggaacggc 1380

ataatcaata caattgatga cccgatgtat gttgcgtttt taagacaatg ccatgttact 1440

cttgcaaaag acggcataag tcttgagata atggtaaaat ccacatcggc atataatgca 1500

atatcaagag aagaggaagt aaatcgtctt attgaggtta ttgaagaaag aaccggcata 1560

aaggtaaata taataattac aaagctggca gatgatgagg attttcaaaa cagatttaca 1620

gatataagag aacttgttaa tatggatata gaagtagatg ataaggagga atacatctaa 1680

<210> 248
<211> 1959
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 248
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tgctcatttc accttgaaga acgtgaaaaa gctgccataa tcggaatcaa tggtgccgga 120

aaatctactc ttttaaaaat cattgtcggt gaacttcccg ctgattcagg aaatgtgact 180

gtctccaaag gaaaaactct cggttatctt tcacagcacc agaatctctc aactgacaag 240

actatatatg atgaacttct gtctgttaaa caggatttaa ttgatatgga aaatactatc 300

cgcagtctcg aaatacagat gaaagatgtt acaggcgatg aacttgacaa cctgctttca 360

cagtatacaa gacttaatca tgaatttgag atgaataacg gatatgcata taaaagtgaa 420

gttaccggtg tccttaaagg tcttggattt ggcgatgagg atttttctct tcatgtaaac 480

acactctcag gcggtcagaa aacgcgtgtt gcacttgcaa aactgctcat atcaaagcct 540

gacatcatca tgcttgatga acctaccaac catcttgata tggattctat tgcatggctt 600

gaaaattatc ttctcacata taatggaagc gtcttaatag ttgcacatga caggtatttt 660

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tacctaaacc agcagcgtga tatcaaacac cagcaggaag taatcacaaa actgaaacag 840

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gaacttgtcg ataagccaac agaattaaac gacaaaatgc atatacgcct tgatcctaag 960

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gttctcgacc ctgataagac tctgtttgag gaaattcagg atgcttatcc tgaccttaac 1260

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tcaaacgcca actttctgat tcttgatgag ccaactaacc atcttgatat agtttcaaag 1440

gaaattcttg aaaatgcact caataattac accggaactg ttttttatgt ctcacatgac 1500

agatatttta tcaacacaac agccacaaga attattgaac ttacaggaca tacaattgta 1560

aattatatcg gcaattacga ttattatatc gaaaaaaagg atatacttac accaaaagca 1620

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cgcatcagtg caattgatga agaatataac aatcctgata ttgcaagcga cacagcaaaa 1860

cttgtcgaac ttcacaatga acgcacttct ctctcggaaa tgcttgatga attgtacgaa 1920

aaatgggaag agctatccga agaacttatt gacaaataa 1959

<210> 249
<211> 2202
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 249
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ctggcacttg gatatgcggc atttaacttt atcggcgtca aaaagcttga tgaaggaaca 120

gatcgtatgt cagagatcgc ggaagctatc agagttggag ctaacgcatt tattacttat 180

gagtataaga ttataggtat tgtagtggtt attattgcaa ttatatttgc agcaattttt 240

tcagtccagt atggaaaatt cagctgggag ccatcagtat gtttcatcat cggagttgtg 300

atgagtgcat cagcaggatg ggtaggaatg aagattgcaa cttatgcaaa tgtcagagta 360

tctaatacag caagaaagac taagaatatc ggttcaacac tcaaggtagc attaaagggt 420

ggttctgtaa tgggattatg tgtaggtggt ttcgcacttc ttggtttatt ccttgtatac 480

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ggatttaaga caggatatac atcaccttgg atagcagcgt cacttggtgt tattagtggt 1140

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tacaactaca acctgttata tctcattttc ggaatcagat aa 2202

<210> 250
<211> 3081
<212> DNA
<213> Eubacterium sp. CAG:86

<400> 250
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gatataaata aactgaattt atcaaaatat gatgtaattt ccgttgaaaa gcttgaagat 180

ttagattcta cagggctttt attaagacat aaaaagagcg gtgcaaggat tgccattgtt 240

tccaatgatg ataataataa ggtattttct ataggtttta agacaccgcc gtataacgat 300

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gttgtatata atgagatgaa aggtgtatat tcgtcaccgg atgacgtgct ttcaagatat 660

acatgtgtat ctttatttcc tgacacgcct tacagatttg agtcgggcgg tgagcctgct 720

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gcacagaaga gttttgaaaa tgatgttttt aaggaattta attatgctgt aacggatgac 960

gaaccgcttg aaaataatgc atttctttca tataacaagg ttgttggaac atcacttgat 1020

gcaaaacttt atcttgcaat gcagattctt gattatgcac ttatcatggc tcccggagca 1080

aagttaaaac aggctcttat tgataaaaat ataggaaccg atatttacag cagttttgag 1140

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caggagttca cagatacaat taatgaagtg ctcagtgata ttgtaaaaaa tggtattgat 1260

atgcgtatga ttgatgcggg aatcaattat tatgaattca aataccgtga ggctgattat 1320

ggtgcatatc caaagggatt aatgtattat ctcacaatga tggacagctg gctttatgat 1380

gaaaataagc cgtttattca tattgaggcg ggaaagacat ttgagcagat taaaaaagaa 1440

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gaaacaaagg aattaaagga atatcaggac gagccttcaa gtcaggagaa tcttgaaaaa 1680

attccaatgc ttgcactcaa agatattgga aaaactccgg caagacttta tatcgatgaa 1740

aaagaggaaa atggtatcaa ggttattcac cataatatgt ttaccaacag aattgcatat 1800

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gaaatcaata ttaattcggg aggactttca tcagattctg caatatatac agataataaa 1980

gaacttgata agtatcagat aagatatgag gtaaaaggta aagttttata tgaaaaaata 2040

ccttttatgc ttgaaatgat gcatgaaatt atatattgta caaaatttga tgattataag 2100

agacttaaag agattatttc aagaacaaag tcgagaattg aaagctcaat gacaggtatg 2160

ggacatacag tagctatgct ttatggaatg tcacagttat ctgcatcggg atattattca 2220

aatcttatga gaggatacgg attttacctt tttatccagg agattgaaaa agattttgat 2280

aacagaaaag aagagattgc aggcacactt aaccagctta taaagcttat atttacaaag 2340

gaaaaccttg ttgtcagctt taatgccaat gatgatggat atgataaatt taaggctgct 2400

tttggtgatt ttgcaggaaa attaaataca gacaattatc ctgtagaaat aagaaaattt 2460

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atgagcggtt ttggcaaaaa tggtgacatg tatatggtat cttaccgtga tcctaacctt 2700

aaaaagacaa atgaaatttt tgatgaatca gttgattata ttaagaattt tgatgtgagt 2760

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tatcagagag agcgtgatga agttttaggt gcgacaccgg agaagataag agaactggca 2940

ccaattgttg aagcaggact taaacagaat catctgtgcg ttgttggtaa ttataaaaat 3000

ataaatgatg agtcatctat gtttgatgag attaagccat tatttgtatc agcagtacaa 3060

aataacagtg aagaagaatg a 3081

<210> 251
<211> 1002
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 251
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gaaggcccca actggccgct ttggctcaag gaagcaagca actggcttcc ccaaggcatc 180

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tatctgctga cagcgttctg ccccttgttg ctgattatcg tcagtatgct ggcaggccat 900

ctgtttgcac tcactagcaa taaactttcc aacgcatttt ttgttatttc cctgattgga 960

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<210> 252
<211> 1041
<212> DNA
<213> Bacteroides sp. CAG:598

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atcatgaaga tgggcgacga cagcatcgaa caagtcgaag tcattcccac tggctccatc 180

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cgtggtggtc aggccatcaa gaacggcgag gacgttattg gcaaacagac caaagtgaaa 780

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aagagcggct cttggttcag ctacaatgac accaaactag ctcaaggccg cgatgccgct 960

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gaactgaaga aagaaaaata a 1041

<210> 253
<211> 837
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 253
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tcctattttg ccaaaggaca atataaccgt gccgccactt tgctgaatga gttgattgcc 180

attctgaagg gaacggataa ggcggaagaa tcgctttata tgctgggtat gtgctattat 240

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cgaggtacat ataccgaact ctcccgtttc catgcaggta aggccctgtt cctggatact 360

ccggaacccc gtctggatca gtcgagcact tacaaagcaa ttgacgagct tcagatgttt 420

atggaatact atccgcaaag cgccaagcat caggaagccc agcaaatgat tttcgagttg 480

caggacaagc tggttatgaa agaatacttg tcggccaaat tgtattacaa cttgggcaat 540

tatatgggca ataactacca gtcatgtgtc atcacggcac aaaatgccct gaaagattat 600

ccttatacta atttgcgtga agacttgtcg atcctgattc tgagagccaa atacgaactg 660

gctgtataca gcgtggaaga aagaaagcaa gagcgctatc gtgaggctgt ggacgaatat 720

tacgccttca aaaatgaatt tcctgaaagc aagtacctga aggaagccga acggattttt 780

agcaagtctc aggcagaatt gggtgaagga agcactgaag aagaagtaac tgaataa 837

<210> 254
<211> 558
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 254
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gcagaaatgt ggtcggccaa tctgtatttg gcaatgtctt tctttatgga gaaagaaggt 180

