SECUENCIAS

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<120> DESIGNER PHOTOAUTOTROPHIC AND HYDROGENOTROPHIC PRODUCTION OF ALCOHOLS AND BIODIESEL

<130> JWL-004-PCT-US3

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<160> 232

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<210> 1
<211> 1809
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 1, Example 1: designer Butanol-Dehydrogenase DNA construct (1809 bp)

<400> 1

agaaaatctg gcaccacacc tatatggtag ggtgcgagtg accccgcgcg acttggagct 60

cgatggcccc gggttgtttg gggcgtccgc ctctcgcgct attctgagct ggagaccgag 120

gcgcatgaaa atgcattcgc ttccatagga cgctgcattg tggcttgaag gttcaaggga 180

agggttcaaa cgaccccgcc gtacgaactt ttgtcggggg gcgctcccgg ccccgggctc 240

ttgtgcgcgc attagggctt cgggtcgcaa gcaagacgat acatggccgc cgtcattgcc 300

aagtcctccg tctccgcggc cgtggctcgc ccggcccgct ccagcgtgcg ccccatggcc 360

gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc cggctcaggc caaccagatg 420

gagaatttta gatttaatgc atatacagag atgctttttg gaaagggaca aatagagaag 480

cttccagagg ttttaaaaag atatggtaaa aatatattac ttgcatatgg tggtggaagt 540

ataaaaaaga atggactcta tgatactatc caaaagctat tgaaagattt taatattgtt 600

gaattaagtg gtattgaacc aaatccaaga attgaaactg taagacgtgg agttgaactt 660

tgcagaaaaa ataaagtaga tgttatttta gctgttggtg gagggagtac aatagactgc 720

tcaaaggtta taggggcagg ttattattat gctggagatg catgggacct tgtaaaaaat 780

ccagctaaaa taggtgaggt tttaccaata gtgacagttt taacaatggc agctactggt 840

tctgaaatga atagaaatgc tgttatttca aagatggata caaatgaaaa gcttggaaca 900

ggatcaccta agatgatccc tcaaacttct attttagatc cagaatattt gtatacattg 960

ccagcaattc aaacagctgc aggttgtgct gatattatgt cacacatatt tgaacaatat 1020

tttaataaaa ctacagatgc ttttgtacaa gataaatttg cggaaggttt gttgcaaact 1080

tgtataaaat attgccctgt tgctttaaag gaaccaaaga attatgaagc tagagcaaat 1140

ataatgtggg ctagttcaat ggctcttaac ggacttttag gaagtgggaa agctggagct 1200

tggacttgtc atccaataga acatgaatta agtgcatttt atgatataac tcatggagta 1260

ggtcttgcaa ttttaactcc aagttggatg agatatatct taagtgatgt aacagttgat 1320

aagtttgtta acgtatggca tttagaacaa aaagaagata aatttgctct tgcaaatgaa 1380

gcaatagatg caacagaaaa attctttaaa gcttgtggta ttccaatgac tttaactgaa 1440

cttggaatag ataaagcaaa ctttgaaaag atggcaaaag ctgcagtaga acatggtgct 1500

ttagaatatg catatgtttc attaaatgcc gaggatgtat ataaaatttt agaaatgtcc 1560

ctttaataaa tggaggcgct cgttgatctg agccttgccc cctgacgaac ggcggtggat 1620

ggaagatact gctctcaagt gctgaagcgg tagcttagct ccccgtttcg tgctgatcag 1680

tctttttcaa cacgtaaaaa gcggaggagt tttgcaattt tgttggttgt aacgatcctc 1740

cgttgatttt ggcctctttc tccatgggcg ggctgggcgt atttgaagcg gttctctctt 1800

ctgccgtta 1809

<210> 2
<211> 2067
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 2, Example 2: designer Butyraldehyde-Dehydrogenase DNA construct (2067 bp)

<400> 2
agaaaatctg gcaccacacc tatatggtag ggtgcgagtg accccgcgcg acttggagct 60

cgatggcccc gggttgtttg gggcgtccgc ctctcgcgct attctgagct ggagaccgag 120

gcgcatgaaa atgcattcgc ttccatagga cgctgcattg tggcttgaag gttcaaggga 180

agggttcaaa cgaccccgcc gtacgaactt ttgtcggggg gcgctcccgg ccccgggctc 240

ttgtgcgcgc attagggctt cgggtcgcaa gcaagacgat acatggccgc cgtcattgcc 300

aagtcctccg tctccgcggc cgtggctcgc ccggcccgct ccagcgtgcg ccccatggcc 360

gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc cggctcaggc caaccagatg 420

attaaagaca cgctagtttc tataacaaaa gatttaaaat taaaaacaaa tgttgaaaat 480

gccaatctaa agaactacaa ggatgattct tcatgtttcg gagttttcga aaatgttgaa 540

aatgctataa gcaatgccgt acacgcacaa aagatattat cccttcatta tacaaaagaa 600

caaagagaaa aaatcataac tgagataaga aaggccgcat tagaaaataa agagattcta 660

gctacaatga ttcttgaaga aacacatatg ggaagatatg aagataaaat attaaagcat 720

gaattagtag ctaaatacac tcctgggaca gaagatttaa ctactactgc ttggtcagga 780

gataacgggc ttacagttgt agaaatgtct ccatatggcg ttataggtgc aataactcct 840

tctacgaatc caactgaaac tgtaatatgt aatagtatag gcatgatagc tgctggaaat 900

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ataaataaag ctattatttc atgtggtggt cctgagaatt tagtaacaac tataaaaaat 1020

ccaactatgg actctctaga tgcaattatt aagcaccctt caataaaact actttgcgga 1080

actggagggc caggaatggt aaaaaccctc ttaaattctg gtaagaaagc tataggtgct 1140

ggtgctggaa atccaccagt tattgtagat gatactgctg atatagaaaa ggctggtaag 1200

agtatcattg aaggctgttc ttttgataat aatttacctt gtattgcaga aaaagaagta 1260

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actcaagaat actctataaa taagaaatgg gtcggaaaag atgcaaaatt attcttagat 1440

gaaatagatg ttgagtctcc ttcaagtgtt aaatgcataa tctgcgaagt aagtgcaagg 1500

catccatttg ttatgacaga actcatgatg ccaatattac caattgtaag agttaaagat 1560

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tttgtaaaga atgctaaatc ttttgccggt gttggttatg aagcagaagg ctttacaact 1740

ttcactattg ctggatccac tggtgaagga ataacttctg caagaaattt tacaagacaa 1800

agaagatgtg tactcgccgg ttaataaatg gaggcgctcg ttgatctgag ccttgccccc 1860

tgacgaacgg cggtggatgg aagatactgc tctcaagtgc tgaagcggta gcttagctcc 1920

ccgtttcgtg ctgatcagtc tttttcaaca cgtaaaaagc ggaggagttt tgcaattttg 1980

ttggttgtaa cgatcctccg ttgattttgg cctctttctc catgggcggg ctgggcgtat 2040

ttgaagcggt tctctcttct gccgtta 2067

<210> 3
<211> 1815
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 3, Example 3: designer Butyryl-CoA-Dehydrogenase DNA construct (1815 bp)

<400> 3
agaaaatctg gcaccacacc tatatggtag ggtgcgagtg accccgcgcg acttggagct 60

cgatggcccc gggttgtttg gggcgtccgc ctctcgcgct attctgagct ggagaccgag 120

gcgcatgaaa atgcattcgc ttccatagga cgctgcattg tggcttgaag gttcaaggga 180

agggttcaaa cgaccccgcc gtacgaactt ttgtcggggg gcgctcccgg ccccgggctc 240

ttgtgcgcgc attagggctt cgggtcgcaa gcaagacgat acctcgagca tatggccgcc 300

gtcattgcca agtcctccgt ctccgcggcc gtggctcgcc cggcccgctc cagcgtgcgc 360

cccatggccg cgctgaagcc cgccgtcaag gctgcccccg tggctgcccc ggctcaggcc 420

aaccagatga atttccaatt aactagagaa caacaattag tacaacaaat ggttagagaa 480

ttcgcagtaa atgaagttaa gccaatagct gctgaaatcg acgaaacaga aagattccct 540

atggaaaacg ttgaaaaaat ggctaagctt aaaatgatgg gtatcccatt ttctaaagaa 600

tttggtggag caggcggaga tgttctttca tatataatag ctgtggaaga attatcaaaa 660

gtttgtggta ctacaggagt tattctttca gcgcatacat cattatgtgc atcagtaatt 720

aatgaaaatg gaactaacga acaaagagca aaatatttac ctgatctttg cagcggtaaa 780

aagatcggtg ctttcggatt aactgaacca ggtgctggta cagatgctgc aggacaacaa 840

acaactgctg tattagaagg ggatcattat gtattaaatg gttcaaaaat cttcataaca 900

aatggtggag ttgctgaaac tttcataata tttgctatga cagataagag tcaaggaaca 960

aaaggaattt ctgcattcat agtagaaaag tcattcccag gattctcaat aggaaaatta 1020

gaaaataaga tggggatcag agcatcttca actactgagt tagttatgga aaactgcata 1080

gtaccaaaag aaaacctact tagcaaagaa ggtaagggat ttggtatagc aatgaaaact 1140

cttgatggag gaagaattgg tatagctgct caagctttag gtattgcaga aggagctttt 1200

gaagaagctg ttaactatat gaaagaaaga aaacaatttg gtaaaccatt atcagcattc 1260

caaggattac aatggtatat agctgaaatg gatgttaaaa tccaagctgc taaatactta 1320

gtatacctag ctgcaacaaa gaagcaagct ggtgagcctt actcagtaga tgctgcaaga 1380

gctaaattat ttgctgcaga tgttgcaatg gaagttacaa ctaaagcagt tcaaatcttt 1440

ggtggatatg gttacactaa agaataccca gtagaaagaa tgatgagaga tgctaaaata 1500

tgcgaaatct acgaaggaac ttcagaagtt caaaagatgg ttatcgcagg aagcatttta 1560

agataatcta gataaatgga ggcgctcgtt gatctgagcc ttgccccctg acgaacggcg 1620

gtggatggaa gatactgctc tcaagtgctg aagcggtagc ttagctcccc gtttcgtgct 1680

gatcagtctt tttcaacacg taaaaagcgg aggagttttg caattttgtt ggttgtaacg 1740

atcctccgtt gattttggcc tctttctcca tgggcgggct gggcgtattt gaagcggttc 1800

tctcttctgc cgtta 1815

<210> 4
<211> 1482
<212> DNA
<213> Artificial Sequence

<220>

<223> Synthetic Construct- Sequence No. 4, Example 4: designer
Crotonase DNA construct (1482 bp)

<400> 4

agaaaatctg gcaccacacc tatatggtag ggtgcgagtg accccgcgcg acttggagct 60

cgatggcccc gggttgtttg gggcgtccgc ctctcgcgct attctgagct ggagaccgag 120

gcgcatgaaa atgcattcgc ttccatagga cgctgcattg tggcttgaag gttcaaggga 180

agggttcaaa cgaccccgcc gtacgaactt ttgtcggggg gcgctcccgg ccccgggctc 240

ttgtgcgcgc attagggctt cgggtcgcaa gcaagacgat acctcgagca tatggccgcc 300

gtcattgcca agtcctccgt ctccgcggcc gtggctcgcc cggcccgctc cagcgtgcgc 360

cccatggccg cgctgaagcc cgccgtcaag gctgcccccg tggctgcccc ggctcaggcc 420

aaccagatgg aattaaaaaa tgttattctt gaaaaagaag ggcatttagc tattgttaca 480

atcaatagac caaaggcatt aaatgcattg aattcagaaa cactaaaaga tttaaatgtt 540

gttttagatg atttagaagc agacaacaat gtgtatgcag ttatagttac tggtgctggt 600

gagaaatctt ttgttgctgg agcagatatt tcagaaatga aagatcttaa tgaagaacaa 660

ggtaaagaat ttggtatttt aggaaataat gtcttcagaa gattagaaaa attggataag 720

ccagttatcg cagctatatc aggatttgct cttggtggtg gatgtgaact tgctatgtca 780

tgtgacataa gaatagcttc agttaaagct aaatttggtc aaccagaagc aggacttgga 840

ataactccag gatttggtgg aactcaaaga ttagcaagaa tagttggacc aggaaaagct 900

aaagaattaa tttatacttg tgaccttata aatgcagaag aagcttatag aataggctta 960

gttaataaag tagttgaatt agaaaaattg atggaagaag caaaagcaat ggctaacaag 1020

attgcagcta atgctccaaa agcagttgca tattgtaaag atgctataga cagaggaatg 1080

caagttgata tagatgcagc tatattaata gaagcagaag actttgggaa gtgctttgca 1140

acagaagatc aaacagaagg aatgactgcg ttcttagaaa gaagagcaga aaagaatttt 1200

caaaataaag gctgctgccc cggctgctgc taatctagat aaatggaggc gctcgttgat 1260

ctgagccttg ccccctgacg aacggcggtg gatggaagat actgctctca agtgctgaag 1320

cggtagctta gctccccgtt tcgtgctgat cagtcttttt caacacgtaa aaagcggagg 1380

agttttgcaa ttttgttggt tgtaacgatc ctccgttgat tttggcctct ttctccatgg 1440

gcgggctggg cgtatttgaa gcggttctct cttctgccgt ta 1482

<210> 5
<211> 1367
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 5, Example 5: designer 3-Hydroxybutyryl-CoA-Dehydrogenase DNA construct (1367 bp)

<400> 5
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggctcgag catatggccg 120

ccgtcattgc caagtcctcc gtctccgcgg ccgtggctcg cccggcccgc tccagcgtgc 180

gccccatggc cgcgctgaag cccgccgtca aggctgcccc cgtggctgcc ccggctcagg 240

ccaaccagat gaaaaagatt tttgtacttg gagcaggaac tatgggtgct ggtatcgttc 300

aagcattcgc tcaaaaaggt tgtgaggtaa ttgtaagaga cataaaggaa gaatttgttg 360

acagaggaat agctggaatc actaaaggat tagaaaagca agttgctaaa ggaaaaatgt 420

ctgaagaaga taaagaagct atactttcaa gaatttcagg aacaactgat atgaagttag 480

ctgctgactg tgatttagta gttgaagctg caatcgaaaa catgaaaatt aagaaggaaa 540

tctttgctga gttagatgga atttgtaagc cagaagcgat tttagcttca aacacttcat 600

ctttatcaat tactgaagtt gcttcagcta caaagagacc tgataaagtt atcggaatgc 660

atttctttaa tccagctcca gtaatgaagc ttgttgaaat tattaaagga atagctactt 720

ctcaagaaac ttttgatgct gttaaggaat tatcagttgc tattggaaaa gaaccagtag 780

aagttgcaga agctccagga ttcgttgtaa acggaatctt aatcccaatg attaacgaag 840

cttcattcat ccttcaagaa ggaatagctt cagttgaaga tattgataca gctatgaaat 900

atggtgctaa ccatccaatg ggacctttag ctttaggaga tcttattgga ttagatgttt 960

gcttagctat catggatgtt ttattcactg aaacaggtga taacaagtac agagctagca 1020

gcatattaag aaaatatgtt agagctggat ggcttggaag aaaatcagga aaaggattct 1080

atgattattc taaaggctgc tgccccggct gctgctaatc tagataaatg gaggcgctcg 1140

ttgatctgag ccttgccccc tgacgaacgg cggtggatgg aagatactgc tctcaagtgc 1200

tgaagcggta gcttagctcc ccgtttcgtg ctgatcagtc tttttcaaca cgtaaaaagc 1260

ggaggagttt tgcaattttg ttggttgtaa cgatcctccg ttgattttgg cctctttctc 1320

catgggcggg ctgggcgtat ttgaagcggt tctctcttct gccgtta 1367

<210> 6
<211> 1721
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 6, Example 6: designer Thiolase DNA construct (1721 bp)

<400> 6
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggctcgag catatggccg 120

ccgtcattgc caagtcctcc gtctccgcgg ccgtggctcg cccggcccgc tccagcgtgc 180

gccccatggc cgcgctgaag cccgccgtca aggctgcccc cgtggctgcc ccggctcagg 240

ccaaccagat gggcaaagaa agtagtttta gctgtgcatg tcgtacagcc atcggaacaa 300

tgggtggatc tcttagcaca attcctgcag tagatttagg tgctatcgtt atcaaagagg 360

ctcttaaccg cgcaggtgtt aaacctgaag atgttgatca cgtatacatg ggatgcgtta 420

ttcaggcagg acagggacag aacgttgctc gtcaggcttc tatcaaggct ggtcttcctg 480

tagaagtacc tgcagttaca actaacgttg tatgtggttc aggtcttaac tgtgttaacc 540

aggcagctca gatgatcatg gctggagatg ctgatatcgt tgttgccggt ggtatggaaa 600

acatgtcact tgcaccattt gcacttccta atggccgtta cggatatcgt atgatgtggc 660

caagccagag ccagggtggt cttgtagaca ctatggttaa ggatgctctt tgggatgctt 720

tcaatgatta tcatatgatc cagacagcag acaacatctg cacagagtgg ggtcttacac 780

gtgaagagct cgatgagttt gcagctaaga gccagaacaa ggcttgtgca gcaatcgaag 840

ctggcgcatt caaggatgag atcgttcctg tagagatcaa gaagaagaaa gagacagtta 900

tcttcgatac agatgaaggc ccaagacagg gtgttacacc tgaatctctt tcaaagcttc 960

gtcctatcaa caaggatgga ttcgttacag ctggtaacgc ttcaggtatc aacgacggtg 1020

ctgcagcact cgtagttatg tctgaagaga aggctaagga gctcggcgtt aagcctatgg 1080

ctacattcgt agctggagca cttgctggtg ttcgtcctga agttatgggt atcggtcctg 1140

tagcagctac tcagaaggct atgaagaagg ctggtatcga gaacgtatct gagttcgata 1200

tcatcgaggc taacgaagca ttcgcagctc agtctgtagc agttggtaag gatcttggaa 1260

tcgacgtcca caagcagctc aatcctaacg gtggtgctat cgctcttgga cacccagttg 1320

gagcttcagg tgctcgtatc cttgttacac ttcttcacga gatgcagaag aaagacgcta 1380

agaagggtct tgctacactt tgcatcggtg gcggtatggg atgcgctact atcgttgaga 1440

agtacgaagg ctgctgcccc ggctgctgct aatctagata aatggaggcg ctcgttgatc 1500

tgagccttgc cccctgacga acggcggtgg atggaagata ctgctctcaa gtgctgaagc 1560

ggtagcttag ctccccgttt cgtgctgatc agtctttttc aacacgtaaa aagcggagga 1620

gttttgcaat tttgttggtt gtaacgatcc tccgttgatt ttggcctctt tctccatggg 1680

cgggctgggc gtatttgaag cggttctctc ttctgccgtt a 1721

<210> 7
<211> 4211
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 7, Example 7: designer
Pyruvate-Ferredoxin-Oxidoreductase DNA construct (4211 bp)

<400> 7
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggct cgagcatatg gccgccgtca ttgccaagtc ctccgtctcc gcggccgtgg 240

ctcgcccggc ccgctccagc gtgcgcccca tggccgcgct gaagcccgcc gtcaaggctg 300

cccccgtggc tgccccggct caggccaacc agatggcgca gaggtgcaag gagcccgtcg 360

acggaacgac agccacgacg cacgtggcct acttcatgag cgacagcgcg ttcatcttcc 420

ccatcacgcc cagctcggtc atgtccgagg tcgcccacga gtggtccatg aacggccgca 480

agaacgcctt cggccagccc acgatggtcc gccagatgca gagcgaggct gggtctgccg 540

gcgccctgca cggcgcgctc agcgagggag cgctggcgac gacgttcacg agcagccagg 600

gcctgctgct catgatcccc aacatgtaca agatcgccgg cgagctcctg ccctgcgtca 660

tgcacatcgc cgcccgcacc gtcgccaccg aggccctctc tatcttcggc gaccacacgg 720

atgtctacgc ggtgaggtcg acggggttcg cgttcctgtg ctccgcgacc gtccaggagt 780

gcatccacat gtccgccgcc gcgcacgccg ccaccctgtc cagcgaggtc ccgttcgccc 840

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gtgtgaacaa ggtgttcggg accaactaca ggacctacga gtactatggc caccccgagg 1140

ccacggacgt gatcgtggcc atgggaagcg gcaccgaagt ggccatctcg actgccaact 1200

tcctcaactc gcgcgacgcg aactcgaggg tcggcgtcgt gagggtgcgg ctgttccggc 1260

cgtttgtgtc ggcggcgttt gtggctgcgc tgcccaagac cgtcaagagg atctgcgttc 1320

tggaccgcgg gagggacggg caggcggccg cggacccccct gcaccaggac gtcctgtcgg 1380

cgctgggtct ggcagcgccc gggagggttc aggtgtgcgt gggaggcgtg tacggtctgt 1440

cgtccaagga cttcaacccc gaccacgtga tcgccgtgta caggaacctc gcgtcggcga 1500

gccccaagaa caggttcagc gtcggcatcg tcgacgacgt gacgcacaac agcctggaca 1560

tgggagagca cgtggacgcg ctgccgcagg ggacgaagca gtgcctgctg tggggcatcg 1620

gcggagacgg gaccatcggg gcgaacaaga cggccatcaa gctgatcgcg gaccacacgg 1680

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cgcacctgcg gttcggcccg acgcggttcg aggcgccgta cctggtgaac gacagcaact 1800

acgtggcgtg ccacaacttc tcgtacgtgc acaggttcaa cctgctgtcg tcgctgcgca 1860

ccgggggcac gttcgtgctc aactgcccgt gccggaccgt ggaggagctg gacacggcac 1920

tcccggtgcg cctgaggcgc gagatcgcca ggcggcaggc caagttctat gtgatcgacg 1980

cgaccaagat cgccaaggac aacgggatgg gcccgttcat caacatggtc ctccaggccg 2040

tgttcttcta tctgtcccac gtgctcgatg tgaacgaggc agtggcactc ctgaagaaga 2100

gcatccagaa gatgtacgcg cgcaagggcg aggaggttgt caggaagaac gtggcatcgg 2160

tcgacgcgtc gctggatccc aaggcgttgc tgcacatcga gtaccccgca gacaggtggc 2220

ttgcgctggc cgacgagcac gtgccccgca tgggtctgct cactgtcccc gagcgcctgc 2280

agaagttcaa cgccgagctg tacgagccga ccctcgcgta cgatggggag agcatcccgg 2340

tcagcaggtt ccctcgcggc ggcgagacgc cgacgggcac gactcagctg ggcaagcgtg 2400

gcatcgccga gagcgtgccg cactggaacc acgagaagtg cgtgcagtgc aaccagtgct 2460

cgttcgtgtg cccgcacgcc gtcatccggt cgtaccagat cagcgaggag gagatgaaga 2520

acgcccctgc cggcttcgac actcttaagt cgcgcaagcc cgggtatcgt ttccgcatca 2580

acgtcagcgc cctggactgc actggctgca gcgtgtgcgt ggagcagtgc ccagtcaagt 2640

gcctggagat gaagcctctc gagtccgagt tcgagatgca gaaggacgcc atcaggttcg 2700

tccgcgagat ggtcgcgccc aagcccgagc tgggagaccg caagactccc gtcggcatcg 2760

cgtctcacac gccgctgttc gagttcccgg gagcctgcgc cgggtgcggt gagaccccgc 2820

tggtgcgcct cgtgacgcag atgttcggtg agcgcatggt catcgccgcg gccactgggt 2880

gcaactcgat ctggggagcg tcgttcccga acgtgccgta cacaaccaac gcccgcgggg 2940

agggccccgc gtggcacaac tcgctgttcg aggacgcggc ggagctcggg tatggcatta 3000

cgtgtgcgta tcgccagcgc cgcgagcgcc tcatcggcat cgtgcggagc gtcgtcgacg 3060

atgcgggatc cgtgcagggt ctgtctgctg agctgaaggc tctgctggtc gagtggctcg 3120

cgcacgtcag ggacttcgag aagacccgcg agctccgcga caggatgaac cccctgatcg 3180

acgcaatccc agcgaacgcg gactgcaggg ttctggagct cagggagaag cacaaccgcg 3240

agctgatcgc gcgcacgagt ttctggatcc tcggtggcga cgggtgggcg tacgacatcg 3300

gcttcggtgg actggaccac gtgatcgcca acaacgagga cgtcaacatc cttgttctcg 3360

acacggaggt ctactccaac actggtggcc agcgctccaa gtcgacgccg ctcggcgccc 3420

gcgccaagta cgctgtgctg ggcaaggaca ctgggaagaa ggacctgggg cgcatcgcga 3480

tgacctacga gaccgcgtac gtggccagca tcgcgcaggg agccaaccag cagcagtgca 3540

tggacgcgct gagggaggcc gaggcctacc agggcccctc gatcgtcatt gcgtacactc 3600

cgtgcatgga gcaccagatg gtccgcggga tgaaggagag ccagaagaac cagaagctgg 3660

ctgtggagac gggctactgg ctgctgtacc gcttcaaccc cgacctcatc cacgagggca 3720

agaacccctt caccctcgac tcgaagcctc cctcgaagcc tcccaaggag ttcctggaca 3780

cgcagggccg tttcattact ctgcagcgcg agcaccccga gcaggcccac ctccttcacg 3840

aggcactcac ccgctctctg gccacccgct tcgtgcgcta ccagcgcctc gtgcagctgt 3900

acgagcccgc tgcccctgcc gcagctcctg ccacgcatgg ctgctgcccc ggctgctgct 3960

aatctagata aatggaggcg ctcgttgatc tgagccttgc cccctgacga acggcggtgg 4020

atggaagata ctgctctcaa gtgctgaagc ggtagcttag ctccccgttt cgtgctgatc 4080

agtctttttc aacacgtaaa aagcggagga gttttgcaat tttgttggtt gtaacgatcc 4140

tccgttgatt ttggcctctt tctccatggg cgggctgggc gtatttgaag cggttctctc 4200

ttctgccgtt a 4211

<210> 8
<211> 2021
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 8, Example 8: designer Pyruvate-Kinase DNA construct (2021 bp)

<400> 8
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggctcgag catatggccg 120

ccgtcattgc caagtcctcc gtctccgcgg ccgtggctcg cccggcccgc tccagcgtgc 180

gccccatggc cgcgctgaag cccgccgtca aggctgcccc cgtggctgcc ccggctcagg 240

ccaaccagat gtctagatta gaaagattga cctcattaaa cgttgttgct ggttctgact 300

tgagaagaac ctccatcatt ggtaccatcg gtccaaagac caacaaccca gaaaccttgg 360

ttgctttgag aaaggctggt ttgaacattg tccgtatgaa cttctctcac ggttcttacg 420

aataccacaa gtctgtcatt gacaacgcca gaaagtccga agaattgtac ccaggtagac 480

```
cattggccat tgctttggac accaagggtc cagaaatcag aactggtacc accaccaacg      540

atgttgacta cccaatccca ccaaaccacg aaatgatctt caccaccgat gacaagtacg      600

ctaaggcttg tgacgacaag atcatgtacg ttgactacaa gaacatcacc aaggtcatct      660

ccgctggtag aatcatctac gttgatgatg gtgttttgtc tttccaagtt ttggaagtcg      720

ttgacgacaa gactttgaag gtcaaggctt tgaacgccgg taagatctgt tcccacaagg      780

gtgtcaactt accaggtacc gatgtcgatt tgccagcttt gtctgaaaag gacaaggaag      840

atttgagatt cggtgtcaag aacggtgtcc acatggtctt cgcttctttc atcagaaccg      900

ccaacgatgt tttgaccatc agagaagtct tgggtgaaca aggtaaggac gtcaagatca      960

ttgtcaagat tgaaaaccaa caaggtgtta acaacttcga cgaaatcttg aaggtcactg     1020

acggtgttat ggttgccaga ggtgacttgg gtattgaaat cccagcccca gaagtcttgg     1080

ctgtccaaaa gaaattgatt gctaagtcta acttggctgg taagccagtt atctgtgcta     1140

cccaaatgtt ggaatccatg acttacaacc caagaccaac cagagctgaa gtttccgatg     1200

tcggtaacgc tatcttggat ggtgctgact gtgttatgtt gtctggtgaa accgccaagg     1260

gtaactaccc aatcaacgcc gttaccacta tggctgaaac cgctgtcatt gctgaacaag     1320

ctatcgctta cttgccaaac tacgatgaca tgagaaactg tactccaaag ccaacctcca     1380

ccaccgaaac cgtcgctgcc tccgctgtcg ctgctgtttt cgaacaaaag gccaaggcta     1440

tcattgtctt gtccacttcc ggtaccaccc caagattggt ttccaagtac agaccaaact     1500

gtccaatcat cttggttacc agatgcccaa gagctgctag attctctcac ttgtacagag     1560

gtgtcttccc attcgttttc gaaaaggaac ctgtctctga ctggactgat gatgttgaag     1620

cccgtatcaa cttcggtatt gaaaaggcta aggaattcgg tatcttgaag aagggtgaca     1680

cttacgtttc catccaaggt ttcaaggccg gtgctggtca ctccaacact ttgcaagtct     1740

ctaccgttgg ctgctgcccc ggctgctgct aatctagata aatggaggcg ctcgttgatc     1800

tgagccttgc cccctgacga acggcggtgg atggaagata ctgctctcaa gtgctgaagc     1860
```

ggtagcttag ctccccgttt cgtgctgatc agtctttttc aacacgtaaa aagcggagga 1920

gttttgcaat tttgttggtt gtaacgatcc tccgttgatt ttggcctctt tctccatggg 1980

cgggctgggc gtatttgaag cggttctctc ttctgccgtt a 2021

<210> 9
<211> 1815
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 9, Example 9: designer Enolase DNA construct (1815 bp)

<400> 9
agaaaatctg gcaccacacc tatatggtag ggtgcgagtg accccgcgcg acttggagct 60

cgatggcccc gggttgtttg gggcgtccgc ctctcgcgct attctgagct ggagaccgag 120

gcgcatgaaa atgcattcgc ttccatagga cgctgcattg tggcttgaag gttcaaggga 180

agggttcaaa cgaccccgcc gtacgaactt ttgtcggggg gcgctcccgg ccccgggctc 240

ttgtgcgcgc attagggctt cgggtcgcaa gcaagacgat acctcgagca tatggccgcc 300

gtcattgcca agtcctccgt ctccgcggcc gtggctcgcc cggcccgctc cagcgtgcgc 360

cccatggccg cgctgaagcc cgccgtcaag gctgcccccg tggctgcccc ggctcaggcc 420

aaccaggtga ccaaggctgt tgagaacatc aacgctatta ttgcccccgc cctgaagggc 480

atggaccccg tcaagcaggc ggagattgac cagaagatga aggacctgga cggcactgac 540

aacaagggca agctgggtgc caacgccatc ctggccgtct ccatggccgt gtgcaaggcc 600

ggtgccgctg agaagggcgt gcccctgtac aagcacattg cggacctggc cggcaacagc 660

aagctgatcc tgcccgtgcc ctcgttcaac atcatcaacg gcggcagcca cgccggcaac 720

gccctggcta tgcaggagtt catgatcctg cccgttggcg cctcgagctt ctctgaggcc 780

atgcgcatgg gctgcgaggt gtaccacgcc ctgaagggcc tgatcaaggc caagtacggc 840

caggacgcct gcaacgtggg tgatgagggt ggcttcgccc ccaacatcgg ctccaacgat 900

gagggcctga acttggtgaa cgaggccatc gagaaggccg gctacaccgg caaggtgaag 960

atcggcatgg acgtggcctc gtcggagttc tacaccgagg acggcatgta cgacctggac 1020

ttcaagaacc agcccaacga tggctcgcag aagaagacca aggagcagat gctggagctg 1080

tacaacgagt tctgcaagaa gtacccggtc atctccatcg aggacccctt cgagcaggac 1140

gactgggagc cctgcgccaa gctgaccacc gagaacatct gccaggtggt cggcgacgac 1200

atcctggtga ccaaccccgt gcgcgtgaag aaggccatcg acgccaaggc cgtcaacgct 1260

ctgctgctca aggtcaacca gatcggtacc attaccgagt ccattgaggc cgtgcgcatg 1320

gccaaggagg ccggctgggg tgtcatgacc agccaccgct cgggtgagac tgaggactct 1380

ttcatcgccg acctggcggt gggcctggcc tccggccaga tcaagaccgg cgccccctgc 1440

cgctcggagc gcaatgccaa gtacaaccag ctgctgcgca tcgaggagga gctgggcgag 1500

aacgctgtgt acgctggcga gagctggcgc cacatcggct ggggctgctg ccccggctgc 1560

tgctaatcta gataaatgga ggcgctcgtt gatctgagcc ttgccccctg acgaacggcg 1620

gtggatggaa gatactgctc tcaagtgctg aagcggtagc ttagctcccc gtttcgtgct 1680

gatcagtctt tttcaacacg taaaaagcgg aggagttttg caattttgtt ggttgtaacg 1740

atcctccgtt gattttggcc tctttctcca tgggcgggct gggcgtattt gaagcggttc 1800

tctcttctgc cgtta 1815

<210> 10
<211> 2349
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 10, Example 10: designer Phosphoglycerate-Mutase DNA construct (2349 bp)

<400> 10

agaaaatctg gcaccacacc tatatggtag ggtgcgagtg accccgcgcg acttggagct 60

cgatggcccc gggttgtttg gggcgtccgc ctctcgcgct attctgagct ggagaccgag 120

gcgcatgaaa atgcattcgc ttccatagga cgctgcattg tggcttgaag gttcaaggga 180

agggttcaaa cgaccccgcc gtacgaactt ttgtcggggg gcgctcccgg ccccgggctc 240

ttgtgcgcgc attagggctt cgggtcgcaa gcaagacgat acctcgagca tatggccgcc 300

gtcattgcca agtcctccgt ctccgcggcc gtggctcgcc cggcccgctc cagcgtgcgc 360

cccatggccg cgctgaagcc cgccgtcaag gctgcccccg tggctgcccc ggctcaggcc 420

aaccagatgg cgcacgacta caagctgaag gcccacccgg cgattcctgc gcccgagggc 480

ccgctgctgg tctgcattct ggacggcttc ggcgagaacg agtacaagga tgagttcaac 540

gccgtgcacg tggctaagac gcccactgtg gacgcgctgc gcgctgtgcc ccatcgcttc 600

cgttccatca aggcgcacgg aaaggctgtg ggcctgccca gcgatgccga catgggcaac 660

agcgaggtgg ggcacaacgc cctgggctcg ggccaggtgg tggaccaagg cgcgcgcctg 720

gtggacctgg cgctggagac cggccgtatg ttctcggacc ccggctggaa gctcatcagc 780

gaggccttcc cctcccacac cgtccacttc atcggcctgc tgtccgacgg cggcgtgcac 840

tcgcgcgccg atcagctgca cggctgcctg cgcggcgccg tggagcgcgg cgccaagcgc 900

gtgcgcgtgc acatcctgac tgacggccgc gacgtgccgg acggcagcag catccggttc 960

gtggaggagc tggaggcggt gctggcggag ctgcgcggca agggctgcga catcgccatc 1020

gcctcgggcg gcggccgcat gcaggtcacc atggaccgct acgaggcgga ctggagcatg 1080

gtgaagcgcg gctgggacgc gcacgtgctg ggcaaggcgc cccactactt caaggacgcc 1140

aagaccgcgg tcaccaccct gcgcggctcc gaggacgcgc cggtgtctga ccagtacgtg 1200

gccccctttg tgattgtgga cgaggcggac aagccggtgg gcaccattga ggacggcgac 1260

gcggtggtgc tgttcaactt ccgcgcggac cgcatggtgg agatcagcaa ggccttcgag 1320

tacgaggacg gcttcaccgc ctttgagcgc gagcgcttcc ccaagggcct gcgcttcgtg 1380

ggcatgatgc agtacgacgg cgacctgaag ctgcccgcca acttcctggt gccgccgccc 1440

ctgattgagc acgtgtcggg cgagtacctg tgcaagaacg ggctgagcac cttcgcctgc 1500

tccgagactc agaagttcgg gcacgtgacg ttcttctgga acggcaaccg ctccggctac 1560

ctggacgcca agcaggagca gtacctggag atcccgtcgg acaagatcga gttcaacaag 1620

gctccggaca tgaaggcgcg cgagatcacc gccgccggca ttgaggcgct caagagcggc 1680

aagtacaagg tggtgcgcat caactacgcc aacccggaca tggtcggcca caccggcgac 1740

atggctgcca ccgtccgcgc ctgcgagacc gtggacgggt gcgtgaagga gctgctggag 1800

gtggtggaca gcctgaacgg ccgctggatc gtcacgtccg accacggcaa cgccgacgac 1860

atggtgcagc gcgacaagaa gggcaagccc ctgctgggcg aggacggcaa gccgctgccc 1920

ctgaccagcc acacgctggc gcccgtgccg ttcttcatcg gcggcaaggg cctgccggac 1980

ggcgtggtgc tgcgcgacga cctgccggac gccgggctgg ccaacgtggc cgccaccacc 2040

ttcaacctgc tgggcttcga ggcgcccggc atctacaagc ccagcatggt caaggcgtaa 2100

tctagataaa tggaggcgct cgttgatctg agccttgccc cctgacgaac ggcggtggat 2160

ggaagatact gctctcaagt gctgaagcgg tagcttagct ccccgtttcg tgctgatcag 2220

tctttttcaa cacgtaaaaa gcggaggagt tttgcaattt tgttggttgt aacgatcctc 2280

cgttgatttt ggcctctttc tccatgggcg ggctgggcgt atttgaagcg gttctctctt 2340

ctgccgtta 2349

<210> 11
<211> 1908
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 11, Example 11: designer Phosphoglycerate-Kinase DNA construct (1908 bp)

<400> 11

agaaaatctg gcaccacacc tatatggtag ggtgcgagtg accccgcgcg acttggagct 60

cgatggcccc gggttgtttg gggcgtccgc ctctcgcgct attctgagct ggagaccgag 120

gcgcatgaaa atgcattcgc ttccatagga cgctgcattg tggcttgaag gttcaaggga 180

agggttcaaa cgaccccgcc gtacgaactt ttgtcggggg gcgctcccgg ccccgggctc 240

ttgtgcgcgc attagggctt cgggtcgcaa gcaagacgat acatggccct ctctatgaag 300

atgcgcgcca acgcgcgcgt gtccggtcgc cgcgtcgccg ctgtggcccc ccgcgtggtg 360

cccttctcgt cggcctccag ctccgtgctg cgctctggct tcgcgctgag gtgtctgtgg 420

acatccgccg cgtgggccgc tctcgcatcc gtcgtcgagg cggtgaagaa gtcggttggc 480

gacctgcaca aggctgacct ggagggcaag cgcgtgttcg tccgcgcgga cctgaacgtg 540

cctcttgaca aggccaccct ggccatcacc gacgacaccc gcattcgcgc ggccgtcccc 600

accctgaagt acctgctgga caacggtgct aaggtcctgc tgacctcgca cctgggtcgc 660

ccgaagggcg gtcccgagga caagtaccgc ctgacccccg tggtggcccg cctgtcggag 720

ctgctgggca agcccgtgac caaggtcgat gactgcatcg gccccgaggt ggagaaggcg 780

gtgggcgcca tgaagaacgg cgagctgctg ctgctggaga actgccgctt ctacaaggag 840

gaggagaaga acgagcccga gttcgccaag aagctggccg ccaacgccga cctgtacgtg 900

aacgacgcgt tcggcactgc ccaccgcgcc cacgcctcca ccgagggtgt gaccaagttc 960

ctgaagccct ccgtggccgg cttcctgctg cagaaggagc tggactacct tgatggcgcc 1020

gtgtccaacc ccaagcgccc cttcgtggcc attgtgggcg gctccaaggt gtcctccaag 1080

atcaccgtca ttgaggcgct gatggagaag tgcgacaaga tcatcatcgg cggtggcatg 1140

atcttcacct tctacaaggc ccgcgcgctg aaggtgggct cctcgctggt tgaggacgac 1200

aagatcgagc tggccaagaa gctggaggag atggccaagg ccaagggtgt gcagctgctg 1260

ctgcccaccg acgtggtggt ggccgacaag ttcgacgcca acgccaacac ccagaccgtg 1320

cccatcaccg ccatccccga tggctggatg ggtctggaca ttggcccgga ctccgtcaag 1380

accttcaacg acgccctggc cgacgccaag accgttgtgt ggaacggccc catgggtgtg 1440

ttcgagtttc cccaagttcg ccaacgcacc gtgtcgatcg ccaacaccct ggccggcctg 1500

acgcccaagg gctgcatcac catcattggt ggcggtgact ccgtggctgc cgtcgagcag 1560

gccggcgttg ccgagaagat gagccacatc tccaccggcg gcggtgcctc cctggagctg 1620

ctggagggca aggtcctgcc cggcgtggcc gccctggacg agaagtaaat ggaggcgctc 1680

gttgatctga gccttgcccc ctgacgaacg gcggtggatg gaagatactg ctctcaagtg 1740

ctgaagcggt agcttagctc cccgtttcgt gctgatcagt ctttttcaac acgtaaaaag 1800

cggaggagtt ttgcaatttt gttggttgta acgatcctcc gttgattttg gcctctttct 1860

ccatgggcgg gctgggcgta tttgaagcgg ttctctcttc tgccgtta 1908

<210> 12
<211> 1677
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 12, Example 12: designer NAD-dependent Glyceraldehyde-3-Phosphate-Dehydrogenase DNA construct (1677 bp)