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gtacctaatg attttggtac cccgcttgat gtatttgaac aggtttataa gcatgactgc 360

cgagtttcaa agatgattga cgaattggtg gatgttgctg cttccgaaag agataaggca 420

acccaagatt tcttgtgggg atttgtacgt gaacaagtag aagaagaagc tacagcctca 480

agtattgtgg aaatgattaa aagagcagga aactctaatt tgtattttgt agactctaag 540

ttgggagaac gtcaataa 558

<210> 255
<211> 1224
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 255
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ctggagtctt tgggacttga agatgttacg ttggacgaca atggctattt gtttgccaca 180

cttcctgcta acactgataa gcctctgcct acagtaggtt tcattgctca catggatacg 240

agtcccgata tgagcggtaa ggatgtgtca ccacggattg tacagtgtta tgatggtgga 300

gaaatagtgc tttgtgccga cgaaaacata gttttatcac cagcacagtt ccccgaactg 360

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cgcaatgtac atccgggcta tgccaagcat aagatgatta attctattcg cgtggccaat 720

cgttttatgg ctatgctgcc cagtcatgag acgcccgagc ataccgaagg ttacgagggc 780

ttttatcatc tggtgggtat cagtggcgaa gtggagcaga ccgtggtatc ttatatcatt 840

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aacatgcgtg agaagataga acctgtgatg catgtaatcg atattgcctt ccaggcgatg 1020

aaagatgctg gtgtagaacc tcgtgtgaag gccatccgtg gtggcacgga cggtgcacag 1080

ctttcgttca aaggattacc ttgtcccaat atttttgccg gtggacttaa tttccatggg 1140

cgttatgaat tcgtgcccat acagagcatg gagaaagcta tgatggtaat tgtcaaaatt 1200

gccggactgg tagctgcacg ctga 1224

<210> 256
<211> 462
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 256
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aaaaataccc atttccccat tgccgagcgc gaagctatga tccgcgactt gtataaaaac 180

gaaccccacg tcagcgtaca agcatacgac agcctgacca tcgactttgc ccgccaagtg 240

ggggccaacc ttatcatccg cggcattcga acggtcaagg acttcgaata cgaagaaacc 300

attgccgaca tcaaccgcaa actgactggc atcgagacca tccttctctt caccgagcca 360

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agcatgttcc tgcccgaagg tatgaataca tctcacgagt aa 462

<210> 257
<211> 516
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 257
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ccgtacatta ctgtaagttt tataagggcg gatggtacgg cctatggtgt gccgctctcg 120

ctggcttgtg ctagcgacaa tgtgtggtat tttcattgtg cgcctgaagg tgataagctc 180

gatgcactgg ctgtacatcc agaggtatgc ctttcggctg tcacgaaatg ccaacctacg 240

gttgggccta aagatggtac ttttacgctt cagtatcgtt ctgcaatagc ctttgggaaa 300

gcggaacttg tgacagatga cgatgaaaag atacatgctc tcaagctgat aagtcagcgt 360

tttctgccca agcacatgga ggctttcgac gatgcagtca agagaagtat tcatcgtaca 420

gctgtggttc gcataacgct gactggcctt cctactggta agcgtaagca gtatgataaa 480

aatggagaag aaatgaagta tggaaggatg gaatga 516

<210> 258
<211> 465
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 258
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gcacgtatca tcgaagagat tactcctttc atcagtggtg agttcactgt agccgacatc 180

aagcgtgcca actatagcga acttttcccc tgcgatgaag aagctgccga ccgctggttc 240

aaatgcaagc tcatttttat cacactcgat gaaaagagcg gtgcagagaa aaaaacatct 300

acgcaagtat tggtacaagc cgccgatttg cgcgatgccg taaagaaact ggatgaaggg 360

atgaagggca ccatggccga ttatcagata gcctctgtgg ccgaaacgcc acttatggac 420

gtgtatcctt acagcgctga gcccgacgac aagccggaag tataa 465

<210> 259
<211> 510
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 259
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aaaagagcct taaccctctc tcccaacccg gtttacatgg cgacagcacg catctgggac 120

gaagagttca gacaacgtgt cctgcgccat caggaacgaa gaggccctga atggaccaac 180

atcgaagagg aaaaggcact gagccaacac caactggacg gacgggtagt cctgatagac 240

tgtgtgacct tatggtgtac caacttcttt ttcgacctga atgcagacgt agaccaaacg 300

ctgaaagccg tccgcgagga atttgaccgc tttacacacc agaatgccat ctttctgttt 360

gtcaccaacg aaataggctg tggagcaacc tctgaaaacg aaatacaacg caagtttact 420

gatcttcagg gttggatgaa ccagtatatc gcctcacagg ccgacgaagt catccttatg 480

gtggcaggta tacccatgaa agtaaaataa 510

<210> 260
<211> 489
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 260
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aaagtgtgct atttatatgc cactcccaac gcgccactca acgatctgta tcaagaggtg 120

gtactgaact tatggaaagc ctttcctaaa ttccgtcgtg aatgcaaact atccacatgg 180

atctaccgta tctcgctaaa cacctgcatc agctttatgc gaaaagagaa aaacattccc 240

gaaatcgtgt cgctgacacc tgccgaagca gaccgcagtg aagaatggga cgagacgcag 300

gctatgttgc gacaactgta tcgcatgatc aatcggctgg gacaattgga gaaatccatt 360

atcctacttt atcttgaaga aaagagttac gaagaaatca gtgagattac cggactgacc 420

gtaacgaacg tagctacaaa actgaatcgc atcaaggaga aactgagaaa aatgaagaag 480

gaggaatga 489

<210> 261
<211> 960
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 261
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gatgacgaag tgctggataa ccttgaagaa atacttatca cttcggatgt tggtgtagag 180

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acagatgatg ccaatgactt tgatgcacct attgcaaaga agccatacgt aattatggtg 360

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aaagccggaa aatctgttta tctaggagca gccgatacgt tccgtgctgc agctgttgag 480

cagcttgtga tatggggtga aagggttggc gttcctgtta tcaagcagaa aatgggctct 540

gatccagctt ctgtagcctt tgatacatta aagtctgcta tggccaatga tgctgatgtg 600

gttatcattg atactgcagg acgactgcat aacaaggtgg gcttaatgaa tgaattgacg 660

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ttggatggct ctactggtca aaatgctttt gagcaagcca agcagtttac tctggcaaca 780

gaagtgacgg ctatggcggt aaccaagttg gacggaacag ccaaaggtgg agttgttatt 840

ggcatatctg atcagttcaa gataccggta aaatatatcg gattgggtga aggaatggaa 900

gacttgcaag ttttcaatag aagagagttc gtagattctt tgtttggtga gaacagatga 960

<210> 262
<211> 738
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 262
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gccgaactgg ggagtatcgt ggtgcgagtt aatgctcgtg cgcggcggct gatatttcgg 120

gcagtagagg gcggttttgt tgtgaccgtc cctttgggag caacgtggag tgatgtgact 180

aaaggattgg aaactttgcg cccccgtctg cgtgaaacgc aggcgcgacg aagcgaaaag 240

ctgatagact tgaactatcg gattgaggcg gagctcttta aactgacctt ggtagagcgg 300

gatatccgtc agtttcaggc acgtttggag ctggggatga tgcagattct gtgtccaata 360

ggtactgatt tttccaattc tcaacttcaa gtctggttga agaaggtgat aggtgaggcc 420

ttgcggaaga atgccaagct agtgttgccc cctcgcctgt atgccttgtc gaagcaacat 480

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gaaatgcttg atcgcctgac tgaaggtcga tgcgaggctc tgaggcagga actgaaggcg 720

ttttctgcct cgttgtga 738

<210> 263
<211> 1110
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 263
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cgctatgccg actatgtaga caaaaaccag aacatcctgc tccgcagcgt ccagacccgt 840

caggaacgtc tgcaaaacga gatgaacctg gcctacaacc tctacaacct gactgcccaa 900

cagctccagc tcgccaaggc caaggtacag gagaacacgc cggtctacac cgtagtccag 960

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gtattcctgg ccggtgtcgg ttccgtaggc tggattcttt tcggcagaga cctgctccga 1080

cagttcaaag gttccaagga acaagcctga 1110

<210> 264
<211> 897
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 264
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ctgtttgcct atggacatcg taccgatacc attgattggt tgccagtcgt ttggccttcg 180

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gttggtgaca gtcatattcg aggacatatg ttaacggata ctgtggcttc tctcctacga 360