<400> 12
agaaaatctg gcaccacacc tatatggtag ggtgcgagtg accccgcgcg acttggagct 60

cgatggcccc gggttgtttg gggcgtccgc ctctcgcgct attctgagct ggagaccgag 120

gcgcatgaaa atgcattcgc ttccatagga cgctgcattg tggcttgaag gttcaaggga 180

agggttcaaa cgaccccgcc gtacgaactt ttgtcggggg gcgctcccgg ccccgggctc 240

ttgtgcgcgc attagggctt cgggtcgcaa gcaagacgat acatggccgc cgtcattgcc 300

aagtcctccg tctccgcggc cgtggctcgc ccggcccgct ccagcgtgcg ccccatggcc 360

gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc cggctcaggc caaccagatg 420

gctcccatca agatcggcat caatggtttt ggtcgtattg gccgcctcgt gtggcgtgcc 480

actcttaacc gtgacgatgt cgaggtcgtc gccatcaatg atccattcat tgatgtgcca 540

tacatggtct acatggccaa gtatgactcg gtccacggca acctgaccca cgacgttcag 600

caaggcgacg gcaagctgat ggtcaatggc aagtcaatca ccatcttcgg caagatggat 660

gccaaggaga tcccatggaa ggaggccggc gcgaccttcg tcgttgagtc gactggtgtg 720

ttcaccaccc tggagggcgc cagctctcac ctggtcggcg gtgctgagac cgtcgtcatc 780

tccgccccat caaacgatgc ccccatgttc gtcatgggtg tcaacgagga gggctacaag 840

ccagacatga aagtggtgtc caacgcgtct tgcaccacca actgcctggg ccccctggcc 900

aaggtcatcc accttaagtt cggcatcctg gagggcctga tgaccaccgt ccacgcgacc 960

accgccaccc agaagaccgt cgacgggccg tccaagaagg actggcgcgg cgggcgcggc 1020

atcctggaca acatcatccc ctcggcgact ggtgccgcca aggccgtcgg caaggtgctg 1080

cctgccctga acggcaagct caccggcatg gccttccgcg tgcccacccc cgatgtctcg 1140

gtcgtcgatc tgaccgtgcg cctggagaag ggtgcgtcgt acgacgccat caaggccgag 1200

atcaagcgcg cgagcgagaa cgagctcaag ggcatcctgg cctacaccga ggatgccgtg 1260

gtctccaccg acttcatcgg caacaagcac agctccatct tcgacgccga ggccggcatc 1320

gccctcaacg acaactttgt caagctggtc tcctggtacg acaacgagtg gggctactcc 1380

aaccgtgtcg tcgacctgat cgcgcacatg gccaaggtca aggccgccag ccactaaatg 1440

gaggcgctcg ttgatctgag ccttgccccc tgacgaacgg cggtggatgg aagatactgc 1500

tctcaagtgc tgaagcggta gcttagctcc ccgtttcgtg ctgatcagtc tttttcaaca 1560

cgtaaaaagc ggaggagttt tgcaattttg ttggttgtaa cgatcctccg ttgattttgg 1620

cctctttctc catgggcggg ctgggcgtat ttgaagcggt tctctcttct gccgtta 1677

<210> 13
<211> 2351
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 13, Example 13: designer HydA1-promoter-linked Phosphoglycerate-Mutase DNA construct (2351 bp)

<400> 13
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccagatg gcgcacgact acaagctgaa ggcccacccg gcgattcctg 480

cgcccgaggg cccgctgctg gtctgcattc tggacggctt cggcgagaac gagtacaagg 540

atgagttcaa cgccgtgcac gtggctaaga cgcccactgt ggacgcgctg cgcgctgtgc 600

cccatcgctt ccgttccatc aaggcgcacg gaaaggctgt gggcctgccc agcgatgccg 660

acatgggcaa cagcgaggtg gggcacaacg ccctgggctc gggccaggtg gtggaccaag 720

gcgcgcgcct ggtggacctg gcgctggaga ccggccgtat gttctcggac cccggctgga 780

agctcatcag cgaggccttc ccctcccaca ccgtccactt catcggcctg ctgtccgacg 840

gcggcgtgca ctcgcgcgcc gatcagctgc acggctgcct gcgcggcgcc gtggagcgcg 900

gcgccaagcg cgtgcgcgtg cacatcctga ctgacggccg cgacgtgccg gacggcagca 960

gcatccggtt cgtggaggag ctggaggcgg tgctggcgga gctgcgcggc aagggctgcg 1020

acatcgccat cgcctcgggc ggcggccgca tgcaggtcac catggaccgc tacgaggcgg 1080

actggagcat ggtgaagcgc ggctgggacg cgcacgtgct gggcaaggcg ccccactact 1140

tcaaggacgc caagaccgcg gtcaccaccc tgcgcggctc cgaggacgcg ccggtgtctg 1200

accagtacgt ggcccccttt gtgattgtgg acgaggcgga caagccggtg ggcaccattg 1260

aggacggcga cgcggtggtg ctgttcaact tccgcgcgga ccgcatggtg gagatcagca 1320

aggccttcga gtacgaggac ggcttcaccg cctttgagcg cgagcgcttc cccaagggcc 1380

tgcgcttcgt gggcatgatg cagtacgacg gcgacctgaa gctgcccgcc aacttcctgg 1440

tgccgccgcc cctgattgag cacgtgtcgg gcgagtacct gtgcaagaac gggctgagca 1500

ccttcgcctg ctccgagact cagaagttcg ggcacgtgac gttcttctgg aacggcaacc 1560

gctccggcta cctggacgcc aagcaggagc agtacctgga gatcccgtcg gacaagatcg 1620

agttcaacaa ggctccggac atgaaggcgc gcgagatcac cgccgccggc attgaggcgc 1680

tcaagagcgg caagtacaag gtggtgcgca tcaactacgc caacccggac atggtcggcc 1740

acaccggcga catggctgcc accgtccgcg cctgcgagac cgtggacggg tgcgtgaagg 1800

agctgctgga ggtggtggac agcctgaacg gccgctggat cgtcacgtcc gaccacggca 1860

acgccgacga catggtgcag cgcgacaaga agggcaagcc cctgctgggc gaggacggca 1920

agccgctgcc cctgaccagc cacacgctgg cgcccgtgcc gttcttcatc ggcggcaagg 1980

gcctgccgga cggcgtggtg ctgcgcgacg acctgccgga cgccgggctg gccaacgtgg 2040

ccgccaccac cttcaacctg ctgggcttcg aggcgcccgg catctacaag cccagcatgg 2100

tcaaggcgta aatggaggcg ctcgttgatc tgagccttgc cccctgacga acggcggtgg 2160

atggaagata ctgctctcaa gtgctgaagc ggtagcttag ctccccgttt cgtgctgatc 2220

agtctttttc aacacgtaaa aagcggagga gttttgcaat tttgttggtt gtaacgatcc 2280

tccgttgatt ttggcctctt tctccatggg cgggctgggc gtatttgaag cggttctctc 2340

ttctgccgtt a 2351

<210> 14
<211> 1796
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 14, Example 14: designer HydA1-promoter-linked Enolase DNA construct (1796 bp)

<400> 14
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccaggtg accaaggctg ttgagaacat caacgctatt attgcccccg 480

ccctgaaggg catggacccc gtcaagcagg cggagattga ccagaagatg aaggacctgg 540

acggcactga caacaagggc aagctgggtg ccaacgccat cctggccgtc tccatggccg 600

tgtgcaaggc cggtgccgct gagaagggcg tgcccctgta caagcacatt gcggacctgg 660

ccggcaacag caagctgatc ctgcccgtgc cctcgttcaa catcatcaac ggcggcagcc 720

acgccggcaa cgccctggct atgcaggagt tcatgatcct gcccgttggc gcctcgagct 780

tctctgaggc catgcgcatg ggctgcgagg tgtaccacgc cctgaagggc ctgatcaagg 840

ccaagtacgg ccaggacgcc tgcaacgtgg gtgatgaggg tggcttcgcc cccaacatcg 900

gctccaacga tgagggcctg aacttggtga acgaggccat cgagaaggcc ggctacaccg 960

gcaaggtgaa gatcggcatg gacgtggcct cgtcggagtt ctacaccgag gacggcatgt 1020

acgacctgga cttcaagaac cagcccaacg atggctcgca gaagaagacc aaggagcaga 1080

tgctggagct gtacaacgag ttctgcaaga agtacccggt catctccatc gaggacccct 1140

tcgagcagga cgactgggag ccctgcgcca agctgaccac cgagaacatc tgccaggtgg 1200

tcggcgacga catcctggtg accaaccccg tgcgcgtgaa gaaggccatc gacgccaagg 1260

ccgtcaacgc tctgctgctc aaggtcaacc agatcggtac cattaccgag tccattgagg 1320

ccgtgcgcat ggccaaggag gccggctggg gtgtcatgac cagccaccgc tcgggtgaga 1380

ctgaggactc tttcatcgcc gacctggcgg tgggcctggc ctccggccag atcaagaccg 1440

gcgccccctg ccgctcggag cgcaatgcca agtacaacca gctgctgcgc atcgaggagg 1500

agctgggcga gaacgctgtg tacgctggcg agagctggcg ccacatcggc tggtaaatgg 1560

aggcgctcgt tgatctgagc cttgcccccc gacgaacggc ggtggatgga agatactgct 1620

ctcaagtgct gaagcggtag cttagctccc cgtttcgtgc tgatcagtct ttttcaacac 1680

gtaaaaagcg gaggagtttt gcaattttgt tggttgtaac gatcctccgt tgattttggc 1740

ctctttctcc atgggcgggc tgggcgtatt tgaagcggtt ctctcttctg ccgtta 1796

<210> 15
<211> 1832
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 15, Example 15: designer HydA1-promoter-linked Pyruvate-Kinase DNA construct (1832 bp)

<400> 15
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccagatg tgcgagatgc tggacgcggg cgtggtgggc tgccgcgtgg 480

acctgacgtg gggcccgctg gagttccacc gcaagtcgct tgccaatctg cagcaggcca 540

tgcgcaagag ccgccgcctg tgttgcacca tggtggacac gctgggccgc gagctcatga 600

tccgccgcca gagaggggca ggctggaccc agcgccagag gggtggggtg atcatcacca 660

cgcgcacgga cgtggacgcc agcagcaacg tgctgcccat cacttacagc aagttcacgg 720

agatggcggt caagggcgac accatctaca tcggccgcta cctggtgtgc ggcgcagaca 780

gcgcctcgct gtacctggag gtcatggacg tgcagggcga cgacgtgtac tgcatcgcca 840

agaacgacgc ggtgctggac ggcctgctga cggtgttcca cgcggagcgc tccgtggagg 900

ggctggccaa cgtgcagaac gacctgccgc tgctgtccga ctacgacaag gagtgcctgc 960

acatcctggc gcaggacttc gagcgcgcgc cctacatctc caagctggag tccatcgcct 1020

cctccgccgt gcgcgccgcc gaccgcgtgg gcgccagcct gattgtggtg tacacgcaca 1080

ccggcaagac ggcgcagctg gtggccaagt accggccgcc catgcccatc ctgacgctgg 1140

tggtgccgca cctggtgtct gaccagctca agtggaagct ggagggcagg tccagcgcgc 1200

gccagtgcct catcagtcgc gcgctgctgc cggtgctggc cgcgccctcg cccagcggcg 1260

accagctgct gcaggaggcg gtggccatgg cgggccgcgt caagctggtc aagccgcacg 1320

accacgtggt gtgcgtgcag cgcatccacg acgacttctg cgtcaagatc atctccgtgg 1380

acgacatggg cgcgggcatc aagcgcgacg acacggtcat gtcgcacagc gtgtttggca 1440

gcagccccat ggccgtgcag ggctcgtccg gctacgactc gccgcgcgtg cacaacaacc 1500

ccatcggcaa caagttcggc cccatgccgc ccgccatcat caccaccggc aatagcttca 1560

ccctgggcgg catgggcgtg ggcgtgctgt aaatggaggc gctcgttgat ctgagccttg 1620

ccccctgacg aacggcggtg gatggaagat actgctctca agtgctgaag cggtagctta 1680

gctccccgtt tcgtgctgat cagtcttttt caacacgtaa aaagcggagg agttttgcaa 1740

ttttgttggt tgtaacgatc ctccgttgat tttggcctct ttctccatgg gcgggctggg 1800

cgtatttgaa gcggttctct cttctgccgt ta 1832

<210> 16
<211> 4376
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 16, Example 16: designer HydA1-promoter-linked Pyruvate-Ferredoxin-Oxidoreductase DNA construct (4376 bp)

<400> 16
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccagatg ggaaagaaaa tgatgacgac tgatggcaat acagcgacag 480

cgcacgtggc gtatgccatg agcgaagtcg ccgccatcta ccccatcacc ccttcctcga 540

ccatgggcga ggaggctgac gactgggcgg cgcaaggacg caagaacatc tttggccaga 600

ccctgaccat acgcgaaatg cagtccgagg ccggcgccgc cggcgcggtg cacggggccc 660

tggcggccgg cgccctgacc acgaccttca cggcgtcgca gggtctgctg ctgatgatcc 720

ccaacatgta caagatctcc ggcgaacttc tgcccggcgt gttccacgtc accgcccgcg 780

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tggcccactt ggcggccatc gagtccaacg tgccgttcat gcacttcttc gacggattcc 960

gcacctcgca cgaaatccag aagatcgagg tcctggacta cgcggacatg gcctcgctgg 1020

tgaaccagaa ggccctggcg gaattccgcg ccaagtccat gaaccccgag cacccccacg 1080

tgcgcggcac ggcccagaac cccgacatct acttccaggg tcgcgaggca gccaacccct 1140

actacctcaa ggtgcccggc atcgttgccg agtacatgca gaaggtcgcc tccctcacgg 1200

gccgcagcta caagctcttt gactacgtgg gtgctcccga cgccgagcgc gtcatcgtgt 1260

ccatgggctc ctcgtgcgag accatcgagg aggtcatcaa ccacctcgcg gccaagggcg 1320

aaaagatcgg cctgatcaag gtccgcctgt acaggccctt cgtaagcgag gccttcttcg 1380

ctgctctgcc cgcttcggcc aaggtcatca cggtcctcga ccgcaccaag gaacccggcg 1440

cgcccggcga tccgctctac ctcgacgtgt gctcggcctt cgtggagcgc ggcgaagcca 1500

tgcccaagat cctggccggc cgctacggcc tgggttccaa ggaattcagc ccggccatgg 1560

tcaagtccgt gtacgacaac atgtccggcg ctaagaagaa ccacttcacc gtgggcatcg 1620

aagacgacgt gaccggcact tcgctgccgg tggacaacgc cttcgccgac accacgccca 1680

agggcaccat ccagtgccag ttctggggcc tcggcgccga cggcactgtg ggcgccaaca 1740

agcaggccat caagatcatc ggcgacaaca cggacctgtt tgcccagggt tacttctcct 1800

acgactccaa gaaatcgggc ggcatcacca tctcgcacct gcgcttcggc gagaagccca 1860

tccagtccac ctacctggtc aacagggccg actatgtcgc ctgtcacaac ccggcctacg 1920

tgggcatata cgacatcctc gaaggcatca aggatggcgg aaccttcgtg ctcaactcgc 1980

cttggagcag cctcgaggac atggacaagc acctgccctc cggcatcaag cgcaccatcg 2040

```
cgaacaagaa gctcaagttc tacaacatcg acgcggtgaa aatcgccacc gatgtgggac     2100

tgggcggccg catcaacatg atcatgcaga cggccttctt caagctggcc ggagtgctgc     2160

ccttcgaaaa ggccgtggat ctgctcaaga agtccatcca caaggcctac ggcaaaaagg     2220

gcgagaagat cgtcaagatg aacaccgacg ccgtggacca ggccgtcacc tccctgcagg     2280

aattcaagta tccggattcc tggaaggacg ctcccgctga gaccaaggcc gagcccatga     2340

cgaacgagtt cttcaagaac gtcgtcaagc ccatcctgac ccagcagggc gacaagctgc     2400

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gcgccttcgt ctgtccgcac agcgccatcc tgcccgtgct ggccaaggaa gaggagttgg     2580

tcggcgcgcc ggcgaacttc acggccctgg aagccaaggg caaggagctc aagggctaca     2640

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acggcttcgg catgaacatg tccatgttcg cccgccgcac gcatttggcc gatcttgccg     3120

ccaaggccct ggagagcgat gcctccggcg atgtcaagga agccctgcag ggctggcttg     3180

ccggcaagaa cgatcccatc aagtccaagg aatacggcga caagctcaag aagctgctgg     3240

ctggtcagaa ggatggtctg ctcggacaga tcgccgccat gtccgacctg tacaccaaga     3300

agagcgtgtg gatcttcggt ggcgacggct gggcctacga catcggttac ggcggcctgg     3360

accatgtgct cgcctcgggc gaggacgtga acgtcttcgt catggatacc gaggtctact     3420
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ccaacaccgg cggccagtcc tccaaggcaa cgcccacggg cgccgtggcc aagttcgcgg 3480

cggccggcaa gcgtaccggc aagaaggacc tggcgcgcat ggtcatgacc tacggctacg 3540

tctacgtggc tacggtctcc atgggttaca gcaagcagca gttcctcaag gtgctcaagg 3600

aagccgaaag cttccccggc ccctcgctgg tcatcgccta tgctacctgc atcaaccagg 3660

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ccgtcctcga tcggtccttc cccgaggacg ccaagagact gcgcgcccag gtcgctcacg 3900

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aggcgctcgt tgatctgagc cttgccccct gacgaacggc ggtggatgga agatactgct 4200

ctcaagtgct gaagcggtag cttagctccc cgtttcgtgc tgatcagtct ttttcaacac 4260

gtaaaaagcg gaggagtttt gcaattttgt tggttgtaac gatcctccgt tgattttggc 4320

ctctttctcc atgggcgggc tgggcgtatt tgaagcggtt ctctcttctg ccgtta 4376

<210> 17
<211> 6092
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 17, Example 17: designer HydA1-promoter-linked Pyruvate-NADP+-Oxidoreductase DNA construct (6092 bp)

<400> 17

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gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccagatg aagcagtctg tccgcccaat tatttccaat gtactgcgca 480

aggaggttgc tctgtactca acaatcattg gacaagacaa ggggaaggaa ccaactggtc 540

gaacatacac cagtggccca aaaccggcat ctcacattga agttccccat catgtgactg 600

tgcctgccac tgaccgcacc ccgaatcccg atgctcaatt ctttcagtct gtagatgggt 660

cacaagccac cagtcacgtt gcgtacgctc tgtctgacac agcgttcatt tacccaatta 720

cacccagttc tgtgatgggc gagctggctg atgtttggat ggctcaaggg aggaagaacg 780

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caccatacat cggtcgccac tacaagatct ttgagtatgt tggtgcacca gatgcagaag 1440

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tccggcgcaa gctggcacag aagaaggtcc gcttctacaa tgtggatgct cgaaagatct 2280

gtgacagttt tggtcttggg aagcgcatca atatgctgat gcaggcttgt ttcttcaagc 2340

tgtctggggt gctcccactg gccgaagctc agcggctgct gaacgagtcc attgtgcatg 2400

agtatggaaa gaagggtggc aaggtggtgg agatgaacca agcagtggtg aatgctgtct 2460

ttgctggtga cctgccccag gaagttcaag tccctgccgc ctgggcaaac gcagttgata 2520

catccacccg taccccccacc gggattgagt ttgttgacaa gatcatgcgc ccgctgatgg 2580

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gtgattacca ggggatgaat ttccgcatcc aagttgctcc tgaggattgc actggctgcc 2880

aggtgtgcgt ggagacgtgc cccgatgatg ccctggagat gaccgacgct ttcaccgcca 2940

cccctgtgca acgcaccaac tgggagttcg ccatcaaggt gcccaaccgc ggcaccatga 3000

cggaccgcta ctccctgaag ggcagccagt tccagcagcc cctcctggag ttctccgggg 3060

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ggacggtcat cgccaacgcc accggctgca gttccatctg gggtggcact gccggcctgg 3180

cgccgtacac caccaacgcc aagggccagg gcccggcctg gggcaacagc ctgttcgagg 3240

acaacgccga gttcggcttt ggcattgcag tggccaacgc ccagaagagg tcccgcgtga 3300

gggactgcat cctgcaggca gtggagaaga aggtcgccga tgagggtttg accacattgt 3360

tggcgcaatg gctgcaggat tggaacacag gagacaagac cttgaagtac caagaccaga 3420

tcattgcagg gctggcacag cagcgcagca aggatcccct tctggagcag atctatggca 3480

tgaaggacat gctgcctaac atcagccagt ggatcattgg tggtgatggc tgggccaacg 3540

acattggttt cggtgggctg gaccacgtgc tggcctctgg gcagaacctc aacgtcctgg 3600

tgctggacac cgagatgtac agcaacaccg gtgggcaggc ctccaagtcc acccacatgg 3660

cctctgtggc caagtttgcc ctgggaggga agcgcaccaa caagaagaac ttgacggaga 3720

tggcaatgag ctatggcaac gtctatgtgg ccaccgtctc ccatggcaac atggcccagt 3780

gcgtcaaggc gtttgtggag gctgagtctt atgatggacc ttcgctcatt gttggctatg 3840

cgccatgcat cgagcatggt ctgcgtgctg gtatggcaag gatggttcaa gagtctgagg 3900

ctgccatcgc cacgggatac tggcccctgt accgctttga cccccgcctg gcgaccgagg 3960

gcaagaaccc cttccagctg gactccaagc gcatcaaggg caacctgcag gagtacctgg 4020

accgccagaa ccggtatgtc aacctgaaga agaacaaccc gaagggtgcg gatctgctga 4080

agtctcagat ggccgacaac atcaccgccc ggttcaaccg ctaccgacgc atgttggagg 4140

gccccaatac aaaagccgcc gcccccagcg gcaaccatgt gaccatcctg tacggctccg 4200

aaactggcaa cagtgagggt ctggcaaagg agctggccac cgacttcgag cgccgggagt 4260

actccgtcgc agtgcaggct ttggatgaca tcgacgttgc tgacttggag aacatgggct 4320

tcgtggtcat tgcggtgtcc acctgtgggc agggacagtt cccccgcaac agccagctgt 4380

tctggcggga gctgcagcgg gacaagcctg agggctggct gaagaacttg aagtacactg 4440

tcttcgggct gggcgacagc acatactact tctactgcca caccgccaag cagatcgacg 4500

ctcgcctggc cgccttgggc gctcagcggg tggtgcccat tggcttcggc gacgatgggg 4560

atgaggacat gttccacacc ggcttcaaca actggatccc cagtgtgtgg aatgagctca 4620

agaccaagac tccggaggaa gcgctgttca ccccgagcat cgccgtgcag ctcaccccca 4680

acgccacccc gcaggatttc catttcgcca agtccacccc agtgctgtcc atcaccggtg 4740

ccgaacgcat cacgccggca gaccacaccc gcaacttcgt cactatccga tggaagaccg 4800

atttgtcgta ccaggtgggt gactctcttg gtgtcttccc tgagaacacc cggtcagtgg 4860

tggaggagtt cctgcagtat tacggcttga accccaagga cgtcatcacc atcgaaaaca 4920

agggcagccg ggagttgccc cactgcatgg ctgttgggga tctcttcacg aaggtgttgg 4980

acatcttggg caaacccaac aaccggttct acaagaccct ttcttacttt gcagtggaca 5040

aggccgagaa ggagcgcttg ttgaagatcg ccgagatggg gccggagtac agcaacatcc 5100

tgtctgagac gtaccactac gcggacatct tccacatgtt cccgtccgcc cggcccacgc 5160

tgcagtacct catcgagatg atccccaaca tcaagccccg gtactactcc atctcctccg 5220

cccccatcca cacccctggc gaggtccaca gcctggtgct catcgacacc tggatcacgc 5280

tgtccggcaa gcaccgcacg gggctgacct gcaccatgct ggagcacctg caggcgggcc 5340

aggtggtgga tggctgcatc caccccacgg cgatggagtt ccccgaccac gagaagccgg 5400

tggtgatgtg cgccatgggc agtggcctgg caccgttcgt tgctttcctg cgcgacggct 5460

ccacgctgcg gaagcagggc aagaagaccg ggaacatggc attgtacttc ggcaacaggt 5520

atgagaagac ggagttcctg atgaaggagg agctgaaggg tcacatcaac gatggtttgc 5580

tgacacttcg atgcgctttc agccgagatg accccaagaa gaaggtgtat gtgcaggacc 5640

ttatcaagat ggacgaaaag atgatgtacg attacctcgt ggtgcagaag ggttctatgt 5700

attgctgtgg atcccgcagt ttcatcaagc ctgtccagga gtcattgaaa cattgcttca 5760

tgaaagctgg tgggctgact gcagagcaag ctgagaacga ggtcatcgat atgttcacga 5820

ccgggcggta caatatcgag gcatggtaat aaatggaggc gctcgttgat ctgagccttg 5880

ccccctgacg aacggcggtg gatggaagat actgctctca agtgctgaag cggtagctta 5940

gctccccgtt tcgtgctgat cagtcttttt caacacgtaa aaagcggagg agttttgcaa 6000

ttttgttggt tgtaacgatc ctccgttgat tttggcctct ttctccatgg gcgggctggg 6060

cgtatttgaa gcggttctct cttctgccgt ta 6092

<210> 18
<211> 1856
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 18, Example 18: designer HydA1-promoter-linked Thiolase DNA construct (1856 bp)

<400> 18
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccagatg aaagaagtag ttattgcaag tggtgtaagg actgctgtcg 480

ggaaatttgg tggcacgctt ctaaatgtac ctgcagtaga tttaggtgct gtgaataata 540

aaagaagcat aaaaagagcc aatgtgaaac ctgaagatgt tagtgaagtg ataatgggaa 600

atgtattgca ggcaggtctt gggcagaacc ccgcaagaca agctgaaata aaagcgggca 660

taccagtaga agttccggct atgactgtaa acatggtatg tggatcaggt cttagagctg 720

tgacacttgc tgctcaggca gttatgcttg gtgatgctga cattgttgta gccggtggaa 780

tggaaaatat gtcaagagca ccatatatat taaatgatgc tcgctttggg tacaggatga 840

acaatggcca gcttgtagat gaaatggtat atgatggttt aacagatgtt tttaaccaat 900

atcacatggg aatcactgcc gaaaatcttg ctgaaaaata cggcatatca agagaagagc 960

aggatgaatt tgcatataga agccaaaaat tagcgtcaga agcgatatca tcaggaagat 1020

ttgaggatga gatagttcct gtgattgtgc cgcagaaaaa aggtgaaccg atagaattta 1080

aagttgatga acatgtgaga cctaatacga caattgaagc acttgcaaaa ttaaaaccag 1140

cattccaaaa agatggaact gtaactgctg gaaatgcatc aggaattaac gatgcagctg 1200

cagcagtagt tgtgatgtca aaagaaaagg catgtgaact tggaataaag accattgcaa 1260

cgattaaatc atttggttat gcaggtgttg accccagcat cacgggaatt ggtccagtat 1320

atgctacgag aaaggcatta gaaaaagcta atctaactgt agatgattta gatttaattg 1380

aagcaaatga agcatttgca gcacaatcac tggctgttgc aaaagaatta aaatttaata 1440

tggacagagt gaatgtaaat ggtggcgcaa ttgcgatagg tcatccaatc ggcgccagcg 1500

gatgtagaat tctagtgacg cttttatatg agatgcagaa gaggaattcg catactggac 1560

ttgcaacatt gtgcatcggc ggaggaatgg gaatagcaat ggttgtcgaa agataaatgg 1620

aggcgctcgt tgatctgagc cttgcccct gacgaacggc ggtggatgga agatactgct 1680

ctcaagtgct gaagcggtag cttagctccc cgtttcgtgc tgatcagtct ttttcaacac 1740

gtaaaaagcg gaggagtttt gcaattttgt tggttgtaac gatcctccgt tgattttggc 1800

ctctttctcc atgggcgggc tgggcgtatt tgaagcggtt ctctcttctg ccgtta 1856

<210> 19
<211> 1550
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 19, Example 19: designer HydA1-promoter-linked 3-Hydroxybutyryl-CoA-Dehydrogenase DNA construct (1550 bp)

<400> 19
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccagatg caaaagattt gtgtaatagg tgctggaaca atgggctcag 480

gcatcgctca agtatttgca caaaatggct ttgaagtaat tttacgcgat attgatatga 540

agttcgtaga aaaaggattt ggcacaattg aaaaaattta caaagaaatg ttgacaaagg 600

gaaaattaca gcagatgaga aaacgaattt taagcagaat cagaggtaca acaaatttgg 660

aagacgcaaa agaagcagat tttgtagttg aagcggctat agaaaatatg gatctcaaga 720

aacaaatatt caaagagcta gatgaaatat gcaaaatgga aacaatcctt gcgtcaaata 780

catcatcact atccataaca gaaatagcaa gtgcgacaaa aagacctgag aaagtcatag 840

gaatgcattt cttcaaccca gttccagtaa tgaaacttgt tgaagtcata aaaggattaa 900

agacatcaga gcaaacattt aatgtcgtca gagaattggc tttaaaagta gacaaaacac 960

ctatagaggt caaagaagca cctggatttg ttgtaaatag gattttaatc ccaatgatta 1020

atgaagcaat tggaatactt gcagtggtgt tggcaactga caagagcata gatgaagcta 1080

tgaaacttgg tgcaaatcat ccaataggac ctttggcatt gtctagtttg ataggcaatg 1140

acgtcgttct tgctataatg aatgtgcttt atgaagagta cggcgattcg aaatacagac 1200

cacatccact tctaaaaaaa gtggtaagag gcggattgct gggtagaaaa actggcaaag 1260

gtttctttga atacaaaatt aatcttttaa ggaggagaat atcatgataa atggaggcgc 1320

tcgttgatct gagccttgcc ccctgacgaa cggcggtgga tggaagatac tgctctcaag 1380

tgctgaagcg gtagcttagc tccccgtttc gtgctgatca gtctttttca acacgtaaaa 1440

agcggaggag ttttgcaatt ttgttggttg taacgatcct ccgttgattt tggcctcttt 1500

ctccatgggc gggctgggcg tatttgaagc ggttctctct tctgccgtta 1550

<210> 20
<211> 1457
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 20, Example 20: designer HydA1-promoter-linked Crotonase DNA construct (1457 bp)

<400> 20
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccagatg gattttaata atgttttatt aaataaggat gatgggatag 480

ctctcatcat tataaatcgt ccaaaggctt taaatgcatt aaactatgag acactaaaag 540

agttagatag tgtgcttgat atagttgaaa atgataaaga gataaaagtt ttaattataa 600

ctggcagcgg tgaaaaaacc ttcgttgcag gtgctgatat agctgagatg agtaatatga 660

caccacttga agcgaagaag ttctctcttt atggacagaa agtatttagg aagatagaaa 720

tgctaagtaa gcctgttata gcagcggtaa atggttttgc acttggtggt ggatgcgagc 780

tttctatggc atgtgacata cgtattgcaa gtaaaaatgc aaaatttggt caacctgaag 840

taggacttgg aataatacct ggcttttcag gaactcaaag attaccacgt cttataggca 900

cttctaaagc taaagagctt attttcacag gtgacatgat aaattctgat gaagcatata 960

aaataggcct tatatctaaa gttgttgaac tatctgatct cattgaagaa gcaaaaaaac 1020

tcgcgaaaaa aatgatgtca aaaagtcaaa tagcaatttc tctagcaaag gaagcaataa 1080

ataagggaat ggaaacagac ttagatacag gcaatactat agaagctgag aaattttcct 1140

tatgttttac aacagatgat caaaaagaag gtatgattgc gttttctgaa aagagggcgc 1200

ctaaatttgg caaataaatg gaggcgctcg ttgatctgag ccttgccccc tgacgaacgg 1260

cggtggatgg aagatactgc tctcaagtgc tgaagcggta gcttagctcc ccgtttcgtg 1320

ctgatcagtc tttttcaaca cgtaaaaagc ggaggagttt tgcaattttg ttggttgtaa 1380

cgatcctccg ttgattttgg cctctttctc catgggcggg ctgggcgtat ttgaagcggt 1440

tctctcttct gccgtta 1457

<210> 21
<211> 1817

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 21, Example 21: designer HydA1-promoter-linked Butyryl-CoA-Dehydrogenase DNA construct (1817 bp)

<400> 21
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccagatg gacttttcat taacaaagga gcaagaaatg gtaaggcgtg 480

ttgtgagaga attcgctgaa aaagaagttg ctcctaaagc aaaagaaata gatatcacag 540

aagagtttcc atgggataca gtaagaaaaa tggctcaaaa cgatatgatg ggtattcctt 600

atccagaaga gtatggtgga gcaggtggag attacttgag ttatatcata gctgttgaag 660

agatatcaag agcttgtgct acgactggag taattttatc tgctcatact tcattgggaa 720

gttttccaat atatcaatgg ggaacagaag aacaaaaaag aaaatatcta gtgccacttg 780

caaaaggtga aaaattgggc gcttttggcc ttacagaacc taacgcaggt acagatgcag 840

ctggacagca gacaactgca gtattagatg gtgatcacta cgtattaaac ggctcaatat 900

ttattacaaa cggaggaaaa gctgacatat atataatctt tgcaatgaca gacaaatcaa 960

aaggcacaag aggcattagt gcatttatag ttgagaaaga ttttccgggt tttagcattg 1020

gcaaaattga agaaaaaatg ggtataagag cttcatcaac tgccgaactt gtgtttgaag 1080

attgtattgt accaaaagaa aatttacttg gtaaagaagg agaaggtttt aaaattgcga 1140

tggctacact agatggtgga agaataggaa tagcagcgca acgccttgga atagctcagg 1200

ctgctttaga tgaagagata aaatatgcaa aggaaagaca acagtttgga agaccaattg 1260

gaaaatttca aggcattcaa tggtatatag ctgatatggc aacgagaata aatgcttcaa 1320

gatggcttgt atacaatgcc gcttggagaa agcaggtagg tcttccgtac acaatggaag 1380

cagctatggc aaaattatat gcttccgaaa cagcaatgtt tgtaacgaca aaaacagttc 1440

agatatttgg cggctatggc tttacaaaag attatccagt ggaaagattt atgagagatg 1500

caaaaataac agaaatttat gaaggcacat cggaagtcca gaaaatggtt atttccggta 1560

acctattgaa aatgtaaatg gaggcgctcg ttgatctgag ccttgccccc tgacgaacgg 1620

cggtggatgg aagatactgc tctcaagtgc tgaagcggta gcttagctcc ccgtttcgtg 1680

ctgatcagtc tttttcaaca cgtaaaaagc ggaggagttt tgcaattttg ttggttgtaa 1740

cgatcctccg ttgattttgg cctctttctc catgggcggg ctgggcgtat ttgaagcggt 1800

tctctcttct gccgtta 1817

<210> 22
<211> 2084
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 22, Example 22: designer HydA1-promoter-linked Butyraldehyde-Dehydrogenase DNA construct (2084 bp)

<400> 22
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccagatg attaaagaca cgctagtttc tataacaaaa gatttaaaat 480

taaaaacaaa tgttgaaaat gccaatctaa agaactacaa ggatgattct tcatgtttcg 540

gagttttcga aaatgttgaa aatgctataa gcaatgccgt acacgcacaa aagatattat 600

cccttcatta tacaaaagaa caaagagaaa aaatcataac tgagataaga aaggccgcat 660

tagaaaataa agagattcta gctacaatga ttcttgaaga aacacatatg ggaagatatg 720

aagataaaat attaaagcat gaattagtag ctaaatacac tcctgggaca gaagatttaa 780

ctactactgc ttggtcagga gataacgggc ttacagttgt agaaatgtct ccatatggcg 840

ttataggtgc aataactcct tctacgaatc caactgaaac tgtaatatgt aatagtatag 900

gcatgatagc tgctggaaat actgtggtat ttaacggaca tccaggcgct aaaaaatgtg 960

ttgcttttgc tgtcgaaatg ataaataaag ctattatttc atgtggtggt cctgagaatt 1020

tagtaacaac tataaaaaat ccaactatgg actctctaga tgcaattatt aagcaccctt 1080

caataaaact actttgcgga actggagggc caggaatggt aaaaaccctc ttaaattctg 1140

gtaagaaagc tataggtgct ggtgctggaa atccaccagt tattgtagat gatactgctg 1200

atatagaaaa ggctggtaag agtatcattg aaggctgttc ttttgataat aatttacctt 1260

gtattgcaga aaaagaagta tttgtttttg agaacgttgc agatgattta atatctaaca 1320

tgctaaaaaa taatgctgta attataaatg aagatcaagt atcaaagtta atagatttag 1380

tattacaaaa aaataatgaa actcaagaat actctataaa taagaaatgg gtcggaaaag 1440

atgcaaaatt attcttagat gaaatagatg ttgagtctcc ttcaagtgtt aaatgcataa 1500

tctgcgaagt aagtgcaagg catccatttg ttatgacaga actcatgatg ccaatattac 1560

caattgtaag agttaaagat atagatgaag ctattgaata tgcaaaaata gcagaacaaa 1620

atagaaaaca tagtgcctat atttattcaa aaaatataga caacctaaat aggtttgaaa 1680

gagaaatcga tactactatc tttgtaaaga atgctaaatc ttttgccggt gttggttatg 1740

aagcagaagg ctttacaact ttcactattg ctggatccac tggtgaagga ataacttctg 1800

caagaaattt tacaagacaa agaagatgtg tactcgccgg ttaaatggag gcgctcgttg 1860

atctgagcct tgccccctga cgaacggcgg tggatggaag atactgctct caagtgctga 1920

agcggtagct tagctccccg tttcgtgctg atcagtcttt ttcaacacgt aaaaagcgga 1980

ggagttttgc aattttgttg gttgtaacga tcctccgttg attttggcct ctttctccat 2040

gggcgggctg ggcgtatttg aagcggttct ctcttctgcc gtta 2084

<210> 23
<211> 1733
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 23, Example 23: designer HydA1-promoter-linked Butanol-Dehydrogenase DNA construct (1733 bp)

<400> 23
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatggccgc cgtcattgcc aagtcctccg tctccgcggc cgtggctcgc ccggcccgct 360

ccagcgtgcg ccccatggcc gcgctgaagc ccgccgtcaa ggctgccccc gtggctgccc 420

cggctcaggc caaccagatg aaaggttttg caatgctagg tattaataag ttaggatgga 480

tcgaaaaaga aaggccagtt gcgggttcat atgatgctat tgtacgccca ttagcagtat 540

ctccgtgtac atcagatata catactgttt ttgagggagc tcttggagat aggaagaata 600

tgattttagg gcatgaagct gtaggtgaag ttgttgaagt aggaagtgaa gtgaaggatt 660

ttaaacctgg tgacagagtt atagttcctt gtacaactcc agattggaga tctttggaag 720

ttcaagctgg ttttcaacag cactcaaacg gtatgctcgc aggatggaaa ttttcaaatt 780

tcaaggatgg agtttttggt gaatattttc atgtaaatga tgcggatatg aatcttgcga 840

ttctacctaa agacatgcca ttagaaaatg ctgttatgat aacagatatg atgactactg 900

gatttcatgg agcagaactt gcagatattc aaatgggttc aagtgttgtg gtaattggca 960

ttggagctgt tggcttaatg ggaatagcag gtgctaaatt acgtggagca ggtagaataa 1020

ttggagtggg gagcaggccg atttgtgttg aggctgcaaa attttatgga gcaacagata 1080

ttctaaatta taaaaatggt catatagttg atcaagttat gaaattaacg aatggaaaag 1140

gcgttgaccg cgtaattatg gcaggcggtg gttctgaaac attatcccaa gcagtatcta 1200

tggttaaacc aggaggaata atttctaata taaattatca tggaagtgga gatgctttac 1260

taataccacg tgtagaatgg ggatgtggaa tggctcacaa gactataaaa ggaggtcttt 1320

gtcctggggg acgtttgaga gcagaaatgt taagagatat ggtagtatat aatcgtgttg 1380

atctaagtaa attagttaca catgtatatc atggatttga tcacatagaa gaagcactgt 1440

tattaatgaa agacaagcca aaagacttaa ttaaagcagt agttatatta taaatggagg 1500

cgctcgttga tctgagcctt gccccctgac gaacggcggt ggatggaaga tactgctctc 1560

aagtgctgaa gcggtagctt agctccccgt ttcgtgctga tcagtctttt tcaacacgta 1620

aaaagcggag gagttttgca attttgttgg ttgtaacgat cctccgttga ttttggcctc 1680

tttctccatg ggcgggctgg gcgtatttga agcggttctc tcttctgccg tta 1733

<210> 24

<211> 1556
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 24, Example 24: designer Fructose-Diphosphate-Aldolase DNA construct (1556 bp)

<400> 24

agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccctgatg atgaagtcgt cggccagcct gaaggctgtg tcgctggccg 240

ctctcgccgc gccgtcgttg tgcgcgccgg gcaagtacga tgaggagctg attaagaccg 300

ctggcaccgt tgcctccaag ggccgcggta tcctggccat ggacgagtca aacgccacct 360

gcggcaaacg cctggactcc atcggcgtgg agaacaccga ggagaaccgc cgcgcctacc 420

gcgagctgct ggtgaccgcc cccggcctgg gccagtacat ctccggcgct atcctgttcg 480

aggagaccct gtatcagtcc accgcctccg gcaagaagtt cgtcgatgtg atgaaggagc 540

agaacatcgt gcccggcatc aaggtcgaca agggcctggt gccctgtcca acaccaacga 600

tgagctggtg catgggcctg gacggctgga caagcgctgc tgagtactac aaggccggcg 660

ctcgcttcgc caagtggcgc tcggtcgtct cgatccccca cggcccctcg atcatgctgc 720

cgcgactggc ctacggcctg gcccgctacg ccgccatcgc ccagaacgcc ggtctggtgc 780

ccattgtgga gcccgaggtc ctgctggacg gtgagcacga catcgaccgc tgcctggagg 840

tgcaggaggc catctgggcc gagaccttca agtacatggc cgacaacaag gtcatgttgc 900

agggtatcct gctgaagccc gccatggtca cccccggcgc tgactgcaag aacaaggccg 960

gccccgccaa ggttgccgag tacaccctga agatgctggc cgcgcgtgcc cccccggtcc 1020

ccggcatcat gttcctgtcg ggcggccagt ccgagctgga gtcgaccctg aacctgaacg 1080

ccatgaacca gagccccaac ccgtggcacg tgtcgttctc gtacgcccgc gctctgacga 1140

acaccgttct gaagacctgg caggcaagcc cgagaacggt ccaggcgccc aggctcgctg 1200

ctcaagcgcg caaggccaac tcggacgctc agcagggcaa gtacgacgcc accaccgagg 1260

gcaaggaggc tgcccagggc atgtacgaga agggaaaagg ctacgtctac taataaatgg 1320

aggcgctcgt tgatctgagc cttgcccccc gacgaacggc ggtggatgga agatactgct 1380

ctcaagtgct gaagcggtag cttagctccc cgtttcgtgc tgatcagtct ttttcaacac 1440

gtaaaaagcg gaggagtttt gcaattttgt tggttgtaac gatcctccgt tgattttggc 1500

ctctttctcc atgggcgggc tgggcgtatt tgaagcggtt ctctcttctg ccgtta 1556

<210> 25
<211> 1379
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 25, Example 25: designer Triose-Phosphate-Isomerase DNA construct (1379 bp)

<400> 25
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggcagctacc tctctcactg cccctccttc tttctccggt ctccgccgca 240

tttctcccaa gctcgacgct gccgccgtct cctcccacca atccttcttc caccgcgtca 300

attcctctac ccgtctcgtt tcttcctctt cttcttctca tcgctccccc agaggtgttg 360

ttgccatggc tggatccgga aagtttttcg ttggaggaaa ctggaagtgt aacgggacta 420

aggactccat cgccaagctt atctccgatc tcaacagtgc aaccttggaa gcagatgtag 480

atgttgttgt gtcacctcca tttgtctaca tcgaccaggt caaatcctcg ttgacagacc 540

gtattgacat atcaggtcag aactcttggg ttgggaaagg tggagccttc actggtgaaa 600

tcagcgtgga acagctcaaa gaccttggct gcaagtgggt cattcttggg cattccgaac 660

ggagacatgt catcggagaa aaagatgagt ttatcgggaa gaaagctgca tatgcattga 720

gtgagggtct tggagtgata gcttgtattg gggaaaagct agaagagagg gaagcaggca 780

agacgtttga tgtttgcttc gcgcaactga aggcgtttgc tgatgctgtg cctagctggg 840

acaatatagt tgttgcatac gagcctgtat gggcaattgg aactggtaaa gttgcatctc 900

ctcagcaagc acaagaagtc catgtagctg tccgcggttg gctaaagaag aatgtctctg 960

aggaagttgc ttccaaaacg agaatcatat atggaggttc tgtcaatgga ggcaacagtg 1020

cagagcttgc caaagaagaa gacattgatg gatttcttgt tggtggtgcc tccttgaagg 1080

gtcctgagtt tgcaaccatt gtgaactcag tcacgtcgaa gaaagttgct gcttgataaa 1140

tggaggcgct cgttgatctg agccttgccc cctgacgaac ggcggtggat ggaagatact 1200

gctctcaagt gctgaagcgg tagcttagct ccccgtttcg tgctgatcag tctttttcaa 1260

cacgtaaaaa gcggaggagt tttgcaattt tgttggttgt aacgatcctc cgttgatttt 1320

ggcctctttc tccatgggcg ggctgggcgt atttgaagcg gttctctctt ctgccgtta 1379

<210> 26
<211> 2156
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 26, Example 26: designer Phosphofructose-Kinase DNA construct (2156 bp)

<400> 26
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