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atggatgagt tggtgcgtat gcttcgggaa cggttgcccg atgtgcccat gatgctgact 600

acgccgccag ggtcttacga aagcaaacgc cgtggaaggg ggcgtcgaac gtatacaatc 660

aatcctcgta cttcggccgt agtaaagaac atcattcgtt ttgctgatgc aaacggactg 720

gctgtctggg atttgtatga tattgcaggc ggagtgaaga gggcttgcct gaactggcag 780

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<210> 265
<211> 597
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 265
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atgattactt acagaaaaat tcaaattgtg ggcgagaacc atccgtgcaa cggactgtgg 180

tatgcacgcc cggtgattaa cgagacgctg gacatcgatt tgctgtcccg tcacatgtcg 240

aaacacaaca cgccgttctc gccgggcgtg atcaaaggcg tcctggcaga catggtgacc 300

tgcatcaagg agctgatcct ggacggcaag aacgtgaagc tggacgacct ggctatcttc 360

tcggtgggca tcatcagcga ccacggggcc gcgagcgcag cagagttcaa ggtgtcggaa 420

cacgtggcag gactgaagct gcgcgcacgt gccaccggcg aactgagcaa cgcgaaaatc 480

aacctggagg cgacgctgcg cgaacagaac gagtactacc tgggcgacgg caccgcggtg 540

actcctaccc ccggcggcgg aggtgaggac gaggaagaag gaggaagtcc gctgtaa 597

<210> 266
<211> 420
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 266
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gaactgatag ccgaatatcg gaagcgccat agccgtgcgg aagtgtggcc ggaaatattg 180

gcgggcattc gtgaagtggg tattctggaa atggaaatat atatagtggg cacacgtctt 240

tttatgatcg tagagacgcc gctcgatttc gattgggatg cggcgatggc ccggctggac 300

acactgccca gacaacgcga atgggaggcc tatatgtcag tctttcagca ggctgatcct 360

caagccagct ctgctgggaa atggaaactg atggaacgga tgttccattt atatgagtaa 420

<210> 267
<211> 810
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 267
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aaagcaatgt tttcgaatga agaaaactat gttttaagac aagaaaagca atgctttcta 180

tcagaagaaa ctatgttttt ccacccgtta attataccga aaaagaaaaa agaagaacga 240

aaaggacaaa cagttcctac aaatatacgt tatttttgta gtaaaaccca ccttaaacaa 300

gaaaggagca agaatatgaa aaaatcaatt tacaccgcct tcatagcctg cgcactggca 360

tctgccgctc ccatacaggc acagcagacg gacaaagagg cacaaaaggc acgcactgaa 420

cagaccgtca aggaggcact cgaggcccgt cgctaccgca tcgaagtaaa ttacatgaca 480

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aagggactga acttcgacgc ccttatccag acctacgaaa cgaaggaagg caagaaaggg 660

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<210> 268
<211> 1398
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 268
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ggcgtggaga tgtgtcaggc cgtttccgac atctgcactt ttctactggc tcttccgctg 1320

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cgcaaagcag gcttttga 1398

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<212> DNA
<213> Bacteroides sp. CAG:598

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ttggaccacc agtggataca cgtcgacacc gaacgcgcca aagccgaaag tcccttcaaa 180

agcaccatcg tgcacggtta cctgaccctt tctatgctgc cctacttgtg gaaccagatt 240

attgaggtga acaatctgaa gatgatgatc aactacggca tcgagaagat gaagttcggt 300

caggctgttt tgtcgggcca gagtatccgt ctggtcgctt cgatgcagtc gctgaccaac 360

ttgcgtggtg tggctaaggc cgaaatcaag tttgccatcg aaatcgaggg tgagaagaag 420

aaagcactag agggcgtggc tgtctttctc tactatttta acgtgagttc gatataa 477

<210> 270
<211> 588
<212> DNA
<213> Bacteroides sp. CAG:598

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ggctcggcag aggcgcaagc catcctgctc gagatacgcg gcattacttc gccacgcccg 180

ctgacctacc agctgtttgc ctctaccctc gaggcgttgg gcgtacgcct gctgcgcgta 240

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tgtccgatcc tcatctacga agacgtgctg gatgctgaga aaatggaact ggacgccgag 420

acactggaaa cggaatcagg gacgacgaac agccaagatg accgggcaga gacaataaac 480

cgcatggagg aggctctgaa agaagccatc gaagcagaag aatacgaaaa agccgccaat 540

ctgcgcgaca tgataaacca atttaaagaa tcaaaccatc aggactga 588

<210> 271
<211> 243
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 271
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ttagtggcaa atatagccaa aacttgttta aacgtttgca ttcgtccggt taaattcttt 180

gccgtttgtt gggaaaatgc gatatttgtc tgctcaaaat cgaaagctgt tgaacaatat 240

taa 243

<210> 272
<211> 633
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 272
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gagactgcac cttattataa gtatgcttcc ctgctggaag gagagaagcg gcaggcaacg 180

cagcacccca gcagctggag agaagagccc ttgcgggtga agcggcttct gttccgtctg 240

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<210> 273
<211> 516
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 273
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actcgaacgc cagggcgatg cgttattcgc gacgatgcca ctcgaatcta tccctgcatt 180

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ggggccgagg acgaagagga acgtgctatt ttccgtcagc ttgtagagcg taatgcccgc 420

aacatgaact tcgagagtta tgaaatccag tttacaaccg aatccatgat cgatgacatg 480

gtaaaacaag tattgcagaa atgggaaaaa ttctga 516

<210> 274
<211> 795
<212> DNA
<213> Bacteroides sp. CAG:598

<400> 274
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ggagaggtca ttcgtgtccg aagtctgctg agtcccgaag gtttgcgctg gcttttgcgc 180

catgtcgtag agaattatgt ggagttcagg gcattgggac cagtcctgct ggttgtggct 240

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cagaattcca tcttggtagg gattgtctat tggatcattg tattgtttgc aaccttctct 420

ccgtgggcgg tattgcgtgg cattgatggg ggattggttc gttccccctt tgtagatggc 480

ttttcgttct tgtttgcaat gggagcagta ttgatgggga cgtgttatgg ctttatcagc 540

ggccgttatc ggcgtgacta tgatgtcgtg aatgggatgt tgtacctgtc tcgattcatg 600

gttctctatc tggtcgtctg ctttttcgcc tctcagatgt tcgcttgctt ggattattct 660

cgtttggata cttgtatcag cggatggata ctggccaact gggggtggca aggacagcag 720

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<210> 275
<211> 669
<212> DNA
<213> Bacteroides sp. CAG:598

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ggctgtttct acgaagaaga gaaacaagcc ctgaaaaact tcatccaggg aaacaatctg 180

caagtgaaac acctgctaaa cacgcatctc catctagacc atatttttgg aaatccattt 240

gtactgaaag aattcggatt gaaagcagaa gccaaccagg ctgatgaata ttggatagag 300

aacgctccca aacagagtcg tatgttcggc ttccaatttc aggaagagct tccaccgttg 360

ggaaaatacc tgtatgacgg tgatattatc actttcggtc atacacaact agaatgtatc 420

cacgtaccgg ggcattcacc tggaagcttg gtatattact gtgcagcaga gcactgcatg 480

ttctctggag atgtactttt ccaaggaagc atcggacggg ccgacttggc tggaggtaat 540

ttcgacacac tgatcgagca tatttgcagc cgcctgtttg tccttcccaa cgaaacgatt 600

gtctaccccg gccatggagc tccgactacc attggaatcg agaaagcaga aaatccgttt 660

ttcagataa 669

<210> 276
<211> 885
<212> DNA
<213> Clostridium sp. CAG:253

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gtaatcatga ttggtgctta tgtttctctt ctttccatga caaatgcagg cattccggca 180

tttccggcac ttattatttc aattgttgtc tgtactgttt taggtattgt cattgagaga 240

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ggtgtcagct acttacttca gaatgttgca cttttacttt ttggagccaa tgcacagact 360

tttccatcaa tcatcaaatg ggaaggactt tcattagccg gaggaaaact taacctttcc 420

ggtgaaacta tcattacaat aatagtttgt atcatcatta tgatagcttt aatgttcttt 480

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ccgggagcat ttataggcgg tattctttta ggtgttattg aaatatttgg taaggcctat 780

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aaaccgacag gacttttagg caaaaaaatt caggaaaaag tatag 885

<210> 277
<211> 1326
<212> DNA
<213> Clostridium sp. CAG:253

<400> 277
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ggggtcttga tgggatgtgg aaagtcctca aattaccaaa aaggtcagca gcagacagct 120

gaacctatag aaacacagag cttcacagga attattacac gcatagataa aaaactcagg 180

cagatttcag tcagagaaat tgatacggat gttgacacta tcatgaacta tgatgcatct 240

tctgagatta ctgataagta taaagaagag attgatgggg atgagcttga gctgggtcag 300

ataatggaaa ccacatacag aacggatgac gcaagagttg tctccatgaa agtgccggat 360

gatgcgtggg aatacagtga tgtagataag tttacttttg atactgagga gtgttcaatg 420

gaagttgcag gagagcttta tcagtattcc gaacagacat attttggctc tattgatgat 480

aaaaagatag atatgctgga actcagtgat aaggacaaac ttacggtacg cggagtagga 540

tacaaagtgt actctgttgt gagaacggag ggacacggtt atatacattt gttaaattac 600

agtgattttt tgggcggtat gataaatatt gatgatgata taatattgcc tgttacaaaa 660

aatatgctta taacagtcag ctgtggaaca tatcgtatca cgataagcaa gggtgcggca 720

aaagcaagta agactgtcac ggtgaaagag gacaaggaga gtacgcttga ttttagtgat 780

tacagaaaaa gcgtgaagaa tgtcggaagt gtacgtttca atgttgaccc gcagggtgca 840

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acatattctg ttacggcaag tttaaatggc tataatactt ataccggacg gcttactgtt 960

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agccagacaa gaaaaattga tagtaaacat accatatcag taactgcacc ggagggcgca 1140

gaggtttatc tggacaatgt ttataaggga attgttccct gcaagtttac aaaagttata 1200

ggctcacaga cgattacttt gagcaagaca ggttatgaga caaaaagcta ctcaattgat 1260

attctggatg atgataagaa tgcaaaactt tcattttcgg atttgattga ggatgctgat 1320

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<210> 278
<211> 1563
<212> DNA
<213> Clostridium sp. CAG:253