```
gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg      240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg      300

ctgccccggc tcaggccaac cagatggaag cttcgatttc gtttctgggg tcaacaaaac      360

ccaatatttc cttgtttaac ccttcttcaa acgtccttcc tcgtagagat ttccctcttc      420

ctgctttgaa attgaagaaa gtttcagtgc tgcctcgaat cttgcaccag aaacgactca      480

tcagagctca gtgctctgat ggattcaaac cagaggaaga cgatgggttt gtcctagaag      540

acgttcctca cttgaccaaa tttctccctg atttaccgtc atatccaaat ccattgaaag      600

aaagccaagc atatgccatt gttaagcgaa cttttgtcag ttccgaagat gtggttgcgc      660

aaaatattgt agtccagaag ggaagtaagc gaggagtaca ctttaggcga gcagggcctc      720

gagaaagagt gtacttcaga tcagatgaag taaaagcttg catagtgact tgtgggggct      780

tgtgccctgg aatcaatact gttatacggg aaattgtatg tggattgaac aatatgtatg      840

gtgttaataa cattctcggc attcagggag gatatagagg cttttactcc aaaaacacta      900

tgaacctgac acctaaagta gttaacgata ttcataaacg cggtggcact tttcttcaaa      960

cctcaagagg aggacatgat acagcgaaga ttgttgataa tattcaagat agaggaataa     1020

atcaggtata tattattgga ggtggtggga cgcaaaaggg tgcagagaag atatacgagg     1080

aagttgagag gcgtggtctt caagtggcgg tttctggcat tcctaagaca attgataatg     1140

atattgctgt gattgacaaa tcatttggct ttgatacggc ggttgaggaa gcacaacgag     1200

ctattaatgc tgcacatgta gaggtcgaga gcgtggaaaa tggagttggt atcgttaaac     1260

tcatgggcag atacagtggt tttattgcca tgattgcaac tttagcgaat cgtgatgtgg     1320

attgttgctt gattccagag tctccatttt ttcttgaagg aaagggtggg ctctttgagt     1380

ttattgaaga acgactcaaa gagaataggc acatggttat tgtgatagct gaaggagctg     1440

gacaggatta tgttgctcaa agcatgcgtg catctgaaac taaagacgcc tcaggaaata     1500

gactcttgct tgatgttggt ctatggttga ctcaacagat aaaggatcac tttacaaatg     1560
```

ttcggaaaat gatgataaat atgaagtaca tagacccaac gtatatgata agagcaatac 1620

cgagtaacgc atcagacaat gtctattgca ctcttcttgc ccaaagtgca gttcatggag 1680

caatggctgg gtactcaggt ttcactgtag gaccagttaa cagtagacat gcttacatcc 1740

caatttctgt gacggaagtg acaaatacgg tgaagttaac tgataggatg tgggctagac 1800

tccttgcatc gacaaatcaa ccgagtttct tgactggtga aggagcattg cagaatgtga 1860

tcgacatgga aactcaagaa aagatcgata acatgaagat ctcttctatc taataaatgg 1920

aggcgctcgt tgatctgagc cttgcccccc gacgaacggc ggtggatgga agatactgct 1980

ctcaagtgct gaagcggtag cttagctccc cgtttcgtgc tgatcagtct ttttcaacac 2040

gtaaaaagcg gaggagtttt gcaattttgt tggttgtaac gatcctccgt tgattttggc 2100

ctctttctcc atgggcgggc tgggcgtatt tgaagcggtt ctctcttctg ccgtta 2156

<210> 27
<211> 860
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 27, Example 27: designer Nia1-promoter-linked Starch-Synthase-iRNA DNA construct (860 bp)

<400> 27
agaaaatctg gcaccacacc tatatggtag ggtgcgagtg accccgcgcg acttggagct 60

cgatggcccc gggttgtttg gggcgtccgc ctctcgcgct attctgagct ggagaccgag 120

gcgcatgaaa atgcattcgc ttccatagga cgctgcattg tggcttgaag gttcaaggga 180

agggttcaaa cgaccccgcc gtacgaactt ttgtcggggg gcgctcccgg ccccgggctc 240

ttgtgcgcgc attagggctt cgggtcgcaa gcaagacgat acatgccagc cggctcacca 300

ccgccaccag cggcttgcgg gggtccacct ccaggcccag acccttctgc agaaactcct 360

tgcacagcgc cttcccggcg gggcggtcgg cgtcgaagtt ggctggcagc agcgcgtcag 420

tggccgggtt ccactcctca cagtcaatgc cgttcaggat gccgtggaac ttggagcgca 480

gctcggggcg cgcgaaggtg gatctcgccg tcccagcggt agcccttggg cacctcgatg 540

tcgcattcgt gcttgaggcc ctcaatctgg tccttgggca ggcactcgta gaacggcagc 600

atgaccgtca cgaagtgtaa atggaggcgc tcgttgatct gagccttgcc ccctgacgaa 660

cggcggtgga tggaagatac tgctctcaag tgctgaagcg gtagcttagc tccccgtttc 720

gtgctgatca gtctttttca acacgtaaaa agcggaggag ttttgcaatt ttgttggttg 780

taacgatcct ccgttgattt tggcctcttt ctccatgggc gggctgggcg tatttgaagc 840

ggttctctct tctgccgtta 860

<210> 28
<211> 1328
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 28, Example 28: designer HydA1-promoter-linked Starch-Synthase-iRNA DNA construct (1328 bp)

<400> 28
agaaaatctg gcaccacacc gagctgtcat gcgttgttcc gttatgtgtc gtcaaacgcc 60

ttcgagcgct gcccggaaca atgcgtacta gtataggagc catgaggcaa gtgaacagaa 120

gcgggctgac tggtcaaggc gcacgatagg gctgacgagc gtgctgacgg ggtgtaccgc 180

cgagtgtccg ctgcattccc gccggattgg gaaatcgcga tggtcgcgca taggcaagct 240

cgcaaatgct gtcagcttat cttacatgaa cacacaaaca ctctcgcagg cactagcctc 300

aaatgaagag cttcatgcgg agggatgcgc tcggcgcggg gctccgcggt gcagccagca 360

caaagcccgt ctcaagggtc gccagcgtga ggcctgcgcc taccgcctac cgcactgcct 420

gccaagttgc gaaggtggat gaaatggtgt cggtggatga ggagcttact cgtctccgca 480

aggagaacga gctcctgcgc gcccaactgg cgctgtacca gcagaaccag cagccgtccg 540

tgggtgccgc tgccgttgcc ccgcctgctg ccgccacgaa ggtgctggag aagccggcgc 600

cgtaagtaac ctaacggtga gcagcatgca atattttagc gtcgatactc ggaaactata 660

ggagcgcatc agccgaccga tgttcgcgtt gctgtcgcag gcccaaccgt gccaccgccg 720

tggtgtgcaa ggcgcagaag gcggccaggc cgccgctgcc gctgctctgg ccataagtaa 780

cctaacggcg ccggcttctc cagcaccttc gtggcggcag caggcggggc aacggcagcg 840

gcacccacgg acggctgctg gttctgctgg tacagcgcca gttgggcgcg caggagctcg 900

ttctccttgc ggagacgagt aagctcctca tccaccgaca ccatttcatc caccttcgca 960

acttggcagg cagtgcggta ggcggtaggc gcaggcctca cgctggcgac ccttgagacg 1020

ggctttgtgc tggctgcacc gcggagcccc gcgccgagcg catccctccg catgaagctc 1080

ttcattaaat ggaggcgctc gttgatctga gccttgcccc ctgacgaacg gcggtggatg 1140

gaagatactg ctctcaagtg ctgaagcggt agcttagctc cccgtttcgt gctgatcagt 1200

ctttttcaac acgtaaaaag cggaggagtt ttgcaatttt gttggttgta acgatcctcc 1260

gttgattttg gcctctttct ccatgggcgg gctgggcgta tttgaagcgg ttctctcttc 1320

tgccgtta 1328

<210> 29
<211> 1889
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 29, Example 29: designer Amylase DNA construct (1889 bp)

<400> 29
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcggggggc 180

gctcccggct cgagcatatg gccgccgtca ttgccaagtc ctccgtctcc gcggccgtgg 240

ctcgcccggc ccgctccagc gtgcgcccca tggccgcgct gaagcccgcc gtcaaggctg 300

cccccgtggc tgccccggct caggccaacc agatggcgaa caaacacatg tccctttctc 360

tcttcatcgt cctccttggc ctctcgtgca gcttggcctc cgggcaagtc ctgtttcagg 420

gttttaactg ggagtcgtgg aagcacaatg gcgggtggta caacttcctg atgggcaagg 480

tggacgacat cgccgccgct ggcgtcacgc acgtgtggct ccccccggcg tcgcagtccg 540

tcgccgagca agggtacatg ccgggccggc tctacgacct ggacgcctcc aagtacggca 600

acaaggcgca gctcaagtcc ctcatcggcg cgctccacgg caagggcgtc aaggccatcg 660

ccgacatcgt catcaaccac cgcacggcgg agcgcaagga cggccggggc atctactgca 720

tcttcgaggg cggcaccccg gacgcgcgcc tcgactgggg cccccacatg atctgccgcg 780

acgaccggcc ctacgccgac ggcaccggca acccggacac cggcgccgac ttcggggccg 840

cgccggacat cgaccacctc aacccgcgcg tccagaagga gctcgtcgag tggctcaact 900

ggctcaggac cgacgtcggc ttcgacggct ggcgcttcga cttcgccaag ggctactccg 960

cggacgtggc caagatctac gtcgaccgct ccgagcccag cttcgccgtc gccgagatat 1020

ggacgtcgct ggcgtacggc ggggacggca agccgaacct caaccaggac ccgcaccggc 1080

aggagctggt gaactgggtg aacaaggtgg gcggctccgg ccccgccacc acgttcgact 1140

tcaccaccaa gggcatcctc aacgtggccg tggagggcga gctgtggcgc ctgcgcggca 1200

ccgacggcaa ggcgccgggc atgatcgggt ggtggccggc caaggcggtg accttcgtcg 1260

acaaccacga caccggctcc acgcagcaca tgtggccctt cccttccgac agggtcatgc 1320

agggatatgc ctacatcctc acgcacccag ggaccccatg catcttctac gatcatttct 1380

tcgactgggg cttgaaggag gagatcgatc gtctggtgtc aatcaggacc cgacagggga 1440

tacacagtga gagcaagctg cagatcatgg aggccgacgc cgacctttac cttgccgaga 1500

tcgacggcaa ggtcatcgtc aagctcgggc caagatacga tgtcggacac ctcattcctg 1560

aaggcttcaa ggtggtcgcg catggcaatg actatgccgt atgggagaaa gtataaggct 1620

gctgccccgg ctgctgctaa tctagataaa tggaggcgct cgttgatctg agccttgccc 1680

cctgacgaac ggcggtggat ggaagatact gctctcaagt gctgaagcgg tagcttagct 1740

ccccgtttcg tgctgatcag tctttttcaa cacgtaaaaa gcggaggagt tttgcaattt 1800

tgttggttgt aacgatcctc cgttgatttt ggcctctttc tccatgggcg ggctgggcgt 1860

atttgaagcg gttctctctt ctgccgtta 1889

<210> 30
<211> 3089
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 30, Example 30: designer Starch-Phosphorylase DNA construct (3089 bp)

<400> 30
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatggcgg atgcgaaagc aaacggaaag aatgaggcgg 360

ccaaactggc gaaaattccg gcggctgcga atccattggc taatgaacca tcggcgattg 420

catcaaatat aagttaccac gtgcagtaca gtcctcattt ctcgccgact aagttcgagc 480

cggagcaagc tttctttgcc acggcggagg ttgtccgcga tcgtcttatt caacaatgga 540

atgagacata ccaccatttt aataaagttg atccgaagca aacatactac ctatcaatgg 600

aatttcttca aggaaggact ttgactaatg caattggcag tttggacatt cagaatgcat 660

atgctgatgc tttaaataat ttggggcatg tccttgagga gatagctgaa caggaaaaag 720

atgctgcact aggaaatggt gggctgggca ggctagcttc atgcttctta gactccatgg 780

caacattgaa tttgcctgca tggggttatg gtttgagata ccggtatggg ctgttcaagc 840

agaagatcac caagcagggt caagaagaag ttgctgaaga ttggcttgag aaatttagtc 900

cttgggaagt tgtcaggcat gatgtggtat ttccggtcag atttttggg agtgttatgg 960

ttaatccaaa tggaacgaga aaatgggttg ggggtgaagt tgtccaagcc gtagcttatg 1020

atataccaat tccagggtac aaaaccaaga acactatcag tcttcgtctc tgggacgcta 1080

aagctagcgc tgaggatttc aatttatttc agtttaatga tggacaatac gaatctgctg 1140

cacagcttca ttctcgagct caacagattt gtgctgtgct ctaccccggg gattctactg 1200

aagaagggaa gcttttaagg ctgaaacaac aattctttct ctgcagtgct tcacttcagg 1260

atatgattct tagattcaag gagaggaaaa gtggaaggca gtggtctgaa tttcccagca 1320

aggtagctgt acaactgaat gatactcatc caacacttgc aattccagag ttgatgcgat 1380

tgctaatgga tgaggaagga cttggatggg atgaagcatg ggatataaca acaaggactg 1440

ttgcttatac caatcacaca gtacttcctg aagcacttga gaagtggtca caagcagtaa 1500

tgtggaagct tcttcctcgc catatggaaa taattgaaga gattgacaag agattcattg 1560

caatggtccg ctccacaagg agtgaccttg agagtaagat tcccagcatg tgcatcttgg 1620

ataataatcc caaaaagccg gttgttagga tggcaaactt atgtgtagta tctgcgcata 1680

cggtaaatgg tgttgctcag ttgcacagtg atatcttaaa ggccgacttg ttcgctgact 1740

atgtttctct atggccaaac aaactccaaa ataaaactaa tggcattact cctcgtcgat 1800

ggctccggtt ttgcaatcct gagctcagca aaattatcac aaaatggtta aaaaccgatc 1860

agtgggttac gaaccttgac ctgcttgtag gtcttcgtca gtttgctgac aacacagaac 1920

tccaagctga atgggaatct gctaagatgg ccagtaagaa acatttggca gactacatat 1980

ggcgagtaac cggtgtaacg attgatccta atagcttatt tgacatacaa gtcaagcgca 2040

ttcatgaata caagagacaa ctgctaaata ttttgggcgc aatctacaga tacaagaagt 2100

tgaaggagat gagccctcag gagcggaaga aaactactcc acgcaccatt atgtttggag 2160

ggaaagcatt tgcaacatat acaaacgcaa aaagaatagt aaagttggtt aatgatgttg 2220

gtgaagtcgt caacaccgat cctgaggtca atagttattt gaaggtggta tttgttccaa 2280

attacaatgt ctctgttgcg gagttgctta ttccaggaag tgagctatct cagcatatta 2340

gcacagcagg catggaggca agtggcacaa gcaacatgaa attttctcta aatggttgcc 2400

tcattatagg aacattggat ggagctaatg tggaaatcag gcaggagata ggagaggaga 2460

atttctttct ctttggtgca ggagcagacc aagtccctaa gctgcggaag gaaagagaag 2520

atggattgtt caaaccagat cctcggtttg aagaggccaa gcaatttata agaagtggag 2580

catttggaag ctatgactac aacccgcttc ttgattccct ggaggggaac actggttatg 2640

gtcgtggtga ttattttcta gttggttatg acttcccaag ttacttagag gctcaggaca 2700

gagttgacca agcttacaag gaccggaaga agtggctgaa gatgtctata ttaagtacag 2760

ctggcagtgg gaaattcagc agtgatcgca caattgcaca gtatgctaag gaaatctgga 2820

acataacaga atgccgtaca tcatgataaa tggaggcgct cgttgatctg agccttgccc 2880

cctgacgaac ggcggtggat ggaagatact gctctcaagt gctgaagcgg tagcttagct 2940

ccccgtttcg tgctgatcag tctttttcaa cacgtaaaaa gcggaggagt tttgcaattt 3000

tgttggttgt aacgatcctc cgttgatttt ggcctctttc tccatgggcg ggctgggcgt 3060

atttgaagcg gttctctctt ctgccgtta 3089

<210> 31
<211> 1949
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 31, Example 31: designer Hexose-Kinase DNA construct (1949 bp)

<400> 31

agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatggcta taacaccccg ccgaaaacct tcccggaagg 360

gatcaatggc tgatatgccg aaggatgtgc ttgaccagct caagacgctg gaagagctct 420

tcacagttga ccaggagaag ctgaagcaga tcgttgagca tttcatcaag gagttacaga 480

agggcctcag tgtcgaaggc ggaaacattc ccatgaacgt gacttgggtt ctgggatttc 540

ccactggcca tgagaaaggt acatttctgg ctctggacat ggggggcacc aacctgcgcg 600

tctgcgaaat tgagctctcc gaagagaagg gcgagtttga tgtcacacag tccaagtatc 660

gaatccccga agagctcaag agcggtgaat catcagaact atgggaatat attgccgact 720

gtgtacagca gttcatagaa tactaccatg acggttgcac ggctttgcca gacctgccgc 780

tgggctttac cttttcgtac cctgctactc aagaatatgt tgaccacggt gtcctacaga 840

gatggaccaa gggttttgat attgacggcg tcgagggcaa agacgtcgtc ccaatgttag 900

aagaagcttt ggctaagaag gttaaaaatt cagctctttc cccatttttc tttggctata 960

tggtgctaat tactttacag ggtctcccca ttaaagttgc cgctctagta aacgacacga 1020

ctggcacact tattgcttcc gcctacactg acccagagat gaaaatcggc tgtatcttcg 1080

gcacaggcgt caacgccgcc tacatggaaa atgcgggctc tatccctaaa atagcccact 1140

acaatttacc tcccgacacc ccagtcgcta tcaactgcga atacggcgcc ttcgacaacg 1200

aactcattgt cctccccga acgcagtatg acgacgtatc ccaactacgt aaaccatact 1260

ccctggactc ctccttccta gccttcatcg aagaagatcc cttcgagaac ctgtcagaaa 1320

cgcgagatct cttcgaacgc accctgggga tctacgcatt gccctcggag ctagaattct 1380

gcagacgcct ggcggaattg atcggcacac gtgccgcacg cctctccgct tgcggtgttg 1440

cggccatctg caagaagaaa aatatcaccc attgccatgt cggagcggac gggtcggtgt 1500

tcgagaagta cccgcatttc aaggccaggg gcgccagagc cctgcgggag atccttgact 1560

ggccagatag tgaaccggat cgggttgtga tgagcggagc ggaggatggg tctggcgttg 1620

gtgcggcgct tattgcggct ttgacgcttg agagggttaa acaagcttct tgggaatgga 1680

agtacatcgg aagcggtctg tcttaataaa tggaggcgct cgttgatctg agccttgccc 1740

cctgacgaac ggcggtggat ggaagatact gctctcaagt gctgaagcgg tagcttagct 1800

ccccgtttcg tgctgatcag tctttttcaa cacgtaaaaa gcggaggagt tttgcaattt 1860

tgttggttgt aacgatcctc cgttgatttt ggcctctttc tccatgggcg ggctgggcgt 1920

atttgaagcg gttctctctt ctgccgtta 1949

<210> 32
<211> 2249
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 32, Example 32: designer Phosphoglucomutase DNA construct (2249 bp)

<400> 32
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtccg atttctccgt ccagaccatt gccaccacgg 360

ccttcacaga ccaaaagcct ggaacctctg gtctcagaaa gaaagttact gtgtttcaac 420

agcctcacta cactgaaaac ttcattcagg ctattctcga tgccattccg gaaggtgccc 480

aaggtgccac tcttgttgta ggaggtgatg gccgtttcta caacgacaag gtcatcaact 540

tgatcgccaa aatcgcctcg gccaacggag tttccaagtt gattttgggt caagacggga 600

ttctttccac tccagcaact tcgcatgtaa tcaggatcag gggtgcaact ggaggaatta 660

ttctcactgc ttcacacaac cccggaggcc ccaaaaacga tttgggtatt aagtacaact 720

tgggaaacgg tgcaccagct ccagaatcgg ttaccaacaa gatctatgat gtctccaagg 780

aattgacttc gtacaagctc attgatttac ccgacattga tttgtccaaa acccagaccg 840

tgcaattggg ccctcttgaa gtggaaatca ttgactccac ctctgattac gtagccatgt 900

tgaaggatat ctttgacttc cccttgatca agtcgttcct cgagactgcc actaaggagc 960

agggattcaa ggttttattt gattcgctca atggtgtcac tggcccctac ggctacaaga 1020

tcttcgttga agaattagga ttgcctctta actcaatcca aaattaccac ccattgcctg 1080

actttggtgg tttacaccca gatccaaact tgacctatgc tcatactttg gtcgagaggg 1140

tcgataagga gaatattgcc tttggtgctg catctgatgg tgacggtgac agaaacatga 1200

tctacggtgc tggtaccttt gtttcgcctg gtgactctgt agccatcatc tcggaatacg 1260

ccgattccat cccttacttc aagaagcaag gtgtctacgg tttggccaga tccatgccta 1320

cctctggagc catcgatttg gtagcaaagg ctaaaggatt gaatgtttac gaagtgccaa 1380

ccggttggaa gttcttctgc aacctttcg acgctgacaa gttgagtatc tgtggtgaag 1440

agtcgtttgg aacaggctcc aaccacatca gagaaaagga cggcctttgg gctgtagttg 1500

cctggttgaa cgtgctagca gattacaacg tcaagaatcc agaatccaag acatctattt 1560

ctgtagtgca gaactcgttt tggaagaaat acggaagaac tttcttcact agatatgact 1620

acgaaaacgt atcgtctgaa ggtgctgccg agctcatcaa cttgttgtct tctattgttg 1680

actctaagaa accaggaagt agcttagctg atggctacgt cgtcaaggaa gctgctaact 1740

tctcgtacac cgatttggac ggctctgttt cgtccaacca aggtttgttc atcaagtttg 1800

aaagcggctt gagattcata gtaagattgt ctggtactgg atcatccggt gctacagtca 1860

gattatatct cgaaaagcac tctgccgacg aatccaccta tggcttaggc gtagaccagt 1920

acttagttga tgacatcaag tttgtcttgg acttgttgaa gttcaagcag ttcttgggaa 1980

aggatgaacc agatgttcgt acctagtaaa tggaggcgct cgttgatctg agccttgccc 2040

cctgacgaac ggcggtggat ggaagatact gctctcaagt gctgaagcgg tagcttagct 2100

ccccgtttcg tgctgatcag tctttttcaa cacgtaaaaa gcggaggagt tttgcaattt 2160

tgttggttgt aacgatcctc cgttgatttt ggcctctttc tccatgggcg ggctgggcgt 2220

atttgaagcg gttctctctt ctgccgtta 2249

<210> 33
<211> 2231
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 33, Example 33: designer Glucosephosphate-Isomerase DNA construct (2231 bp)

<400> 33
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtcca ataactcatt cactaacttc aaactggcca 360

ctgaattgcc agcctggtct aagttgcaaa aaatttatga atctcaaggt aagactttgt 420

ctgtcaagca agaattccaa aaagatgcca agcgttttga aaaattgaac aagactttca 480

ccaactatga tggttccaaa atcttgttcg actactcaaa gaacttggtc aacgatgaaa 540

tcattgctgc attgattgaa ctggccaagg aggctaacgt caccggtttg agagatgcta 600

tgttcaaagg tgaacacatc aactccactg aagatcgtgc tgtctaccac gtcgcattga 660

gaaacagagc taacaagcca atgtacgttg atggtgtcaa cgttgctcca gaagtcgact 720

ctgtcttgaa gcacatgaag gagttctctg aacaagttcg ttctggtgaa tggaagggtt 780

ataccggtaa gaagatcacc gatgttgtta acatcggtat tggtggttcc gatttgggtc 840

cagtcatggt cactgaggct ttgaagcact acgctggtgt cttggatgtc cacttcgttt 900

ccaacattga cggtactcac attgctgaaa ccttgaaggt tgttgaccca gaaactactt 960

tgtttttgat tgcttccaag actttcacta ccgctgaaac tatcactaac gctaacactg 1020

ccaagaactg gttcttgtcg aagacaggta atgatccatc tcacattgct aagcatttcg 1080

ctgctttgtc cactaacgaa accgaagttg ccaagttcgg tattgacacc aaaaacatgt 1140

ttggtttcga aagttgggtc ggtggtcgtt actctgtctg gtcggctatt ggtttgtctg 1200

ttgccttgta cattggctat gacaactttg aggctttctt gaagggtgct gaagccgtcg 1260

acaaccactt cacccaaacc ccattggaag acaacattcc attgttgggt ggtttgttgt 1320

ctgtctggta caacaacttc tttggtgctc aaacccattt ggttgctcca ttcgaccaat 1380

acttgcacag attcccagcc tacttgcaac aattgtcaat ggaatctaac ggtaagtctg 1440

ttaccagagg taacgtgttt actgactact ctactggttc tatcttgttt ggtgaaccag 1500

ctaccaacgc tcaacactct ttcttccaat tggttcacca aggtaccaag ttgattccat 1560

ctgatttcat cttagctgct caatctcata acccaattga gaacaaatta catcaaaaga 1620

tgttggcttc aaacttcttt gctcaagctg aagctttaat ggttggtaag gatgaagaac 1680

aagttaaggc tgaaggtgcc actggtggtt tggtcccaca caaggtcttc tcaggtaaca 1740

gaccaactac ctctatcttg gctcaaaaga ttactccagc tactttgggt gctttgattg 1800

cctactacga acatgttact ttcactgaag gtgccatttg gaatatcaac tctttcgacc 1860

aatggggtgt tgaattgggt aaagtcttgg ctaaagtcat cggcaaggaa ttggacaact 1920

cctccaccat ttctacccac gatgcttcta ccaacggttt aatcaatcaa ttcaaggaat 1980

ggatgtgata aatggaggcg ctcgttgatc tgagccttgc cccctgacga acggcggtgg 2040

atggaagata ctgctctcaa gtgctgaagc ggtagcttag ctccccgttt cgtgctgatc 2100

agtctttttc aacacgtaaa aagcggagga gttttgcaat tttgttggtt gtaacgatcc 2160

tccgttgatt ttggcctctt tctccatggg cgggctgggc gtatttgaag cggttctctc 2220

ttctgccgtt a 2231

<210> 34
<211> 1709
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 34, Example 34: designer oxyphotobacterial Butanol Dehydrogenase DNA construct (1709 bp)

<400> 34
agaaaatctg gcaccacacc atccaaactc gccacccgca aaccaatggc atggccgagc 60

gctgcaacgg tcgcattgcc aagattctgc gtgctgagcg ctttgtctcc gctgctgatc 120

tgcaagagac gctcacgcga tacctctggg cgtgcaatca ccgcattccc caacgcgctt 180

tgggccacat gacccccatc gagagactcc gaacgtggca aatggaggga ccagagttgt 240

tcagttcaca ggtagataat gtcgcgggtc ttgatagtta gcaataaata cagtttcaga 300

atatctgtaa tacaaaaact gtatcgagac aagaaaaaag tagcaaaatt tacaaatgtt 360

catgattcat ctggctaaat tggatgttca actgacccat tgaagacaag ggcaacaacc 420

atggagaatt ttagatttaa tgcatataca gagatgcttt ttggaaaggg acaaatagag 480

aagcttccag aggttttaaa aagatatggt aaaaatatat tacttgcata tggtggtgga 540

agtataaaaa agaatggact ctatgatact atccaaaagc tattgaaaga ttttaatatt 600

gttgaattaa gtggtattga accaaatcca agaattgaaa ctgtaagacg tggagttgaa 660

ctttgcagaa aaaataaagt agatgttatt ttagctgttg gtggagggag tacaatagac 720

tgctcaaagg ttataggggc aggttattat tatgctggag atgcatggga ccttgtaaaa 780

aatccagcta aaataggtga ggttttacca atagtgacag ttttaacaat ggcagctact 840

ggttctgaaa tgaatagaaa tgctgttatt tcaaagatgg atacaaatga aaagcttgga 900

acaggatcac ctaagatgat ccctcaaact tctattttag atccagaata tttgtataca 960

ttgccagcaa ttcaaacagc tgcaggttgt gctgatatta tgtcacacat atttgaacaa 1020

tattttaata aaactacaga tgcttttgta caagataaat ttgcggaagg tttgttgcaa 1080

acttgtataa aatattgccc tgttgcttta aaggaaccaa agaattatga agctagagca 1140

aatataatgt gggctagttc aatggctctt aacggacttt taggaagtgg gaaagctgga 1200

gcttggactt gtcatccaat agaacatgaa ttaagtgcat tttatgatat aactcatgga 1260

gtaggtcttg caattttaac tccaagttgg atgagatata tcttaagtga tgtaacagtt 1320

gataagtttg ttaacgtatg gcatttagaa caaaaagaag ataaatttgc tcttgcaaat 1380

gaagcaatag atgcaacaga aaaattcttt aaagcttgtg gtattccaat gactttaact 1440

gaacttggaa tagataaagc aaactttgaa aagatggcaa aagctgcagt agaacatggt 1500

gctttagaat atgcatatgt ttcattaaat gccgaggatg tatataaaat tttagaaatg 1560

tccctttaat aaggctgaga tcttcttcag tgcattgtag ttgaatgaag ggttaggggg 1620

gaaatgcccc cctatttttt gtctagccat cctgccacgt ttgacagggt agcaatttcg 1680

acacgatagg gttctctctt ctgccgtta 1709

<210> 35
<211> 1967
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 35, Example 35: designer oxyphotobacterial Butyraldehyde Dehydrogenase DNA construct (1967 bp)

<400> 35
agaaaatctg gcaccacacc atccaaactc gccacccgca aaccaatggc atggccgagc 60

gctgcaacgg tcgcattgcc aagattctgc gtgctgagcg ctttgtctcc gctgctgatc 120

tgcaagagac gctcacgcga tacctctggg cgtgcaatca ccgcattccc caacgcgctt 180

tgggccacat gacccccatc gagagactcc gaacgtggca aatggaggga ccagagttgt 240

tcagttcaca ggtagataat gtcgcgggtc ttgatagtta gcaataaata cagtttcaga 300

atatctgtaa tacaaaaact gtatcgagac aagaaaaaag tagcaaaatt tacaaatgtt 360

catgattcat ctggctaaat tggatgttca actgacccat tgaagacaag ggcaacaacc 420

atgattaaag acacgctagt ttctataaca aaagatttaa aattaaaaac aaatgttgaa 480

aatgccaatc taaagaacta caaggatgat tcttcatgtt tcggagtttt cgaaaatgtt 540

gaaaatgcta taagcaatgc cgtacacgca caaaagatat tatcccttca ttatacaaaa 600

gaacaaagag aaaaaatcat aactgagata agaaaggccg cattagaaaa taaagagatt 660

ctagctacaa tgattcttga agaaacacat atgggaagat atgaagataa aatattaaag 720

catgaattag tagctaaata cactcctggg acagaagatt taactactac tgcttggtca 780

ggagataacg ggcttacagt tgtagaaatg tctccatatg gcgttatagg tgcaataact 840

ccttctacga atccaactga aactgtaata tgtaatagta taggcatgat agctgctgga 900

aatactgtgg tatttaacgg acatccaggc gctaaaaaat gtgttgcttt tgctgtcgaa 960

atgataaata aagctattat ttcatgtggt ggtcctgaga atttagtaac aactataaaa 1020

aatccaacta tggactctct agatgcaatt attaagcacc cttcaataaa actactttgc 1080

ggaactggag ggccaggaat ggtaaaaacc ctcttaaatt ctggtaagaa agctataggt 1140

gctggtgctg gaaatccacc agttattgta gatgatactg ctgatataga aaaggctggt 1200

aagagtatca ttgaaggctg ttcttttgat aataatttac cttgtattgc agaaaaagaa 1260

gtatttgttt ttgagaacgt tgcagatgat ttaatatcta acatgctaaa aaataatgct 1320

gtaattataa atgaagatca agtatcaaag ttaatagatt tagtattaca aaaaaataat 1380

gaaactcaag aatactctat aaataagaaa tgggtcggaa aagatgcaaa attattctta 1440

gatgaaatag atgttgagtc tccttcaagt gttaaatgca taatctgcga agtaagtgca 1500

aggcatccat ttgttatgac agaactcatg atgccaatat taccaattgt aagagttaaa 1560

gatatagatg aagctattga atatgcaaaa atagcagaac aaaatagaaa acatagtgcc 1620

tatatttatt caaaaaatat agacaaccta aataggtttg aaagagaaat cgatactact 1680

atctttgtaa agaatgctaa atcttttgcc ggtgttggtt atgaagcaga aggctttaca 1740

actttcacta ttgctggatc cactggtgaa ggaataactt ctgcaagaaa ttttacaaga 1800

caaagaagat gtgtactcgc cggttaataa ggctgagatc ttcttcagtg cattgtagtt 1860

gaatgaaggg ttaggggga aatgcccccc tatttttgt ctagccatcc tgccacgttt 1920

gacagggtag caatttcgac acgatagggt tctctcttct gccgtta 1967

<210> 36
<211> 1602
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 36, Example 36: designer oxyphotobacterial Butyryl-CoA Dehydrogenase DNA construct (1602 bp)

<400> 36

agaaaatctg gcaccacacc tgatctgcaa gagacgctca cgcgatacct ctgggcgtgc 60

aatcaccgca ttccccaacg cgctttgggc cacatgaccc ccatcgagag actccgaacg 120

tggcaaatgg agggaccaga gttgttcagt tcacaggtag ataatgtcgc gggtcttgat 180

agttagcaat aaatacagtt tcagaatatc tgtaatacaa aaactgtatc gagacaagaa 240

aaaagtagca aaatttacaa atgttcatga ttcatctggc taaattggat gttcaactga 300

cccattgaag acaagggcaa caaccatgaa tttccaatta actagagaac aacaattagt 360

acaacaaatg gttagagaat tcgcagtaaa tgaagttaag ccaatagctg ctgaaatcga 420

cgaaacagaa agattcccta tggaaaacgt tgaaaaaatg gctaagctta aaatgatggg 480

tatcccattt tctaaagaat ttggtggagc aggcggagat gttctttcat atataatagc 540

tgtggaagaa ttatcaaaag tttgtggtac tacaggagtt attctttcag cgcatacatc 600

attatgtgca tcagtaatta atgaaaatgg aactaacgaa caaagagcaa aatatttacc 660

tgatctttgc agcggtaaaa agatcggtgc tttcggatta actgaaccag gtgctggtac 720

agatgctgca ggacaacaaa caactgctgt attagaaggg gatcattatg tattaaatgg 780

ttcaaaaatc ttcataacaa atggtggagt tgctgaaact ttcataatat ttgctatgac 840

agataagagt caaggaacaa aaggaatttc tgcattcata gtagaaaagt cattcccagg 900

attctcaata ggaaaattag aaaataagat ggggatcaga gcatcttcaa ctactgagtt 960

agttatggaa aactgcatag taccaaaaga aaacctactt agcaaagaag gtaagggatt 1020

tggtatagca atgaaaactc ttgatggagg aagaattggt atagctgctc aagctttagg 1080

tattgcagaa ggagcttttg aagaagctgt taactatatg aaagaaagaa aacaatttgg 1140

taaaccatta tcagcattcc aaggattaca atggtatata gctgaaatgg atgttaaaat 1200

ccaagctgct aaatacttag tatacctagc tgcaacaaag aagcaagctg gtgagcctta 1260

ctcagtagat gctgcaagag ctaaattatt tgctgcagat gttgcaatgg aagttacaac 1320

taaagcagtt caaatctttg gtggatatgg ttacactaaa gaatacccag tagaaagaat 1380

gatgagagat gctaaaatat gcgaaatcta cgaaggaact tcagaagttc aaaagatggt 1440

tatcgcagga agcattttaa gataaggctg agatcttctt cagtgcattg tagttgaatg 1500

aagggttagg ggggaaatgc ccccctattt tttgtctagc catcctgcca cgtttgacag 1560

ggtagcaatt tcgacacgat agggttctct cttctgccgt ta 1602

<210> 37
<211> 1248
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 37, Example 37: designer oxyphotobacterial Crotonase DNA construct (1248 bp)

<400> 37
agaaaatctg gcaccacacc tgatctgcaa gagacgctca cgcgatacct ctgggcgtgc 60

aatcaccgca ttccccaacg cgctttgggc cacatgaccc ccatcgagag actccgaacg 120

tggcaaatgg agggaccaga gttgttcagt tcacaggtag ataatgtcgc gggtcttgat 180

agttagcaat aaatacagtt tcagaatatc tgtaatacaa aaactgtatc gagacaagaa 240

aaaagtagca aaatttacaa atgttcatga ttcatctggc taaattggat gttcaactga 300

cccattgaag acaagggcaa caaccatgga attaaaaaat gttattcttg aaaaagaagg 360

gcatttagct attgttacaa tcaatagacc aaaggcatta aatgcattga attcagaaac 420

actaaaagat ttaaatgttg ttttagatga tttagaagca gacaacaatg tgtatgcagt 480

tatagttact ggtgctggtg agaaatcttt tgttgctgga gcagatattt cagaaatgaa 540

agatcttaat gaagaacaag gtaaagaatt tggtatttta ggaaataatg tcttcagaag 600

attagaaaaa ttggataagc cagttatcgc agctatatca ggatttgctc ttggtggtgg 660

atgtgaactt gctatgtcat gtgacataag aatagcttca gttaaagcta aatttggtca 720

accagaagca ggacttggaa taactccagg atttggtgga actcaaagat tagcaagaat 780

agttggacca ggaaaagcta aagaattaat ttatacttgt gaccttataa atgcagaaga 840

agcttataga ataggcttag ttaataaagt agttgaatta gaaaaattga tggaagaagc 900

aaaagcaatg gctaacaaga ttgcagctaa tgctccaaaa gcagttgcat attgtaaaga 960

tgctatagac agaggaatgc aagttgatat agatgcagct atattaatag aagcagaaga 1020

ctttgggaag tgctttgcaa cagaagatca aacagaagga atgactgcgt tcttagaaag 1080

aagagcagaa aagaattttc aaaataaata aggctgagat cttcttcagt gcattgtagt 1140

tgaatgaagg gttaggggggg aaatgccccc ctatttttg tctagccatc ctgccacgtt 1200

tgacagggta gcaatttcga cacgataggg ttctctcttc tgccgtta 1248

<210> 38
<211> 1311
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 38, Example 38: designer oxyphotobacterial 3-Hydroxybutyryl-CoA Dehydrogenase DNA construct (1311 bp)

<400> 38
agaaaatctg gcaccacacc tgatctgcaa gagacgctca cgcgatacct ctgggcgtgc 60

aatcaccgca ttccccaacg cgctttgggc cacatgaccc ccatcgagag actccgaacg 120

tggcaaatgg agggaccaga gttgttcagt tcacaggtag ataatgtcgc gggtcttgat 180

agttagcaat aaatacagtt tcagaatatc tgtaatacaa aaactgtatc gagacaagaa 240

aaaagtagca aaatttacaa atgttcatga ttcatctggc taaattggat gttcaactga 300

cccattgaag acaagggcaa caaccatgaa aaagattttt gtacttggag caggaactat 360

gggtgctggt atcgttcaag cattcgctca aaaaggttgt gaggtaattg taagagacat 420

aaaggaagaa tttgttgaca gaggaatagc tggaatcact aaaggattag aaaagcaagt 480

tgctaaagga aaaatgtctg aagaagataa agaagctata ctttcaagaa tttcaggaac 540

aactgatatg aagttagctg ctgactgtga tttagtagtt gaagctgcaa tcgaaaacat 600

gaaaattaag aaggaaatct ttgctgagtt agatggaatt tgtaagccag aagcgatttt 660

agcttcaaac acttcatctt tatcaattac tgaagttgct tcagctacaa agagacctga 720

taaagttatc ggaatgcatt tctttaatcc agctccagta atgaagcttg ttgaaattat 780

taaaggaata gctacttctc aagaaacttt tgatgctgtt aaggaattat cagttgctat 840

tggaaaagaa ccagtagaag ttgcagaagc tccaggattc gttgtaaacg gaatcttaat 900

cccaatgatt aacgaagctt cattcatcct tcaagaagga atagcttcag ttgaagatat 960

tgatacagct atgaaatatg gtgctaacca tccaatggga cctttagctt taggagatct 1020

tattggatta gatgtttgct tagctatcat ggatgtttta ttcactgaaa caggtgataa 1080

caagtacaga gctagcagca tattaagaaa atatgttaga gctggatggc ttggaagaaa 1140

atcaggaaaa ggattctatg attattctaa ataaggctga gatcttcttc agtgcattgt 1200

agttgaatga agggttaggg gggaaatgcc cccctatttt ttgtctagcc atcctgccac 1260

gtttgacagg gtagcaattt cgacacgata gggttctctc ttctgccgtt a 1311

<210> 39
<211> 1665
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 39, Example 39: designer oxyphotobacterial Thiolase DNA construct (1665 bp)

<400> 39
agaaaatctg gcaccacacc tgatctgcaa gagacgctca cgcgatacct ctgggcgtgc 60

aatcaccgca ttccccaacg cgctttgggc cacatgaccc ccatcgagag actccgaacg 120

tggcaaatgg agggaccaga gttgttcagt tcacaggtag ataatgtcgc gggtcttgat 180

agttagcaat aaatacagtt tcagaatatc tgtaatacaa aaactgtatc gagacaagaa 240

aaaagtagca aaatttacaa atgttcatga ttcatctggc taaattggat gttcaactga 300

cccattgaag acaagggcaa caaccatggg caaagaaagt agttttagct gtgcatgtcg 360

tacagccatc ggaacaatgg gtggatctct tagcacaatt cctgcagtag atttaggtgc 420

tatcgttatc aaagaggctc ttaaccgcgc aggtgttaaa cctgaagatg ttgatcacgt 480

atacatggga tgcgttattc aggcaggaca gggacagaac gttgctcgtc aggcttctat 540

caaggctggt cttcctgtag aagtacctgc agttacaact aacgttgtat gtggttcagg 600

tcttaactgt gttaaccagg cagctcagat gatcatggct ggagatgctg atatcgttgt 660

tgccggtggt atggaaaaca tgtcacttgc accatttgca cttcctaatg gccgttacgg 720

atatcgtatg atgtggccaa gccagagcca gggtggtctt gtagacacta tggttaagga 780

tgctctttgg gatgctttca atgattatca tatgatccag acagcagaca acatctgcac 840

agagtggggt cttacacgtg aagagctcga tgagtttgca gctaagagcc agaacaaggc 900

ttgtgcagca atcgaagctg gcgcattcaa ggatgagatc gttcctgtag agatcaagaa 960

gaagaaagag acagttatct tcgatacaga tgaaggccca agacagggtg ttacacctga 1020

atctctttca aagcttcgtc ctatcaacaa ggatggattc gttacagctg gtaacgcttc 1080

aggtatcaac gacggtgctg cagcactcgt agttatgtct gaagagaagg ctaaggagct 1140

cggcgttaag cctatggcta cattcgtagc tggagcactt gctggtgttc gtcctgaagt 1200

tatgggtatc ggtcctgtag cagctactca gaaggctatg aagaaggctg gtatcgagaa 1260

cgtatctgag ttcgatatca tcgaggctaa cgaagcattc gcagctcagt ctgtagcagt 1320

tggtaaggat cttggaatcg acgtccacaa gcagctcaat cctaacggtg gtgctatcgc 1380

tcttggacac ccagttggag cttcaggtgc tcgtatcctt gttacacttc ttcacgagat 1440

gcagaagaaa gacgctaaga agggtcttgc tacactttgc atcggtggcg gtatgggatg 1500

cgctactatc gttgagaagt acgaataagg ctgagatctt cttcagtgca ttgtagttga 1560

atgaagggtt agggggggaaa tgccccccta ttttttgtct agccatcctg ccacgtttga 1620

cagggtagca atttcgacac gatagggttc tctcttctgc cgtta 1665

<210> 40
<211> 4071
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 40, Example 40: designer oxyphotobacterial Pyruvate-Ferredoxin Oxidoreductase DNA construct (4071 bp)

<400> 40
agaaaatctg gcaccacacc tgatctgcaa gagacgctca cgcgatacct ctgggcgtgc 60

aatcaccgca ttccccaacg cgctttgggc cacatgaccc ccatcgagag actccgaacg 120

tggcaaatgg agggaccaga gttgttcagt tcacaggtag ataatgtcgc gggtcttgat 180

agttagcaat aaatacagtt tcagaatatc tgtaatacaa aaactgtatc gagacaagaa 240

aaaagtagca aaatttacaa atgttcatga ttcatctggc taaattggat gttcaactga 300

cccattgaag acaagggcaa caaccatggc gcagaggtgc aaggagcccg tcgacggaac 360

gacagccacg acgcacgtgg cctacttcat gagcgacagc gcgttcatct tccccatcac 420

gcccagctcg gtcatgtccg aggtcgccca cgagtggtcc atgaacggcc gcaagaacgc 480

cttcggccag cccacgatgg tccgccagat gcagagcgag gctgggtctg ccggcgccct 540

gcacggcgcg ctcagcgagg gagcgctggc gacgacgttc acgagcagcc agggcctgct 600

gctcatgatc cccaacatgt acaagatcgc cggcgagctc ctgccctgcg tcatgcacat 660

cgccgcccgc accgtcgcca ccgaggccct ctctatcttc ggcgaccaca cggatgtcta 720

cgcggtgagg tcgacggggt tcgcgttcct gtgctccgcg accgtccagg agtgcatcca 780

catgtccgcc gccgcgcacg ccgccaccct gtccagcgag gtcccgttcg cccacttctt 840

cgacggcttc cgcacgtccc acgagatcca gaagatcgac ttcccctcgg acgccgacct 900

gctggcctgc atgaactttg acgacgtccg caggttccgt ggccgctcgc tgtgctgcga 960

gcgcccgctg ctgcgcggga cggcgcagaa ccccgacgtc ttcatgcagg cgtccgagtc 1020

gaacctggcg acgctggcca gggtccccgc ggccatcgac gaggcgctgg ctcgtgtgaa 1080

caaggtgttc gggaccaact acaggaccta cgagtactat ggccaccccg aggccacgga 1140

cgtgatcgtg gccatgggaa gcggcaccga agtggccatc tcgactgcca acttcctcaa 1200

ctcgcgcgac gcgaactcga gggtcggcgt cgtgagggtg cggctgttcc ggccgtttgt 1260

gtcggcggcg tttgtggctg cgctgcccaa gaccgtcaag aggatctgcg ttctggaccg 1320

cgggagggac gggcaggcgg ccgcggaccc cctgcaccag gacgtcctgt cggcgctggg 1380

tctggcagcg cccgggaggg ttcaggtgtg cgtgggaggc gtgtacggtc tgtcgtccaa 1440

ggacttcaac cccgaccacg tgatcgccgt gtacaggaac ctcgcgtcgg cgagccccaa 1500

gaacaggttc agcgtcggca tcgtcgacga cgtgacgcac aacagcctgg acatgggaga 1560

gcacgtggac gcgctgccgc aggggacgaa gcagtgcctg ctgtggggca tcggcggaga 1620

cgggaccatc ggggcgaaca agacggccat caagctgatc gcggaccaca cggagctgca 1680

cgcgcagggg tactttgcgt acgacgccaa caaggccggc ggcctgacag tctcgcacct 1740

gcggttcggc ccgacgcggt tcgaggcgcc gtacctggtg aacgacagca actacgtggc 1800

gtgccacaac ttctcgtacg tgcacaggtt caacctgctg tcgtcgctgc gcaccggggg 1860

cacgttcgtg ctcaactgcc cgtgccggac cgtggaggag ctggacacgg cactcccggt 1920

gcgcctgagg cgcgagatcg ccaggcggca ggccaagttc tatgtgatcg acgcgaccaa 1980

gatcgccaag gacaacggga tgggcccgtt catcaacatg gtcctccagg ccgtgttctt 2040

ctatctgtcc cacgtgctcg atgtgaacga ggcagtggca ctcctgaaga agagcatcca 2100

gaagatgtac gcgcgcaagg gcgaggaggt tgtcaggaag aacgtggcat cggtcgacgc 2160

gtcgctggat cccaaggcgt tgctgcacat cgagtacccc gcagacaggt ggcttgcgct 2220

ggccgacgag cacgtgcccc gcatgggtct gctcactgtc cccgagcgcc tgcagaagtt 2280

caacgccgag ctgtacgagc cgaccctcgc gtacgatggg gagagcatcc cggtcagcag 2340

gttccctcgc ggcggcgaga cgccgacggg cacgactcag ctgggcaagc gtggcatcgc 2400

cgagagcgtg ccgcactgga accacgagaa gtgcgtgcag tgcaaccagt gctcgttcgt 2460

gtgcccgcac gccgtcatcc ggtcgtacca gatcagcgag gaggagatga agaacgcccc 2520

tgccggcttc gacactctta agtcgcgcaa gcccgggtat cgtttccgca tcaacgtcag 2580

cgccctggac tgcactggct gcagcgtgtg cgtggagcag tgcccagtca agtgcctgga 2640

gatgaagcct ctcgagtccg agttcgagat gcagaaggac gccatcaggt tcgtccgcga 2700

gatggtcgcg cccaagcccg agctgggaga ccgcaagact cccgtcggca tcgcgtctca 2760

cacgccgctg ttcgagttcc cgggagcctg cgccgggtgc ggtgagaccc cgctggtgcg 2820

cctcgtgacg cagatgttcg gtgagcgcat ggtcatcgcc gcggccactg ggtgcaactc 2880

gatctgggga gcgtcgttcc cgaacgtgcc gtacacaacc aacgcccgcg gggagggccc 2940

cgcgtggcac aactcgctgt tcgaggacgc ggcggagctc gggtatggca ttacgtgtgc 3000

gtatcgccag cgccgcgagc gcctcatcgg catcgtgcgg agcgtcgtcg acgatgcggg 3060

atccgtgcag ggtctgtctg ctgagctgaa ggctctgctg gtcgagtggc tcgcgcacgt 3120

cagggacttc gagaagaccc gcgagctccg cgacaggatg aacccctga tcgacgcaat 3180

cccagcgaac gcggactgca gggttctgga gctcagggag aagcacaacc gcgagctgat 3240

cgcgcgcacg agtttctgga tcctcggtgg cgacgggtgg gcgtacgaca tcggcttcgg 3300

tggactggac cacgtgatcg ccaacaacga ggacgtcaac atccttgttc tcgacacgga 3360

ggtctactcc aacactggtg gccagcgctc caagtcgacg ccgctcggcg cccgcgccaa 3420

gtacgctgtg ctgggcaagg acactgggaa gaaggacctg gggcgcatcg cgatgaccta 3480

cgagaccgcg tacgtggcca gcatcgcgca gggagccaac cagcagcagt gcatggacgc 3540

gctgagggag gccgaggcct accagggccc ctcgatcgtc attgcgtaca ctccgtgcat 3600

ggagcaccag atggtccgcg ggatgaagga gagccagaag aaccagaagc tggctgtgga 3660

gacgggctac tggctgctgt accgcttcaa ccccgacctc atccacgagg gcaagaaccc 3720

cttcaccctc gactcgaagc ctccctcgaa gcctcccaag gagttcctgg acacgcaggg 3780

ccgtttcatt actctgcagc gcgagcaccc cgagcaggcc cacctccttc acgaggcact 3840

cacccgctct ctggccaccc gcttcgtgcg ctaccagcgc ctcgtgcagc tgtacgagcc 3900

cgctgcccct gccgcagctc ctgccacgca ttaaggctga gatcttcttc agtgcattgt 3960

agttgaatga agggttaggg gggaaatgcc cccctatttt ttgtctagcc atcctgccac 4020

gtttgacagg gtagcaattt cgacacgata gggttctctc ttctgccgtt a 4071

<210> 41
<211> 1806
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 41, Example 41: designer oxyphotobacterial Pyruvate Kinase DNA construct (1806 bp)

<400> 41
agaaaatctg gcaccacacc tgatctgcaa gagacgctca cgcgatacct ctgggcgtgc 60

aatcaccgca ttccccaacg cgctttgggc cacatgaccc ccatcgagag actccgaacg 120

tggcaaatgg agggaccaga gttgttcagt tcacaggtag ataatgtcgc gggtcttgat 180

agttagcaat aaatacagtt tcagaatatc tgtaatacaa aaactgtatc gagacaagaa 240

aaaagtagca aaatttacaa atgttcatga ttcatctggc taaattggat gttcaactga 300

cccattgaag acaagggcaa caaccgtgtt cactaaaatt gtagctacat tggggccttc 360

gactgataga ctgccggata taacggccct gttgagcaag gttcacggcg tgcggataaa 420

tatgtctcac gcatcgccat cggaggtaga ggcccgcgtg aacgccgtga ggaagtatga 480

ggagaccagc gggaggtata tagccattat agcggatcta aggggcccca gcgtcaggac 540

cggccttatg cgccctctac agataacggc gggcgcccgc gtctccttta aattagccga 600

gaaggggac ggcttcgtac ctgtgccgcg gcgtgagttc ttcgaagtaa tcgaggaggg 660

agacgaggtt cttatgttag acggaaaact cgtcttgagg ataatcagcg cagcgcagac 720

ctcggccgag gccgagtcgt tatcctccgg cgtcatatcc agcaataagg caatagtggt 780

caaaggcaag gaatatcata tagagcagcc tgtggaggaa gacataaggg cgcttcagac 840

gctctctcgg ttcagagacg acgtagacta cgtggccctc agccttgtga gagacggagc 900

agacgtgagg aaaatgagga gcgtcgtcga ggaggctggg ctcacctccg gcataatggc 960

caaaatagag acgaagagcg cagtagataa aatcgaggag ataatcaatg cggccgacta 1020

catagttata gcgagaggcg atctggcgct gcactacgga ctggagtaca ttcctaaagt 1080

acagaggctc ttggtggaga gatctctctc ggcaggaagg cccgtggcgg tggccacgca 1140

gcttttggac tctatgcaga ccaacacgac gcccactagg gcggaggtca acgacgtgta 1200

cacaacggcg agtctcggag tggactctct gtggctgacc aacgagactg cgagcggaga 1260

gcacccgtta gaggcagtgg attggctgag gaggatagtg tcgcaggtcg agttcgggag 1320

acttaaggct gcgtcgccgg ccgacgcacg cgataggttc gccaaagccg tggtagatat 1380

ggccgaggac atgggagggg aaatcgcagt atactcaatg acgggaactc tggcgaagag 1440

aatagctaaa tttaggccga tgacgacagt ctacgtcgga gtcaacgaga ggaggctcgc 1500

gaggatgttg gagctccgcg aggatgttgg agctcatatg gggcctagag cctgtggtcg 1560

tgccggcgca tacttacgag gagggcctcg agaggctcct ctccagattc tccgacaaag 1620

tcttgatagc cacgtatggg ctcagaggcg gcacacatac tattaataag gctgagatct 1680

tcttcagtgc attgtagttg aatgaagggt taggggggaa atgccccccct atttttgtc 1740

tagccatcct gccacgtttg acagggtagc aatttcgaca cgatagggtt ctctcttctg 1800

ccgtta 1806

<210> 42
<211> 1696
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 42, Example 42: designer oxyphotobacterial Enolase DNA construct (1696 bp)

<400> 42
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac cttatttttt cttcaagtta aagaatgcgt tcattccagg ataaacggca 300

atgctgccaa gctcttcttc aattctcaag agctgattgt attttgctac tctgtctgtt 360

cttgacggtg cacctgtctt tatctgacca gcatttactg caacaacaag gtcagcaatt 420

gttgtatctt cagtctcacc tgatctgtgg gatacaactg cagtgtagcc tgctctattt 480

gccatttcaa tagcttctaa agtttctgta agtgttccta tctgattaag cttaatcaat 540

attgagtttg caacgccaag ttctattccc tttgcaagcc tctttgtgtt tgtaacaaac 600

aaatcatcac ccacaagctg aatcttcttg ccaagtgctt cagttagcat cttccagcct 660

tcccagtcct cttctgcaac accgtcttca attgatacaa ttgggtactt ttcaacaagt 720

tttacccaga attctaccat ttcttctttt gttctaactt taccttctct ttcgaaatga 780

tactttccat cttcttcatt gtagagctca gatgttgcag ggtcaagcgc aattgcaata 840

tccttaccag gagtataacc agctttttca attgcttcga caattacttc caatggctct 900

tcgttagact tcaagtttgg tgcaaatcca ccttcatcac ccactgttgt gttgtatcct 960

cttgccttca atacatttct taattgatgg aatgtctcag cacacatcct gagtgcttcg 1020

ctaaaagatt ttgcaccaac tggcattatc ataaactctt gtaggtcaac agagttgtca 1080

gcatgctttc caccgttcaa aatattcatc attggcacag gtaaatactt tgcattgaca 1140

ccaccaatgt attggtacag tggaagacca agtgcgtttg ccgctgcctt cgcaactgcc 1200

aaagatacac ccaaaattgc atttgcacca agcttgctct tgttctctgt cccatcaagc 1260

tcaatcataa gcctgtcaat ctcaacttgg ttaagagcgt tcattccaat tatttctggc 1320

gcaataacct cgtttacatt ttcgactgct ttgagaaccc cttttcccat atatcttttt 1380

ttatcaccgt ctctgagttc aacagcctcg aacatacctg ttgacgcacc tgatggaaca 1440

gcagctctac ctacaaattc atcatttaca acaacttcta cttcaacagt tgggtttcct 1500

cttgaatcca gaatttctct tgcttttaca gctgtaattg aaagatcaac cttcattaag 1560

gctgagatct tcttcagtgc attgtagttg aatgaagggt taggggggaa atgccccccct 1620

atttttgtc tagccatcct gccacgtttg acagggtagc aatttcgaca cgatagggtt 1680

ctctcttctg ccgtta 1696

<210> 43
<211> 2029
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 43, Example 43: designer oxyphotobacterial Phosphoglycerate-Mutase DNA construct (2029 bp)

<400> 43
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac cctacgccgg cgcctgcttc tcctcctgcc ggcagcactt ctccaaaggg 300

tgcacgttcg cttctcttgt aatcagggtc tggccggtca tctcggccgg tttcgggatg 360

cccagcaggt gcaggatggt gggggccaca tcccgcaggc tgccgtcccg cagcgcaatg 420

ccggcggtat cccgcccgat caggatgaac ggcaccgggc tggtggtgtg ggccgtatga 480

ggctgtccct cttcgtccac catctcatcc gcattgccgt ggtctgccgt tatcaggagc 540

gtgccgtcct tttccaggac ggcccgcgcc acctttccaa ggcagcggtc gattgtttct 600

atggccttta ccgttgcctt catgtcgccg gtatgcccga ccatgtcggg attggcgtaa 660

ttcattatga ttacgtcgta cttgcccgag gccagccgct ccagaaaggt gccggtgacc 720

tcgttggcgc tcatttcggg cttcaggtcg taggtggcca cccgcgggga gggcaccagg 780

atcctgtctt cgccggggta tggcttttct aagccgccgt tgaagaagaa ggtcacatgg 840

gcgtactttt ccgtttcggc caggcggagc tgggtcatgc cgtgcctgct taaaacctcg 900

cccagggtat tgcgcagctc ctgcggctga aacgccaccg gcgccttaat ggtcttgtcg 960

taaagggtca tgcaggtaaa atgcacggca gggtagccct gctttctggc aaacccggtg 1020

aaatcctcgt ccacaaaggc cctggtaatc tggcgggccc ggtccggccg gaagttaaag 1080

aaaataacgg cgtcgccctt cattattttg gcggccggcc cacccgaccc gtttaccacg 1140

acggtgggct ggataaactc gtcggtttca tcccttccgt accccaggtc aaccgcctcc 1200

agcgggcttg ttgcctgaat gccctcgcct aaaaccattg cgttgtacgc ccgctcggtg 1260

cggtcccagc ggcggtctct gtccatggcg taatagcgcc ccattaccgt tgccaccgcc 1320

ccaaagccca gttcgcccag cttcttcctt aactgctcga agtattcttt tgcgttggcc 1380

ggcggcacgt cgcgcccgtc caggaaggca tggacaaaga cgttgcgcat gttctcgcgg 1440

gcggccaggt ccaggagggc gaaaaggtgg ctgatatggc tgtgcactcc gccgtccgat 1500

aaaagcccca tcaggtgaag ggccttatta ttctccctgg cgtatctcac cgcctccagc 1560

aggacttcgt tcttgaaaaa ggtcccgtcc ttgatggcgc ggcttattct ggtaagctcc 1620

tggtacacca ccctgccggc gcctatgttc aagtgtccca cctcggaatt gcccatctgg 1680

ccctcgggaa gccccacgtc ctcgccggaa cagctcaggg cacagtgggg gtaaccggcc 1740

agaaagctct tgaaattcgg tgtgctggcc agggctatgg cattgccccg gacattggaa 1800

ctgaggcccc agccgtccag aaccaccagc accaggggcc tgccgccggc ataccggccg 1860

cagggcgttg cagctacgtc ttccttcaat aaggctgaga tcttcttcag tgcattgtag 1920

ttgaatgaag ggttaggggg gaaatgcccc cctatttttt gtctagccat cctgccacgt 1980

ttgacagggt agcaatttcg acacgatagg gttctctctt ctgccgtta 2029

<210> 44
<211> 1687
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 44, Example 44: designer oxyphotobacterial Phosphoglycerate Kinase DNA construct (1687 bp)

<400> 44
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac cttatttatc gagcagcgcc cttactcccg gcagttgctt cccttccaga 300

aactccaggg aagcgccgcc gccggttgag atatgggtca ttttgccggc tacgccggcc 360

ttcttggccg ccgccgccgt gtcaccgccg ccgattacgg tgacggcgtt taattcggcc 420

agcgtccggg ctattgcttc ggtgcccctg gcaaaaggat ccatttcaaa aacgcccatt 480

ggtccgttcc agaccacggt cctggccgcc ctgagggctt cggtgaaaag tctgatggac 540

tcgggcccta tatccagggc catccactcc gccgggattt gatcgaccgg caccgtcctt 600

tgctcctggc cgggcgccgg ccccggcgcc accaccacat ccaccggcag gaggagcttt 660

acttccctgc ttctggcttc tgcaatcagc ttcctggcca ggtcaatctt gtcggcctcc 720

agcagggact taccgacgct gtacccttgt gccttcagaa aggtattggc catcccgccg 780

ccaatgataa ccgtatcgac tttggtcagc aggttgaaaa ttactcccag cttgtcggaa 840

actttcgagc cgcccacgac ggctgcaaaa gggcgctccg ggctggtcag cagcctgccc 900

agtatttcca gctctttttc catcagcagg cctgccacgg ccggcaaaaa cccggcaacg 960

ccctcggtgg aggcgtgggc ccggtgtgcg gttccaaacg catcgtttac aaagacatct 1020

gccagctcag ccagttgccg ggcaaacttc tcgtcgtttt tctcctcctc cgggtggaaa 1080

cggacgtttt ccagcagcac cacgtccccg tcctgcatct gggcaacggc ggacctggcg 1140

gcttctccca cgcagtcgcc ggccttaacc accgttttcc ccagcagttc ggaaaggcgc 1200

ctggcaacgg gatccatttt gtacctctcg tccaccctgc ccttgggccg gcccaggtgc 1260

gaaaccagaa taaccctggc tttttgtccg ataaggtagt ttatggtggg cacggcctcc 1320

tttattttaa cgtcatcggc cacccggccg ttttccatcg gcacgttgaa gtccacccgc 1380

aacaggaccc gcttgccctt tacatctata tcccttaccg ttttttggc cactaaggct 1440

gagatcttct tcagtgcatt gtagttgaat gaagggttag gggggaaatg ccccccctatt 1500

ttttgtctag ccatcctgcc acgtttgaca gggtagcaat ttcgacacga tagcgtgctg 1560

tactgttttt tgctcgtcag ggttgggttt tgtcatcgac acccaaggat tggagtcggt 1620

gctcaataat cgccagttgc tgttgggcag ccgccaattg cgcctgaggt tctctcttct 1680

gccgtta 1687

<210> 45
<211> 1514
<212> DNA
<213> Artificial Sequence

<220>

<223> Synthetic Construct- Sequence No. 45, Example: designer oxyphotobacterial Glyceraldehyde-3-Phosphate Dehydrogenase DNA construct (1514 bp)

<400> 45

agaaaatctg gcaccacacc tgatctgcaa gagacgctca cgcgatacct ctgggcgtgc 60

aatcaccgca ttccccaacg cgctttgggc cacatgaccc ccatcgagag actccgaacg 120

tggcaaatgg agggaccaga gttgttcagt tcacaggtag ataatgtcgc gggtcttgat 180

agttagcaat aaatacagtt tcagaatatc tgtaatacaa aaactgtatc gagacaagaa 240

aaaagtagca aaatttacaa atgttcatga ttcatctggc taaattggat gttcaactga 300

cccattgaag acaagggcaa caaccaatgg atttgggcgg atcggacgtt tagcattcag 360

aagaattcaa gatgtagaag gtcttgaagt agttgcagtt aacgacttaa cagatgacga 420

tatgttagct catttattaa aatacgatac tatgcaaggt cgtttcactg gagaagttga 480

agttatcgaa ggtggattcc gtgttaacgt aaaagaaatt aaatcattcg atgaccagat 540

gctgggtaaa ttaccatggg gcgatttaga tatcgacgta gtattagaat gtactggttt 600

ctatactgat aaagaaaaag cacaagctca catcgatgca ggtgctaaaa aagtattaat 660

ctcagctcca gctaaaggtg atgtaaaaac aatcgtattc aacactaacc atgacgcatt 720

agacggttca gaaacagttg tttcaggtgc ttcttgtact actaactcat tagcaccagt 780

tgcaaaagtt ttaagtgatg aattcggttt agttgaaggt ttcatgacta caattcacgc 840

ttacactggt gaccaaaata cacaagacgc acctcacaga aaaggtgaca aacgtcgtgc 900

acgtgcagca gcagaaaata ttatccctaa ctcaacaggt gctgctaaag ctatcggtaa 960

agttattcca gaaatcgatg gtaaattaga cggtggagca caacgtgttc cagttgctac 1020

tgggtcttta actgaattaa ctgtagtatt agacaaacaa gatgtaactg ttgaccaagt 1080

taacagtgct atgaaacaag cttcagacga atcattcggt tacactgaag acgaaatcgt 1140

atcttctgat atcgttggta tgacttacgg ttcattattc gatgcgactc aaactcgtgt 1200

tatgactgtt ggagatcgtc aattagttaa agttgcagct tggtacgaca aagagtgggg 1260

taaggctgag atcttcttca gtgcattgta gttgaatgaa gggttagggg ggaaatgccc 1320

ccctattttt tgtctagcca tcctgccacg tttgacaggg tagcaatttc gacacgatag 1380

cgtgctgtac tgtttttgc tcgtcagggt tgggttttgt catcgacacc caaggattgg 1440

agtcggtgct caataatcgc cagttgctgt tgggcagccg ccaattgcgc ctgaggttct 1500

ctcttctgcc gtta 1514

<210> 46
<211> 609
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 46, Example 46: designer Nial-promoter-controlled Proton-Channel DNA construct (609 bp)

<400> 46
agaaaatctg gcaccacacc tatatggtag ggtgcgagtg accccgcgcg acttggagct 60

cgatggcccc gggttgtttg gggcgtccgc ctctcgcgct attctgagct ggagaccgag 120

gcgcatgaaa atgcattcgc ttccatagga cgctgcattg tggcttgaag gttcaaggga 180

agggttcaaa cgaccccgcc gtacgaactt ttgtcggggg gcgctcccgg ccccgggctc 240

ttgtgcgcgc attagggctt cgggtcgcaa gcaagacgat acatggccgg catcggcgcc 300

gtgctgaagg tcctgaccac cggcctgccc gccctgatca gctggatcaa gcgcaagcgc 360

cagcagtaaa tggaggcgct cgttgatctg agccttgccc cctgacgaac ggcggtggat 420

ggaagatact gctctcaagt gctgaagcgg tagcttagct ccccgtttcg tgctgatcag 480

tctttttcaa cacgtaaaaa gcggaggagt tttgcaattt tgttggttgt aacgatcctc 540

cgttgatttt ggcctctttc tccatgggcg ggctgggcgt atttgaagcg gttctctctt 600

ctgccgtta 609

<210> 47
<211> 1360
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 47, Example 47: designer nirA-promoter-controlled NAD-dependent Glyceraldehyde-3-Phosphate-Dehydrogenase DNA construct (1360 bp)

<400> 47
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgaa cggatttggc 120

aggataggac gactggtgtt gcgggcggcg gtggagaagg gcacggtgga ggtggtggcg 180

gtgaacgatc cgttcatctt cccggacgcg gcgtacgctg cgtacatgct gcagtacgac 240

tcgacgcacg gggcgttccc gggtgaggtg ggcagcgacg gggagcactt ggtggtgaac 300

gggaagaagc tggcgtgctt tgcgatccgc gatccggcgg agatcccgtg gggctcggtc 360

ggcgccgact acgtcgtgga gtccaccggc gtgttcaccg tgaccgagaa ggcgtcgttg 420

cacgtcaagg gcggcgcgaa gaaggtggtt atatcggcgc cgtcgaagga tgcgcccatg 480

tttgtgatgg gcgtgaacca tgacgcctac accaaggact tgacggtggt gtcgaatgcg 540

tcttgcacca ccaacttgtt tggcgccgct ggccaagatc atcgacgagg cgttcggcat 600

cgggatgggc ctcatgagca ccatccacgc ggtgacggcc acgcaaaaga cggtggatgg 660

gccgagctcc aaagactggc gcggtgtcgc ggcgcgttcc agtcgattat tcccagcagc 720

accggcgctg cgaaagcggt cggcaaggtg tacccgaagc tgaacggcaa gctgaccggc 780

atggcgttcc gcgtgccggt gcccgacgtg tccgtggtag acttgacagt gaccctgaag 840

aaggagacca actacgagga gatcaaaaag gctgtcaagc aggcgtcgca gagcccgcac 900

tacaagggca tcgtggcgta caccgagcac cccatcgtgt cggccgacct ggtgcacaac 960

ccgtactcgt cggtgttcga tgccgaagcc ggtatcatgc tgtcgcccac gtttgtgaaa 1020

ctggtcagct ggtaatagtg atcccggccg ctactaaagc ctgatttgtc ttgatagctg 1080

ctcctgcctt tgggcagggg ctttttttctg tctgccattc ttgaggatgg cggactcttt 1140

ccctttttgct ctacgcccat gaatgcgatc gcagtctccc ctgtccagca cgttggagtg 1200

attggtggtg gccagttagc ttggatgctg gcaccagcag cgcaacagtt ggggatgtcg 1260

ctgcacgttc aaacacccaa tgatcacgac ccagcagtag cgatcgcgga tcaaaccgta 1320

ttagcagcag ttgctgacgc ggttctctct tctgccgtta 1360

<210> 48
<211> 1621
<212> DNA
<213> Artificial Sequence

<220>
<223> Syntheitc Construct- Sequence No. 48, Example 48: designer nirA-promoter-controlled Phosphoglycerate-Kinase DNA construct (1621 bp)

<400> 48
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgtc atttgtcttc 120

gagcgcgacg acacccggca gctgttttcc ttccataaac tcgagcgaag cgccgccgcc 180

ggtggagata tgatccattt tgtcggccaa gccgaatttc tcaaccgccg ccgccgaatc 240

cccgccgccg atgaccgaat aggtgtcggg cgcttccgcc agtgcttcgg cgatcgcttt 300

tgtcccatgg gcgaacgctt ccatttcaaa gacgcccatc gggccgttcc agacaacgag 360

cttcgattga cgaatgacat cgcggtacaa ttcgcgcgtt ttcgggccga tgtcaagcgc 420

ctcccaatcg ctcggaatgg cgtcgatggc gacgactttc gtgttggcgt cgttcgcaaa 480

ccggtcggcg acgaccacgt ccaccggcat ataaaaacgg acgccttttt ctttcgcctt 540

ttccataaac gatttggcga gttcgatttt gtcctcctca agcagcgact tgccgacgtc 600

atggccgagc gctttgacga acgtatacgc cagtccgccg ccgatgatca agttgtcgac 660

tttttcaagc aaattgtcga tgacgccgat tttgtctttc actttcgcgc cgccgatgat 720

cgccgtaaac gggcggtccg gattcgagag cgctttgccg agcacttcga gttcttttc 780

catcaaaaac ccggccaccg caggcaagta atgggcgatg ccttccgtcg acgcatgagc 840

gcggtgggcg gcgccgaacg catcgttgac atacagatcc gcgagctccg caaacgcttt 900

ggccagctct ggatcgtttt tctcttcgcc agggtaaaaa cggacgttct caagcaagag 960

cacgtcgcct tcgttcaaac ggtcgaccgc cgctttcacc tcatcgccga ccgcttcatt 1020

cgttttggcg accggccgtt caagcagctc gccgagccgc ttcgcaacgg catccaaacg 1080

caattcttcg accacttttc ctttcgggcg gccgaggtgg ctcgccaaaa tgactttcgc 1140

cccgtgctcg atcaaatagc ggatcgtcgg gagtgcggcg cgaatgcgcg tgtcatcggt 1200

gatggcgcct tgctccatcg gaacgttgaa atcgacgcgg caaaagacgc gctttcccct 1260

cacctcaacg tcgcggatcg tcttcttgtt cattaatagt gatcccggcc gctactaaag 1320

cctgatttgt cttgatagct gctcctgcct ttgggcaggg gctttttct gtctgccatt 1380

cttgaggatg gcggactctt tccctttgc tctacgccca tgaatgcgat cgcagtctcc 1440

cctgtccagc acgttggagt gattggtggt ggccagttag cttggatgct ggcaccagca 1500

gcgcaacagt tggggatgtc gctgcacgtt caaacaccca atgatcacga cccagcagta 1560

gcgatcgcgg atcaaaccgt attagcagca gttgctgacg cggttctctc ttctgccgtt 1620

a 1621

<210> 49
<211> 1990
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 49, Example 49: designer nirA-promoter-controlled Phosphoglycerate-Mutase DNA construct

(1990 bp)

<400> 49

agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgct cgagcattta 120

tttaataata agcgagcttc ccttcatctc tgaaggtttt tctaacccta agatgtctaa 180

gattgttgga gcaatgtctg ctaagattcc atcatctctt aatttaacat tgccatatcc 240

cacaagatac aaaggcacct tatttgttgt atgagctgta tgaggctcac ctgtctcata 300

atcaatcatc tgttcacagt tgccatggtc agcagtaata ataaccactc cacccttttc 360

taaaaccttg ttaacaactt ttccaataca ctcatctaca gcctcaactg cctttattgc 420

agcctctaaa acgcctgtgt gccctaccat gtcaccattt gcatagttac atattatcac 480

atcatattca tctctttcaa ttctctcaag taaagcttct gttacctcgt atgcactcat 540

ctcaggttta agatcatatg ttgcaacctt tggtgatggt accaataccc tgtcttctcc 600

gacatttggt acttccacac cgccgttgaa gaaaaaggtg acatgagcat acttttctgt 660

ctcagcaatt cgaagttgtt ttaaccctaa cttgctaaaa tactctccca aagtgtttgt 720

caggttctct ggtttgaatg caacatggca atttttatt gtcacatcat actgagtcat 780

gcatacaaag aacacttcga aatatccttt tttcctttca aaaccgtcaa attcaacatc 840

acaaaacgct cttgtaagct gtcttgctct gtcaggtctg aagttaaaga aaataatact 900

gtcatgttca tttattgttg cgacaggttt tccattttca agcacaacag tcggaattac 960

aaactcatca gtgttacctt ttttatacga cttttcaacc gcctctaatc ctgagcttgc 1020

atactcgcct tcaccaaaga ccattgcatt atatgccttt tcaactcttt cccatctttt 1080

gtctctgtcc attgcatagt atctgcccat cactgttgca atcttaccac aaccaatttc 1140

ttttatcttc tgttcaagct cttcaatgta aatttttgcg ctcgaaggtg gaacatctcg 1200

cccatccaaa aagcaatgaa catatacttt ttcaagattg tgcctctttg caagttttaa 1260

aagtgcgtaa agatgtgtgt tgtggctgtg aacaccacca tctgataaaa gtcccatcag 1320

atgaagagaa gagttatatt ttttgcaatt ctctattgcc atcaaaaact cttctttttc 1380

aaaaaaatca ccgtctttaa ttgactttgt tattcttgta aattcttggt aaacaattct 1440

tcctgcaccc aggttcagat gtccaacttc agaattcccc atttgtcctt cgggaagacc 1500

aacatccata ccactgctac caatcagggt atatgggtaa ttcttttcgt aatagtcaag 1560

gttaggggtc ttacccaaag caacagcgtt tccctcttgc tttgggttat aaccccaacc 1620

gtccatgata atcaacacaa caggtttttt cattaatcta gataatagtg atcccggccg 1680

ctactaaagc ctgatttgtc ttgatagctg ctcctgcctt tgggcagggg ctttttttctg 1740

tctgccattc ttgaggatgg cggactcttt ccctttgct ctacgcccat gaatgcgatc 1800

gcagtctccc ctgtccagca cgttggagtg attggtggtg gccagttagc ttggatgctg 1860

gcaccagcag cgcaacagtt ggggatgtcg ctgcacgttc aaacacccaa tgatcacgac 1920

ccagcagtag cgatcgcgga tcaaaccgta ttagcagcag ttgctgacgc ggttctctct 1980

tctgccgtta 1990

<210> 50
<211> 1765
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 50, Example 50: designer nirA-promoter-controlled Enolase DNA construct (1765 bp)

<400> 50
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgct cgagcatatg 120

ctaaataaac ccgtcgtttc cattgaagaa attaccgcta gagaaatttt agactctcgt 180

ggccgtccta ccattgaagc agaagtctta ctggaaacag gggctttcgg tattgcccag 240

gttcccagtg gcgcgtcaac tggtagcttc gaggcccacg aattacggga tgatgacccc 300

aaccgctacg gtggtaaagg cgttctcaaa gcggttagta acgttataga cgaaattgcc 360

cctaaaatta tcggaatgga tgggttagat caaactgcga tcgatcacac catgattgag 420

ttagacggtt ctactaataa aaaagaatta ggggccaatg ctatccttgc cgtttcctta 480

gccactgcaa aagctgccgc cgatgaatta gcccttcccc tgtaccgtta tttagggggt 540

cccttggcca atgtcttacc cgtccccatg atgaacgtga ttaacggggg ttctcacgcg 600

gataataacg tagacttcca ggagtttatg attatgccag tgggtgcgga ctcttttaaa 660

gaagctttga ggtgggggggc cgaagtgttt gcttccctca gtaaagttct aaaagagcgt 720

aaattgctct ctggggtagg agacgagggg ggatacgccc cgaacctggg atcgaaccag 780

gaagccttag atttgctcat agaagccatt gaaaaggcgg ggtataagcc aggggaacag 840

gtggctttag cgatggatgt ggcttcaagt gagttttata aggatggcga atatatttat 900

gatggttctc cccattcccc tcaagaattt atcgattatt taggtaaatt agtggatcaa 960

tatcctatta tttccattga agatggctta caagaagatg actgggatag ctggaaaagt 1020

ttgaccgata cgttaggatc tcgcattcag ttagttgggg acgatctttt tgtcacgaac 1080

cccactcgtc tgcaaaaagg cattgatatg ggtgtgggta atagtattct cattaaactc 1140

aatcaaattg gtagtttaac ggaaacgtta gatacgattg ctttagcgac tcgtcatcaa 1200

tatagttccg ttatttccca tcgttccgga gaaaccgaag acactaccat tgcagactta 1260

gccgtagcta cacgcgctgg acaaatcaaa accggttctc tgtgtcgtag tgaacgggta 1320

gccaaatata accgactatt acgtattgaa gaagaattag gcgatcgcgc agtttatgct 1380

gcaaaagtgg gtttaggccc tcaataaggc tgctgccccg gctgctgcta atctagataa 1440

tagtgatccc ggccgctact aaagcctgat ttgtcttgat agctgctcct gcctttgggc 1500

aggggctttt ttctgtctgc cattcttgag gatggcggac tctttccctt ttgctctacg 1560

cccatgaatg cgatcgcagt ctcccctgtc cagcacgttg gagtgattgg tggtggccag 1620

ttagcttgga tgctggcacc agcagcgcaa cagttgggga tgtcgctgca cgttcaaaca 1680

cccaatgatc acgacccagc agtagcgatc gcggatcaaa ccgtattagc agcagttgct 1740

gacgcggttc tctcttctgc cgtta 1765

<210> 51
<211> 1888
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 51, Example 51: designer nirA-promoter-controlled Pyruvate-Kinase DNA construct (1888 bp)

<400> 51
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgct cgagcatatg 120

ttaaaaaaga cgaaaatcgt ttgcacgcag ggtccgtcca cagagaaacc gggcgtaatt 180

gatgcactga ttgccaatgg catgaactgc gcacgcttca atttctccca tggtgaccac 240

gaagaacatc ttggccgtat caatatggtt cgtgaagctg ccaagaaggc tggcaaggtt 300

atctctttaa tcctcgatac caaaggtccg gaaatgcgtc tgggcgagtt caaagatggc 360

aaagttatgc tcgaaaaggg caacaagttc actttgacct atgacgatga accgggtgat 420

gaaactcatg tttccgtaaa ccacaaaggt ctttacacgg aagttaagcc gggcgacacc 480

ctgctcctct ccgatggcct cgtagctctc aaagttgatg aaatcaaggg caaggatatc 540

gttacgacga ttcagaacag cggtaagatg agcacgcgca agcgcgtagc tgctccgggc 600

gtaccccttg gtctgcctcc tatctccgaa caggatgcta aggacatcat ctttggctgc 660

gaacaggata tggatttcgt agctgcttcc ttcatccagc gtccggatga tgttatcgcc 720

atccgcaagc tcatcgaaga gcacaatggc cacatggaaa ttctgccgaa gatcgaaaac 780

ctcgaaggtg ttaagaactt cgatgcaatc ctggaagttt ccgacggcat catggttgcc 840

cgtggtgacc tgggcgtaga agttccggca gaagatgtgc cccttattca gaaggaaatc 900

atccgcaagt gcaacgctgc tggcaagccg gttatcgttg ctacgcagat gctcgactcc 960

atggaacgca acccgcgtcc gacccgtgca gaagtttctg acgttggtaa cgccatcctc 1020

gatggtacgg atgccatcat gctgtccggc gaaacggctt ccggtgacta tccggtagaa 1080

gcagttgcca cgatgaaccg cattgcacag cgcatggaaa gctcccttga atacaaggaa 1140

ctctatgtag aacgtggtct gcagcacatg gaatcccgta cgcgtgctat cgctcatgct 1200

acggttcaga tggcttatga gctcgatgct ccggctatta tcacgccgac cgaatccggt 1260

tacacgacga aggtcgtttc caagtatcgt ccgaaggctg ctatcgtagc ttacacgccg 1320

agcgaaaaag ttctgcgtca gctgaacctg cgttggggcg tatatccggt actcggcacc 1380

cagtggagcg atgtggatga aatgatcagc aatgcaacgg ctgctgctgt taaggaagac 1440

ctcgtacagc gcggcgacct caccatcatc acctccggtg tgaagatgga atcccgtacg 1500

cgtgctatcg ctcatgctac ggacatctaa ggctgctgcc ccggctgctg ctaatctaga 1560

taatagtgat cccggccgct actaaagcct gatttgtctt gatagctgct cctgcctttg 1620

ggcaggggct tttttctgtc tgccattctt gaggatggcg gactctttcc cttttgctct 1680

acgcccatga atgcgatcgc agtctcccct gtccagcacg ttggagtgat tggtggtggc 1740

cagttagctt ggatgctggc accagcagcg caacagttgg ggatgtcgct gcacgttcaa 1800

acacccaatg atcacgaccc agcagtagcg atcgcggatc aaaccgtatt agcagcagtt 1860

gctgacgcgg ttctctcttc tgccgtta 1888

<210> 52
<211> 2188
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 52, Example 52: designer

nirA-promoter-controlled Pyruvate-Decarboxylase DNA construct
(2188 bp)

<400> 52
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgct cgagcatatg 120

gtatcaacct acccagaatc agaggttact ctaggaaggt acctctttga gcgactccac 180

caattgaaag tggacaccat tttcggcttg ccgggtgact tcaacctttc cttattggac 240

aaagtgtatg aagttccgga tatgaggtgg gctggaaatg ccaacgaatt gaatgctgcc 300

tatgctgccg atggttactc cagaataaag ggattgtctt gcttggtcac aacttttggt 360

gttggtgaat tgtctgcttt aaacggagtt ggtggtgcct atgctgaaca cgtaggactt 420

ctacatgtcg ttggagttcc atccatatcg tcacaggcta aacagttgtt gctccaccat 480

accttgggta atggtgactt cactgttttt cacagaatgt ccaatagcat ttctcaaact 540

acagcatttc tctcagatat ctctattgca ccaggtcaaa tagatagatg catcagagaa 600

gcatatgttc atcagagacc agtttatgtt ggtttaccgg caaatatggt tgatctcaag 660

gttccttcta gtctcttaga aactccaatt gatttgaaat tgaaacaaaa tgatcctgaa 720

gctcaggaag aagttgttga aacagtcctg aagttggtgt cccaagctac aaaccccatt 780

atcttggtag acgcttgtgc cctcagacac aattgcaaag aggaagtcaa acaattggtt 840

gatgccacta attttcaagt ctttacaact ccaatgggta aatctggtat ctccgaatct 900

catccaagat ttggcggtgt ctatgtcggg acaatgtcga gtcctcaagt caaaaaagcc 960

gttgaaaatg ccgatcttat actatctgtt ggttcgttgt tatcggactt caatacaggt 1020

tcattttcat actcctacaa gacgaagaat gttgttgaat tccactctga ctatatgaaa 1080

atcagacagg ccaccttccc aggagttcaa atgaaagaag ccttgcaaca gttgataaaa 1140

agggtctctt cttacatcaa tccaagctac attcctactc gagttcctaa aaggaaacag 1200

ccattgaaag ctccatcaga agctcctttg acccaagaat atttgtggtc taaagtatcc 1260

ggctggttta gagagggtga tattatcgta accgaaactg gtacatctgc tttcggaatt 1320

attcaatccc attttcccag caacactatc ggtatatccc aagtcttgtg gggctcaatt 1380

ggtttcacag taggtgcaac agttggtgct gccatggcag cccaggaaat cgaccctagc 1440

aggagagtaa ttttgttcgt cggtgatggt tcattgcagt tgacggttca ggaaatctct 1500

acgttgtgta aatgggattg taacaatact tatctttacg tgttgaacaa tgatggttac 1560

actatagaaa ggttgatcca cggcaaaagt gccagctaca acgatataca gccttggaac 1620

catttatcct tgcttcgctt attcaatgct aagaaatacc aaaatgtcag agtatcgact 1680

gctggagaat tggactcttt gttctctgat aagaaatttg cttctccaga taggataaga 1740

atgattgagg tgatgttatc gagattggat gcaccagcaa atcttgttgc tcaagcaaag 1800

ttgtctgaac gggtaaacct tgaaaattga ggctgctgcc ccggctgctg ctaatctaga 1860

taatagtgat cccggccgct actaaagcct gatttgtctt gatagctgct cctgcctttg 1920

ggcaggggct tttttctgtc tgccattctt gaggatggcg gactctttcc cttttgctct 1980

acgcccatga atgcgatcgc agtctcccct gtccagcacg ttggagtgat tggtggtggc 2040

cagttagctt ggatgctggc accagcagcg caacagttgg ggatgtcgct gcacgttcaa 2100

acacccaatg atcacgaccc agcagtagcg atcgcggatc aaaccgtatt agcagcagtt 2160

gctgacgcgg ttctctcttc tgccgtta 2188

<210> 53
<211> 1510
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 53, Example 53: designer nirA-promoter-controlled NAD(P)H-dependent Alcohol-Dehydrogenase DNA construct (1510 bp)

<400> 53

agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgtt agctacctct 120

gtgccagaaa cccaaaaggg tgttattttc tatgagaatg gtggtaaatt ggaatacaag 180

gacattccag ttccaaagcc aaagccaaat gaaatcttga tcaacgtcaa gtactccggt 240

gtgtgtcata ccgatttgca cgcatggaag ggtgactggc cattgccaac caagttgcca 300

ttggtcggtg gtcacgaagg tgctggtgtc gttgttgcta tgggtgaaaa cgtcaagggc 360

tggaacattg gtgactttgc gggtatcaaa tggttgaacg gttcttgtat gtcctgtgaa 420

tactgtgaat tgtccaatga atccaactgt ccagatgctg acttgtctgg ttacacccac 480

gatggttctt tccaacaata ccgtaccgca gatgctgttc aagctgccag aattccaaag 540

ggtaccgatt tggctgaagt tgctccaacc ctatgtgccg gtgttactgt ttacaaggct 600

ttgaaaagtg ctaacttgaa ggctggtgac tgggttgcca tctctggtgc tgctggtggt 660

ctaggttctc tagctgtcca atacgccaag gccatgggtt acagagtcgt tggtatcgac 720

ggtggtgaag aaaagggtaa gttggtcaag caattgggtg gtgaagcctt tgttgatttc 780

accaaaacca aggacatggt tgctgaaatc caagaaatca ccaacggtgg tccacacggt 840

gtcattaacg tctctgtttc tgaagctgcc atgaacgctt ccactcaatt cgtcagacca 900

actggtactg tcgtattggt cggtttgcca gctggtgccg tcatcaagtc cgaagtcttc 960

tcccacgtcg ttaagtctat taacatcaag ggttcttacg tcggtaacag agctgacacc 1020

agagaagcta tcaacttctt cgctaacggt cacgtccact ctccaatcaa ggttgttggt 1080

ttgtccgaac taccaaaggt ttacgaattg atggaacaag gtaagatttt gggtagatac 1140

gttgttgaca cctccaacta gggctgctgc cccggctgct gctaatagtg atcccggccg 1200

ctactaaagc ctgatttgtc ttgatagctg ctcctgcctt tgggcagggg ctttttttctg 1260

tctgccattc ttgaggatgg cggactcttt ccctttttgct ctacgcccat gaatgcgatc 1320

gcagtctccc ctgtccagca cgttggagtg attggtggtg gccagttagc ttggatgctg 1380

gcaccagcag cgcaacagtt ggggatgtcg ctgcacgttc aaacacccaa tgatcacgac 1440

ccagcagtag cgatcgcgga tcaaaccgta ttagcagcag ttgctgacgc ggttctctct 1500

tctgccgtta 1510

<210> 54
<211> 56
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 54, Example 54: designer selected Hyd1 transit peptide (amino acids sequence)

<400> 54

Met Ser Ala Leu Val Leu Lys Pro Cys Ala Ala Val Ser Ile Arg Gly
1 5 10 15

Ser Ser Cys Arg Ala Arg Gln Val Ala Pro Arg Ala Pro Leu Ala Ala
20 25 30

Ser Thr Val Arg Val Ala Leu Ala Thr Leu Glu Ala Pro Ala Arg Arg
35 40 45

Leu Gly Asn Val Ala Cys Ala Ala
50 55

<210> 55
<211> 45
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 55, Example 55: designer selected RbcS2 transit peptides (amino acids sequence)

<400> 55