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gttgtctgcg ttgccattat catcgccgga atatgttaca aaaactattc taacgaacag 120

aaacttaaaa aagccgagaa aaatgccatt acatgtgtcg atgacataac cggtaaaaaa 180

atcggtgttc aaatcggtac aaccggtgac atatatgcat cggattatga aggtgacaaa 240

gaaggtactg ttgttgaacg ttacaataaa ggtactgatg ccatacaggc actcaaagat 300

gacaaaataa actgtgttat ccttgatgaa cagccatccc ttgcatacac tgaaaaaaac 360

actgaattaa aaattcttga agaagaattt gcagttgaag attatgctat atgtatagat 420

aagtcaaacg gcgaattaaa aagcaaaata aacgacgcat tagctaagct tcaaaaagac 480

ggaactcttg cagacataaa gaaaaactat acaggtaaag atgaagaaaa aggtaagttt 540

ccttataaaa agaaaaatgt ctcaggcaaa aacggcactt taaaagtcgg tacaaatgcc 600

gcatttaaac cttatgaata ttatgacaac aatcagatta caggtcttga tatagacatg 660

atgcaggctg tatgtgacga acttgatatg aagcttcaag ttgaagatat ggaatttgat 720

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gataatttca tatcagacca cagatacaac taccttgtaa aaggttttgc aaatactata 960

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gcatatgttg ccgaagttat acgttccggt atcaattcaa tagaccacgg acagtttgaa 1260

gccggcagaa gtctcggtct taactataga cagacaatga cttcaatcgt acttccacag 1320

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aatacatacg atgctttcct tcctcttata actgtcgcag taatctacct cgtaatagtt 1500

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taa 1563

<210> 279
<211> 1824
<212> DNA
<213> Clostridium sp. CAG:253

<400> 279
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atggatgcaa aacttttaat cgctctctgt gttatagcgg gaatgttttc aaatctttct 180

attgagatgt ccttgtgtgg aagtatggta atattatcaa tgcttcttat atatgataca 240

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tttgttatat acggcggtat aaaactatat atgtttccgt acaatgagta tgatatactg 360

cttcttatgt ttgggacagg tcttgtattg tcattgtcga aagtgtttaa tgaaatattt 420

aattatctga cagatggcag gaaaagcagg acaaaagagt acgaggacat ggttgaaaac 480

aggcttaatg atttttcgca tgtctttgac agaatttcaa aggtcatgtc ggatgatgtg 540

cctgaaaaca gacagatatg cggcagggac ataagaaaaa ttttcaggga aatgtccgaa 600

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cctgaaaaat tcagaagtct tagcgtttca ggggatggtt ttataaaaat tgaacagatg 720

ccgatggagt ttgcaagaga ttgtatccat ccggaacgtt ttttaaatga ggcaaatcaa 780

aatcttcata ttgcgagaaa tataatgggt tacagaaaca gagtcaggga gagcagaaaa 840

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atgagcagaa taatgcaaaa gaaattaaaa ccgtccgatg catcaagaaa agtaatagat 1140

acagaatttg gtgaatatat ttttgttgag gagacaaagt ataaagcaat aacaggagtt 1200

gcgaggatga caaaggatga acaggatgtt tcgggagaca cattttcaat ggtaaatctt 1260

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aatttagaaa aatacatagg acagatagat gcagtaaatc cgggagatat ggctcaggca 1740

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gttgccggag tatgggagaa ctaa 1824

<210> 280
<211> 1410
<212> DNA
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gtgtctgaag aaaccgctca tattcatatg tcagaggcag ccgttgaaga agaacataca 480

agagcatata taaagataca ggatgggtgc aaccagtttt gtacatattg tataattccg 540

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agaataataa ccgatgaatt tgcaaaaagg ttgtcggaaa tatcatcaat atgtcctcat 840

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cagggaaccg ctgcagataa gatggacggt cagatagctg agagtgaaaa atcagcaaga 1140

agtgaaaggc tgatagaaaa agaaaaagtt cttgagagtg aatttagaga acgggcatta 1200

aaaaatgagg aaaaagtttt atttgaggaa attacgcaga tagacgggaa aaaatatata 1260

acaggatata atgagagata tataagaatt gctgtaagtg ctgaaaatat tgaggatgca 1320

caaaacaaat gcaataagat aatcagcgtg aaaattatcg gaaaagtgaa taatgaagtg 1380

gttcttgcag agttaaatga caacttttaa 1410

<210> 281
<211> 1305
<212> DNA
<213> Clostridium sp. CAG:253

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ggtggaagta atgcaggtca tactatcata aatgactatg gaaaatttgc attacattta 180

cttccatcag gtgtatttta tgatcatact acaagtataa tcggtaatgg agttgccttg 240

aatatcccat atttatttaa tgaaataaat gaattgacta aaagaggtgt gccacagcca 300

aaaatcctcg tatctgacag agcacagatt cttatgccat atcatatagc atttgatgag 360

tatgaggaag agagacttgg aaagaaatca ttcggttcaa ctaagtcagg aatagcacca 420

ttttattcag ataaatacgc aaagattggt attcaggtat cagaactttt ccaggatgat 480

gatgcactta aagaaaagat tgagagaatc tgcgtacaga aaaatgttat acttaaacat 540

ttatacaaca aacctgaact tgatcaggca gaaatcttag atacacttca ccagtacaga 600

gatatggtag caccatatgt atgtgatgta tcagcattct taagaaaagc aatcaaagaa 660

ggaaaaaatg tacttttaga gggacagctt ggctctctta aagacccgga tcacggaatt 720

tatcctatgg ttacatcatc ttcaacactt gcagcatatg gagcgatagg cgcaggaatt 780

cctccatatg agattaagag aatcgttact gtagttaagg cttattcaag tgctgtcgga 840

gcaggtgaat ttgtaagtga gattcttgat gaggaagagg cagataagct tcgtaaacac 900

ggcggagacg gtggagagta cggagcaaca acaggacgtc cacgtcgtat gggatggttt 960

gatgctgttg ctacacgtta cggctgtgag atacagggtg caacagaagt tgttctcact 1020

gtacttgact gtcttggata ccttaaagag attccggtat gtgtaggtta tgagattgac 1080

ggagaagttg taaaagattt ccctgttaca acaaaacttg caaaagcaaa gcctgtatat 1140

aaagttcttc caggatggaa ttgcgatata ggcggcataa aggaatatga caaacttcct 1200

aaagaatgca gagattatat tgaatttatc gaaaaagaaa taggtgttcc aattaagatg 1260

gtatcaaacg gaccaaagag acatgatatc attcacagga aataa 1305

<210> 282
<211> 1446
<212> DNA
<213> Clostridium sp. CAG:253

<400> 282
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ggaggattag cggatgtagt agggtcactg ccaaagtgtt ttgacaagaa gaaatatgat 120

gtaagggtta tgataccaaa gtatgcatgt attcctgatg aatggaaaaa taagatggtt 180

tacaaaactc atttttatat agatttggct tggcgtaaac agtatgtagg tatcatggag 240

atgcagtatg aaggtgtaac cttttatttc gtggataatg agttttactt tgcaggacca 300

aagccatatg gttatataca tgaggatata gagaaatttg catttttctg taaagcagca 360

ttgtcatcac ttccgagtct tgattttcac cccgatgtaa ttcattgtca tgattggcag 420

acgggactta ttccagtgta tcttcatgat atgtttcagg agaatccatt ctacacaaat 480

attaagacaa tcatgactat acataatctt aaattccaag gtgtgtggga tttacagaaa 540

gtaaaagata ttacaggtat aaattcatca ttttttacct cagataagct tgaggcttat 600

ggtgatgcga actaccttaa gggtggtata gtttatgctg atttagttac tacagttagt 660

gattcatatg ccgaagagat taagatgcca ttttatggag aaaaacttga cggtcttatg 720

cgtgcaaggg acaattccct ttttggaata gtaaacggat tagattatga tgagtataat 780

cctgagacgg atcctcttat ctataaaaat tactcggcaa agacattcag aagagaaaaa 840

attaaaaata aaagagcact tcagaaagag ctggggcttg aggaaaacga taaaaaattt 900

atgataggta ttgtttcaag acttactgac cagaaaggtc ttgatttagt tgactacgtc 960

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tatgagcatt tattcagaca ttatgagtgg aagtatcatg acagagtatc tgccaatatt 1080

tattattcaa atgaacgttc tcataagatt tatgcggcat gtgatgcatt tcttatgcca 1140

tcgctttttg agccatgtgg acttagccag ttgatgagtc tcagatatgg aacagttcct 1200

attgtaagag aaacaggagg gcttaaagat accgtagaac catacaatga atacgagagt 1260

aagggaacag gattttcgtt ctgtaattat aacgcacatg aaatgctgaa tactattcgt 1320

tatgcaaaag atgtatattt caatcgtaag cgtgagtgga acaagataat tgacagagga 1380

atggcaaaag atttctcatg gggacagtca gcactcaaat atgcagaatt atatgacaga 1440

ttataa 1446

<210> 283
<211> 1434
<212> DNA
<213> Clostridium sp. CAG:253

<400> 283
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tatatgttta aaactttgat taaaaagctg tctactactc agattatcgc ccttggtttt 120