```
Met Ala Ala Val Ile Ala Lys Ser Ser Val Ser Ala Ala Val Ala Arg
1               5                   10                  15


Pro Ala Arg Ser Ser Val Arg Pro Met Ala Ala Leu Lys Pro Ala Val
            20                  25                  30


Lys Ala Ala Pro Val Ala Ala Pro Ala Gln Ala Asn Gln
        35                  40                  45


<210>  56
<211>  7
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct- Sequence No. 56, Example 56: designer
       selected ferredoxin transit peptide (amino acids sequence)

<400>  56

Met Ala Met Ala Met Arg Ser
1               5


<210>  57
<211>  33
<212>  PRT
<213>  Artificial Sequence

<220>
<223>  Synthetic Construct- Sequence No. 57, Example 57: designer
       selected CF0CF1 subunit-a transit peptide (amino acids sequence)

<400>  57

Met Leu Ala Ala Lys Ser Ile Ala Gly Pro Arg Ala Phe Lys Ala Ser
1               5                   10                  15


Ala Val Arg Ala Ala Pro Lys Ala Gly Arg Arg Thr Val Val Val Met
            20                  25                  30
```

Ala

<210> 58
<211> 1417
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 58, Exmaple 58: designer nirA-promoter-controlled NADPH-dependent Glyceraldehyde-3-Phosphate Dehydrogenase DNA construct (1417 bp)

<400> 58
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgacttgc acttacagtt tcttttgatg tcaaaagtgc tccaatttgc 300

tcagcaacat ctacaactct atttgaataa ccccattcat tatcatacca agcaataact 360

tttactttat tccctgacat gaccattgtt gattttgcat caataatagc tgaatttgga 420

ttagtattaa aatcaacaga cactagtggt tgatgttcga cttctatgat accttctaaa 480

cctgcatttt caaaagcttg gtttacttct tctgcagtta cttctttttc taaatcaaca 540

actaaatcaa cgagcgatac attctttgtt ggtacacgta atgccatgcc gtgtaattta 600

ccttctaatt ctggtaatac ttcttttaaa gctttcgccg caccagtaga agtaggaata 660

atgctttcat tacatgaacg tgcacgtctt aaatctttat gtggattatc aatatttttt 720

tggtcatttg taatagcgtg aacagtagtc attaaaccat taactattcc aaactgatta 780

tttaaaactt ttgcaactgg accaatgcaa ttagtagtac atgaagcatt actaaaaatg 840

tcaaatgctt ctatatctaa ttggttatca tttacgcctt taactaacat ttgaacatgt 900

ccacctttg aaggaccagt taacaatact tttttggcac ctgctttaat atgtgcgatg 960

gctttatcac catgattaaa tttaccagtt gcatctatag caatatcgat atctaattct 1020

ttccatggca agttttcagg attgcgatca gcaaccaatt taattttatg atcaccaact 1080

tgcaatccat tttcaatcgg ttcaactttt agattatatt ttccatgtgt tgtatcgtaa 1140

ttgattaaat gtgcaattgt ttcgggtgga taactagcat ttatcgctac tacatttaaa 1200

tttttatttt gtaatgcaat acgtaatacc attcttccaa ttctacccat accattaatt 1260

gcaatattcg ttgacattaa ggctgagatc ttcttcagtg cattgtagtt gaatgaaggg 1320

ttaggggga aatgcccccc tatttttgt ctagccatcc tgccacgttt gacagggtag 1380

caatttcgac acgatagggt tctctcttct gccgtta 1417

<210> 59
<211> 1387
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 59, Exmaple 59: designer nirA-promoter-controlled NAD-dependent Glyceraldehyde-3-Phosphate Dehydrogenase DNA construct (1387 bp)

<400> 59
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgcttaga gatgtgtgcg atcagatcca gaactttgtt ggagtagcca 300

gtttcgttgt cataccaaga aaccagtttc acgaagttgt cgttcagaga gataccggcg 360

tcggcatcaa acacggaggt gcatacttcg ccgttgaagt cggtagaaac gacggcttcg 420

tcggtgtagc ccagaacgcc tttcatttcg ccttcagaag cggccttcat cacgtcacag 480

atctgctgat aggtcgccgg cttggccagg cgagcagtca ggtcaacaac ggagacgttc 540

ggggtcggaa cgcggaaagc cataccggtc agtttgccgt tcagctccgg gatgaccttg 600

ccaacggcct tggctgcacc ggtagaggac gggatgatgt tctggctagc gccgcggccg 660

ccgcgccaat ctttcatgga cgggccgtcg acagttttct gggtcgcggt ggtagcgtga 720

acggtggtca tcagcgcttc aacgatgccg aagttgtcgt tcaggacttt agccagcgga 780

gccaggcagt tggtggtgca ggatgcgttg gaaacgatct cctggccagc gtagttcttg 840

tggtttacgc ccataacgaa catcggggta gcatctttag acgggccagt catgacgact 900

ttcttggcac cggcggcgat gtgcttacgc gcggtttcgt cggtcaggaa cagaccggtc 960

gcttcggcaa caacgtcaac gccgatttcg ttccacttca ggttagccgg atctctttca 1020

gcggtaacac ggatttttt accgttaacg atcaggtggc catctttcac ttcaacagtg 1080

ccgttgaaac gaccgtgagt agagtcgtac ttcagcatgt atgccatgta gttggcatcc 1140

agcagatcgt tgatgccaac gatttcgatg tcagaacgtt cctgagcagc acggaaaaca 1200

atacggccga tacggccaaa accgttgata cctactttga tagtcattaa ggctgagatc 1260

ttcttcagtg cattgtagtt gaatgaaggg ttaggggga aatgcccccc tatttttgt 1320

ctagccatcc tgccacgttt gacagggtag caatttcgac acgatagggt tctctcttct 1380

gccgtta 1387

<210> 60
<211> 1627
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 60, Exmaple 60: designer nirA-promoter-controlled phosphoglycerate mutase DNA construct (1627 bp)

<400> 60

agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgggcccc gaacttttgc agcttgcccg cgtgcgccag caggagcggc 300

agcacgtggg tgccgtgcag gtcgccgagc gcgccccctg ccgcctcgtc ctcggtgaag 360

cggcgggccg cgtcggcgcg caggttgggg ccgtagagca ggaagggcac cgggtgccag 420

gagtgcgcct tcatcacgct gggcgtggag tggtcgccgg tgatggcgat cacctcgggc 480

tccagcgcca gcagctcggg cagcagggcg tcgaaggcct cgatcttgtg caccttcgcg 540

tcgaagtcgc cgtcctcgcc ggtggagtcg gtcttcttga agtgcaggta gaagtagtcg 600

aaggcttccc agtgggcctt cagggccgcg agcttgcctt cgggggcgtc ggggtcctcg 660

cccacctcga cctccagcgc ggtcatcccc accagcgagg ccaccccgcg gtacatcggg 720

tagctggcga ccgccgcggg ggtgagcccg gtgatctcgc ccagggtggg ccagaccggg 780

cgcttggaga cgccgcgaag cagcaccccg ttgatcctgg gctcgtccgc gagcgcctgc 840

cgcgccagcg cgctgaactt gttgagcacg tcggccgtct tggcgctggg ctcgtcgctt 900

tcgtcgtgcg gacgggccgc gagcggcggc accccggtct tctgggggtc ggtgtcgtgg 960

acccggtcgc ccagccccac gccccgcagc accagcacga agcggtgctc cgactcggtg 1020

tggagctcga tcctgacgcc gtcgatctcg cggatgcgct ccctcagctt ggcgagcacc 1080

cgccggtttt cctcggtggg ggggcggccg gcgcggcggt cggcgatggt gccgtcgggg 1140

ttcaaggtgg cgaagttgcc gcgcaccgcg acgtcgtcgg gccccagctc gatgcccagc 1200

cccagcgccg agaggacgcc gcgcccgacc tcgtagcgga aggggtcgta gccgaagagg 1260

ctcaggtggc cgggcccgga gccgggcgcg aagccggggg ccaccagggt gactcgcccc 1320

aggttggcct tttcggccag ggcgtcgagg ttgggggtgc gggccgcggc cagctccgtg 1380

ggcccgcccg gctcgcgggg cagcccgccc accccgtcga gcacgacgaa gaggatcttg 1440

ctgggcgtgg tgcggctcag ttccttgagg tgggggagga ggtccattaa ggctgagatc 1500

ttcttcagtg cattgtagtt gaatgaaggg ttaggggggа aatgcccccc tatttttgt 1560

ctagccatcc tgccacgttt gacagggtag caatttcgac acgatagggt tctctcttct 1620

gccgtta 1627

<210> 61
<211> 1678
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 61, Exmaple 61: designer nirA-promoter-controlled Enolase DNA construct (1678 bp)

<400> 61
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgtttttg taaattatag aaaaccccca acccacgata cagcccgata 300

tcgcttaatt cttcttctat ccgcaacagc tggttgtatt tcgctacccg gtcagtcctg 360

gccggagccc cggtctttat ctgccctacg ttggtcgcta ctaccaggtc agcgatgaag 420

gtgtcctccg tctccccgga acggtgggat actacacagg tgtaaccggc tcttttagcc 480

atttcaatcg tatccaaggt ctcagtgacc gtgcctatct gattcagttt gataagtatg 540

ctgttggcca cacccttttt tattcctgtg gtaaaacgct ggggattggt tacgaaaata 600

tcatctccga cgatctgaat cttcttgccc agcttacggg tgagcttttt ccacccttcc 660

cagtcttctt cctgcagccc gtcttccagg gatatgatag gatacttacg cacaaggcca 720

tcgtaaaact cgaccacctc atcggcggtc agctcttggc cggtgctggc aaaaacgtat 780

ttcccgtcct tgaaaatctc attggcagca acatccagtc ccaggtaaat atccttcccc 840

ggcttgtacc ccgccgtttt aatagcctcc aaaattactt caatcgcggc ttcattcgaa 900

ggcaagttgg gagcaaatcc tccttcatcc ccgatggaag tagaaaaccc ttttttactc 960

aataccttct tcagggtatg gtagacctcc acccccatgc gcagggcctc ggcaaaagaa 1020

gtagctccta ccggtaggat caagaattct tgaatgtcca cattattatc cgcgtgcttg 1080

ccgccgttca agatgttcat ttgcgggatc ggcagttctt tggcgtttac gccgcccagg 1140

tactggtaaa gcggcatgga taggtaggaa gcagcagccc gcgccacagc catcgacacg 1200

cctaagatag cgttagctcc cagcttgccc ttgttgtcag tcccatcgag gtcaatcatc 1260

aaccggtcaa tccccacctg gtcgagcgca tccatcccca caacctccgg ggcgatgacc 1320

gtgttgacgt tatccaccgc attcagcacg cctttgccgc cgaaacgctc tgcgtcccca 1380

tcccgcagtt ccaccgcctc aaaagcacca gtggacgcgc cggaaggaac cgcagcccgt 1440

cccatggtcc catcttctaa aaggacctcg acctccaccg tcgggtttcc ccgcgaatcc 1500

agtatttctc tggcgtaaac ctcggtgata atactcacta aggctgagat cttcttcagt 1560

gcattgtagt tgaatgaagg gttaggggggg aaatgccccc ctatttttg tctagccatc 1620

ctgccacgtt tgacagggta gcaatttcga cacgataggg ttctctcttc tgccgtta 1678

<210> 62
<211> 2137
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 62, Exmaple 62: designer nirA-promoter-controlled Pyruvate Kinase DNA construct (2137 bp)

<400> 62

agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgccgcac ttgggcttgg ccgcggtaga tttgtcccct agccgtatcc 300

atggttatgg tttctccgtc ttggatgaca cgggttgcct cggcggctcc aacgatgaca 360

ggaatatcca agttaatacc tactatggct gcatgagaag tcaggcctcc ctgttccgtg 420

ataatccccc cggccttttc caacaacggc atatagtcct tgtctgttcc gactgccacc 480

actatatctc ccggagcaaa cgagcccggt ttgcccggat ccagtatcac ccgcgcctta 540

ctggtaacgg cccggctacc tatacccgtt cccttaacca gcaccttgcc tactacttga 600

actctcagta gattggtagt cccagggatt ccaggagtac ctgcggttat gactaccagg 660

tcaccggggg agattagccc tcgcctgact gcggcatcca gggctgtttc tatcatctgg 720

tcagttccgt gggtttccgg gaccgtgagc gcgtataccc cccataccaa agttagcttg 780

cgtaccactt cgggtgaagg cgtagtagcc acgatcggag cccggggacg gtacttggcc 840

accattctcg ccgtatggcc cgattttgta gcagtaacaa tggccgaggc ccccaggtcg 900

gtagcggtag cacaggtggc ataactgatg gcatcggtca cggtacgcct gccttcgaat 960

cgtcttgccg ccagcatgtt ctcatagggc aaagccatct ccgtccgccg ggctattcgc 1020

gccatggttt ccaccgcaac taccggatat ttaccggctg cggtctctgc cgacagcata 1080

atggcgtctg ccccctcaaa tatggcatta gccacgtctg acgcttcggc ccgggtgggg 1140

cgcggcacgt ttaccatcga ttcgagcatc tgggtggcaa ttatcaccgg cttaccctga 1200

gcccggcatt tctcgattat aacctttttgc accagaggta cttcttcggt aggtatttca 1260

acccccaggt ctccccgggc gaccatgacg ccatcagcaa cctttattat gtcatccagg 1320

ttgtccagcc cctcctggct ctcaatctta gcgattatat cgatgtcggc tccctttcc 1380

tctaatatgc gtctgatatc caaaacatca tcggccgtcc ttacgaacga ggcagcaatg 1440

aaatccatat tctgctggat gccgaagtta atgtcttcga tgtctttctg gctcaaaaaa 1500

ggcaggttgg ttctcacacc cggcaggttt atgcctttcc tttcaccgag tactcctccc 1560

gcaaccacct ggcagacgat gtcggtgtcg ttcgcctcta aaacagacag ctggatgacg 1620

ccgtcagcga tcaatatgca gtcacccgct tttacctgcg aaggtaactc atggtaactt 1680

atctggacct cgtcttcgtt accttcaacc ggacggttgg tgagaacgaa cttttgacca 1740

ggacgcagct ctatcttacc ttctttcaag ggcccggtcc tgatctccgg ccctttggta 1800

tcaagcatca accctacttc cgcattcagt tcccgcgcca cctcacgcac catgcggatg 1860

cggcgctcat gctcatcata agtgccgtgt gaaaaattca aacgggccac gttcatgccg 1920

ttggtgatca aagctcttag ccgctcataa tcatcggtgg aaggtcccag ggtacagatg 1980

attttggtct tccgcaataa ggctgagatc ttcttcagtg cattgtagtt gaatgaaggg 2040

ttaggggga aatgccccc tatttttgt ctagccatcc tgccacgttt gacagggtag 2100

caatttcgac acgatagggt tctctcttct gccgtta 2137

<210> 63
<211> 2163
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 63, Example 63: designer nirA-promoter-controlled citramalate synthase DNA construct (2163 bp)

<400> 63
agaaaatctg gcaccacacc tgatctgcaa gagacgctca cgcgatacct ctgggcgtgc 60

aatcaccgca ttccccaacg cgctttgggc cacatgaccc ccatcgagag actccgaacg 120

tggcaaatgg agggaccaga gttgttcagt tcacaggtag ataatgtcgc gggtcttgat 180

agttagcaat aaatacagtt tcagaatatc tgtaatacaa aaactgtatc gagacaagaa 240

aaaagtagca aaatttacaa atgttcatga ttcatctggc taaattggat gttcaactga 300

cccattgaag acaagggcaa caaccatgga gcaggttttt atctacgaca ccaccttgag 360

ggatggctcg caggcagaag gtataaactt ttccgtagag gataagatgc gcatacttca 420

aaaactggac gaatttggag tgcattacat agagtgcgga tggcccggtg cgaacccaaa 480

agacactatt ctctttgaaa ggctgagaaa gataaaaact caaaatgcca aaatagtagc 540

ctttggtgca acaagaaaag ctggaaagaa ggcgcacgaa gataagcagg tggaaaacct 600

tttgaaatcg ggtgccaagg tgataaccgt atttggcaag agctgggact ttcatgtaac 660

gcatgccata gggaccacct tagaggaaaa cctggacatg gtttacgaga cggtaagcta 720

tcttaaaaag catgtggagg aggttatctt tgacgcagag cacttctttg acggatacag 780

gcacaacgaa agctatgctt ttaaggtatt ggaggcagct tttcaggcag gtgcggactg 840

gatagtcctc tgcgatacca acggtggcac ccttcccaat gaggtttatg agataaccaa 900

aaaggttgta caaaagtttc cacaggcacg cgtaggcata cacgctcaca acgattcaga 960

tactgctgtg gctaactctc ttatggcggt gcttgcaggt gcaaggcagg ttcacggcac 1020

tataaacggc ttgggggaaa gaacgggcaa tgctaatctg tgttccataa tacctaacct 1080

tcagctcaag ctgggcttta gtgtagtgcc ttcccaaaac ctcaaaaagc tcaccgagct 1140

tgctcacttt gtctccgaaa tctccaacac gccactgccc aaaaacatgc cttatgtagg 1200

ggagagtgct tttacccaca aagcaggcgt acacgcctct gcagttatga aaaggtcaga 1260

aacatacgaa cacatagacc cttctttggt aggaaacaga aggaaggtga cagtgtctga 1320

cctttctgga aggagtaata tactttacaa gctcagggaa atggggcttg aggtggatga 1380

taagtcccct gagcttatca aactccttga aaagataaag gaacttgaga aggaaggcta 1440

ccactttgaa gcagctgaag cttcttttga gcttctttgc aagaggcatt ttgggcttgt 1500

taaaaactat tttgaccttg atgcttacag ggtgctaata gccagaagga gtacagacct 1560

atctcctgtt tcggaagcca ccgtaagact ctatgtggaa gacataaagg agcatacagc 1620

agctcttggt aacggaccag tgagcgccct tgacagagcc ctcagaaaag ccttggaaga 1680

gttttatcca agccttaaag atgttcagct catagactac aaggtgagaa tagttaacga 1740

atcggagggt acatctgcca aagtgagggt gcttatagaa tctaccgatg gtagaagaaa 1800

gtggggaacg gtgggagttt cggaaaacat aatagaagcc tcttggatag ccttaactga 1860

tagcctcgta tataaactct taaaagacga agaagagggt ataatgtgat aaggctgaga 1920

tcttcttcag tgcattgtag ttgaatgaag ggttaggggg gaaatgcccc cctatttttt 1980

gtctagccat cctgccacgt ttgacagggt agcaatttcg acacgatagc gtgctgtact 2040

gtttttgct cgtcagggtt gggttttgtc atcgacaccc aaggattgga gtcggtgctc 2100

aataatcgcc agttgctgtt gggcagccgc caattgcgcc tgaggttctc tcttctgccg 2160

tta 2163

<210> 64
<211> 2878
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 64, Example 64: designer nirA-promoter-controlled 3-Isopropylmalate/(R)-2-Methylmalate Dehydratase DNA construct (2878 bp)

<400> 64
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgtaccat gtctgctgtt gctatctcgc ccttgattgc tgatgctgta 300

acagtagccg ctgaagcaag atatacaaaa gaatctttat gtcctgcacg tcccttgaag 360

tttcgtgtac ctgtactgat aagagtctca ccctcaccga taacaccctg acagcttccc 420

cagcatacag agcagttagg attcataaca attgcacctg cgtccatgaa tatatcaagg 480

agtccctctt tcatagcctg aagatatacc gaacggcttg caggaactac aaggaatctt 540

accttaggag caacctttt ccctttgatg atcgctgcgc caactcttaa atcctcgatt 600

cgtccattgt tacatgaacc aagaaatgct tcatcaatct ttacaccaag tgattcctta 660

gccggaacta cattgtcaac aaaatgtggc tttgcaacaa ttggctgtat tgttgaaagg 720

tcaatatcat aaacctgctc aaatactgca tcatcatctg atgtaaagca tgcctttggc 780

tctctgccat gctccttaag ataatccatt gcaacatcat caacttccat gagtgcagtc 840

ttagcacctg cctctacaca aaggttacag attgatattc tgtctgccat tgaaaggctg 900

tgtaagcctt ctcctgcaaa ttccattgct ttatagttag caccgttagc gccaatcttt 960

ccaataatag agagtattaa atctcttgca tatactccat cgttaagctt tcccttaagg 1020

ttgaatctta atgttcccgg aaccattacc catgatgttc ctgtaaccat tgcatacaaa 1080

taatctgtac aaccaacacc tgtaccaaat gcacctaacg caccatatgc acaagtatgg 1140

ctgtctgctc caaatataag ctcacccggc actacatgat tttccatcat aacctgatga 1200

cacacaccct cgccctcgta gaacttaata tcattagcct tagcaaagtc tctcatcttc 1260

ttctgtgagg ctgctgtctt aggactgtct gatggaatat tgtggtctac aatccataca 1320

agcttatcct tgtcagcaat atgaggattc tttaacttct catacatacc aatagtaaga 1380

tgtgttgttc catcattact cataagtctg tcaagagtaa cagttgcaat atcaccagcc 1440

ttaacctgtg aaagacctgc tgcccttgcg ataatcttct ctgcaatagt catgccatgc 1500

tttgcctcat ctgcaggtac ggctgtactc tcagactctt ctttctcacc atcaagtgat 1560

gcaataagac caccctgatt aagaatagcc tgcatcttgg ctggaagctt agtacatgta 1620

taagtctttc cattaacagt tataattcca tcttctaatg aaagctcaca ttcatccccc 1680

gcattaactt cgtcatggag ttctttacat acaataacag gaagtcctat attaatagca 1740

ttacgataga atattcttgc aaatgatttg gcaatcactg ccttgacacc taatgcctta 1800

agtacgcttg gtgcctgctc tcttgatgaa ccacatccaa agttgtcatc tgcaacaacg 1860

aaatctcccg gctttacggc agaagcaaaa tcagagtcta atgattcaaa tgtatgactc 1920

ttcatctcat caattgtcgg aaacaaaaga tactgcgatg caataatctg atctgtatca 1980

acatctttat caaacttaaa tatcctaccc attgaccccc atcgagagac tccgaacgtg 2040

gcaaatggag ggaccagagt tgttcagttc acaggtagat aatgtcgcgg gtcttgatag 2100

ttagcaataa atacagtttc agaatatctg taatacaaaa actgtatcga gacaagaaaa 2160

aagtagcaaa atttacaaat gttcatgatt catctggcta aattggatgt tcaactgacc 2220

cattgaagac aagggcaaca accatggtca agaccgttaa gctttctcat tgccttaaca 2280

agtccgcctg cattaagtat atccacaaga ttatcaggaa gtgaagcaat aggatatgct 2340

tttccattgt gtgtaatctt tgcatttact tcaacatcaa tagtatcgcc ttccgtaact 2400

tcgtcgtgaa ggtctgcatt ctctataagg agaagtccgt tattaataga atttctgaag 2460

aatattcttg catatgattt ggcaataaca catttaatac ctaatgcctt aataacctca 2520

ggtgcctgct ctcttgatga accacaacca aagttctttc ctgcaacaat gatgtcgcct 2580

ggcttaatct gacctgcaag ttctggtctt aatggcgaaa atgcatatgg tttcatatct 2640

tctactgtct ttaatgcaag gtactctgta gggataatga tatctgtatc aatgtcatca 2700

ccaagtaccc atactttacc gctaaatttc tcgttcatta aggctgagat cttcttcagt 2760

gcattgtagt tgaatgaagg gttaggggggg aaatgccccc ctatttttg tctagccatc 2820

ctgccacgtt tgacagggta gcaatttcga cacgataggg ttctctcttc tgccgtta 2878

<210> 65
<211> 2380

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 65, Example 65: designer nirA-promoter-controlled 3-isopropylmalate dehydratase DNA construct (2380 bp)

<400> 65
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgaatgaa tcttcttgga tctgtgatgt atccggttac cgcggtggct 300

gccgccgttg caggagaagc aaggtatatc tccgcattgg gattccccat ccttcccttg 360

aagtttctgt tctgcgtgga aagtaccctc tctccgtctc caagaacacc catgtggatt 420

ccaacacatg ggccgcaacc tggtggtata actgccgctc cgagttcaac aaatttcttg 480

attattccct tttcaagggc gtccatgtag accttccttg aagcggggcc gacgatcagc 540

ctcacatccg ggtgctttcc gtgtttctca agaattttca aagcgatctc aagatcctga 600

agtcttccgt tcgtacaggt tcctatgaac acttgatcta tctttatctt ttccttttca 660

acctcgctca cctttctcac gttgtccaca tagtgaggca aagagacgag tggttcgagt 720

gtgtcggcat ctatctctat ctctgtctcg taaaccgcgt ctggatctgc tttcaactct 780

ctgaagtcct cctctcttcc catcttttc aggaactctc tggtcttctc atcagaaggc 840

atgagacctg ctttcgctcc cacttccacc gccatgttgg aaatggtgag tctgtcctcc 900

acattcatat tttcgataca gcttccatgg aactccaacg ctttgtaagt tgcgccgtcg 960

cttcccagaa ttctcgcgat ctcgagaatg atgtctttcg cgtaaactcc atcctgtaac 1020

ttcccgttca ccacaacctt gatcgtctca ggtactttga accagttctg tccaagcccg 1080

aagatgatcg caacatctgt ggaccccatt cccgttccga aagcaccgag cccaccggca 1140

gtgcaggtgt gcgaatccgc acctgctacc agatcgccgg gtttcacgta tttttccgcg 1200

aggatctggt gggatatccc gtctcccgca tcgaaaacct tgactcccat ctcttttcca 1260

aattctctca tcatcttctg cgaattcgaa agctctttcc tcgggctcgg agaagcgtga 1320

tcgatgaaga ggaaggcctt cgggaccttc acttctttga agccgagttc tctgaattcg 1380

tttatcatca gggggcctgt tccatcctgg gccatggcta tatccactct cgcgagtacg 1440

atttctccgg ctttcacgtc tcttccagta tgttcagaaa agatcttttc tgcgagtgtc 1500

ttacccattg acccccatcg agagactccg aacgtggcaa atggagggac cagagttgtt 1560

cagttcacag gtagataatg tcgcgggtct tgatagttag caataaatac agtttcagaa 1620

tatctgtaat acaaaaactg tatcgagaca agaaaaaagt agcaaaattt acaaatgttc 1680

atgattcatc tggctaaatt ggatgttcaa ctgacccatt gaagacaagg gcaacaacca 1740

tgaactcttg ggaaggaacc gtgctttttc agatagttca ctataccgtc ttctttcagt 1800

atctcgagga gaaacttcgg aatcggagtg aatctgtatt cttttcctgt tgtgaggttc 1860

ttcaaaacac cgttttcgag atctatctca agttcgtctc cctggttgat ctcgtcgact 1920

tccttgagct ctatgactgg aagtcccaca ttgatggcgt ttcggtagaa gatccttgcg 1980

aaagacttcg ccacgataca ggaaacacca gcgatcttta tgatacgcgc agcgtgctct 2040

ctggaagaac caagtccgaa gttcttgcca gccacgatga tgtcaccttt ctgcaccttc 2100

ttcgcgaaat cctccatggc atcttccaag acgtgttttg cgagctcctc aagattgttc 2160

ctcagatgaa aataccttcc aggtgctata tggtcagtcg atatattgtc accgaatttc 2220

cagactcttc cccttatcat taaggctgag atcttcttca gtgcattgta gttgaatgaa 2280

gggttagggg ggaaatgccc ccctattttt tgtctagcca tcctgccacg tttgacaggg 2340

tagcaatttc gacacgatag ggttctctct tctgccgtta 2380

<210> 66
<211> 1456
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 66, Example 66: designer nirA-promoter-controlled 3-Isopropylmalate Dehydrogenase DNA construct (1456 bp)

<400> 66
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgccatat ttcttcgagt tttttacata tgagatctcc catctgagag 300

gtcgaaaccg ccttttctgg atcctctgcg atgtctctgg ttctgtatcc ctcttctatc 360

accagctcaa ccgctctttc tatctttctt gcctcttcca ccattccaaa ggaatgctcg 420

agcatcatgg cgagagagag gatctgtgcg atcgggttgg cgatgttctt tccggctata 480

tcaggagcgg aacctcctgc cggctcgtag aggttcttat caccgaaaga cgcggacggc 540

agaagaccaa gagaaccagg aagtgccgca ctctcatccg agagaatgtc tccaaacatg 600

ttcgttgtga ggatcacatc gaactgcgat ggtttcagga tgagctgcat ggcagcgttg 660

tccacataca tgtgcgtcag ctccacatca gggtattctc tcgctacttc gttcacaact 720

ttcctccaca gcatggaact gtagaggacg ttcgctttgt caacggaggt gacctttttt 780

cttctgtttt ttgcgatttc aaaggcagtt ctcgcgatcc gttccacggt ttttctgtcg 840

tagatcatgg tgtcgaatcc cttttcttca tccaatcccc tcggctggcc gtagtaaact 900

ccgtaggaaa gttccctgac ggtcacaaga tcgaccccgg atccaatcac cttttctttc 960

aaaggagaga catgcacaag cgatctgtag acctttatcg gtcttatgtt tgcgtaaagg 1020

ttgagcatct tccttagggc aagaagcccc cctatttccg gcctcttctc cggaggaaga 1080

tcgtcccatt taggtcctcc gacgcttcca aggaagatcg cgtcggcttc cagacatatc 1140

ttttttgtct cttcaggaag gggttcaccg aatttgtcta tggcatcccc tccgatgtgt 1200

ccaaagactt tctcaaaggt tttccccgtt ttcttttcca ccacctcgag cactttaaga 1260

gcttccctta caacctcggg acctatgccg tctccaggca aaaccgctat cttcattaag 1320

gctgagatct tcttcagtgc attgtagttg aatgaagggt taggggggaa atgccccccc 1380

atttttgtc tagccatcct gccacgtttg acagggtagc aatttcgaca cgatagggtt 1440

ctctcttctg ccgtta 1456

<210> 67
<211> 1933
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 67, Example 67: designer nirA-promoter-controlled 2-Isopropylmalate Synthase DNA construct (1933 bp)

<400> 67
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgctcagc acccccgttt tttctgagaa ggcctttagc gatgaggtac 300

ttgtttattg cgtttatgta agctatcgca gaggcttcca ctatgtccgt ggagacaccc 360

cttccactgt agagttcacc gtttattctc aacgtgagtt tgacctctcc ctgtgcgttc 420

tttccagttc caaccgcctg aattatgtac tcctcgagct tcggttgaat accgagcgct 480

ttgtctatag ccttgaagat agcatccact ggaccgtttc ctgcctctgc tgcttctttc 540

ttttcatctc caacctgaag cacgaccgcc gcggttggaa gcagcgtgtt tccggtgtgt 600

acatggaagt gaacgagctt gtaaccgttg atgggctccc tcaaaacttc cgagacgatc 660

gagaaaagat catcgtcgta aacctctttc tttctgtcgg cgagttctgt gaacttctcg 720

aacactttct ggaaggtctc ttcgtcgagt ttgatgccgt agctctccag cttctttctg 780

agggcgtgct ttccggagtg tcttccaagc acgagcgtct cggaagacct gccgatatcg 840

gatggtttca tgatctcgta ggtctccctg tgtttcagca caccatcctg gtgtataccc 900

gactcgtgaa ggaacacgtt ctctcccact atgggtttgt ttctggacgg gatgagcccc 960

gttatatgtg tgaggagcct ggaagcgggg tatatgagct ctgtctttat acccgtctcg 1020

tagggaagtt tgtctttcct caccttgagg atcatcacga actcttccag ggcacagttt 1080

cctgccctct ctccgatacc gttcagagtc acttcgacct gggtggctcc gttctgaacg 1140

gcagcgaggg agttcgccac agcgagtcca agatcgttgt gacagtgcac agaaagatcg 1200

acattctcta taccgggcac accctctctc aaggtcttta tgagttctcc aaactcatcg 1260

ggaagggcgt accccaccgt gtccggaaca ttgatcgttg tggctccggc ttcgatcgcc 1320

gtcttgtagg cttctatcaa aaagggaacc tccgttctcg aagcgtcttc cgccgagaac 1380

tccacaaggt cgaaaaactg ttttgcgtag ccgacgtatc ttctgatcct ctcgaggatt 1440

tcctctttct ccattctcag tttgtatttt ctgtgaatcg gagaggtcgc tatgaaaacg 1500

tgtatcatac gtttgtcttt tggtcgatcc ttgagagcct cgtacaccgc gtctatgtcc 1560

ttttcaacac accttgcgag tcccaccact atgggtttct gaacggcgct cgcaactctt 1620

tttacagctt caaactgcac gggagatgaa acgggaaacc cagcctcgat gagatcgaca 1680

ccgagatcct ctaacatgag tgccatttct acttttcct caaccgacat cgaagcccct 1740

ggggattgct ctccatccct caacgttgta tcgaagatct taattctcct cattaaggct 1800

gagatcttct tcagtgcatt gtagttgaat gaagggttag gggggaaatg ccccctatt 1860

ttttgtctag ccatcctgcc acgtttgaca gggtagcaat ttcgacacga tagggttctc 1920

tcttctgccg tta 1933

<210> 68
<211> 2632
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 68, Example 68: designer nirA-promoter-controlled Isopropylmalate Isomerase DNA construct (2632 bp)

<400> 68
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgacagac cggctcggct tcaagctggc gcacatcgac aaaatgtccg 300

taaatcgcag ccgccgcggc catcaccggg ctgacgagat gcgtgcgcgc ccctttcct 360

tgccgccctt caaagttgcg gttcgacgtt gacgcacagt gctcgccttc tgggatgatg 420

tccgggttca tgcccaaaca ggcgctgcag ccggagtcgc gccattcaaa accggcgtcg 480

atgaaaattt gtgccaaccc ttccgcttcg gcttgttttt tcacttgctg cgatccaggc 540

acgacgagcg cccgtacacc aggagccact tttttccctt tcacgatgct cgccgccgcg 600

cgcaaatcgc tgaggcgtga gttggtgcac gaaccgatga agacgtgctg caccggaata 660

tccgtaatcg gcgtgcccgg cttgagcccc atgtactcaa gcgcccggcg caccgcgttt 720

tgctctgttt tgctttcaaa ttgctcggga tgcggcacga cgccatcgac ggaagtgctc 780

atcgcggggt tcgtccccca cgtcaccatc ggagcgatcg tcgacgcatc gatttcaatc 840

gttttatcgt attttgcccc ctcatcgctg gctaacgccc gccaccgttc caccgccttg 900

tcaaactcct cgccttttgg tgcatatttg cggccgcgca aataggcgaa cgtcgtttca 960

tccggactga tgaggccggc tctcgcccca gcttcaatcg acatgttgca aatcgtcatt 1020

cgctcttcca tcgacatgcg tcggatcgct tcgcctgtaa attcgataat ataaccggtg 1080

ccgacgccaa cgccatagcg gccgataatg gccaagatga cgtctttggc ggtcactcct 1140

ttgccgaggc ggccgttgat gcagatttgc agcgttttcg gcttatgctg ccaaagcgtt 1200

tgtgtagcca atacatgctc gacttcgctc gtgccgatgc caaacgccaa ggcgccaaac 1260

gccccgtgcg tcgacgtatg gctgtcgccg caaacgatcg ttttccccgg ctgggtcaac 1320

ccgagctctg ggccgatgac gtgaacgatt ccttgctctt cgctgtgtag gtcggcgagc 1380

ggaatgccga actcgcggca gttgcgctca agcgcagcga tttggttgcg cgccacttcg 1440

tcggtaatca caaatcggtt aacggttggc acgttatggt ccatcgtcgc aaaggtcaaa 1500

tccggccgcc gcaccttccg tccttttttgc cgcaaccctt caaacgcttg cggcgaggtc 1560

acttcatgca ctaagtgcaa atcgatgtac aataaatccg gtttgccctc ctcacggtag 1620

acgacgtggt tttcccaaat tttatcgatg atcgttttcg gcttcattga cccccatcga 1680

gagactccga acgtggcaaa tggagggacc agagttgttc agttcacagg tagataatgt 1740

cgcgggtctt gatagttagc aataaataca gtttcagaat atctgtaata caaaaactgt 1800

atcgagacaa gaaaaaagta gcaaaattta caaatgttca tgattcatct ggctaaattg 1860

gatgttcaac tgacccattg aagacaaggg caacaaccat gcggccgtgg acaatgccgt 1920

cgttcgtagg cggcgatatg cgcttcgtac acaaacgtca aatcaatttc gtcccatcct 1980

tttagcaaca gctgttttcg atacgggtcg atgtcaaacg gacgcgaaaa tccttcatcg 2040

tcaaataccc gctgttcttc aagcgaaacc gtcagttcat agtctgcgcg ctcgctttgg 2100

cgcagcaagt agcggacatc ctctttatcc agccggatcg gcaacagtcc atttttaag 2160

cagttgttgt aaaaaatatc ggcaaacgat ggggcaatga ttacgcggaa tccgtaatct 2220

tgcagcgccc acggcgcatg ttcgcgcgat gagccgcaac cgaagttttc atcggcgact 2280

aaaatcgtcg ccccttcgtt ttccgggcgg ttgagctcaa actccggatt tggcgtgccg 2340

tcgctcaaat accgccaatc gtaaaagaga aactggccaa agccggtgcg ttcaatccgt 2400

ttcaaaaact gctttggaat gatttgatcg gtatcaatat tcgcccgatc gatgccggcg 2460

gtttttccgc gatggatcgt aaacggcttc attaaggctg agatcttctt cagtgcattg 2520

tagttgaatg aagggttagg ggggaaatgc ccccctattt tttgtctagc catcctgcca 2580

cgtttgacag ggtagcaatt tcgacacgat agggttctct cttctgccgt ta 2632

<210> 69
<211> 2035
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 69, Example 69: designer nirA-promoter-controlled 2-Keto Acid Decarboxylase DNA construct (2035 bp)

<400> 69
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgtataca gtaggagatt acctgttaga ccgattacac gagttgggaa 300

ttgaagaaat ttttggagtt cctggtgact ataacttaca atttttagat caaattattt 360

cacgcgaaga tatgaaatgg attggaaatg ctaatgaatt aaatgcttct tatatggctg 420

atggttatgc tcgtactaaa aaagctgccg catttctcac cacatttgga gtcggcgaat 480

tgagtgcgat caatggactg gcaggaagtt atgccgaaaa tttaccagta gtagaaattg 540

ttggttcacc aacttcaaaa gtacaaaatg acggaaaatt tgtccatcat acactagcag 600

atggtgattt taaacacttt atgaagatgc atgaacctgt tacagcagcg cggactttac 660

tgacagcaga aaatgccaca tatgaaattg accgagtact ttctcaatta ctaaaagaaa 720

gaaaaccagt ctatattaac ttaccagtcg atgttgctgc agcaaaagca gagaagcctg 780

cattatcttt agaaaaagaa agctctacaa caaatacaac tgaacaagtg attttgagta 840

agattgaaga aagtttgaaa aatgcccaaa aaccagtagt gattgcagga cacgaagtaa 900

ttagttttgg tttagaaaaa acggtaactc agtttgtttc agaaacaaaa ctaccgatta 960

cgacactaaa ttttggtaaa agtgctgttg atgaatcttt gccctcattt ttaggaatat 1020

ataacgggaa actttcagaa atcagtctta aaaattttgt ggagtccgca gactttatcc 1080

taatgcttgg agtgaagctt acggactcct caacaggtgc attcacacat catttagatg 1140

aaaataaaat gatttcacta aacatagatg aaggaataat tttcaataaa gtggtagaag 1200

attttgattt tagagcagtg gtttcttctt tatcagaatt aaaaggaata gaatatgaag 1260

gacaatatat tgataagcaa tatgaagaat ttattccatc aagtgctccc ttatcacaag 1320

accgtctatg gcaggcagtt gaaagtttga ctcaaagcaa tgaaacaatc gttgctgaac 1380

aaggaacctc atttttgga gcttcaacaa ttttcttaaa atcaaatagt cgttttattg 1440

gacaaccttt atggggttct attggatata cttttccagc ggctttagga agccaaattg 1500

cggataaaga gagcagacac cttttattta ttggtgatgg ttcacttcaa cttaccgtac 1560

aagaattagg actatcaatc agagaaaaac tcaatccaat ttgttttatc ataaataatg 1620

atggttatac agttgaaaga gaaatccacg gacctactca aagttataac gacattccaa 1680

tgtggaatta ctcgaaatta ccagaaacat ttggagcaac agaagatcgt gtagtatcaa 1740

aaattgttag aacagagaat gaatttgtgt ctgtcatgaa agaagcccaa gcagatgtca 1800

atagaatgta ttggatagaa ctagttttgg aaaaagaaga tgcgccaaaa ttactgaaaa 1860

aaatgggtaa attatttgct gagcaaaata aatagtaagg ctgagatctt cttcagtgca 1920

ttgtagttga atgaagggtt agggggggaaa tgccccccta ttttttgtct agccatcctg 1980

ccacgtttga cagggtagca atttcgacac gatagggttc tctcttctgc cgtta 2035

<210> 70
<211> 1426
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 70, Example 70: designer nirA-promoter-controlled NAD-dependent Alcohol Dehydrogenase DNA construct (1426 bp)

<400> 70
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catggggtat caggactgcc ctgcctagaa cttcaccttt ctctagcctc 300

tcaagcacat cgtttatttc atctagcttg tggatatcaa cctctaccct gaccttaccc 360

tgaagggcta acgtgactag ctcatggagc tctacatagt ttcctactag gcttccttca 420

aaggatacct cagaggatat caccctgatc gtggggaatc taagctcacc cccatagcct 480

acgatgataa gcctccccat cctccctagc aggtatggtg tataatcgac tgtagcctga 540

gagcctacga agtccattgc aacgttaact cctctccccc tggtaagctc catgacctgc 600

tttacagggt ctcgtctagc gtcaaccacg tgatccgctc caagcctctc ggccagcttt 660

agtttttctt ccttaacgtc cagtgctatc accgtcgcgg gtgtcataac tttaagtagc 720

tgaactgcaa tatgacctaa tcctcccacg cccactatag cgacgtatgc gccgggatag 780

agggttcggg cggccttctt aacagcccta taagccgtta tcccagcgtc cgctagaggg 840

gccatttcaa caagtttctc cctgctaata tccttaggca gctttatcac agacctgtgc 900

gaggtcctca tgaactctgc aaatccacca tcgatattaa gtcctgggaa ctctaggttc 960

tcgcagtgca tatcctcacc agctctacag gctagacagg ttccatctgt gaccgccggg 1020

tgaagaatta ccgggtcccc cttctctaag ccttccactc cttcggcaac ttcttcaata 1080

tacccgacgt tctcatggcc taaagtgtag ggtagcttag gctgcaatag ctcatgccac 1140

attccctgga caaggtggag gtccgtatgg catacgccag cgcctgcaat ccttacaata 1200

acgtcaaatc taccttctag cctcggatag tcgacatcct ctatcctcaa cggcttgtta 1260

tactcgtgga gcctggcagc tttcaataag gctgagatct tcttcagtgc attgtagttg 1320

aatgaagggt taggggggaa atgcccccct atttttgtc tagccatcct gccacgtttg 1380

acagggtagc aatttcgaca cgatagggtt ctctcttctg ccgtta 1426

<210> 71
<211> 1468
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 71, Example 71: designer nirA-promoter-controlled NADPH-dependent Alcohol Dehydrogenase DNA construct (1468 bp)

<400> 71
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catggcgtac ccagacacct ttgaaggatt tgccgtcact gacactgcaa 300

aatggtccac aaccaagaag atagaattca ccccaaaaag gttccaggaa catgatatcg 360

atgtcaagat ccatgcctgt ggtatctgcg ggagtgatgt tcacactgtt tgcgggggat 420

gggcaaaacc agaccttccc gtgatcccag gacatgagat cgttggtgag gttgttagag 480

tgggcccaaa agtgaaggga tttgaaattg ggcaaagagt tggtgttgga gctcaagttt 540

gggcctgtct agagtgcgac acatgcaagg ataacaacga aacgtactgt cctcaatggg 600

tggacactta caatgccact tatcctgatg gtgacaaggc atggggtggt tattcctctc 660

acatcagagt ccacgatcac tttgtattcc ctattcctga tgaacttcca actaatgctg 720

tggccccaat gttgtgcgct ggtatcacca cgtactctcc gttggtaaga aatggagctg 780

gtccaggaaa gaaggtgggt atcatcggaa ttggagggtt gggacatttt gccatcatgt 840

gggctagggc tcttggttgc gaagtgtaca cgttttctag aacacatagc aaggaagctg 900

atgctaagaa attgggaact gaccatttta ttgcgacgtg ggaggacaaa gactgggcca 960

agaagattgg cagaaagctg gactttatca tttcgtgtgg aaattcggcc acgaactttg 1020

atatggatgg ttacctcagt gtgctgaagg ttcatggtaa actcatttcc gtcggccttc 1080

cagaggagcc attcacgctg tctgctggaa gctttatcaa gaacggttgc tacttgggat 1140

cgtcccactt ggggaacaga caggagatgc ttgatatgct gaaacttgct gctgataagg 1200

gcattggttc ttggtatgag gagctcccaa tctctgagga agggctgaag gaaggactgg 1260

agagatgcca caacaatgac gttaagtata ggttcaccct gaccggttac gataaggcat 1320

tcaaatagta aggctgagat cttcttcagt gcattgtagt tgaatgaagg gttaggggg 1380

aaatgccccc ctatttttg tctagccatc ctgccacgtt tgacagggta gcaatttcga 1440

cacgataggg ttctctcttc tgccgtta 1468

<210> 72
<211> 1555
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 72, Example 72: designer nirA-promoter-controlled NADH-dependent Butanol Dehydrogenase DNA

construct (1555 bp)

<400> 72

agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgcaggga agcgcgcaaa atggcgagca catcatcgcg gttcaatgtt 300

ttgaaacggc cgaactcgcc aaacgccatc gctttatcgg ccatcagctc caagttttcc 360

tcgccgatgc catagtccgc aagccgcgac ggcgccccga ggctcgacca gaactcgcgc 420

agccgctcga tgccttcaag cgccacatcc cgctccgatt tgcccgccgg atcgacatca 480

aagacgcgca ccgcgagctg ggcgaaacgg ctgacatttt catcgagcac atgcttcatc 540

cagttcggga acaaaatcgc caatcccccg gcgtgcggga tgtcatacac ggcggaaacg 600

gcatgctcaa tattgtgcgt cgcccagtcg ccgcggacgc ccatttgcaa gaagccgttt 660

aaggcgatcg tgcccgagta catgatcgtc tcgcgcagct cgtagttttc caaatcgttg 720

atcagtttgg gcgccgtttc gatcacggtt ttcaacaccg cttcacacat ccggtcttgc 780

aatggcgtgt tcggcgtatg gtggaaatat tgctcaaaca catgcgacat catatcgaca 840

atgccgtaaa ccgtatggtc tttcggaacg gtcatcgtat acgtcggatc caaaatcgaa 900

aattgcggga acgtaaacgg gctgccccag ccgtattttt ctttcgtctc ccagtttgtg 960

atcaccgaac cagaattcat ctccgacccg gtcgccgcca gcgtcaagac gacgccaaac 1020

ggcagggcgc cggtgacggg cgcttttttc gtgataaact cccacggatc gccatcgaat 1080

ttcgccccgg cggcgatcgc tttcgtgcag tcgatgacgc tgccgccgcc aaccgccagc 1140

aaaaattcga cgccttcccg cttgcaaatg tccacccctt ttcttacggt cgagacgcgc 1200

gggttcggtt cgacgcctgg cagttcgatg acctcggcgc caatattccc caatatcttc 1260

atgacttcct catacaatcc gtttcgtttg atgctgccgc cgccatacac gagcagcact 1320

ttcttgccgt agcgcggcac ttcttctttg agacgttcga gctgcccttt tccgaaaatc 1380

agtttcgtcg ggttgcggaa aataaactct tgcattaagg ctgagatctt cttcagtgca 1440

ttgtagttga atgaagggtt agggggggaaa tgccccccta ttttttgtct agccatcctg 1500

ccacgtttga cagggtagca atttcgacac gatagggttc tctcttctgc cgtta 1555

<210> 73
<211> 1558
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 73, Example 73: designer nirA-promoter-controlled NADPH-dependent butanol dehydrogenase DNA construct (1558 bp)

<400> 73
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgaaaatc cacatcactg ccgtaatatg cacaagtata taatttttcc 300

atagtttcat cattaatctc ccttggattt gatcctgtgc atggatctaa aacagcatta 360

tgagctataa atttaagatt agctttaaat tcattctcat ctattccata ctctttcatt 420

gatgaaggta tatttaattc cttattaaac ttatttatta aatctattag gtcatctgtt 480

aattctcttt cactttctcc ctttaatcca atatgtcttg caatgttagc atatctattt 540

tcacaagctt ttctattata tttaattaca tatggcaaga agatagcatt agcacatcca 600

tgtggtatat ggaatacagc ccctacctta tgagccatag aatgtactat tcctaaaagg 660

gcattagaga aggccattcc tgctaaacat tgagcctcat gcatttctcc cctagcttcc 720

atatctccct tatatgaatt tactaagtgc atattaacca tttcaattgc ctttaaagct 780

aaaggatctg taaagtttga tcttaaactt gcagtataag cctcaatagc atgagttaag 840

gcatccattc ctgtgtgagc tactaacttc tctggcatag tttctgctaa gctaggatca 900

acaatagcta tatctggagt tatttcaaaa tctgctaaag gatatttaat cttagcctta 960

taatcagtta ttactgagaa ggcagttacc tctgtagcag ttccagaagt tgatggaata 1020

gctacaaact ttgcttttct tctaagctta ggtaatccaa aaggaacaat ggcctttca 1080

aaagtaaaat caggatactc gtagaaaatc cacatagcct ttgctgcatc aataggtgaa 1140

cctcctccta tggaaactat ccagtctgga ttaaattcct ccatttcctt tgcacccttc 1200

ataacagttt ctactgatgg atctggttct actccttcaa aaacctttgt ttccatatta 1260

gcttccttta aataacttaa aaccttatct aaaaagccaa atcttttcat tgatccgcca 1320

ccaataacta taaaggcctt tttaccttct aaactcttta atacttctaa ggaatctttt 1380

ccatgatata tgtcccttgg taaagtaaat cttgccatta aggctgagat cttcttcagt 1440

gcattgtagt tgaatgaagg gttaggggggg aaatgccccc ctatttttg tctagccatc 1500

ctgccacgtt tgacagggta gcaatttcga cacgataggg ttctctcttc tgccgtta 1558

<210> 74
<211> 3646
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 74, Example 74: designer nirA-promoter-controlled Phosphoenolpyruvate Carboxylase DNA construct (3646 bp)

<400> 74
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catggccggc gttccgcaag cccgccgcga tgcccaggat ggagagcagc 300

agcgcccgct ccagggccgg gcgctcgggg tcgccttccg gcgaggcccg gtaccgggcc 360

agcagctcca cctgcaggta gctgatgggg tcgacgtacg ggttgcgcaa ggccgtctgc 420

cgcgccagca cggggtggtg ggccagaagc ggcccgccga aggtctcctc caagagcgcc 480

cgggtccgca ccatggcctc ctcgagccgg gggaagaacc ggttcgccag gggcccgggc 540

accagccgca ggtactccct ggccacggcc aggtcggcct tggccagggc cagggccgcg 600

ccgtccagca ccgagcggaa gaagggccag cgggcaaaca tcgcctggcg aaggtcccgc 660

ggcaccgccg caagaccttc ggccagcccg taccagccgg gcagcagaag acgcacctgg 720

gtccaggcca tcacccaggg gatggcccgc agatcctgga cgcgccgggc ccggcccgtg 780

cgggccaccg ggcgggaagc gatcttcagg gcggcgatct cccggatcgg ggtgaagtgc 840

tcgaagaact cgaagaaccc gggctccgcc agcagctggc ggtaggcctc cgccgaccgg 900

gcggcggccc ggtccatggc ctcccgccag gccgccggga cgggggaacc gcccggggcg 960

agcccctggc gcccgccgcc cggcctgctc ggcgcggtcc cggccccgcc gggcgggccg 1020

ggttcctccg gcgaaagcac cgcctcttgg gcctgggcca gcgtgtcccg ggccgccgcc 1080

agaaggaagt ggtagaggag ctgctccagg ttgcgcaggg ccagctcggg gtgagcgtag 1140

cggtccgcca gcgcctctcc ctgctcggtg agccgcaggc ggcggcccac ggtgcccggc 1200

ggcaggctgg cgatggcgcg gccggcggtc cccccgccgc cccgggctgt ggacgtgccg 1260

cgaccgtgga agaaggacac cggcacgccc gccgcccggg ccaccgccgc gatgccctcc 1320

tgggcccggt agagggccca gttggccgcc aggtagcccg cgtccttgct ggagtcggag 1380

tagccgatca tcacctcgca gccgccgcgg ccgcgggcgt ggacgccgaa gacggggttc 1440

tgcagcagct gctccatggc gcggggcgcc gcctccaggt cggccagggt ctcgaacagg 1500

gggaccacgt caaagggcaa ggggtggccg gggcggtaca gccccacctc ccgcgccagg 1560

acgaacacct ccagcacgtc ggcggggccg cggcagccgc tgatgatgta agccccccgg 1620

tcctgccagg cccgcagagc atccagggcc acggccagct cgcggctgcg gggccggtag 1680

cccaccggcg ccagcggccg gggcgaagcc agctcccggg tcagcaccgc ctcccgcccg 1740

gcggcatcca gggccaggta ctcccctgcc gccatgaccc caccggcttc cagcagctcc 1800

gccaccgccc gcccgtgggc ctcggcatgc tcccgcaggt cgaggggcgc catggcctcg 1860

ccaaagacct gggcccgcca gcgcagggga cgcaccaggg tggccgccgc ctcgcccagc 1920

ccggcatccc gcagcccctc ttccacctgg aagagcaggc gatccagggc ggtggaaccg 1980

gcggcctccg gcccctcgcc ggccggcggt tccccggcgg tcccctttgg tggcgcggcc 2040

gcggcgggcc gggaaggccg ttcgccggct gggtccgctg gaacggcggg ccctccaggg 2100

atgccctccg ctgaagcggg cggccgggga ggcattgccg ctccctccgg cggagccgcc 2160

ggccggggag gcggtgccgt tgcctcgact gcagcgtccg gccggtgggg tacagccggt 2220

gcctcggctg gagccgccgc ccgggcgggc gtctcgctcc acacctcttc cggcaccgcc 2280

cttgccgccc agtgccgctg cagccggtag gcgaaccgcc ggtagggctc gccggggaac 2340

cggccggcgg ccgccggcgg caggggcgcc acggcctctg cgggcaagga gggcagggga 2400

ggcagggaag cccgttcttc cgccacggac agatcccgcg tcagggcggc caggcctccg 2460

gcgtactttc gggcgatctc ggcccgcgcg taggcctggg cccaggcggt gacctccggg 2520

gtcacaaagg ggttgccgtc ccggtcacca ccgatccagc tccggaaggc caggcgcggg 2580

ggaagaaccg gccgccgccc gtagcgggcg gccaccgccc cctcgagggc ctccatgagc 2640

cggggcaccg cctcccacag ggtggtgggc aggtagtaga ggccgccgcg gacctcgtcc 2700

tccacccggg gcggggccgg gcgcagctcg cgggtggtcc agagcagggt gacccgggcc 2760

accacctcgt ccaggtcccc ctcgccccgc tccagccggt ccagggcctg gttgagctgc 2820

agcaggtggt ggcgcagggt gcgccgccgc gtctcggtcg gatgggccgt gaaggtcagc 2880

tccagccggg ccgaggcgag gaggcgcacc acgtcgtcga attccatccc ttgggcctga 2940

agctgggtga ccagggccag cagcgactcg ggccggggcc ggtcgggcgt gctggcctgc 3000

tcgcgccggc ggttcacccg cacccggtgc cgctcctccg ccaggttgac cagatggaaa 3060

taggtcgaaa aggcccggat cagcccttcg gccgcggcca ccgaaagccc gccgatctcg 3120

gcccgcagcg cctgccgggc ggcgtcgtcc cccgggtgct gccggaggtg cttggtgtgg 3180

gcgcggatgt cctcttccag ttcgaacagg cgatcccccg agaggcggcg gatggcctcc 3240

cccagggccc gtcccaggag gtcgacctcc cgcttgagaa gggggtacag ctcctcttcc 3300

ggccgcccat ccggcggggg aacggatccc gccggggcag gcaacgcctc gccggacgag 3360

ccggccgccg cagggcggct cccctgcccg ccgccccggt cctggcggtc ctgaccgtcc 3420

ttgcggtccc ggccgtcctt caggtcccgg ctccccttcc ccgccgccga gccggcccct 3480

gccggccggt caccctcgcc gctcactaag gctgagatct tcttcagtgc attgtagttg 3540

aatgaagggt taggggggaa atgccccccc atttttttgtc tagccatcct gccacgtttg 3600

acagggtagc aatttcgaca cgatagggtt ctctcttctg ccgtta 3646

<210> 75
<211> 1591
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 75, Example 75: designer nirA-promoter-controlled Aspartate Aminotransferase DNA construct (1591 bp)

<400> 75
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgagaatt tcggaaagat caaaaaaggc gccggcgagt cccataagaa 300

aattagtgcc atttgccgag gaagctgtaa aaaaaggtaa aaaaatctat tatttaaaca 360

taggtcaacc tgatatacca acaccttcaa tttattttca gtatgaggaa aaacacagac 420

cccagattgt agcttataca cactcagcag gtcttctgcc actgagggag gcttttacaa 480

aatattacgc cagattcgat atagatgttt tcccggatga aatcatcgtt accaatggtg 540

gaagtgaagc tgtcctgttc gctatgacag tcgtggcgga tccgggagat gaaatacttg 600

ttctggagcc gttctatgcc aattacgctg gatttgctgc tcaacttggt atcaatcttg 660

ttccagttag aactcgcccg gaggatggat atcaaatacc aaagatgggt gattttctgg 720

agaaaatcag tcacaggact aaagcaatca ttttttccaa tccctgcaat cctacggggg 780

ctgtttacga tgaaaaacaa cttgaagtta ttgctgaagt tgctttgaag agagatttgt 840

ttgtgatttc agacgaggtt tatagagaat tcacttttga tggttttagg gccatatcta 900

tgatgagttt ttctaatatt tctgacaaag tcatagttgt tgacagtatt tctaaaagat 960

atagtgcctg cggcgcgcgg attggtacat ttattaccaa gaataaagat atatatcaag 1020

cagctatgaa actggctcag gcgagactct gtcctgctat gacatctcaa tacggtacta 1080

ttggtcttct gacgcttgac gatttgtatt attcacaaat gagaaaagag tatgaaatga 1140

gaagagatgt tgtttacgaa gaacttcagc gcattgatgg agcagtcttc aagaaacctc 1200

acggggcttt ttatatttcg gtgaaacttc caatcgacaa ttctgaagat tttgtgaaat 1260

ttatgttgac ggagtatgag gttgaaggaa aaacgacaat ggtggcacct ctcagtggat 1320

tttatgtaac accatctacg gggatgagtg agatcagaat agcgtatgtt ctggaacgcg 1380

aacaactgag ggatgcagtt gcaattttga cttcaggttt gaaaacttac atagagagaa 1440

gaaataaata ataaggctga gatcttcttc agtgcattgt agttgaatga agggttaggg 1500

gggaaatgcc cccctatttt ttgtctagcc atcctgccac gtttgacagg gtagcaattt 1560

cgacacgata gggttctctc ttctgccgtt a 1591

<210> 76
<211> 1588
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 76, Example 76: designer nirA-promoter-controlled Aspartate Kinase DNA construct (1588 bp)

<400> 76
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgtagtcc gaaaacttga cagagttctt tcaacaaatc ttctgcttta 300

tcttcatgta caaggcatga tatctttatt tcagaagttg ttatcatttc tggctctatg 360

tttttctttc tcaaaacttc aaaaaatttt gctgcaacac ctcgttgata tttcattcct 420

aaacctatta ttgatacctt agaaaacccc cctgtgatct taatttcaca atcaagatct 480

ctcattgcct tctgtacgtc aaccgagtta ctttcaacaa ttgtgaaaga tagattaatg 540

tctcctgagt tactcaccaa cgatatcata tcaacgttaa agccttttc agcgagttct 600

ctaaatacgt cggcggttgc tttagaattt ttcaagctat aaacgctgac ctttacctga 660

tttttctcta tcgtcgcgcc tgtaacaacg ggtcgctcaa gccattccgg aagttttccc 720

atcacccacg ttccctcctc atttgaaaac gaagaagcgc aataaattgg tacgctgtat 780

ttttttgcta tctcaacact tcgagaatgt agaaccctgg caccaagtgc ggagaattcc 840

aacatttcat cgtatgtaat ataagacagt ttttttgcct ggggaaagat cctgggatct 900

gttgtatata tgccagcgac gtcgctgtat atttcgcaga ttgttccaag ttttgcggca 960

atagcaacag cagaagtatc tgatcctcct cttccaagag ttgtcagttc atcgttttcg 1020

tttattccct gaaaccctgt aacaagtaaa acatcgttat gaaaagccag cgatcttaat 1080

tttcggtcat ctatatcttt tatccttgcc gaattaaaat cgctggttgt cagaatccga 1140

gcctgaaacg cattcaaaga tacagctttc atacctattc tgtcaaggta tatggatagc 1200

aaagcagcgg atatttgttc gccacaggat aacaacatat ccagttctct tggattgggt 1260

ttttcagaca gccttcttgc aagaaaaacc aatttgtctg ttgtttttcc cattgcagag 1320

acaacaacga ttaacttttt cccatttttt actgttttca ctattttctc ggtaattttt 1380

ttgattcttt ctatgctggc aagcgatgag ccaccatatt tttgtacaac aagtttcaga 1440

aaaatcacta aggctgagat cttcttcagt gcattgtagt tgaatgaagg gttaggggg 1500

aaatgccccc ctatttttg tctagccatc ctgccacgtt tgacagggta gcaatttcga 1560

cacgataggg ttctctcttc tgccgtta 1588

<210> 77
<211> 1411
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 77, Example 77: designer nirA-promoter-controlled Aspartate-Semialdehyde Dehydrogenase DNA construct (1411 bp)

<400> 77
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgtcccct gaaaatatta taaatctctg cattgagaac tgcacacccg 300

gcagcccctc tgattgtatt atgaacaaga gcaacgaacc caaactgttt gttcgaatac 360

tgtttcaacc tgccaacact gacactcatt ccaccaccaa gatctctgtg aaacttcggc 420

tgcggagaat caactcctgt caaataaaaa acaggttttt caggtgcggt tggaagatac 480

attcctttaa gtggttgaaa atcttcaaaa gctctcacaa tttcacttaa agtggccttt 540

tcctgagttt tgatagttat agatagcata tgaccgtcaa caacggctac cctgttgcac 600

tgtgcgaaaa tatcgagatt cgccgggtat atttttccat ctttcaatct gccaagtatt 660

ttttttgatt cggtcatgat tttttcttcc tcatttttta tgaacggcac aacattgtca 720

attatatcca tagatggtac accgggatat cccgcgccag agatagcctg cattgtgaca 780

acatttgcct cttctatacc gaatctatcc attatgggtt taagaaccat tgtaaaacct 840

atcgttgagc aattagggtt ggtgattatt tttccttttc tcttttgagt ttcggttatt 900

ttcaaatgat ccagattaac ttcagggata attagaggta catcctcgtc cattctatgg 960

cttgcggcat ttgagaaaac aatgtatcct gcgtttgcaa attcctcctc aatttcgcct 1020

gcaacatctg aaggcaaagc agaaaacaca taatcacaat ctatatcagg tgtgcatttt 1080

tttaaaacca tatctcctgc tttttcggct acaggaacat tcaagcgcca ttgaactgct 1140

tctctgtact tttttcccgc agaattatca gaagctgcca gagctgttat ctcaaaaaat 1200

ggatgatttg aaagcaattg aacaaatctc tgtccaacaa gccctgttgc accaagaata 1260

gctaccttca ttaaggctga gatcttcttc agtgcattgt agttgaatga agggttaggg 1320

gggaaatgcc cccctatttt ttgtctagcc atcctgccac gtttgacagg gtagcaattt 1380

cgacacgata gggttctctc ttctgccgtt a 1411

<210> 78
<211> 1684
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 78, Example 78: designer nirA-promoter-controlled Homoserine Dehydrogenase DNA construct (1684 bp)

<400> 78

agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgaacttt actatcttcg ccttccaccc ggatgacgtt gcaaatctct 300

gccactatac tcatttctcc caacaccatc agggcatctc gcaggtcaga ttcaggaact 360

ctatgggtca ctaagaccag ctgggcgaac tcctcgccgc ttgtcttctg cagcacggta 420

gctatgctca gctgatggct gccaaaaacc ccggcgatgg ccgccaatac cccagggcgg 480

tccttaacca gcatccgaat atagaacttg ctctccactt tgtcgatagg aataatctcc 540

ttggcttcaa aacaagtaca gcccagcatg ccggtggtac catgactgag gttatggcat 600

atctccatta tgtctcccac caccgcgcta gcagtgggca tctgccctgc ccctcttcca 660

aagaacatga cttctcccac cgcgtccccg ttcacgaata cggcgttgta aacccccttt 720

accgcggcca gagggtggtg cataggtatg aaagccgggt ggacccgggc ttgcacccgg 780

ccgtcgattt cctgcgcgat agccaggagc ttcaccacat agcccaattc ataaccgtac 840

ttgatatcta aagggcttaa acgggtaatt ccttcaacgt aaacgttttc gaacgtaacc 900

cggctgttga aggcgatcga agccaggatg gcaattttac gagcagcatc atagccttct 960

acgtctgaag taggatcagc ttcagcatac cccagttcct gcgcctcttt caaagccctc 1020

gaaaactcta ggccttcctc gctcatctta gtaaggatgt agttggttgt cccgttaaca 1080

atccccatta cttctttgat tcgattggca cctagcgaat gcttcaaagg ataaattaag 1140

gggatgcccc caccaacact ggcttcaaaa aagaagtcca ccttgttctc ttcagctgcg 1200

gccagcagtt cctgcccgtg gaccgctatt aaatctttat tggcagtcac cacgttcttg 1260

cctttgcgta acgcctgcaa aataaaggtt cgagccggtt cgatgcctcc tatgagttct 1320

acaacaacac ttatatggtc atcatccagt atgtctttga tatcggcgca aaggacgtct 1380

tcgcttaaac ctagactcaa aaccttctcc gggtcttttt cgaggattcg cttgatcgcg 1440

actccttgtc cggtacggag cgaaataaca tcccggtttg aggctaaaag cttgaccaca 1500

ccggatccaa ccgttccaca acccaagagg ccaatattaa ccactaaggc tgagatcttc 1560

ttcagtgcat tgtagttgaa tgaagggtta ggggggaaat gccccccctat tttttgtcta 1620

gccatcctgc cacgtttgac agggtagcaa tttcgacacg atagggttct ctcttctgcc 1680

gtta 1684

<210> 79
<211> 1237
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 79, Example 79: designer nirA-promoter-controlled Homoserine Kinase DNA construct (1237 bp)

<400> 79
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgaaggtc ctggtaccgg ccacaacgac caatctcgga gcgggattcg 300

acgtctttgg actcgcgctg gatcttttca acgaagtgga gttttctttc gatacaaaag 360

agacaaccat agaaagtact ggaaaatacg cttcggattt gaaggaccac aatctgtttt 420

tcgaagtctt caggttcttt gagagaaaaa ccgggtacag agttccgcca gtcaggatca 480

agcagacatg caacatccct gtatcgagcg gtcttggatc gagcgccgct gtgatcgtcg 540

cggcactcca cattgcgaac gaaggaacgg gcagaaatct ttcacgggaa gatcttatga 600

aactcgctgt ggagctggaa ggacaccctg acaacgttgt acccgctttc acaggggggc 660

ttgtggtctg ttatcaaaac ggaagtcatc ttgattttga aaagttcgag atcgatcttt 720

ctctcacatt tttcgttcca aacttttcga tgtgcacgaa cgagatgaga aagatccttc 780

cggagaaggt ccctttcgaa gatgcggtct tcaacataaa gaattcatgc cagttccttg 840

caaagatcgc agctggaaag atcaaagagg ctctgaaata cgtgggagat cgacttcacc 900

agaactacag gataaacggc aataagaaga tgaaagagtt tgtggaagcc atcttatcaa 960

aaaatcccga gtactggttt gtgagcggat ccggtccttc tgtttgttcc aatataaatg 1020

actttgaagg gattccctat ctcaaggacg ttctgaagct gagggtgaac aacaggggga 1080

tgatagtttc agaatagtaa ggctgagatc ttcttcagtg cattgtagtt gaatgaaggg 1140

ttaggggga aatgcccccc tatttttgt ctagccatcc tgccacgttt gacagggtag 1200

caatttcgac acgatagggt tctctcttct gccgtta 1237

<210> 80
<211> 1438
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 80, Example 80: a designer nirA-promoter-controlled Threonine Synthase DNA construct (1438 bp)

<400> 80
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgaaattg ggaatactcg aaaagtacag agaatttctt cccgtaacag 300

acaaaacccc catgctctct ttgaatgaag ggaacactcc tctcataccc ctcgtgaaca 360

tgagcaggga actcggaata aacatctacg taaaatacga aggggccaat ccgacggggt 420

ccttcaaaga cagaggaatg gtcgttgccg tcgcaaaggc actggaagaa ggctcgaaag 480

ccatcatgtg cgcttcaacg gggaacacct ccgcatccgc tgccgcgtac gccgcaaggg 540

caggaataaa ggcgatcgtt ctgataccag aagggaagat cgcactcgga aagctggctc 600

aggcgatgat atacggcgcc gtggtgcttc aggtgagagg gaatttcgac aagtgtctgg 660

aactggtcaa ggagatcaca tccaaatatc ccatcacact cgtgaacagt atcaatccct 720

acagactcga aggtcagaaa acggccgctt ttgagatagt cgacgagctc ggagatgcac 780

cggactacca cttcatcccc gtgggaaacg cgggcaacat ctccgcttac tggatgggat 840

acaaggagta ttatcagcat gggttctcca ccaaactgcc gaagatgatg ggattccagg 900

cggaaggggc cgccccccata gttcgcggtc atcccataga aaacccggag acggtcgcca 960

ctgcaataag gatcggtaac cccgcgaact gggaaaaagc ggtccgggca cgcgatgaat 1020

cgggtggaga catcgacatg gtgagcgacg aagaaatact gcgcgcacag agactcttgg 1080

ctcagaaaga agggatcttc tgtgagcccg catccgctgc atcgatagcg gggcttttga 1140

agaagcacag acagggaatc ttcaggggtg gagagatcgt tgtgtgtacc ctcacaggga 1200

acggtttgaa agatccgaac atcgtcatct cacagcttga acccccaagg atcatagaag 1260

gaagagtaga agagattctg gaggtactcg acatatgata aggctgagat cttcttcagt 1320

gcattgtagt tgaatgaagg gttaggggggg aaatgccccc ctatttttg tctagccatc 1380

ctgccacgtt tgacagggta gcaatttcga cacgataggg ttctctcttc tgccgtta 1438

<210> 81

<211> 1600
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 81, Example 81: designer nirA-promoter-controlled Threonine Ammonia-Lyase DNA construct (1600 bp)

<400> 81
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgttgaca ttagcagaca ttgaacaagc gcgagcgaaa atgaaaggca 300

tcgtccatca aacgccgctt gagcattcgc aaacgttcag ccggctgtct ggcaatgatg 360

tatatatgaa actcgaaaat ttgcaaaaaa cgggctcgtt taaagtaaga ggttcattca 420

ataaaattat gtcgctcacg gaagaagaga gggcgcgcgg cgtcatcgcc gcttcggccg 480

gcaaccacgc ccaaggggtc gcctatgcga gcggcatgct tcatattccg tgcacgatcg 540

tcatgccaaa aggcgcgccg ctcagcaaaa ttgaagcgac gaaaagctac ggggcggaag 600

tcgtgctgta cggcgatgtg tttgacgagt ctttggaata tgcgttagag ttgcagcgtg 660

aacgggggat gacgtttgtt catccgtttg acgacttggc ggtgatggcc ggccaaggga 720

cgatcggctt agagctgatc gagcagcttc ccgacgtcga tgtcgttctt tgtccagtcg 780

gcggcggcgg gttgcttgcg ggggtggcgc ttacgttaaa acagctgaag ccgtcggttg 840

aagtgtacgg cgttgagtca tcggcttgcc ccggcatgac ggcggccata cgccataaac 900

agcccgtctc cattgccgca tcgaatacga tcgccgatgg gattgccgtg aaaaagccgg 960

gcaatattac gtaccaatac attgagcaat acgtcgatgg cgttgtatgc gtggaagagg 1020

cggaaatttc gcggacgatg ctgtatgtgc tcgagcggaa caagctgttg atcgaagggg 1080

cggcagcttg tccgctggcg gcattgttgt atcaaaagct gccgtttcgc ggcaaaaaag 1140

tcgccgccat tttaagcggc ggcaacgtcg atgtgacgct catttcccgc atcatcgagc 1200

gggggctcgt cgaagccggg cgattcgtta cgtttacaac ggtcatctcc gacaagccgg 1260

gccagttgaa caagctgctg cgcattattg cggagcttga ggcaaacgtg atgtcgattc 1320

atcatcagcg catcggcgcc aaagtgctgc caggtcaggc ggaaattcac ttttcgctcg 1380

agacaaaaaa cgaagaccac attcagcaaa tctaccaagt gttgttgaaa gaaggctacg 1440

atgtacagtt ttaccgatga taaggctgag atcttcttca gtgcattgta gttgaatgaa 1500

gggttagggg ggaaatgccc ccctattttt tgtctagcca tcctgccacg tttgacaggg 1560

tagcaatttc gacacgatag ggttctctct tctgccgtta 1600

<210> 82
<211> 2107
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 82, Example 82: designer nirA-promoter-controlled Acetolactate Synthase DNA construct (2107 bp)

<400> 82
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgttgaca aaagcaacaa aagaacaaaa atcccttgtg aaaaacagag 300

gggcggagct tgttgttgat tgcttagtgg agcaaggtgt cacacatgta tttggcattc 360

caggtgcaaa aattgatgcg gtatttgacg ctttacaaga taaaggacct gaaattatcg 420

ttgcccggca cgaacaaaac gcagcattca tggcccaagc agtcggccgt ttaactggaa 480

aaccgggagt cgtgttagtc acatcaggac cgggtgcctc taacttggca acaggcctgc 540

tgacagcgaa cactgaagga gaccctgtcg ttgcgcttgc tggaaacgtg atccgtgcag 600

atcgtttaaa acggacacat caatctttgg ataatgcggc gctattccag ccgattacaa 660

aatacagtgt agaagttcaa gatgtaaaaa atataccgga agctgttaca aatgcattta 720

ggatagcgtc agcagggcag gctggggccg cttttgtgag ctttccgcaa gatgttgtga 780

atgaagtcac aaatacgaaa aacgtgcgtg ctgttgcagc gccaaaactc ggtcctgcag 840

cagatgatgc aatcagtgcg gccatagcaa aaatccaaac agcaaaactt cctgtcgttt 900

tggtcggcat gaaaggcgga agaccggaag caattaaagc ggttcgcaag cttttgaaaa 960

aggttcagct tccatttgtt gaaacatatc aagctgccgg taccctttct agagatttag 1020

aggatcaata ttttggccgt atcggtttgt tccgcaacca gcctggcgat ttactgctag 1080

agcaggcaga tgttgttctg acgatcggct atgacccgat tgaatatgat ccgaaattct 1140

ggaatatcaa tggagaccgg acaattatcc atttagacga gattatcgct gacattgatc 1200

atgcttacca gcctgatctt gaattgatcg gtgacattcc gtccacgatc aatcatatcg 1260

aacacgatgc tgtgaaagtg gaatttgcag agcgtgagca gaaaatcctt tctgatttaa 1320

aacaatatat gcatgaaggt gagcaggtgc ctgcagattg gaaatcagac agagcgcacc 1380

ctcttgaaat cgttaaagag ttgcgtaatg cagtcgatga tcatgttaca gtaacttgcg 1440

atatcggttc gcacgccatt tggatgtcac gttatttccg cagctacgag ccgttaacat 1500

taatgatcag taacggtatg caaacactcg gcgttgcgct tccttgggca atcggcgctt 1560

cattggtgaa accgggagaa aaagtggttt ctgtctctgg tgacggcggt ttcttattct 1620

cagcaatgga attagagaca gcagttcgac taaaagcacc aattgtacac attgtatgga 1680

acgacagcac atatgacatg gttgcattcc agcaattgaa aaaatataac cgtacatctg 1740

cggtcgattt cggaaatatc gatatcgtga aatatgcgga aagcttcgga gcaactggct 1800

tgcgcgtaga atcaccagac cagctggcag atgttctgcg tcaaggcatg aacgctgaag 1860

gtcctgtcat catcgatgtc ccggttgact acagtgataa cattaattta gcaagtgaca 1920

agcttccgaa agaattcggg gaactcatga aaacgaaagc tctctagtaa ggctgagatc 1980

ttcttcagtg cattgtagtt gaatgaaggg ttaggggga aatgcccccc tatttttgt 2040