ttaggtacaa ttttcatagg tgcttttatt ctatgtctgc ctttttgttc ttccaatggc 180

acttttactc ctttcatcga tgcgttattt acttcaccta cctctgtctg cgtgacaggt 240

cttgttgttg tcaatacagc ctctcactgg agtttgtttg gaaaaatcat aattcttata 300

cttatacagc ttggcggtct tggtattgta tctttcgtca ccggtattat gatgattgcc 360

ggaagccgta ttactctaag tgaccgtctt cttttggaag atgcactgaa tctcagcaca 420

cttaaaggat tggtgcgctt tttgaaattt atttttaaag gaacatttat aatagaaata 480

accggtgcaa tatgttacag ttttgttttt attccggatt atgggctgat aaaaggattg 540

tggttttctc tgttccattc ggtgtctgct ttttgtaatg caggtattga cctgcttggc 600

gaaaacagcc ttgaaatata tgcttcaaat gtatggatca atctgattac aatgttttta 660

attatctccg gcggaatagg ttttatagta tggaaagata ttatggacgg ttttaaaaat 720

cattttataa aaggattttc ttttaaaaaa tgtttgcaaa aactcaggct tcatacaaaa 780

ataacactta tcactactgc tattttaatt tttggcggtg cattgcttat atttcttctt 840

gaatatacaa attcagatac aattggtaat atgagttttt caggtaagat aatcgccagt 900

ttcttccagt ctgttacact tagaactgcc ggttttgcta ctttttcaca atcaggattg 960

agacacggta ccgtcctttt atgttatttt cttatgatta tcggcggttc ctcaataggt 1020

acggcaggcg gaataaaaac aacaaccgca gccaccttat ttttaagtac acgggcagtt 1080

gtaaaaaata aaaaccacct ttttgtattc agaaaaaata taccgcacca aactgtcact 1140

aaagctctcg caataacaat ggtcagtata tcttttctgt tgctggcatc ctttagcctt 1200

taccaggctg aaggtggttc aatggtcgat gttgtctacg agacaacaag tgcaatcgga 1260

actgtgggac tgacaagaga tttcactcca aaacttcatc ttttaggaaa acttattata 1320

atcatatgta tgtacctcgg tcgtataggc ccgatttcaa tggttatctt ctttaataat 1380

gacagcagga aagaacttgt atctttccct cacgaagaca ttactgttgg ctga 1434

<210> 284
<211> 1560
<212> DNA
<213> Clostridium sp. CAG:253

<400> 284

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ccgcagtcat ttaatgatac aaatgcagat ggtataggtg acataaatgg tattacggag 120

aaactcgact acataaaaga acttggatgt aatgctatct ggataaatcc atgtttcaag 180

tcgcctttcg gtgatgcggg ttatgatgtt gaagattatt acacggttgc acctagatat 240

ggtacaaatg aggatcttgc aaatcttttc agagaggcac acaagagaga tatgcatatt 300

cttcttgacc ttgttccggg acatacttct gtacagcatg agtggtttaa gcagtcgatg 360

aaagctgaaa agaacgaatt tacggacaga tatgtctgga cagacaatat atgggaatca 420

ccggagggaa tgggatgcat aagaggaatt tcggatagag acggttcatg tgcagtcaac 480

tttttctcac accagccggc gttgaattat ggatattata aacctgagcg tccttggcag 540

caggcaatgg atgatgaggg accgaaagca acactcgaag cgatgaaaga tgttatgcgt 600

ttctggcttc agatgggtgc agacggtttc agagtagaca tggcaggttc gcttgtaaaa 660

aatgatgaag acggaaaggg aactataaaa ctctggcaga atgtcagaga gtttcttgac 720

agggaatttc cggatgctgc gatggtttca gagtggggag agcctgacaa atcgcttcag 780

ggtggttttc atatggattt cttacttcat ttcggtccat cccattacaa tgatttgttc 840

cgttgtgaag aaccgttctt ttcttcaaga ggaaagggcg atgtgtcagc ttttgtagaa 900

aaatatcttg ataattatga gaagtcagaa aagaaaggtc ttatgtgtat tccttcagga 960

aatcacgata tgggacgact ttcgcaggga attaagggtg atgagcttaa gatagctttt 1020

gcattcctct tatcaatgcc gggtgcaccg ttcatatatt acggtgatga gattggaatg 1080

aaatatgttg agggattgac atctgtagag ggaggatatg aaagaacagg ttcaagaaca 1140

cctatgcagt gggatgacag tgtaaatgca ggcttcagca gtgcaaagaa agagatgctt 1200

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ttaagcaaag gtgaaataga atttgtagct gcaaagaaag atacttatcc gcttgcgtat 1380

gtaagaagca gtgaggatga aaaaatactt gtagttataa atccttcagc agaagatgtt 1440

acatttgatt ttgacggaaa gttcggagaa gaaatctatc gttttggtgg aaacgcagag 1500

agtgacggaa aagttgttaa agtttcggga cagacagcag tatttgtaaa gcttgtataa 1560

<210> 285
<211> 1923
<212> DNA
<213> Clostridium sp. CAG:253

<400> 285
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gcacctgggt ctaagtcgga agcacttgat atggctatag acctcatggt aaaaagcggc 120

aagataaacg acagagaagc ttacaaaaag caggtttatc tgagagaaga agaaagcaca 180

acaggaattg gtgagggaat tgcaattccg catggaaagt gtgatgcagt tgacaagccg 240

ggacttgcgg caatggttat taagaatgga gttgattttg actctcttga tggcgaaccg 300

gtaacacttc ttttccttat tgcggcacca aatacagagg ataatgtgca cctcgatgtg 360

cttagcaagt tatctgtgct tatgatggat gaggagtttt ccaaatccct cagacaggca 420

aaatcagttg aagaatttct tgcaattata gataaagctg atgatgagaa accggatatt 480

gatgagaggc ttgaaaaaac aaatgtgcct aatgaattgg gaaagaaaat tctcgcagtt 540

acatcatgcc cgacaggaat agcacacaca tacatggcag cagaaggaat tgagaaagct 600

gcaagtgcag caggtgtaaa tgtcaagata gagacaagag gttccggtgg ggcaaagaat 660

gtacttacag acagtgatat tgcacaggct gactgcatta tcgttgcggc agatgcaaaa 720

gttcctatgg agagatttga cggaaagaaa gttattgagt gtcaggtttc agatggtata 780

aataaagctg atgaacttat aaagagagca gtagacggcg atgcacctgt ctaccatgca 840

gcaaatgcat cagagagcca gagcaaagag acatcaggag gaagtatagg gcataagata 900

tatacacagc ttatgaatgg tgtatctcat atgcttccgt ttgtagtagg cggtggtata 960

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gttataaaca caggacttaa ttcatggctt ggaagcatgg gcggttcaag taagattgtt 1440

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gcttatgtat ttggtataaa ttccatagca gccggaaatt atgatattat ggcggctgtt 1560

atgattggtg gtatggttcc accatgtgct atagcacttg caacaatgtt atttaaagat 1620

aagtttacaa aagagcaaag agaaagcggc cctacaaact ttgtaatggg acttgcattt 1680

attacagaag gtgcgatacc ttacgcagca tcagatccgc ttcatgtaat accttcatgt 1740

atcatcggtt caggtgtggc aggagcactc agcatggtat ttaactgtac acttatggca 1800

ccgcatggtg gaatttttgt attccctgtt gttggaggtt catggttata tcttgtatcg 1860

cttgtaatag gaacaatcgt ttcaacagca ttgctcggtg tacttaaaaa gaaaatagca 1920

taa 1923

<210> 286
<211> 2184
<212> DNA
<213> Clostridium sp. CAG:253

<400> 286
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gggcttgaga atcttgaaaa catatgtctt gaaagtaagg atgtcggcga atttgacgag 120

gacaatgtaa atgagatatt ccgtatcatg catacgataa aaggttcgtc agccgttatg 180

atgtttcaga atatagcaac acttgcacat aaacttgaag atgtatttta ctttataaga 240

gaaagtcatc ccgatggtgt accacatgat gaacttgttg atgatgtgct tgaagtatct 300

gattttataa cagcagaaat ggaaaagata aaggacggcg gagaacctga tgaagacccc 360

gcaggactta ttgaaaaact tgataagttc ctgaaaaaaa ttcagaataa aacagatgtc 420

gatgccggac agattatagc cgagaaacag gaaaaagcca aggaaagtga aaaaccacac 480

ttttatatag cacctgttgc ttcggacgac agtaaatttt acagtattta cattacatac 540

tataaagaaa ctgagatggc gaacataaga gcatatatgg ctgtaaattc attgaaggga 600

attgcagagg acatacttta tacgccgtca gacattattt caaatccgga cagtgcggat 660

gttgtacttg agtttggttt cagaattgcc cttcagacaa cggaagagcc acagactatt 720

acagagctta taaattcaag tgccggtatt gaaaatatag aaataaaaga atgcacaagt 780

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cagagggcag aggaagaggc gcaggctgaa aggcaggatg cgacaaaagg ggaaagtggg 960

aaagaagcac caacaaagaa aaaggctgcg aaaaagcctc gtgtaaaaaa aggtgaggca 1020

caaagtttca tcagtgtaaa cataaaaaag atggatcttc ttatggatct tataggagag 1080

cttgttattg cggaagcggt tgttttgcat aatcctgttt taaagttacc gggtcttgac 1140

cttaccaatt tccaaaaatc ggccggacag ctttcaaaga taacatcaga acttcaggac 1200

gcaataatgg caatgcgtat gatgcctctt aaaaatacat tccagaagat gaacagaata 1260

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acggaagttg acaagaatat cattgaacat atttccgatc cgcttatgca tcttatacga 1380