ctagccatcc tgccacgttt gacagggtag caatttcgac acgatagggt tctctcttct 2100

gccgtta 2107

<210> 83
<211> 1405
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 83, Example 83: designer nirA-promoter-controlled Ketol-Acid Reductoisomerase DNA construct (1405 bp)

<400> 83
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgttttac ctctttaagc caaggcatca tcgccctaag ttccttacct 300

acttttcta tcaggtgctc ctgccctttc ctccgcaagg cactgaagac cggacggccc 360

acttggaatt cgagcaagag ctcccgggca aaagttccat cctggatggc agccaaaacc 420

ttttcatct cagccctggt gttttcgttt attatgcgcg gacctaccgt gaggtcgccg 480

tactcagcgg tatcactgac cgagtaccgc ataaggccga taccgccttc gtatataagg 540

tctactatga gcttaagctc gtgcaggcac tcgaaatagg ctatctccgg ctggtatcct 600

gcctctacca aggtatcaaa accggcttta ataagttcag tgaccccgcc acagagcaca 660

cattgttctc cgaataggtc ggtctcggtt tcttctttaa aagtagtagc gatgacacct 720

gcacgggtac agccgatacc tttagcatag gctaaccccg tttccaaggc tttccccgta 780

tggtcattat gtacggctat gagcccgggg actcccactc cttgcctgta catacgcctg 840

accagatgac caggactctt aggcgctacc atgaagacat cgacggaagg cggaggcaca 900

atttgcccga aatgtatgtt gaacccatga gaaaatccca acgcatcgcc ttcgttaagg 960

taaggttcga tcttttcccg gtaaaccttg gcctggatat catccggcac caaaatctgg 1020

attatctggg cagctcgggc cgcttcatct accggtaaag gcgtaagccc gtcggctaca 1080

acctgattcc actccgcagt ggtaaaatcg tcctccggct tacgcaaccc taccaccact 1140

tcgagaccac tgtcgtgaag gttctgggcc tgagcgtgtc cctggctgcc ataaccgatc 1200

acggcaatgg tcttgccttt aagcaggtca aggtttgcat cagcatcata atacatccta 1260

gccattaagg ctgagatctt cttcagtgca ttgtagttga atgaagggtt agggggggaaa 1320

tgccccccta ttttttgtct agccatcctg ccacgtttga cagggtagca atttcgacac 1380

gatagggttc tctcttctgc cgtta 1405

<210> 84
<211> 2056
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 84, Example 84: designer nirA-promoter-controlled Dihydroxy-Acid Dehydratase DNA construct (2056 bp)

<400> 84
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catggggctt cctgaagatt gccccttgc tcgccgactg tacgaagaat 300

gcgtaccttc tcaggtaatc gctgtccact tctttcacca gaggcgtgaa ctctttcatt 360

cttctttcga actcttcgtc tgagatcaag agattcaggg ttctcttttc aaaatctatc 420

tcgatgaggt ccccgtcttt cacgatacct ataggaccgc cttctgccgc ttctggagaa 480

acgtgaccta tcacggcacc gtgcgatcca cccgagaacc taccgtctgt gatgagagcc 540

acgtcctccg caaggcccat ccccacgatg gcggaggtgg gtgagagcat ctctctcatc 600

ccgggaccgc ccttcggccc ttcgtagcgg atcacaacca catctccttt tttgatcttt 660

ccagatagaa tggcttttgt cgcctcttct ccgtcttcaa agacgacggc cgggccaacg 720

tggtgcatca tcttctcggg aacaccggag agtttggcaa ccgctccttc tggagcgagg 780

ttcccgaaga ggataccgag tccgccctct ttgtggtacg gattatcgaa gggcctgatc 840

acatcttcat tcaggatctt agcctctctg acgagatctc caatctttct caaatagatg 900

gtcatggcgt cttccttcaa aagaccattt tcctggagac gtttcatcac agcgtagata 960

ccaccagcat cgtcgagatc ctggatgtgg tacggaccaa cgggagagat gttgcagatg 1020

tgaggaatct tcctgctgag ttcgtcaaag agctttatat cgaaatctat tccaaaactc 1080

tcggctatcg ccttcaaatg cagaactgtg ttcgtggaac ctcccgttgc gaggtccacc 1140

atgacagcgt tcatgaaaga gtccagagtg acgatatccc ttggttttac atctcttttc 1200

acgagttcca caacgagcat ccccgcttct ttcgccattc tcaacctctt cgcgtggacg 1260

gccggtacag tcccattccc cctcggtgca attccgagag cttccgccag agagttcatc 1320

gtgttcgcgg tgaacaatcc agcacacgaa ccggcaccgg gacacgcgag gtcttctatc 1380

gctttgagcg tttcttcatc gacttttccc actttgtatc caccaaccgc ttcgaagacg 1440

gtgatgagat cgatgtctct gccgttgtag cgacctgcga gcatgggacc gccggatatc 1500

agaacggacg ggatgttcaa tcttcccatg gccatcatca tgccgggtgt gatcttgtcg 1560

cagttgggga cgaagaccaa accatcgaag gggaaaccgc ttgcaacgat ctctatggag 1620

tccgctatga gttccctcga gggcaaggaa aacttcatcc ccctgtgatc cattgctatt 1680

ccgtcacaga tcccgatcgt tggaaagacg aagggaactc ccccggccat tctcacaccg 1740

gctttcaccg cttcaacgac cttgtcaagg tggacatggc cgggaatgat ctcgttccac 1800

gaggacacta tgccgatgaa aggccttcgc atttcgtcgt ccgttattcc gagcgctttc 1860

aaaagtgatc tatggggagc cctttcgaga cctttcttta tcacatcact cctcattaag 1920

gctgagatct tcttcagtgc attgtagttg aatgaagggt taggggggaa atgccccct 1980

atttttgtc tagccatcct gccacgtttg acagggtagc aatttcgaca cgatagggtt 2040

ctctcttctg ccgtta 2056

<210> 85
<211> 1360
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 85, Example 85: designer nirA-promoter-controlled 2-Methylbutyraldehyde Reductase DNA construct (1360 bp)

<400> 85
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catggcttct gtaaatgact actttgagaa cgccaagacg acgtacttta 300

ctttgagatc gggtgacaag atccccgctg ttggattggg tacttggcaa tcacccacca 360

acgagactaa agaggcagtc aagtacgctt tgcagcacgg ttaccgtcac atcgatgctg 420

ccgccattta tggtaacgaa gacgaggttg gtgacggtat caaggagagt ggaatccctc 480

gtgaccaaat ctgggtcaca tctaagctct ggtgcaatgc tcatgctccc gaggctgtcc 540

ccaaggcttt ggagaagacc ttgcgtgagc tgaaacttga ttaccttgac ctttacctca 600

tccactggcc tatttctttg aagaccggcg atgacttggt tcccaaggac aaggacggca 660

acaccatcac tgtcgaaatt ccccctcgagg acacctggaa ggctatggag ggtcttgtga 720

agtccggcaa ggtgaagaac attggtattt ccaatttcaa caacgaagag ttggatcgta 780

ttttgaaggt tgccgagatt cctcctgccg tccaccaaat ggaaactcat ccttacttga 840

agcagacgga gttcattgag aagcacaaga agcttggcat tcacgtcacc gcttactcgc 900

ctttggccaa ccaaaatgct ctttacggca atgccgttcc caagttgatt gagcacaaga 960

ctcttgtcga cattgccaag accaagggtg agggcgtcac tggtgccaac attgctattt 1020

cttgggcagt caagcgcggt acttcggtta ttcctaagtc tgttcatgcc aacagaatta 1080

agagcaactt cctcgttgtt cccttgactg atgacgagat gaaggccatc gataacattg 1140

gtgtcagcaa gcgtttcaat tggagcaaag ttttctgcaa tgagaattgt ttctacggtc 1200

ttgaggatgg tcctcagtaa taaggctgag atcttcttca gtgcattgta gttgaatgaa 1260

gggttagggg ggaaatgccc ccctattttt tgtctagcca tcctgccacg tttgacaggg 1320

tagcaatttc gacacgatag ggttctctct tctgccgtta 1360

<210> 86
<211> 1420
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 86, Example 86: designer nirA-promoter-controlled 3-Methylbutanal Reductase DNA construct (1420 bp)

<400> 86

agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgtcagtt ttcgtttcag gtgctaacgg gttcattgcc caacacattg 300

tcgatctcct gttgaaggaa gactataagg tcatcggttc tgccagaagt caagaaaagg 360

ccgagaattt aacggaggcc tttggtaaca acccaaaatt ctccatggaa gttgtcccag 420

acatatctaa gctggacgca tttgaccatg ttttccaaaa gcacggcaag gatatcaaga 480

tagttctaca tacggcctct ccattctgct ttgatatcac tgacagtgaa cgcgatttat 540

taattcctgc tgtgaacggt gttaagggaa ttctccactc aattaaaaaa tacgccgctg 600

attctgtaga acgtgtagtt ctcacctctt cttatgcagc tgtgttcgat atggcaaaag 660

aaaacgataa gtctttaaca tttaacgaag aatcctggaa cccagctacc tgggagagtt 720

gccaaagtga cccagttaac gcctactgtg gttctaagaa gtttgctgaa aaagcagctt 780

gggaatttct agaggagaat agagactctg taaaattcga attaactgcc gttaacccag 840

tttacgtttt tggtccgcaa atgtttgaca aagatgtgaa aaaacacttg aacacatctt 900

gcgaactcgt caacagcttg atgcatttat caccagagga caagataccg gaactatttg 960

gtggatacat tgatgttcgt gatgttgcaa aggctcattt agttgccttc caaaagaggg 1020

aaacaattgg tcaaagacta atcgtatcgg aggccagatt tactatgcag gatgttctcg 1080

atatccttaa cgaagacttc cctgttctaa aaggcaatat tccagtgggg aaaccaggtt 1140

ctggtgctac ccataacacc cttggtgcta ctcttgataa taaaaagagt aagaaattgt 1200

taggtttcaa gttcaggaac ttgaaagaga ccattgacga cactgcctcc caaattttaa 1260

aatttgaggg cagaatataa taaggctgag atcttcttca gtgcattgta gttgaatgaa 1320

gggttagggg ggaaatgccc ccctattttt tgtctagcca tcctgccacg tttgacaggg 1380

tagcaatttc gacacgatag ggttctctct tctgccgtta 1420

<210> 87
<211> 1540
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 87, Example 87: designer nirA-promoter-controlled 3-Ketothiolase DNA construct (1540 bp)

<400> 87
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgcgtgaa gcggtcattg tcgaagcggt caggacgccg gtcggcaagc 300

ggaacggcgt cttccgggac gttcatccgg tccatttggc cgcggtggtg ctcgatgaag 360

tcgtgcgccg ggccggcatg gacaaagggg cggtggaaga catcgtcatg ggctgcgtga 420

cgccggtcgc cgaacaaggg tacaacatcg gccggctggc ggcgcttgag gccggattcc 480

cgatcgaagt gccggcagtg caaatcaacc gaatgtgcgg ctcggggcag caggcgattc 540

atttcgccgc ccaggaaatc cgctccggcg atatggatgt cacgatcgcc gccggggtcg 600

aaagcatgac gaaagtgccg attttaagcg atggcaacga gcggacgatt ccgccgtcgc 660

tgcatgaaaa atacgaattc atccaccaag gcgtctcggc tgagcggatc gccaaaaaat 720

acggcctaac gcgcgaggag cttgacgcct acgcgtacga aagccatcaa cgcgccttgg 780

cggccttgcg cgaagggaag tttcgcgcgg aaatcgtccc ggtgaaaggg cttgaccgcg 840

atggccgcga aatccttgtc accgatgatg aagggccgcg ggccgacaca tcgccggaag 900

cgctcgccgc gctcaagccg gtgtttcaag aagacggtct catcaccgct ggcaatgcga 960

gccaaatgag cgacggggcg gccgctgtgc ttttgatgga acgggaggcg gcgaggcggt 1020

tcggactgaa gccgaaagcg cgcattgtcg cgcaaacggt cgtcggctcc gacccgacgt 1080

atatgctcga tggcgtcatt ccggcgacga ggcaagtgct gaaaaaagcc ggcctctcga 1140

tcgatgacat cgacctcatt gaaatcaacg aagcgttcgc cccggtcgtg ctcgcctggc 1200

aaaaagaaat cggcgctccg cttgagaagg tgaatgtcaa cggcggcgcc attgcgcttg 1260

gccatccgct cggcgccacc ggtgcgaagc tcatgacgtc gcttgttcat gaacttgaac 1320

ggcgcggcgg ccgctatggg ctattgacga tttgcatcgg ccacgggatg gcgacggcca 1380

cgatcatcga gcgggagtaa taaggctgag atcttcttca gtgcattgta gttgaatgaa 1440

gggttagggg ggaaatgccc ccctattttt tgtctagcca tcctgccacg tttgacaggg 1500

tagcaatttc gacacgatag ggttctctct tctgccgtta 1540

<210> 88
<211> 1231
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 88, Example 88: designer nirA-promoter-controlled 3-Hydroxyacyl-CoA Dehydrogenase DNA construct (1231 bp)

<400> 88
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgatactt aaagaaacct tctccggtct tacgccccag cttccctgca 300

cggaccatct taaccaagag cgggcaagga cgatacttgt catcgccaaa ctcgcgatgc 360

aaagtctgca tgatagccaa acatatatct agcccaatca tgtctgctaa agcgagggga 420

cccataggat gccctgctcc gagcttcatg gaggtatcca cgtcctcggg gcttgcaacc 480

ccctccatga cggcatacat accttcgttc agcattggaa taagcaggcg gttgacaaca 540

aagccaggag cttcgttgat ctcaaccggg gtcttgccca gcttaattga aagatccttg 600

atggtattaa aagtttcctg gctagtagaa gccccctttga taatctcgat aagcttcatt 660

gccggtaccg ggttgaagaa atgcatgcct attaccctgt ctgcccgctt ggttgctgct 720

cctatctcgg ttatgctcag agctgatgtg ttagaagcca ggatacattc aggcttgcag 780

atctcgtcca gttccttgaa aatcgctttt ttgatgtcca tattctcgat agcagcttca 840

attaccacat ccacatcttt ggccgcagcc atgtcgaccg taccgctaat cctggccatc 900

accgcgttct tgtcatctgc gctcatcttg ccctttcga ccattttgct gagacccttg 960

tcgatgcctt ttataccatt gtcaacaaac tcttgtttaa tatcacgtac gattacttcg 1020

aacccagctt gagcagcgac ttgaacaatc ccagctccca tagtacctgc gcctaaaacc 1080

attattttca ttaaggctga gatcttcttc agtgcattgt agttgaatga agggttaggg 1140

gggaaatgcc cccctatttt ttgtctagcc atcctgccac gtttgacagg gtagcaattt 1200

cgacacgata gggttctctc ttctgccgtt a 1231

<210> 89
<211> 1162
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 89, Example 89: designer nirA-promoter-controlled Enoyl-CoA Dehydratase DNA construct (1162 bp)

<400> 89
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgacggtt cgactggaat acgatggcgg gttcgcgcac ctgacgctca 300

gccgcccgca ggtcctgaat gcgctcagtt tcgagctgct cgccgagttg agccgggcgc 360

ttgccggcgt cgccgaatcc gatgcgcgcg ccctgatcgt cacgggcgag ggcgacaagg 420

cgttctgcgc cggcgcggac attcccgagc tgatgaatcg gccgctcatg caagagctcg 480

aaggggccgc gaaaggccag gcggtgttca gccggatcgc cgagctgaag attccgtctg 540

tcgccgtcat ccagggttat gccttcggcg gcgggctgga gcttgccctg gcatgcacat 600

tccgcgttgc cactgatcgc gcccgcatgg ggctgcccga ggtcaagctc ggcctgatcc 660

cgggttatgg cggaacgcag cgtctgccga ggctgatcgg cgaggggcgc gcactcgacc 720

tgatcatgtc cggccgcacg atagacggcg gggaagccga gcgaatcggc ctggtcaatc 780

gcatagacaa cgaggggacg cccctggaga tcggcaagcg gtttctggag ccttatctca 840

agcacagtct ctgcgccttg tattttgccc gcgaggccgt gcagagggga ggcggtgtcg 900

ccattgcgga tggcctgcgc atcgagcggg atctttccac gctggcttac cggagccagg 960

atgcggccga ggggctgcgc gcttttgtgg aaaaacggcc cgcgtctttc aaggactgct 1020

gataaggctg agatcttctt cagtgcattg tagttgaatg aagggttagg ggggaaatgc 1080

ccccctattt tttgtctagc catcctgcca cgtttgacag ggtagcaatt tcgacacgat 1140

agggttctct cttctgccgt ta 1162

<210> 90
<211> 1561
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 90, Example 90: designer

nirA-promoter-controlled 2-Enoyl-CoA Reductase DNA construct
(1561 bp)

<400> 90
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catggccggc gcgcagcagg atcttgccgc tgcgtccggg cttgtcgctg 300

gccgcggcgg ccttggcggc atcgtgcagg tcgaacaccg cttccaccgg cagcgccagg 360

ctgccatcga gcgcggcggt gagcagttcg ccgatcatgc ggcgcttgtc ctcggccttg 420

gtggcctgca tcaccttgct gccccagaag ccacgcacgg tggcctgctt gaagatcaca 480

tcgccgctgg atatctgcag cggctcgccg gtcatcgagc caaaggaaat cagctcgccg 540

ccttcggcca gcaaggccat cagctcaccc gctgcattgc cggccaccga atcgatggcg 600

cgcacgatgg gcgcatcgcc ggccagcgcg cgcaccttgt cctgccagcc tgcttgcgca 660

gtggagattg cgttgccgat gcccagcgct ttcagctcgt ccacgccggc gtcgcggcgc 720

accaggttga tcacgttgat gccgcgtgcg gcggcgagca tcgccaccgt cttgccgacc 780

gcaccgttgg cggtgttctg cacgatccag tcgccctgtt tcacctgcag gaattcgatc 840

agcatcagcg cgctcagcgg catggcgatc aactggcaac cacgctcgtc gtccaggcca 900

tccggcaacg gcaccacgcc ggaggcgtcg gcaaggaagt actcggccca ggcctcatgc 960

acaccggcgg cgaccacgcg ctggccaacc tgcaagccct cgacaccctc acccagcgca 1020

tcgatgacac ccgccgcttc gctgccgccg atggctggca gttccggctt gtagccgtaa 1080

ttgccgcgca cggtccacag gtcatggtta tggatcggcg cgcgccgcat cgcaacgcgc 1140

acctggccct tgcctggctg cggcgtgggg cgctcgccca gttcgagcac cttggccgga 1200

tcgccgaatt gggtatggat ggctgcgcgc atggaggtct cctgccgggc acgctcttgc 1260

tgcgacgcgc ccgatcgttg tgaaaggtgg cgcgatgcta tcggcagggc tgcaaggaag 1320

ggatgaagcg aacggaactg ctgtgtgaag ttgttggcgt gcgcgcgtag tgacgatgct 1380

ctgctgcagc gccggaggac tgcgtgcagg ccgaccctca ttaaggctga gatcttcttc 1440

agtgcattgt agttgaatga agggttaggg gggaaatgcc cccctatttt ttgtctagcc 1500

atcctgccac gtttgacagg gtagcaattt cgacacgata gggttctctc ttctgccgtt 1560

a 1561

<210> 91
<211> 1747
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 91, Example 91: designer nirA-promoter-controlled Acyl-CoA Reductase DNA construct (1747 bp)

<400> 91
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgtagttg tctactaact acgtaagtca tttcctgcaa attgtgcatt 300

ccatcatgag aagttcctgg ataatgtgct ggcatttccc ctggcttagt gactatgctt 360

acaccaagta acgtcatttt ttcaataaat tcgtggtcgt caccactata ccccatagtt 420

tgaaggaatt gctttaaatt ttcttcaaca taatcatgta cttcatcttt attttcatat 480

gggcaaacaa atataagtct attaaagcat ctatcaatat ccttttttttc aggcattctg 540

ttgcttaaaa tcacagtata gtcggcatta cacgatgcaa acacctttgc cggtttctcc 600

tcatcaacac tatattttaa taaacaatac tgtcggtctt gtattgattt catagaactc 660

caaggactca gatatgcctt tgggaaaacc tctgtaagct ctttcaagct ttctgctaca 720

gtttctgcaa gaatattaat gtctattttt ttattggcaa ataccatcct aggagacaaa 780

caggcttttt gctcccaaca tatcacatca ctagcaatac cttttgcaat agtcttaata 840

tcttctactt tatctataac ttcaaaacta attttagcac catgcattat taaatgagaa 900

ttatattttg cacataactc tgccattatc cttcctgaat attctccacc ccaatgtata 960

acacaatcca tttctctcac gacagtctca tatatatcag aacattcact actaaagtat 1020

aaaacagata gtctatcttt tatacttgga tcaagctgta ccaaactttc atagaaagca 1080

tacgcaaaat atggttcatc agcagaaacc tttactaaat tacagttctt tgataataac 1140

cccataccta tacttgtcgg aacaactaca aatgcatttc cagaaatatt atgaaacatc 1200

acacctcttg gctgtctatg cacagctcca taacttgttg gaacccaatt atctagtata 1260

tcaatgttac caagttcttc tttaatgatt atctcaagat tttctcttaa aagcattctc 1320

atactatttt caagttcata tgttacaagt tcttcacttt gattcaatat gttagctaat 1380

ctttctatat gtactttgga gtatcctcta tcaagccaca atcttccaca cctatccaaa 1440

agatcaattg tatcctgcac tgatattgca tgactcttac ttttactttt tctaagtctt 1500

tttatttcct caattacctg atctctactt gagtaagtta attctaattc caggccattt 1560

atattcttta ttaaaacatt actttcacaa acagtttcgc tcttcattaa ggctgagatc 1620

ttcttcagtg cattgtagtt gaatgaaggg ttaggggga aatgcccccc tatttttgt 1680

ctagccatcc tgccacgttt gacagggtag caatttcgac acgatagggt tctctcttct 1740

gccgtta 1747

<210> 92
<211> 1450
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 92, Example 92: designer nirA-promoter-controlled Hexanol dehydronase DNA construct (1450 bp)

<400> 92
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catggaactc gacctcgacg gtcccggggt tggtgaagtg ctgatcaagt 300

acaccgccgc ggggttgtgc cattcggacc tgcacttgac cgacggggac ctaccgccgc 360

gctatccaat cgtcgggggg cacgaggggt caggcatcat cgaggacgtc ggacctgggg 420

tcaccaaggt caaaccaggc gatcacgttg tttgcagctt catcccgaac tgcggaacct 480

gtcggtactg cgccaccgga cgctccaacc tctgcgatat gggcgccacc atcctcgaag 540

ggtgcatgcc cgacggcagt taccggttcc acagtaacgg cctggatttc ggtgcgatgt 600

gcatgctcgg cacattctcc gaacgcgcaa ctatctccca gcattcggtg gtcaagatcg 660

acgactggct gccgctcgag accgcggtgg tcgtcggctg cggcgtgccg actggctggg 720

gcacctccgt ctatgccggc ggggttcgtt gcggtgacac caccgtcatc tatggcgtcg 780

gcggcctggg agtcaacgcc gtccaaggcg cggtgagtgc gggcgcgaag tacatcgtgg 840

tcgtcgatcc ggttgcgttc aaacgcgaca ccgcgctcaa gttcggcgcc acccacgcgt 900

tcgccgacgc cgccaccgcc gcggccaagg tcgacgaact gacctgggga cagggtgccg 960

atcaggcgct gatcctggtc ggcaccgtcg acgaggacgt ggtctcggcg gcgactgcgg 1020

tgatcggtaa gggaggcacc gtcgtgatca ccggactggc ggacccagca aagctcacgg 1080

tgcacgtttc gggaacggac ctgacgctta acgagaagac aatcaagggc acgttgttcg 1140

gctcgtccaa tccgcaatac gacatcgtac ggctgctccg tctctacgac gccggccagc 1200

taaaactcga cgatctgatc accacccgat acacgctcga ccaggtcaac cagggctacc 1260

aggatctgcg agacggcaag aacatccgcg gcgtgatcat ccacgcctga taaggctgag 1320

atcttcttca gtgcattgta gttgaatgaa gggttagggg ggaaatgccc ccctattttt 1380

tgtctagcca tcctgccacg tttgacaggg tagcaatttc gacacgatag ggttctctct 1440

tctgccgtta 1450

<210> 93
<211> 1074
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 93, Example 93: designer nirA-promoter-controlled Octanol Dehydrogenase DNA construct (1074 bp)

<400> 93
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgttggga ggccaagaag ccgctggtga ttgaggacat tgaggtggcg 300

ccacctcagg cttggcaggt tcgcatcaag attacagcca ctggcgtttg ccacacggat 360

tctttttcgt tgagcggctc tgatcctgag ggtctctttc ccgtggtcct tggccatgag 420

ggcgccggca tcgtggagag cgttggcgag ggcgtaacca actttaaggc cggcgatcat 480

gtcattgccc tctacatacc ccagtgcaat gagtgcaaat tctgcaagag cggcaagaca 540

aatctctgcc agaagattcg cctcacccag ggcgctggtg tcatgcccaa tggatcctcc 600

cgcttgtcgt gcaagggtca gcagctgttc catttcatgg gcacctcaac tttcgccgag 660

tacgcggtgg tggccgacat atcggtgacc aaaatcaacg agtcggctcc attggagaag 720

gtgtgccttc tgggctgtgg catttccacg ggctatggtg ccgccttgaa caccttagg 780

tggaacctgg cagcacttgc gccgtctggg gtctgggtgc tgttggactg gcagtgggtc 840

tgggctgcaa gaaggctggc gccgccaagg tctacggcat cgacatcaat ccctccaaat 900

tcgagctggc caggaagttc ggcttcaccg actttaaggc tgagatcttc ttcagtgcat 960

tgtagttgaa tgaagggtta ggggggaaat gccccctat tttttgtcta gccatcctgc 1020

cacgtttgac agggtagcaa tttcgacacg atagggttct ctcttctgcc gtta 1074

<210> 94
<211> 1096
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 94, Example 94: designer nirA-promoter-controlled Short Chain Alcohol Dehydrogenase DNA construct (1096 bp)

<400> 94
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgaaggtt gccgtaatta ctggggcatc ccgtggaatc ggggaagcta 300

tagcaaaggc ccttgctgaa gatggatatt cccttgcctt aggggctaga agtgttgata 360

ggttagagaa gattgccaag gaactcagcg aaaaacatgg ggtggaggta ttttacgact 420

acctcgatgt atcaaaacca gaaagcgttg aagagtttgc aaggaaaacg ctagctcact 480

ttggagatgt ggacgttgtt gtggccaatg cggggcttgg ttactttggt aggcttgaag 540

agcttacaga agagcagttc cacgaaatga ttgaagtaaa ccttttggga gtttggagaa 600

caataaaagc tttcttaaac tccttaaagc ggactggagg agtggctatt gttgttactt 660

cagatgtttc tgcaaggcta cttccatacg gtggaggtta tgtggcaact aaatgggctg 720

caagagcatt ggtaaggacc ttccagattg agaatccaga tgtgaggttc ttcgagctaa 780

gacctggagc agtagataca tattttggag ggagcaaagc tgggaagcca aaggagcaag 840

ggtatttaaa acctgaggaa gttgctgagg cagtaaaata cctcctaaga cttccaaagg 900

atgttagggt tgaggaatta atgttgcgct caatttatca aaaacctgag tattgataag 960

gctgagatct tcttcagtgc attgtagttg aatgaagggt taggggggaa atgccccct 1020

atttttgtc tagccatcct gccacgtttg acagggtagc aatttcgaca cgatagggtt 1080

ctctcttctg ccgtta 1096

<210> 95
<211> 1438
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 95, Example 95: designer Synechococcus sp. strain PCC 7942 nirA-promoter-controlled NADPH-dependent Glyceraldehyde-3-Phosphate-Dehydrogenase DNA construct (1438 bp)

<400> 95
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgat gtcaacgaat 120

attgcaatta atggaatggg tagaattgga agaatggtgc taagaatagc actaaagaat 180

gaagcattga atgtagttgc catcaatgct agctatcctc ctgaaacaat tgcacattta 240

attaattatg acacaacaca tgggagatac gataaaagag tagaacctat tgaaagtgga 300

attcgagtgg aaggccatga tattaaatta gtgtctgata gaaacccaga aaatttaccc 360

tggaaagatt tagaaataga tatcgtcatt gaagcgaccg gtaaatttaa ccatggtgat 420

aaagctaagg cacatattca agcaggagct aaaaaagtgt tattgacagg accatcaaaa 480

ggcggaaaag tacagatggt ggttaaaggt gttaacgatc aagacttaga tacagataca 540

tatgacatat ttagtaatgc gtcgtgtact acgaattgta tcggaccagt tgcaaaagtt 600

ttaaatgata gttttggcat tgaaaatggc ttaatgacaa cggtacatgc aattacaaat 660

gatcaaaata atatagataa tccgcataaa gatttgagaa gagcgcgttc ttgtggggaa 720

agtattatac caacatcaac aggtgctgct aaagcattaa aagaagttat gccagaattg 780

aatggcaaac tacatggcat agcacttcgt gtgccaactc aaaatgtatc attagttgat 840

ttagtcattg atttaaaaca aaaagtgaca gtagatgaag ttaatcatgc atttagagat 900

gcaaacttac aaggaattat tgatgttgaa gaggcccctc tagtttctaa ggactataat 960

acaaatcctc attcagcagt tatagatgct aaaaatacaa tggtcatggg agataataag 1020

gttaaagtta tagcctggta tgataacgaa tggggatatt ctaatagagt agttgaggta 1080

gcaaatcaac ttggagaact aattaaataa taatagtgat cccggccgct actaaagcct 1140

gatttgtctt gatagctgct cctgcctttg ggcaggggct tttttctgtc tgccattctt 1200

gaggatggcg gactctttcc cttttgctct acgcccatga atgcgatcgc agtctcccct 1260

gtccagcacg ttggagtgat tggtggtggc cagttagctt ggatgctggc accagcagcg 1320

caacagttgg ggatgtcgct gcacgttcaa acacccaatg atcacgaccc agcagtagcg 1380

atcgcggatc aaaccgtatt agcagcagtt gctgacgcgg ttctctcttc tgccgtta 1438

<210> 96
<211> 1447
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 96, Example 96: designer Synechococcus sp. strain PCC 7942 nirA-promoter-controlled

NAD-dependent Glyceraldehyde-3-Phosphate-Dehydrogenase DNA construct (1447 bp)

<400> 96

agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgat ggcagtaaaa 120

gtagcaatta atggttttgg tagaattggt cgtttagcat tcagaagaat tcaagaagta 180

gaaggtcttg aagttgtagc agtaaacgac ttaacagatg acgacatgtt agcgcattta 240

ttaaaatatg acactatgca aggtcgtttc acaggtgaag tagaggtagt tgatggtggt 300

ttccgcgtaa atggtaaaga agttaaatca ttcagtgaac cagatgcaag caaattacct 360

tggaaagact taaatatcga tgtagtgtta gaatgtactg gtttctacac tgataaagat 420

aaagcacaag ctcatattga agcaggcgct aaaaaagtat taatctcagc accagctact 480

ggtgacttaa aaacaatcgt attcaacact aaccaccaag agttagacgg ttctgaaaca 540

gttgtttcag gtgcttcatg tactacaaac tcattagcac cagttgctaa agttttaaac 600

gatgactttg gtttagttga aggtttaatg actacaattc acgcttacac aggtgatcaa 660

aatacacaag acgcacctca cagaaaaggt gacaaacgtc gtgctcgtgc agcggcagaa 720

aacatcatcc ctaactcaac aggtgctgct aaagctatcg gtaaagttat tcctgaaatc 780

gatggtaaat tagatggtgg tgcacaacgt gttcctgtag ctacaggttc attaactgaa 840

ttaacagtag tattagaaaa acaagacgta acagttgaac aagttaacga agctatgaaa 900

aatgcttcaa acgaatcatt cggttacact gaagacgaaa tcgtttcttc agacgttgta 960

ggtatgactt acggttcatt attcgacgct acacaaactc gtgtaatgtc agttggcgac 1020

cgtcaattag ttaaagttgc agcttggtat gataacgaaa tgtcatatac tgcacaatta 1080

gttcgtacat tagcatactt agctgaactt tctaaataat aatagtgatc ccggccgcta 1140

ctaaagcctg atttgtcttg atagctgctc ctgcctttgg gcaggggctt ttttctgtct 1200

gccattcttg aggatggcgg actctttccc ttttgctcta cgcccatgaa tgcgatcgca 1260

gtctcccctg tccagcacgt tggagtgatt ggtggtggcc agttagcttg gatgctggca 1320

ccagcagcgc aacagttggg gatgtcgctg cacgttcaaa cacccaatga tcacgaccca 1380

gcagtagcga tcgcggatca aaccgtatta gcagcagttg ctgacgcggt tctctcttct 1440

gccgtta 1447

<210> 97
<211> 2080
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 97, Example 97: designer Synechococcus sp. strain PCC 7942 nirA-promoter-controlled 2-Keto Acid Decarboxylase DNA construct (2080 bp)

<400> 97
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgat gtatacagta 120

ggagattacc tgttagaccg attacacgag ttgggaattg aagaaatttt tggagttcct 180

ggtgactata acttacaatt tttagatcaa attatttcac gcgaagatat gaaatggatt 240

ggaaatgcta atgaattaaa tgcttcttat atggctgatg gttatgctcg tactaaaaaa 300

gctgccgcat ttctcaccac atttggagtc ggcgaattga gtgcgatcaa tggactggca 360

ggaagttatg ccgaaaattt accagtagta gaaattgttg gttcaccaac ttcaaaagta 420

caaaatgacg gaaaatttgt ccatcataca ctagcagatg gtgattttaa acactttatg 480

aagatgcatg aacctgttac agcagcgcgg actttactga cagcagaaaa tgccacatat 540

gaaattgacc gagtactttc tcaattacta aaagaaagaa aaccagtcta tattaactta 600

ccagtcgatg ttgctgcagc aaaagcagag aagcctgcat tatctttaga aaaagaaagc 660

tctacaacaa atacaactga acaagtgatt ttgagtaaga ttgaagaaag tttgaaaaat 720

gcccaaaaac cagtagtgat tgcaggacac gaagtaatta gttttggttt agaaaaaacg 780

gtaactcagt ttgtttcaga aacaaaacta ccgattacga cactaaattt tggtaaaagt 840

gctgttgatg aatctttgcc ctcattttta ggaatatata acgggaaact ttcagaaatc 900

agtcttaaaa attttgtgga gtccgcagac tttatcctaa tgcttggagt gaagcttacg 960

gactcctcaa caggtgcatt cacacatcat ttagatgaaa ataaaatgat ttcactaaac 1020

atagatgaag gaataatttt caataaagtg gtagaagatt ttgattttag agcagtggtt 1080

tcttctttat cagaattaaa aggaatagaa tatgaaggac aatatattga taagcaatat 1140

gaagaattta ttccatcaag tgctccctta tcacaagacc gtctatggca ggcagttgaa 1200

agtttgactc aaagcaatga aacaatcgtt gctgaacaag gaacctcatt ttttggagct 1260

tcaacaattt tcttaaaatc aaatagtcgt tttattggac aacctttatg gggttctatt 1320

ggatatactt ttccagcggc tttaggaagc caaattgcgg ataaagagag cagacacctt 1380

ttatttattg gtgatggttc acttcaactt accgtacaag aattaggact atcaatcaga 1440

gaaaaactca atccaatttg ttttatcata aataatgatg gttatacagt tgaaagagaa 1500

atccacggac ctactcaaag ttataacgac attccaatgt ggaattactc gaaattacca 1560

gaaacatttg gagcaacaga agatcgtgta gtatcaaaaa ttgttagaac agagaatgaa 1620

tttgtgtctg tcatgaaaga agcccaagca gatgtcaata gaatgtattg gatagaacta 1680

gttttggaaa aagaagatgc gccaaaatta ctgaaaaaaa tgggtaaatt atttgctgag 1740

caaaataaat agtaatagtg atcccggccg ctactaaagc ctgatttgtc ttgatagctg 1800

ctcctgcctt tgggcagggg ctttttttctg tctgccattc ttgaggatgg cggactcttt 1860

ccctttttgct ctacgcccat gaatgcgatc gcagtctccc ctgtccagca cgttggagtg 1920

attggtggtg gccagttagc ttggatgctg gcaccagcag cgcaacagtt ggggatgtcg 1980

ctgcacgttc aaacacccaa tgatcacgac ccagcagtag cgatcgcgga tcaaaccgta 2040

ttagcagcag ttgctgacgc ggttctctct tctgccgtta 2080

<210> 98
<211> 1603
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 98, Example 98: designer Synechococcus sp. strain PCC 7942 nirA-promoter-controlled NADH-dependent Butanol Dehydrogenase DNA construct (1603 bp)

<400> 98
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgat gtcaagattt 120

acactaccaa gagatattta tttcggagaa aacactttag aaactttaaa aactttaaaa 180

ggtaagaaag ctataattgt tgttggagga ggatcaatga aaaaatttgg tttccttcaa 240

aaagttgaag aatatctaaa agaagcagga atggaaataa aattaataga aggtgttgaa 300

ccagatccat cagttgaaac cgttatgaaa ggtgcagaaa tcatgagaga ttttgagcct 360

gattggatag tatccatagg tggaggatca ccaatagatg ctgctaaagc tatgtggata 420

ttctatgaat acccagaatt tacttttgag caagctgttg ttccttttgg aataccagat 480

ttaagacaaa aagctaaatt tgttgctata ccatctacaa gtggaacagc tacagaagtt 540

actgcttttt cagttataac tgattacaaa gctaagataa aatatccttt agctgatttt 600

aatttaacac cagatgtagc tattatagat ccagctcttg ctcaaacaat gcctgcaaaa 660

ttaacagctc atacaggtat ggatgcttta actcatgcaa tagaagctta tgtagcagga 720

ttaagatcat atttctcaga tcctcttgca atgcaagcta tagttatgac aaaagataat 780

ttaataaaat cctatgaagg agataaagaa gcaagagatg aaatgcatat agctcaatgt 840

ttagcaggaa tggcattctc aaatgcgcta cttggaatta ctcatagtat ggcacataag 900