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gataatggta aaggtcttaa aaagagtgaa attcttgaga aggcaaaagc aaacggactt 1560

cttggaaata aatctgaaaa agatttgaca gagaaagaga tattcaattt tataactgta 1620

ccgggatttt ctacgaagaa gaaagttaca gagtattccg gaagaggagt cggtatggat 1680

gttgtagtaa agaatatcca gcaggtcggc ggcgtgctcg acattgaaag tgtagagggt 1740

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ttctctgtag gagagactaa ttttgttaca ccgactaatg cggttactga atttatacgt 1860

gttgaaaaag acaagcttat agtagaacct gatggcgaag aatatgtgat gataaggcag 1920

gagtgttatc ctcttataag gctgaacgag ttttatcatc ttgatggtgc agttgaagag 1980

attgaggacg gaatagtgat aatcttaaat cacgaagaca gaaaactggc tgtctttgct 2040

gacagtcttg taggtgaaca ggagattgta gttaaaccta ttccttctta tgtcaaggct 2100

gtaaaaggaa tatcgggatg tacccagctt ggtgacggaa gtatcagtct tatacttgac 2160

acaggcggac ttgttatgaa ttga 2184

<210> 287
<211> 1737
<212> DNA

<213> Clostridium sp. CAG:253

<400> 287
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ggcaaaacta ctttattaag gcatacaaag aaaaatcaga ttcctacagg tcatggctgc 180

ggaaaaatgt attttgaagg taaagacatt gagatgcttg acgaaaggga gagtgcttca 240

tgcataggat atgtggggca gagccctgat ggtcagattg taacagacag ggtatggcat 300

gagcttgctt ttggacttga aagtcttgga tacggaagag aagagatgcg cagaagaatt 360

gcagagatgt cagagtattt gggcataagc ggctggtatg agaaaaagac ggatgaattg 420

tcaggggtc agaaacagat attaaatctt gcttcggtca tggtaatgca tcccagattg 480

cttatactcg atgagcctac atcgcagtta gacccggttt cttctgacag atttttgcag 540

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catgaagtta ttgcaagggc tgacagggtt atgcttatga aagatacaaa gcttatcgga 660

tttgataaag tgcacaagat agccggtcag atgaaagaaa gtgcaagtaa agtttatgag 720

gcacttccgg gatacatgaa actttggctg gaatatggaa gtgaaggaag tctgccgctg 780

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gaaaaacata aaaaagatat attactgtca gccggacatc taagtttctc atatgataaa 960

aataagatat taaaagattt ctccatagac atatcgggag gaaatatata tgcgattatg 1020

ggtggaaacg gttcgggaaa aacaaccgct ttaaaaatcc ttgcaggaat ttacaaggca 1080

aagagcggaa aaataaagaa aaaaaaagat ttgagagcag tataccttac acagaatccg 1140

cagacggtat ttactgagat aaatgtttat gatgaactta gagaagtttt tacaagtcat 1200

aaggatttct ttaagaatga atatacaaaa tatcaggata atggtaggaa aaatacacaa 1260

aagtatgagt gttttgttga tacaaagata aatgaaatgc ttgaaaaaat ggaattatca 1320

gatttgtctt tgagacatcc ttttgatata agcgtggggc agcaacagcg gcttgcaatt 1380

gcaaaggtat tacttttaaa accggatgta ttgctgcttg atgagcctac aaaaggtctt 1440

gacggtgagt ttaagaaaaa actggcaggc atattaaaaa gaatgacaat aaacggcata 1500

gcggttgtgc ttgtatcgca tgatattgat ttctgctcgg aaaatgcaga tgtatgtgga 1560

cttttatttg acggagagat ggcaggaatg cagtctgttg atgacttttt ttcaaacaat 1620

tatttttata caacagatat ctgcagaatg ttttcagact tgtatcaaat gacagcagga 1680

attaaaaggg atttaccggt aaattacaga caggcggtgg aaatgtttga gggataa 1737

<210> 288
<211> 1194
<212> DNA
<213> Clostridium sp. CAG:253

<400> 288
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ggaaacccca gtacacttcc acctaaggca gtaaaccagg cgattataga tgttgtgaac 180

aatgaagaac caaacagggt tcatggatat atgaacaatt caggatttga agatgtgagg 240

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cttatgacag tcggtgctgc cgggggattg aatgttatac tcaaatcaat aattgaccct 360

ggggatgagg ttatcacttt tgcaccgtat tttggtgagt acaacaatta cgttgcaaat 420

tttgacggaa aagttgttgc ggtttctcct aatccgccta catttcagcc gaatataaaa 480

gaattttcag agaaaattac agcaaaaaca aaggctgtca taatcaataa tccaaacaat 540

ccgacgggtg ttgtttactc ggaagacaca ataaaagaac ttgcaaaggt tctttgcgac 600

aaacaggagg agtttggcac agcgatttat cttatatcag atgagccata cagggagctt 660

gcatatgacg gtgtatatgt accgtatctt acaaaatatt atgcaaacac aatagtcgga 720

tattcataca gtaagtcatt atcacttccg ggtgaaagaa taggttatct tgtaattcct 780

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gatgatacta agtttgcggc aaaggcaaaa gaatttaatc tgcttcttgt tccgggaagt 1080

tcatttatgt gtgcaggata tgtaagaata gcttattgtg ttgataaaaa aatgattgaa 1140

aaatcatttg cagcgtttga aaaacttgca gaaagttata atttaaataa ctag 1194

<210> 289
<211> 2937
<212> DNA
<213> Clostridium sp. CAG:253

<400> 289
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caaaataaag atgttgttac attactacag gaaaacggat ttgatgtcaa gggctcgcag 120

agcgttatcg aggatgatgc gataggtttt ttgttaaaac acgcaaaaga gcatttggct 180

aatcttaaaa agagtgagca tgcgaagaag aaagatacaa agaaggcaga aactccaaag 240

aaaaaggagg aaaaagctga aaatacttct gcaagtgaga aagcggcagt taaagaaaag 300

gcaaaaaaag aagaagttaa gccggaagta aaaaatacgg ttgaagaaaa taaagataca 360

aaaagtgaaa aggggcagga aaaaactgta gcagctgaga cagaagaaaa taaaatgcag 420

gaaacagaag aaaagggaaa agaggaaact gtgaagcaag aagagaaaaa agaagtagtt 480

aaaaaagagg taaagaaagc tgagccggag aaaaaatctg aagtaaagag tgcatcagag 540

gataaaaagg aagaaaagaa gtctgacaat cagcaggaag aaaagagaga caacagaaac 600

agtcagagtc gtgataacag ggataacaga aacggctcaa accgtgacaa tagagataga 660

gataatagaa acggtggaaa cagaaataat ggaaaccgcg ataacagaaa cggctcaaat 720

cgtgacaata gagataatag aaacggcgga aacagagaca acagaaataa tggaaaccgt 780

gataacagag ataatagaaa cggtggaaac agaaataacg gaaaccgcga taacagaaat 840

ggctcaaacc gtgacaatag agataataga aacggcggaa acagagacaa cagaaataat 900

ggaagccgtg ataacagaaa cagaaatcag ggcggcggat tttcaagagg cgcagctatg 960

ccaatggatt caatgaaatc tgaggttaaa cagtcaagac agcagagagc aaacaaggat 1020

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atgtttgagc agagcagaaa aaataagaag aaagacccta accgcaaggg agcatttatc 1140

aagcctgaac ctgtagcaaa accacaggag ccggaagatg gaatccgtac aatcacactt 1200

cctgaaaaga tgacaataaa agagttgtct gatataatga aagtaactcc ttcaacggtt 1260

atcaaaaacc tctttatgcg tggtcaggta gtaactctta accaggagat aacatttgaa 1320

gaggcagaag agattgcact tgaatataac tgtattgcag agatggaaga aaaggttgat 1380

atgatagccg aaatcctcaa agaggatgag gaagatgaga accttatggt taagcgtcct 1440

cctgtagtct gtgtaatggg tcacgttgac cacggtaaga catcacttct tgatgctatc 1500

agagaaacaa gcgttacttc aagagaagca ggtggtatta cacagcacat aggtgcttat 1560

gtgacagaga taaacggtga gaagattaca ttccttgata caccgggtca tgaggcgttt 1620

acatcaatgc gtatgcgtgg tgcacagtca acagatattg ctatccttgt tgtagcggca 1680

gatgatggtg ttatgccaca gactattgaa gctataagcc atgcaaaagc agcaggtgtt 1740

gagataatcg tagccgtaaa taagattgat aagcctagtg caaatgttga gagagttaag 1800

caggagctta cagaacacgg acttatcgca gaggactggg gtggagatac agtatttgta 1860

cctgtttctg cacatacaaa agaaggtata gaccagcttc ttgaaatgat aatccttact 1920

gcggaagtgc ttgaacttaa agcaaatcca aacagaaaag caagaggtgt tgttatagag 1980

gcgcagcttg ataagggacg cggacctgtc gcaactgtac ttgtacagaa aggtacactc 2040

catgtaggag acaacatagc tgtaggagca gcatatggta agataagagc catgatggat 2100

gatcagggaa agagagttaa gacagctctt ccgtcaacac ctgttgaaat tttaggactt 2160

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gaggaaaaag taataggtca cgcagaagta agacagacat tcaaagcttc tggtgtaggt 2700

atgatagcag gttcatatgt gcttgacgga aagattgaga gaaactgcaa ggtgagaatc 2760

agccgtgagg gagagcagat atttgaagga gaacttgcat cactcaagag atttaaggat 2820

gatgttaagg aagtggcagc aggatacgag tgtggtcttg tatttgaagg ttttaatgac 2880

atcaaggttg aagatcaggt agaagcatat atcatggtag aagttcctag aacatag 2937

<210> 290
<211> 1311
<212> DNA
<213> Clostridium sp. CAG:253

<400> 290
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cttgcagttg cggaagatga aaaatttgat aaggatgagc ttataaaact tgttgcagaa 120

ggaaaagtaa taattccggc aaacaaaaat cataaatgtt taaagcctag cggaatcgga 180

acaaaactca gaacaaagat aaatgtcaat cttggaacat caagagactg gactgatctt 240

gacatggaga tggaaaaagt aaaaagtgca gtagacatgg gtgcagaagc tatcatggac 300

ttgagttcat gcggtgacac acaggtgttt agacgcaaac ttacaagtga atgtcctgct 360

gttatcggaa ctgttcctat ttatgatgca gttgtatatt ataaaaaagc acttaaggat 420

attactgcaa aagaatggat tgatgtcgtg agaatgcacg ctgaggatgg tgttgacttt 480

atgactattc attgtggaat aaacaaagag actgcaagaa aatttaagag aaataaaaga 540

cttatgaata ttgtttcaag aggtggttca ataatctatg catggatgga gatgacagga 600

aatgaaaatc cattctatga gtattatgac gaagtgcttg acatatgcag gcagtatgat 660

gtgacaatga gcctcggtga cgcatgtcgt ccgggatgtc tcaaagatgc tacagatgca 720

gctcagattg aagaacttat tgctctttca gaacttacaa acagagcatg ggaaaaggac 780

gttcaggtga tgatagaagg accgggacat atgccgctta accagataaa agcaaatatg 840

gaagtacagc aggcaatgtg caagggagca ccgttctatg tacttggacc actcgtaacg 900

gatattgcac ccggatatga ccatattaca gcagcgatag gcggagcgat agctgcaaca 960

tatggagcgt ctttcctctg ctatgtaaca cctgccgagc atcttagact tccggatgta 1020

aatgacgtaa aagagggaat aattgcatca aagatagccg cacatgcagc agatatagct 1080

aaaggtgttc cgggagcaag agactgggat gacaacatgg gacaggcgag aaagaatctt 1140

gattgggaga agacgtttga gtattcaatc gaccctgaaa aggctagagc atatcgagca 1200

tcagcaaaac cggagaaaga ggacacatgt tcaatgtgtg gaaacttctg tgcagtaaag 1260

aatatgaata agatacttga cggagaaata gtatctatat ttgatgaata a 1311

<210> 291
<211> 1605
<212> DNA
<213> Clostridium sp. CAG:253

<400> 291
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aaggcattat ttactaacgc cgaagatatg atattattct ttgatgctga cgggtttgtg 120

tgcgaaaaaa acgacgccgt ctgcaaaaac ctcggatgta ccatggatga taaaatttat 180

atgcaggata tttttagaac atgcatgtct ttgaaagatg gtaagataga ccttataggt 240

cataaatacg gcattagttt tgagacagtt gcatacagaa caaatgagac atgcttctct 300

gttgttgcgt atcttgcaca gcttcaggag agcacaggct gttatggttt ctgcaggatt 360

catgacattg tacagcagaa ggagacaaag aaagagctta gaacagctaa aatggaagtt 420

gaggagacgc acaaagagag aaatgaaatg gttgcaaatg tcacccatga acttagaaca 480

cctgtaaacg gtgttttggg actggcacaa aatctccttg ataccggact tgattctgag 540

cagcgtgaga caatagagct tataatacaa tgctgcaaca atatgataaa gattataaat 600

aacattttgg acttttctaa aatacaggcc ggcaaattta ctatagagta tacggaattt 660

aacttttatc agatgatgga caaaattgtg aaagtaaaca ggacacaggc agagtcaaaa 720

gggcttaagc ttatctgcaa tgtcggagaa gatattcctg aacttatgac cggtgatgaa 780

cttcgtgtaa ctcaggtatt aaacaatctg ttatccaatg cgattaaatt tacctcaatg 840

gggcaggtca cactgaatgt tgtaaagagt tttgagacag aagaggaact tgaactgttt 900

ttcatggtta cagattcagg aataggcatt tcagaagagg aaaaagacaa gctgtttaaa 960

agcttttcac aggtagatgc atcaattaca agaaagtttg gaggaaccgg tttaggactc 1020

agcattgtaa aaaatcttgt tgaaatgatg ggtggagaca tcaatgttga aagtgagaaa 1080

ggaaaaggaa gtacattttc attttcaata aaagttaaaa agatagtatc agaagaagac 1140

aataaaacag aagaaaagac tgaaaaagct gaggaaaaaa cggagtattc atttaattac 1200

agcggaggtt ttcagctcga tgaagaagag gaagaaaata atctttataa acttggctca 1260

gaggaaaata taaaagccat agatgaaaat tgcgagaagc ttgttttgtg tatagagatg 1320

gaaaattgga acagggcaaa cagttttgca gatacgataa agctgcttgt ggcagatgat 1380

ccgatgaatt taaagagaaa agctttcaga cttcagatga cggtgagaaa aggtgaccat 1440

caggcggcat tagatgatta tgaagtatta aaaaaagcta ttgaggagtt taaactacag 1500

ttagaaaggc ggttatttgg catgacagta agcatgcagg tgaatgagca gccaaatata 1560

ctgatagtgg atgatgtatc tactaatctt gttattcttt ctgaa 1605

<210> 292
<211> 2388
<212> DNA
<213> Clostridium sp. CAG:253

<400> 292
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cttagcggac gtaatgaaaa gggtgtttat ttttatcgtt ttaataaaac atcagaaaaa 120

atagaacagt ttatttataa atattataat gaagcaagaa agtcgggggt tgtaattgag 180

gggaaaatcg gaaatcccac cgaaagtaat ctttcgtatt atgaagaaat tatgggatta 240

gattttcaaa tgagtatggg atttatctct actgctttaa aaaagtggct tccaaggatg 300

ggaatgtttc agcgggagaa tattgccgga gcaatatatg atgtgcttga tgaactgaga 360

aaaaaaggca aaaatgaaaa tatgcttaaa aatgcatata ttaaatttat gtgctggctt 420

tattataaat ttgagagcgt tgtaaatcag atgaatggcg agaatatacc taagattttg 480

tttattgggg atattgtcgg atatgagttt atgcttataa atattttggc tgatgcaggg 540

tgtgatgttg tttttgtaca gccacaggga gacgatgcat atctcaaggt ggatgcatca 600

cttgaaaagt cagtcgaata tacagatacg gatatggctc cgtttgaaaa agatttcagc 660

ataaaaaaac ttacacggaa aaatgattta aacagacgga acagtaataa tccttcagag 720

tttaaggagc atatactaaa ttgtacaaat gcctggattg atggaaaagg aattgatgat 780

ttcttacggc cagtatctgt tagaaaaaac aagtttaatg aattaaaaaa taatttgcag 840

acaggaaata ctttaggaca aaatggcttt gaaaacacat ctgataatcg ttatgcagat 900

gagaaaaatt tgttttataa ctgttatatc aggataaacg gtgtgtggga taaacttaca 960

tacgagaatg aactctatca gttttatctt tcactccaag gaatgaaaag gaatgttgtt 1020

gtcgtaagtg aaatgattcc taagcctgat acggatgaga tagcgaagat aaaaagagga 1080

aattacaggg acgtatatca gcttgtaaag gagctccagg tcaatattca gtttcctgaa 1140

agaccgagtg taaggaagtt tttggtcaat gcttttgctg atgttatttt ggatgaggct 1200

aagaggcttg aacaaaatac taatattaca aatataaata aaattttgaa taaggcagtt 1260

tatctgctct gttttataaa cagataccag acagcgctat ttaaagggct ggatgatgat 1320

atggtatcat gttttatata catgggaggg tgcaatgatg aaaatgaggc attgtttatg 1380

cgtttccttg caaggacaaa gacagatgtt ttgatattgt gtccaaatgc aggaaaaaag 1440

tgctgtcttg aagataaaat attatacgag ataaattatc cggattatct tgccgtaaat 1500

aagtttccga tgcaaaatgc agatatgcac attggaacgg cggcatatca tgcagagaga 1560

gaacttgata cccttatgta taatgatgat atgttgttta gaaatcagca gtatgacaag 1620

gcaaatgcaa tatcacttaa tactatggac agtgagatta aaattttgtg ggatacggag 1680

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aatccgatga aaatgtttgc tacggagttt tttaaaaatg gaagacttca cagaaatgtt 1920

ataaaaaatc acagagcata tcagtatggt tttctgcgtg aagatatgca ggaacatatt 1980

ttggataaaa ttgagctttt gctgcagcaa aagtcaataa agggaacttt tgaaaatggg 2040

acagaatata ctatagttgc aatagctcta aatcttccta aggaagtgac aagattgttg 2100

caggcatttg attttacaaa gaaaaatcct aagcttattt atttaaatac atcagatagt 2160

gtgatatctc tggaagatac gatatatata gcgttcttaa atcttcttgg gtttgatgtt 2220

gctttgtttg tacctaccgg gtacaatatg gaaaattatt ttaatatgaa gcttatggaa 2280

gaacaccaga tgggggatta tatgtatgat cttcaagtac caaattggaa tagtattccg 2340

ttaagtgtac acacgtcatt gcgtgacaga ctttttagac gtggatga 2388

<210> 293
<211> 2097
<212> DNA
<213> Clostridium sp. CAG:253

<400> 293
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aggcttagag gaaatcttaa gacctatttg agatggcctc tgtttttgg attgttattt 120

attttaatga cagttcagct tttttcagtg tcagttaaag ccggtataat gggtgtgttt 180

tacactgtta tttatttgtt gatagctttt cttataaatt tttccggtag aagaaagctc 240

aagaaagatc ttatagaatt tgctacaaac tatggtgaaa tgcaaatgcg gatgatgaaa 300

acattgactg ttccgtttgc aattctgagc gatgatggtc atatgctgtg gggcaatgat 360

gaatttgtat cagtcatagt caacaaaaaa gcggcaagaa gaaacatttc aaacatattt 420

gaggaaatta caatagacag tctgccggac tctgatgaga ttaaggtgat acatgtaaaa 480

acagaagata aatattatcg tgctgttatg aaacttattg tatcagactc accggatgat 540

gatgagacgg taaaaactga cataaatcag cttatggata acagcaggct catttctgta 600

ttcctgtatg atgagactga catgatggaa cttgagcaga agagagaagc ggaaaatctt 660

gttgtgggtc ttttatatat tgacaattat gatgagctta tcgacagcat cgatgaaatt 720

aggcagtcgc tgattatggc tctgatagac agaaaaatca ataaatacat gcaggggata 780

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cttgcggaga tatgttcaaa tcgttttgca attttagaag aaataaggga tataaatctc 900

ggaaatgaat caagtgcaac cataagtatt ggtattggtg tgggcagaga tacatttgtt 960

gagagatatg accttgcgcg tgctgccata gatcttgcac tcggaagagg tggcgaccag 1020

gctgtagtca aatctgttga ccaggaaaaa ttctacggtg gaaaaagtgt tcagatagaa 1080

agaaatacaa gggtaaaagc gagagtaaaa gcacatgctt taaaagaact tatagagggc 1140

aaggaaagag ttgtcgtaat gggacattct ataggtgatg tcgattcttt cggtgcttca 1200

ataggtatat accgcattgc aaagacgctt aacagaaaag cgaatgtcgt attaaatgag 1260

gtaaatcagt cagttaaacc tataagagac agattttata caaaagaata cgagggtgac 1320

atgattgtta caggtgacga ggcaaaagaa cttgtagatg aaaatacggt acttgtaatt 1380

gtagatgtaa atagagcaag ttatacagaa tgcccggaac ttattgagca ggctcagtct 1440

gttgtagtga tagaccatca cagacaggcg ggagatgcga ttgataaggc ggtattgttt 1500

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gcagaaagca agagtgaggg aatagaatca ccgactgtat ttgcatccaa aattgcaaat 1860

tcacttctcg acataaatgg agttaaagct tcatttgtac ttacaaaata tagagggaaa 1920

gtgtatataa gtgcacgttc aattgacgaa gtcaatgtcc agattatgat ggagcagttt 1980

ggcggcggcg gtcatataaa tatggcgggt gcacagcttg agaatgttga agtggaagct 2040

gtaaaagata tgattagaaa agaaatagac aggatgatag aggaaggaga aatatag 2097

<210> 294
<211> 1554
<212> DNA
<213> Clostridium sp. CAG:253

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ctcaatttta ttttaagtaa aaaacctgac ctggttctta tggatatacg catgccaaaa 180

atgcttggtc ttgaagttgt tgaaaacgca agaaaacgag gctttaacgg aaaagttata 240

attctcagcg gttataccga ttttaaatac gcacaggcag cgattaaaaa cggcgttgac 300

tattatctca caaaacctat tgatgaagac gaactctacg agacagtaag tgccataagt 360

tcacagataa ataaagaagc caaagaagag gaaactctta gtaattaccg tgacaaagca 420

aagggcatga ttcttttcga catacttaca ggcgttccta caataaacaa tattgcagac 480

atgaatattc acgctgacat atatcaggtt gtcatttacg aaaaatacag tcatcatgca 540

actgagcttc catataaatt ttcagatttg cttaaagtta caaatgaatc aaacagttca 600

tatgaaagca ttgagattga acaaaacgaa gttattctgc tcaaaggtgc ttttacacta 660

cataaattcc aagaattttt agagcattac aacagagaac aaaaaccaca ggagaactct 720

cctctcgact ctctgtttat tgcatacggc agagaagtca cttctattga ggatgtgcat 780

atttcttatg aagaagccca caaacttctt cagagaaggt tcttctgtga agataaacag 840

catactatag gatatgatga actaccgcgt gaggaacttg aaaacactta tgagatttcc 900

gacagccatt tacaggatta ctgtgaaaaa ctcacaggat atattcaggc ttcaaagaga 960

aatcagattg ccgaaacttt acacgaactt gaacataatc tctttaactc aacaagtgat 1020

atttcaagaa taaagctttt tttgactgat ttatatttgt cgataaaaga aaaaatttcg 1080

catctgtacc acaatgctaa tattgctttc cccggaaatg cggaaatcat cgattatata 1140

ggaagcaaat attatctcta tgagataatg ctgtatttca ccgaacaatt tgacatgatt 1200

accagaacaa taggcaatcc taccagcgaa ggtgttatgg acgatattat acattatatt 1260

gaacacaact atatggataa tatcaaactt gaaaatattg caccgctttt tggttataac 1320

agttcatacc tcggcaaaat cttcaacaaa aaaataggcg agggattcaa tatatttgta 1380

gacaaagtaa ggattaaaca ctctaaagag cttctcctta caacagacct caaagtttat 1440

gagatagcag aaaaagttgg ctataaaaat gttgactatt tccatacaaa atttaagaaa 1500

tatgtcgaaa tgagccctgc tgaattcaga aagaaaaaca aggataccat ttga 1554

<210> 295
<211> 1188
<212> DNA
<213> Clostridium sp. CAG:253

<400> 295
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acatataagg ctcacggtga gaagtttgtt acggaaacag accttccgga gcatggaatt 180

gcaatcaaaa aagttcttga acttcttgta gataaagaga gaggtgtaat aagctcactt 240

gatgagatac atgcagtagg acatcgtatg gtacatggtg gagagaagtt ctcttcttca 300

gttatcatta cagaagatgt tataaaagat attgaaagct gtaacgacct tgcaccgctt 360

cacaatccgg caaacatttt aggtgttcgt gcatgtcagg aagttatgcc gggtgtaaag 420

catgttgctg tatttgacac ggcattccat cagacaatgc ctgcaaaagc ttatttatat 480

gcacttccaa aagagtatta tgaaaaatat ggggtacgcc gttatggatt ccatggaaca 540

agccacagct ttgtatcaaa gagacttgca gaacttgcag gacttgacta taacaactca 600

aaaatgatta tctgccatat cggaagcgga gcaagtattt ctgcaattaa gaatggcaaa 660

tcaattgata caagtatggg tatgacacca cttgaaggac ttgtaatggg aacacgttca 720

ggagatattg atcctgcaat tgttgaattt atctgccaga aagaaaatat ttcagtcagt 780

gagatgacga caatcttaaa caagaagtca ggtgtacttg gtctttcagg agtatcaaat 840

gactttagag atttggtaga tgcaagagag agcggaaata aagatgcggc aaatgcactt 900

gatgtactcg tataccgtat cgtaaaatat atcggtgcat actatatggc acttggcgga 960

gttgatgcta ttgcacttac agcaggagcc ggagagaaca ataaagaagt tcgtgagatg 1020

attatggaag gaatcagtgt acttggcgta aagattaacc aggaggcaaa tcagacacgc 1080

ggagaagaga tacttctttc aacaaaagac agcaaggttc ctgtatggat agtaccgaca 1140

aacgaagaac ttgcaatcgc aagagagaca gcaagacttg taaaatag 1188

<210> 296
<211> 1206
<212> DNA
<213> Clostridium sp. CAG:253

<400> 296
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gcatttaaaa tttacagtga taaagatttg gaaagttcaa tggaagattt cggttttgaa 120

tatagagatg acaaggtgtt tgaagataag atatataaag tcataaaaaa acttccgata 180

aaaaatccac gttcaaaagc gcatattata tgtattgctg ttatatgtat ggttctggtt 240

tttggatgta ttaccggata cagatatatg agaagcagaa agcaggcggg gcagacaagt 300

gtattggaga gtgtgtgtaa ggaggcaaaa acacgttatg atataaatca aagcaataat 360

aatctgaatg ccataatagg cggagaaaca agtctgtctg atgaaaaaac gcagcttaaa 420

gattattata acagccggaa tacagcggtt tatgtaaata caaagaatta tgataaaagc 480

ggttatttgt acagcatgta cttattaaat gacgaggagg taaaaaaact tacggataaa 540

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aagtttattg tatataaaaa caaatcggat gacatgtata taggaaagtg tgtgggattt 720

gaaagtttaa aagatcatga tataataaca gataaaaaag ttaatgaaaa gaaatcgatt 780

tctgcgggtg aatttttgga aaacataatg gacataaaaa atgcagatga catacgggaa 840

ataatgcttg aaagagtcag agcaaaatca aaagctaatc ctgataaaag aattgcagta 900

tggacatcag acgaatcaaa gagtgaactt tacgaatttc tcacaaaaga aagcagcatt 960

gaaatggaga gtgtgggaga tacatccggt cagttgtggt ttggtgctgc cgagcctcaa 1020

aaatgttatt atcttgcagt tgagaataat gcaggtgagt tttgtgtgtt cggtatagtt 1080

tttgaagaaa aagatacaat ggtctatgtt gagccacagt ataaaccggg aacggcatta 1140

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<210> 297
<211> 1341
<212> DNA
<213> Clostridium sp. CAG:253

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ggagaatttt atcaacagca atatggaatt atctttgatg ctcttgttga aatgtacaga 180

gacgggatag gagccgattt ggtcactatc cagaataagc ttcgtgagaa ggaagtcaca 240

cctgaacttt acagtgtgga atatttagga gaacttttag caagtgttcc cacatcggca 300

aatgtaaaat tttatgcgga gattgtacat gaaaaggctg ttttaagaag gcttatcaag 360

gtaacagaac aggttacaag agagtgttac atggacagcc agccgttaga ggatattctc 420

gaggacaccg aaaaaagcgt gttcgatgta atacagcagc gtggaggaag tgagtttgag 480

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