acaggagcag tattccacat tcctcatggt tgtgcaaatg ctatattcct tccttatgta 960

atagatttta ataagaaaac atgtaaagat agatatgcaa ctatagctaa aactttaggt 1020

ttagcaggaa atactgatga tgaattagta gatgcattaa cttctatgat acaagaaatg 1080

aataagaaaa tggatatacc actaaactta aaagaatatg gagtaacaga agaagatttt 1140

aatgaaaact tagatttcat agcacataat gcagtgttag atgcatgtac tggatcaaat 1200

ccaagaccta taactgaaga agaaatgaaa aaagtattca aatgcacatt tactggagag 1260

aaagttaatt tttaataata gtgatcccgg ccgctactaa agcctgattt gtcttgatag 1320

ctgctcctgc ctttgggcag gggctttttt ctgtctgcca ttcttgagga tggcggactc 1380

tttccctttt gctctacgcc catgaatgcg atcgcagtct cccctgtcca gcacgttgga 1440

gtgattggtg gtggccagtt agcttggatg ctggcaccag cagcgcaaca gttggggatg 1500

tcgctgcacg ttcaaacacc caatgatcac gacccagcag tagcgatcgc ggatcaaacc 1560

gtattagcag cagttgctga cgcggttctc tcttctgccg tta 1603

<210> 99
<211> 1654
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 99, Example 99: designer Synechococcus sp. strain PCC 7942 nirA-promoter-controlled NADPH-dependent Butanol Dehydrogenase DNA construct (1654 bp)

<400> 99
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgct agaaatcaac 120

ttctgtatcg taataacagc acttaagcag tttttccatt tcttctacgc ttggctgtct 180

tgggttagaa cctgtgcagg catcgcctat ggcattaact gcaatgtcat gtaacctctc 240

caggaataca ttttcaggca caaatccctg tgcaaccgga tagctgtctg caccgtaatt 300

tttaatgcag tgcggtatat taagttcatc attcatctta cggagataac cgattaatga 360

agctaccttt tcatcaaggt ctgctccgcc aagtcccatg aaatcagcaa tttcaccata 420

acgcttctta gcctgttcat cctttgcgtt aaatgcaatt accttaggga gatacattgc 480

attcgcagca ccgtgaatga tgtgtgcgcc gtaatcggca aatgccgcac ctgttttatg 540

cgccattgaa tgtacaatac caagaagtgc attagaaaat gccattcctg cgagacattg 600

tgcattatgc attgaatctc ttttttccat atcaccgtta tatgaaccga caaggtctct 660

ttgaatcatt ttaattgcat ggagtgccaa tgggtctgta aaatcacaat ttgcggtgga 720

tacatatgcc tcgatagcat gtgtcattgc atccatacct gtatgtgcca ccaatttttg 780

tggcatggtc tctgccagtt cagggtctac tattgcaaca tcaggtgtta tttcaaaatc 840

ggctattgga tattttattc ctttttcata atctgtaata attgaaaaag cagttacctc 900

ggtagcggtt cctgaagtag aagatattgc acaaaaatgt gctttttac gaagtgaagg 960

tatgccaaat actttacaca tatcctcaaa ggtaatatca ggatattcat atttaatcca 1020

cattgcttta gccgcatcaa tcggagaacc tccgcctatt gcaacaatcc agtcaggttc 1080

aaactctgac atcgctttgg caccttttcat aacggtttcc accgaagggt caggttcaat 1140

tccttcaaaa agtctgactt ccataccggc ttccttaaga tactgttctg ccctgtcaag 1200

gaaaccaaaa cgtttcattg aacctccgcc aacacaaatc atggcttttt tgccttgaaa 1260

tgtcttaagt gcctctaatg caccctttcc atgatacaaa tctcttggta acgtaaatct 1320

tgccattaat agtgatcccg gccgctacta aagcctgatt tgtcttgata gctgctcctg 1380

cctttgggca ggggcttttt tctgtctgcc attcttgagg atggcggact ctttcccttt 1440

tgctctacgc ccatgaatgc gatcgcagtc tcccctgtcc agcacgttgg agtgattggt 1500

ggtggccagt tagcttggat gctggcacca gcagcgcaac agttggggat gtcgctgcac 1560

gttcaaacac ccaatgatca cgacccagca gtagcgatcg cggatcaaac cgtattagca 1620

gcagttgctg acgcggttct ctcttctgcc gtta 1654

<210> 100
<211> 1440
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 100, Example 100: designer Synechocystis sp. PCC 6803 nirA-promoter-controlled NAD-dependent Glyceraldehyde-3-Phosphate Dehydrogenase DNA construct (1440 bp)

<400> 100
atggtagtta aagttggtat taacggtttc ggtcgtatcg gacgtcttgc attccgccgt 60

attcaaaata tcgaaggtgt tgaagtaact cgtatcaacg accttacaga tccaaatatg 120

cttgcacact tgttgaaata cgatacaact caaggtcgtt ttgatggaac agttgaagtt 180

aaagaaggtg gatttgaagt aaacggaaac ttcattaaag tttctgctga acgtgatcca 240

gaaaacatcg actgggcaac tgatggggtt gaaatcgttc ttgaagcaac tggtttcttt 300

gctaaaaaag aagcagctga aaaacactta catgctaacg gtgctaaaaa agttgttatc 360

acagctcctg gtggaaacga tgttaaaaca gttgttttca acactaacca cgacattctt 420

gacggtactg aaacagttat ctcaggtgct tcatgtacta caaactgttt agctcctatg 480

gctaaagctc ttcacgatgc attcggtatt caaaaaggtc ttatgactac aatccacgct 540

tacactggtg accaaatgat ccttgacgga ccacaccgtg gtggtgacct tcgtcgtgca 600

cgcgctggtg ctgcaaatat cgttcctaac tcaactggtg ctgctaaagc tatcggtctt 660

gttatcccag aacttaacgg taaacttgac ggtgctgcac aacgtgttcc tgttccaact 720

ggatcagtaa ctgagttggt tgtaactctt gacaaaaacg tttctgttga cgaaatcaac 780

gctgctatga aagctgcttc aaacgatagc ttcggttaca ctgaagatcc aatcgtttct 840

tcagatatcg taggcgtatc atacggttca ttgtttgacg caactcaaac taaagtaatg 900

gaagttgacg gatcccaatt ggttaaagtt gtatcatggt atgacaacga aatgtcttac 960

actgctcaac ttgtacgtac tcttgagtac ttcgcaaaaa ttgctaaata atagtaatga 1020

gttacagttt tggcaattac taaaaaactg acttcaattc aatgttagcc cgctcccgcg 1080

ggtttttgt tgctttttca cagtgactat aggtaatcag caacacaata cggccctgtt 1140

ctttggacag tttttgtata atgttgaccg catcctgacc ggatttttta tctaagtggg 1200

gaattgtcaa ttgtcaatta aagctaagtt ctactaatgt tttagaaggc attgtcgatt 1260

gaaaataagg gttgaatgga gaaaattttg agcctttgtc aaagataaaa atttatttca 1320

acagtttttt aactagccga accagagaat gacccagtgg cgctgacttt gctcccgagt 1380

ttttgttaga aattaccctc aagaagtaat ctaataataa ggttctctct tctgccgtta 1440

<210> 101
<211> 2182
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 101, Example 101: designer Synechocystis sp. PCC 6803 nirA-promoter-controlled 2-Keto Acid Decarboxylase dehydrogenase DNA construct (2182 bp)

<400> 101
agaaaatctg gcaccacacc ctaaatgcgt aaactgcata tgccttggct gagtgtaatt 60

tacgttacaa attttaacga aacgggaacc ctatattgat ctctacatga tgtatacagt 120

aggagattac ctgttagacc gattacacga gttgggaatt gaagaaattt ttggagttcc 180

tggtgactat aacttacaat ttttagatca aattatttca cgcgaagata tgaaatggat 240

tggaaatgct aatgaattaa atgcttctta tatggctgat ggttatgctc gtactaaaaa 300

agctgccgca tttctcacca catttggagt cggcgaattg agtgcgatca atggactggc 360

aggaagttat gccgaaaatt taccagtagt agaaattgtt ggttcaccaa cttcaaaagt 420

acaaaatgac ggaaaatttg tccatcatac actagcagat ggtgatttta aacactttat 480

gaagatgcat gaacctgtta cagcagcgcg gactttactg acagcagaaa atgccacata 540

tgaaattgac cgagtacttt ctcaattact aaaagaaaga aaaccagtct atattaactt 600

accagtcgat gttgctgcag caaaagcaga gaagcctgca ttatctttag aaaaagaaag 660

ctctacaaca aatacaactg aacaagtgat tttgagtaag attgaagaaa gtttgaaaaa 720

tgcccaaaaa ccagtagtga ttgcaggaca cgaagtaatt agttttggtt tagaaaaaac 780

ggtaactcag tttgtttcag aaacaaaact accgattacg acactaaatt ttggtaaaag 840

tgctgttgat gaatctttgc cctcattttt aggaatatat aacgggaaac tttcagaaat 900

cagtcttaaa aattttgtgg agtccgcaga ctttatccta atgcttggag tgaagcttac 960

ggactcctca acaggtgcat tcacacatca tttagatgaa aataaaatga tttcactaaa 1020

catagatgaa ggaataattt tcaataaagt ggtagaagat tttgatttta gagcagtggt 1080

ttcttcttta tcagaattaa aaggaataga atatgaagga caatatattg ataagcaata 1140

tgaagaattt attccatcaa gtgctccctt atcacaagac cgtctatggc aggcagttga 1200

aagtttgact caaagcaatg aaacaatcgt tgctgaacaa ggaacctcat tttttggagc 1260

ttcaacaatt ttcttaaaat caaatagtcg ttttattgga caacctttat ggggttctat 1320

tggatatact tttccagcgg ctttaggaag ccaaattgcg gataaagaga gcagacacct 1380

tttatttatt ggtgatggtt cacttcaact taccgtacaa gaattaggac tatcaatcag 1440

agaaaaactc aatccaattt gttttatcat aaataatgat ggttatacag ttgaaagaga 1500

aatccacgga cctactcaaa gttataacga cattccaatg tggaattact cgaaattacc 1560

agaaacattt ggagcaacag aagatcgtgt agtatcaaaa attgttagaa cagagaatga 1620

atttgtgtct gtcatgaaag aagcccaagc agatgtcaat agaatgtatt ggatagaact 1680

agttttggaa aaagaagatg cgccaaaatt actgaaaaaa atgggtaaat tatttgctga 1740

gcaaaataaa tagtagtaat gagttacagt tttggcaatt actaaaaaac tgacttcaat 1800

tcaatgttag cccgctcccg cgggtttttt gttgcttttt cacagtgact ataggtaatc 1860

agcaacacaa tacggccctg ttctttggac agtttttgta taatgttgac cgcatcctga 1920

ccggattttt tatctaagtg gggaattgtc aattgtcaat taaagctaag ttctactaat 1980

gttttagaag gcattgtcga ttgaaaataa gggttgaatg gagaaaattt tgagcctttg 2040

tcaaagataa aaatttattt caacagtttt ttaactagcc gaaccagaga atgacccagt 2100

ggcgctgact ttgctcccga gtttttgtta gaaattaccc tcaagaagta atctaataat 2160

aaggttctct cttctgccgt ta 2182

<210> 102
<211> 1705
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 102, Example 102: designer Synechocystis sp. PCC 6803 nirA-promoter-controlled NADH-dependent Butanol Dehydrogenase DNA construct (1705 bp)

<400> 102
agaaaatctg gcaccacacc ctaaatgcgt aaactgcata tgccttggct gagtgtaatt 60

tacgttacaa attttaacga aacgggaacc ctatattgat ctctacatga tgtcaagatt 120

tacactacca agagatattt atttcggaga aaacacttta gaaactttaa aaactttaaa 180

aggtaagaaa gctataattg ttgttggagg aggatcaatg aaaaaatttg gtttccttca 240

aaaagttgaa gaatatctaa aagaagcagg aatggaaata aaattaatag aaggtgttga 300

accagatcca tcagttgaaa ccgttatgaa aggtgcagaa atcatgagag attttgagcc 360

tgattggata gtatccatag gtggaggatc accaatagat gctgctaaag ctatgtggat 420

attctatgaa tacccagaat ttacttttga gcaagctgtt gttccttttg gaataccaga 480

tttaagacaa aaagctaaat ttgttgctat accatctaca agtggaacag ctacagaagt 540

tactgctttt tcagttataa ctgattacaa agctaagata aaatatcctt tagctgattt 600

taatttaaca ccagatgtag ctattataga tccagctctt gctcaaacaa tgcctgcaaa 660

attaacagct catacaggta tggatgcttt aactcatgca atagaagctt atgtagcagg 720

attaagatca tatttctcag atcctcttgc aatgcaagct atagttatga caaaagataa 780

tttaataaaa tcctatgaag gagataaaga agcaagagat gaaatgcata tagctcaatg 840

tttagcagga atggcattct caaatgcgct acttggaatt actcatagta tggcacataa 900

gacaggagca gtattccaca ttcctcatgg ttgtgcaaat gctatattcc ttccttatgt 960

aatagatttt aataagaaaa catgtaaaga tagatatgca actatagcta aaactttagg 1020

tttagcagga aatactgatg atgaattagt agatgcatta acttctatga tacaagaaat 1080

gaataagaaa atggatatac cactaaactt aaaagaatat ggagtaacag aagaagattt 1140

taatgaaaac ttagatttca tagcacataa tgcagtgtta gatgcatgta ctggatcaaa 1200

tccaagacct ataactgaag aagaaatgaa aaaagtattc aaatgcacat ttactggaga 1260

gaaagttaat ttttaatagt aatgagttac agttttggca attactaaaa aactgacttc 1320

aattcaatgt tagcccgctc ccgcgggttt tttgttgctt tttcacagtg actataggta 1380

atcagcaaca caatacggcc ctgttctttg gacagttttt gtataatgtt gaccgcatcc 1440

tgaccggatt ttttatctaa gtggggaatt gtcaattgtc aattaaagct aagttctact 1500

aatgttttag aaggcattgt cgattgaaaa taagggttga atggagaaaa ttttgagcct 1560

ttgtcaaaga taaaaattta tttcaacagt tttttaacta gccgaaccag agaatgaccc 1620

agtggcgctg actttgctcc cgagtttttg ttagaaatta ccctcaagaa gtaatctaat 1680

aataaggttc tctcttctgc cgtta 1705

<210> 103
<211> 1756
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 103, Example 103: designer Synechocystis sp. PCC 6803 nirA-promoter-controlled

NADPH-dependent Butanol Dehydrogenase DNA construct (1756 bp)

<400> 103

agaaaatctg gcaccacacc ctaaatgcgt aaactgcata tgccttggct gagtgtaatt 60

tacgttacaa attttaacga aacgggaacc ctatattgat ctctacatgc tagaaatcaa 120

cttctgtatc gtaataacag cacttaagca gtttttccat ttcttctacg cttggctgtc 180

ttgggttaga acctgtgcag gcatcgccta tggcattaac tgcaatgtca tgtaacctct 240

ccaggaatac attttcaggc acaaatccct gtgcaaccgg atagctgtct gcaccgtaat 300

ttttaatgca gtgcggtata ttaagttcat cattcatctt acggagataa ccgattaatg 360

aagctacctt ttcatcaagg tctgctccgc caagtcccat gaaatcagca atttcaccat 420

aacgcttctt agcctgttca tcctttgcgt taaatgcaat taccttaggg agatacattg 480

cattcgcagc accgtgaatg atgtgtgcgc cgtaatcggc aaatgccgca cctgttttat 540

gcgccattga atgtacaata ccaagaagtg cattagaaaa tgccattcct gcgagacatt 600

gtgcattatg cattgaatct ctttttttcca tatcaccgtt atatgaaccg acaaggtctc 660

tttgaatcat tttaattgca tggagtgcca atgggtctgt aaaatcacaa tttgcggtgg 720

atacatatgc ctcgatagca tgtgtcattg catccatacc tgtatgtgcc accaattttt 780

gtggcatggt ctctgccagt tcagggtcta ctattgcaac atcaggtgtt atttcaaaat 840

cggctattgg atattttatt ccttttttcat aatctgtaat aattgaaaaa gcagttacct 900

cggtagcggt tcctgaagta gaagatattg cacaaaaatg tgcttttta cgaagtgaag 960

gtatgccaaa tactttacac atatcctcaa aggtaatatc aggatattca tatttaatcc 1020

acattgcttt agccgcatca atcggagaac ctccgcctat tgcaacaatc cagtcaggtt 1080

caaactctga catcgctttg gcacctttca taacggtttc caccgaaggg tcaggttcaa 1140

ttccttcaaa aagtctgact tccataccgg cttccttaag atactgttct gccctgtcaa 1200

ggaaaccaaa acgtttcatt gaacctccgc caacacaaat catggctttt ttgccttgaa 1260

atgtcttaag tgcctctaat gcacccttтc catgatacaa atctcttggt aacgtaaatc 1320

ttgccattag taatgagtta cagttttggc aattactaaa aaactgactt caattcaatg 1380

ttagcccgct cccgcgggtt ttttgttgct ttttcacagt gactataggt aatcagcaac 1440

acaatacggc cctgttcttt ggacagtttt tgtataatgt tgaccgcatc ctgaccggat 1500

tttttatcta agtggggaat tgtcaattgt caattaaagc taagttctac taatgtttta 1560

gaaggcattg tcgattgaaa ataagggttg aatggagaaa attttgagcc tttgtcaaag 1620

ataaaaattt atttcaacag ttttttaact agccgaacca gagaatgacc cagtggcgct 1680

gactttgctc ccgagttttt gttagaaatt accctcaaga agtaatctaa taataaggtt 1740

ctctcttctg ccgtta 1756

<210> 104
<211> 1655
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 104, Example 104: designer Anabaena PCC 7120 hox-promoter-controlled NAD-dependent Glyceraldehyde-3-Phosphate Dehydrogenase DNA construct (1655 bp)

<400> 104
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatggtagt taaagttggt attaacggtt tcggtcgtat cggacgtctt 240

gcattccgcc gtattcaaaa tatcgaaggt gttgaagtaa ctcgtatcaa cgaccttaca 300

gatccaaata tgcttgcaca cttgttgaaa tacgatacaa ctcaaggtcg ttttgatgga 360

acagttgaag ttaaagaagg tggatttgaa gtaaacggaa acttcattaa agtttctgct 420

gaacgtgatc cagaaaacat cgactgggca actgatgggg ttgaaatcgt tcttgaagca 480

actggtttct ttgctaaaaa agaagcagct gaaaaacact tacatgctaa cggtgctaaa 540

aaagttgtta tcacagctcc tggtggaaac gatgttaaaa cagttgtttt caacactaac 600

cacgacattc ttgacggtac tgaaacagtt atctcaggtg cttcatgtac tacaaactgt 660

ttagctccta tggctaaagc tcttcacgat gcattcggta ttcaaaaagg tcttatgact 720

acaatccacg cttacactgg tgaccaaatg atccttgacg gaccacaccg tggtggtgac 780

cttcgtcgtg cacgcgctgg tgctgcaaat atcgttccta actcaactgg tgctgctaaa 840

gctatcggtc ttgttatccc agaacttaac ggtaaacttg acggtgctgc acaacgtgtt 900

cctgttccaa ctggatcagt aactgagttg gttgtaactc ttgacaaaaa cgtttctgtt 960

gacgaaatca acgctgctat gaaagctgct tcaaacgata gcttcggtta cactgaagat 1020

ccaatcgttt cttcagatat cgtaggcgta tcatacggtt cattgtttga cgcaactcaa 1080

actaaagtaa tggaagttga cggatcccaa ttggttaaag ttgtatcatg gtatgacaac 1140

gaaatgtctt acactgctca acttgtacgt actcttgagt acttcgcaaa aattgctaaa 1200

taatgaagta agtaggaagc agggagcagg ggaaagaaaa ttgacaactg tacaagatta 1260

atcgcgtctc tgagcaatga ccaaatacat ctacctccac ggttttcttc cagccccta 1320

tctgcgaaag cacaagatat tagcaagcgt ttcgcccaaa ttcacataca gctaacaatc 1380

cctgatctca atgctggtga attttctcag ttaacaatca cgcgccaaat tcaacaagtt 1440

gccgcaattt tccctgataa ttctgaacca ataacgctga taggttctag tttaggcggt 1500

ttaactgctg cttatctagg acagcgatat ttacaagtac aacgcttagt tttattagcg 1560

ccagtttggt tttttatccc attggttgcc caaaatgggt gaagaagctg tcacaagttg 1620

gcaacaaacg atataggttc tctcttctgc cgtta 1655

<210> 105
<211> 2303
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 105, Example 105: designer Anabaena PCC 7120 hox-promoter-controlled Acetolactate Synthase DNA construct (2303 bp)

<400> 105

agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgctaagggg tgcagctgag ctccccaaga cgttggttaa agcgcagatt 240

ttcactatag tccacaggga catcaatgag agtgggaaca ttctgtgcca aggcggtttt 300

gagggttggg ataaagtcag tggtctcctc aatgcgatag cctttgagtc ccatgctttc 360

ggctaacttg acaaaatcgg gattactaaa gtggacatag gcagattcac caaagtagcg 420

ctgctgcttc cactcaatga gaccatagcc gccgtcatta aagatgatgg tggtaaagtt 480

tgtccccata cgcagggcag tttccagttc ttggaaattc atcatgaagc caccatcccc 540

cgtgactgcc accacatgcc gctgcggata gactaatttg gcggccattg cccccggtac 600

cgcaatcccc attgccgcaa agccattgga aatcaagcag gtgttggggc gatcgcagtg 660

gtagtgacga gcaatccaca ttttatgggc acccacatca gaaataacaa tgtcctcggg 720

ccccatgact tggcgcaggt catagattag cttttggggc ttaaccggaa aactctcatc 780

ctgggcatat tggtaatagt ccgccacaat ctcctgacgc agttgcacgg catagggggt 840

gggcttatct tggcgatcgg cccgcttaag aatttcatag agggagtcag aaatatcgcc 900

gacaacctca acgacaggga tatagctgct gtcaatttcc gcaggagtgg ccgcaatatg 960

gataatcggc aagcggccct cggggttcca gctttttggg gaatactcaa ttaagtcata 1020

gccaacggca atcactaagt cagcatgatc aaagccgcag ctaatgtaat cccgctgttg 1080

gagccccacg gtccacagag caaggggggtg ttgataggga atgacccctt tgcccatgaa 1140

ggtattggcc acggggatat tcagcttttc ggcaaaatgg gtgagggcag cggcagcatg 1200

ggcgcgaatg gcgccattcc ccactaggat caggggggttc tcggcagcat tgatgagttc 1260

agcggcctta agaatactct ggaaagaggc ataggttttt tcgggggagc tgggcttaag 1320

gggagcgccc tcggcttcca tggcggcaat gttttcaggc acatcaatgt gaacggcgcc 1380

cggcttctca ttctgggcaa ttttaaaggc cttgcggaca atttctgggg taatactagg 1440

gcggacaatc tgggcattcc atttggttac ggggctaaac atggccacca agtccaaata 1500

ttggtgggac tcgatgtgca tgcgatccgt ccccacttgc cctgtaatcg ccaccagggg 1560

agcgccgtcg aggttggcat cggcaacacc ggtcattaaa ttcgtggccc cggggccgag 1620

ggtagaaaga cagacccctg ctttgccggt gaggcgacca tagacatcgg ccataaaggc 1680

cgccccctgt tcgtggcggg tggttataaa ttgaatccga gagcgatgga gggcatggag 1740

gacatctaga ttctcttccc ccggcaaacc aaaaatatat tcaacgcctt cattttcaag 1800

gcattttacg agtaattcgg cggtattcat aggatgggcg atcgcaggca ctgaagtaag 1860

taggaagcag ggagcagggg aaagaaaatt gacaactgta caagattaat cgcgtctctg 1920

agcaatgacc aaatacatct acctccacgg ttttcttcca gccccctatc tgcgaaagca 1980

caagatatta gcaagcgttt cgcccaaatt cacatacagc taacaatccc tgatctcaat 2040

gctggtgaat tttctcagtt aacaatcacg cgccaaattc aacaagttgc cgcaattttc 2100

cctgataatt ctgaaccaat aacgctgata ggttctagtt taggcggttt aactgctgct 2160

tatctaggac agcgatattt acaagtacaa cgcttagttt tattagcgcc agtttggttt 2220

tttatcccat tggttgccca aaatgggtga agaagctgtc acaagttggc aacaaacgat 2280

ataggttctc tcttctgccg tta 2303

<210> 106
<211> 1661
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 106, Example 106: designer Anabaena PCC 7120 hox-promoter-controlled Ketol-Acid Reductoisomerase DNA construct (1661 bp)

<400> 106

agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttaatttt tatccttatc cactatcttt ccttttccaa gccagctcat 240

catacttcta agtttagatc ccacctgctc gatgggatgg ttttcatcag ccctggtgag 300

ggcattaaat actggtctgc cagctttatt ttccagcatc cattcttttg caaattctcc 360

tgattgtatc tgtcttaaaa cttccctcat gttgtcttta acctggggat ctattaccac 420

aggccccctt gtgaggtcac catattgggc tgtgttgctt atggaatatc tcatgttgga 480

gataccacct tcatagagaa gatccactat cagttttacc tcatgcatac attcaaaata 540

agccatttct ggagcgtagc cagcctccac caatgtttca aaaccatatt taataagctg 600

tgtcaaacca ccacataaaa ccgcctgctc accgaaaaga tctgtttctg tttcctcttt 660

gaagtttgtt tcaagcacac ctgctctggc tccaccaatg gcagctgcgt atgacaaagc 720

cacctctctt gaatcaccgg aatagtcttg atgcacagcg atgaggcatg gtactccgcc 780

acccttttgta tattctgctc ttacaagatg ccctggccct ttaggtgcaa tcattataac 840

gtttacgttt ttaggaggca ctatctgtcc aaaatggatg ttgaaaccgt gggcaaatgc 900

aagatatgtc ccctctttta tataaggggc aatctgctct ctgtaaagat ccccctgtat 960

ctcatcagga acgagtatca tgatgaggtc tgcccatttt gtggcctctg atatctccat 1020

aactttaagc ccggagcttt ccgctttttt ccaggaatca ccacccttтc ttagggcaac 1080

ggcaacgtca acaccactat ctttgaggtt attagaatgt ccataaccct gacttccgta 1140

accaactatg gccacctttt tctttttaat caattctaaa tttgcatcct tttcgtagta 1200

tactttcatt gaagtaagta ggaagcaggg agcaggggaa agaaaattga caactgtaca 1260

agattaatcg cgtctctgag caatgaccaa atacatctac ctccacggtt ttcttccagc 1320

cccctatctg cgaaagcaca agatattagc aagcgtttcg cccaaattca catacagcta 1380

acaatccctg atctcaatgc tggtgaattt tctcagttaa caatcacgcg ccaaattcaa 1440

caagttgccg caattttccc tgataattct gaaccaataa cgctgatagg ttctagttta 1500

ggcggtttaa ctgctgctta tctaggacag cgatatttac aagtacaacg cttagtttta 1560

ttagcgccag tttggttttt tatcccattg gttgcccaaa atgggtgaag aagctgtcac 1620

aagttggcaa caaacgatat aggttctctc ttctgccgtt a 1661

<210> 107
<211> 2324
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 107, Example 107: designer Anabaena PCC 7120 hox-promoter-controlled Dihydroxy-Acid Dehydratase DNA construct (2324 bp)

<400> 107
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttataaat ccgttataca tccaaaagat gctgatgata ccagcttgct 240

atacttcctt aagcttccac tcacatttcg ctcgggcttt ataggagttt gctcctttcg 300

tttttcccat tcctcttcct ccatcaatac actaattgaa ttttccactg catctattct 360

gatgcggtcg ccattttcta cataagctaa tgcgccatta tcaaaagctt cgggtgaaat 420

gtgtcccact acaaaaccgt gagttcctcc tgagaacctt ccatctgtaa tgagggctac 480

tttctttccc aaacctgctc ccattatagc agcagttggc tttaacattt cgggcattcc 540

aggacctcct tttggccctt catatcgaat caccactaca tcaccttctt ttatctcgcc 600

tctggcaata ccatcattgg ccagaaattc accatcataa actctagcag ttccttcgaa 660

tatctctcct tcctttccgg tgattttagc aacagctcct ccaggtgcta aattgccttt 720

caatattcgc aaatgacctg agcttttgat tggatttttc acagagtgaa tgatgtcttg 780

cttttcgcct aaaccctgaa catctttata attttcagct aaagttttac ctgttatggt 840

catgcaatcg ccatgaagaa gtccttcccc caacatcatt ttcatcactg caggaatccc 900

gccattttga tgaagatctt ccatcaagta tttaccagaa ggctttaagt cggctagata 960

aggagtttcg gcactgattc gagcgaaatc ttccaatgtt aaatcgattt caaaagcatt 1020

ggcaacagct aataaatgta aaactgcatt ggtcgatcct cccaaaactg taatcaaccg 1080

tatggcgttt tcaaatgatt ttttagtgac gatatcccgt ggcttcaaat cattttcaat 1140

caatttttta atggctaaac cagcctctgc acattctttc cttttctcag cactttgagc 1200

gggattggaa gcaccataag gcaagcataa tcctaaggct tcaatagcgg atgccatcgt 1260

attggcagtg tacattcctc cacaggctcc aggacctggg catgcatttg ccactactcc 1320

cttaaaatct tcttcagaaa tagtgttggc ttgcttctta cctaaagctt caaaagcaga 1380

aaccacatct aatttttctc cattatggca acctggagca atggttcctc cataaattat 1440

gagtgaaggt cgattcaatc tgcccatagc cagtaaggcg cctggcatat ttttatcgca 1500

tcccgtaata gcaatcatgg catcgtaagc ttgcgcattc actaccgttt ccatggaatc 1560

ggctatgata tcgcgggaag gcaatgaata gcgcattccg ttggtaccca tagaaatacc 1620

atcgcttact ccaatagtat tgaaaatcaa ccctacccac tcataagatt tgatgctttt 1680

cttgacctct acagccaaat cattcaaatg catattacat ggattgccct caaaaccagt 1740

gcttgcaata cctatttgtg gtttttccaa atcttcatca gacaaaccaa tggcatgcaa 1800

catggcttga gcggcaggtt gtgtaggatc ttgtgtaact gctttactat atggatttaa 1860

ttccttcgcc attgaagtaa gtaggaagca gggagcaggg gaaagaaaat tgacaactgt 1920

acaagattaa tcgcgtctct gagcaatgac caaatacatc tacctccacg gttttcttcc 1980

agccccctat ctgcgaaagc acaagatatt agcaagcgtt tcgcccaaat tcacatacag 2040

ctaacaatcc ctgatctcaa tgctggtgaa ttttctcagt taacaatcac gcgccaaatt 2100

caacaagttg ccgcaatttt ccctgataat tctgaaccaa taacgctgat aggttctagt 2160

ttaggcggtt taactgctgc ttatctagga cagcgatatt tacaagtaca acgcttagtt 2220

ttattagcgc cagtttggtt ttttatccca ttggttgccc aaaatgggtg aagaagctgt 2280

cacaagttgg caacaaacga tataggttct ctcttctgcc gtta 2324

<210> 108
<211> 2288
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 108, Example 108: designer Anabaena PCC 7120 hox-promoter-controlled branched-chain alpha-Ketoacid Decarboxylase DNA construct (2288 bp)

<400> 108
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatgtatac agtaggagat tacctgttag accgattaca cgagttggga 240

attgaagaaa tttttggagt tcctggtgac tataacttac aatttttaga tcaaattatt 300

tcacgcgaag atatgaaatg gattggaaat gctaatgaat taaatgcttc ttatatggct 360

gatggttatg ctcgtactaa aaaagctgcc gcatttctca ccacatttgg agtcggcgaa 420

ttgagtgcga tcaatggact ggcaggaagt tatgccgaaa atttaccagt agtagaaatt 480

gttggttcac caacttcaaa agtacaaaat gacggaaaat ttgtccatca tacactagca 540

gatggtgatt ttaaacactt tatgaagatg catgaacctg ttacagcagc gcggacttta 600

ctgacagcag aaaatgccac atatgaaatt gaccgagtac tttctcaatt actaaaagaa 660

agaaaaccag tctatattaa cttaccagtc gatgttgctg cagcaaaagc agagaagcct 720

gcattatctt tagaaaaaga aagctctaca acaaatacaa ctgaacaagt gattttgagt 780

aagattgaag aaagtttgaa aaatgcccaa aaaccagtag tgattgcagg acacgaagta 840

attagttttg gtttagaaaa aacggtaact cagtttgttt cagaaacaaa actaccgatt 900

acgacactaa attttggtaa aagtgctgtt gatgaatctt tgccctcatt tttaggaata 960

tataacggga aactttcaga aatcagtctt aaaaattttg tggagtccgc agactttatc 1020

ctaatgcttg gagtgaagct tacggactcc tcaacaggtg cattcacaca tcatttagat 1080

gaaaataaaa tgatttcact aaacatagat gaaggaataa ttttcaataa agtggtagaa 1140

gattttgatt ttagagcagt ggtttcttct ttatcagaat taaaaggaat agaatatgaa 1200

ggacaatata ttgataagca atatgaagaa tttattccat caagtgctcc cttatcacaa 1260

gaccgtctat ggcaggcagt tgaaagtttg actcaaagca atgaaacaat cgttgctgaa 1320

caaggaacct catttttgg agcttcaaca attttcttaa aatcaaatag tcgttttatt 1380

ggacaacctt tatggggttc tattggatat acttttccag cggctttagg aagccaaatt 1440

gcggataaag agagcagaca ccttttattt attggtgatg gttcacttca acttaccgta 1500

caagaattag gactatcaat cagagaaaaa ctcaatccaa tttgttttat cataaataat 1560

gatggttata cagttgaaag agaaatccac ggacctactc aaagttataa cgacattcca 1620

atgtggaatt actcgaaatt accagaaaca tttggagcaa cagaagatcg tgtagtatca 1680

aaaattgtta gaacagagaa tgaatttgtg tctgtcatga aagaagccca agcagatgtc 1740

aatagaatgt attggataga actagttttg gaaaaagaag atgcgccaaa attactgaaa 1800

aaaatgggta aattatttgc tgagcaaaat aaatagtgaa gtaagtagga agcagggagc 1860

aggggaaaga aaattgacaa ctgtacaaga ttaatcgcgt ctctgagcaa tgaccaaata 1920

catctacctc cacggttttc ttccagcccc ctatctgcga aagcacaaga tattagcaag 1980

cgtttcgccc aaattcacat acagctaaca atccctgatc tcaatgctgg tgaattttct 2040

cagttaacaa tcacgcgcca aattcaacaa gttgccgcaa ttttccctga taattctgaa 2100

ccaataacgc tgataggttc tagtttaggc ggtttaactg ctgcttatct aggacagcga 2160

tatttacaag tacaacgctt agttttatta gcgccagttt ggtttttat cccattggtt 2220

gcccaaaatg ggtgaagaag ctgtcacaag ttggcaacaa acgatatagg ttctctcttc 2280

tgccgtta 2288

<210> 109
<211> 1613
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 109, Example 109: designer Anabaena PCC 7120 hox-promoter-controlled 2-Methylbutyraldehyde Reductase DNA construct (1613 bp)

<400> 109
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatggcttc tgtaaatgac tactttgaga acgccaagac gacgtacttt 240

actttgagat cgggtgacaa gatccccgct gttggattgg gtacttggca atcacccacc 300

aacgagacta aagaggcagt caagtacgct ttgcagcacg gttaccgtca catcgatgct 360

gccgccattt atggtaacga agacgaggtt ggtgacggta tcaaggagag tggaatccct 420

cgtgaccaaa tctgggtcac atctaagctc tggtgcaatg ctcatgctcc cgaggctgtc 480

cccaaggctt tggagaagac cttgcgtgag ctgaaacttg attaccttga cctttacctc 540

atccactggc ctatttcttt gaagaccggc gatgacttgg ttcccaagga caaggacggc 600

aacaccatca ctgtcgaaat tcccctcgag gacacctgga aggctatgga gggtcttgtg 660

aagtccggca aggtgaagaa cattggtatt tccaatttca acaacgaaga gttggatcgt 720

attttgaagg ttgccgagat tcctcctgcc gtccaccaaa tggaaactca tccttacttg 780

aagcagacgg agttcattga gaagcacaag aagcttggca ttcacgtcac cgcttactcg 840

cctttggcca accaaaatgc tctttacggc aatgccgttc ccaagttgat tgagcacaag 900

actcttgtcg acattgccaa gaccaagggt gagggcgtca ctggtgccaa cattgctatt 960

tcttgggcag tcaagcgcgg tacttcggtt attcctaagt ctgttcatgc caacagaatt 1020

aagagcaact tcctcgttgt tcccttgact gatgacgaga tgaaggccat cgataacatt 1080

ggtgtcagca agcgtttcaa ttggagcaaa gttttctgca atgagaattg tttctacggt 1140

cttgaggatg gtcctcagta atgaagtaag taggaagcag ggagcagggg aaagaaaatt 1200

gacaactgta caagattaat cgcgtctctg agcaatgacc aaatacatct acctccacgg 1260

ttttcttcca gccccctatc tgcgaaagca caagatatta gcaagcgttt cgcccaaatt 1320

cacatacagc taacaatccc tgatctcaat gctggtgaat tttctcagtt aacaatcacg 1380

cgccaaattc aacaagttgc cgcaattttc cctgataatt ctgaaccaat aacgctgata 1440

ggttctagtt taggcggttt aactgctgct tatctaggac agcgatattt acaagtacaa 1500

cgcttagttt tattagcgcc agtttggttt tttatcccat tggttgccca aaatgggtga 1560

agaagctgtc acaagttggc aacaaacgat ataggttctc tcttctgccg tta 1613

<210> 110
<211> 1300
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 110, Example 110: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled NAD-dependent Glyceraldehyde-3-Phosphate Dehydrogenase DNA construct (1300 bp)

<400> 110

agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatgtta tgccaagccg actttacgaa 180

ccaattccgc ggtgcgcgtg gcgtaaccca tttcgttgtc ataccaagtg tagattttca 240

ccattcgctt accaaccacc atggtggaga gcgcatccac aattgttgaa cgttgatcgc 300

cttggtaatc aatcgacacc agtggacgct cttcaaaacc cagaatgcct ttaagctcgt 360

tttctgaggc ttgttttaac agctgattga tctcttccac cgtcgtatca cgctgcacat 420

caaaaatgat gtcggttaac gaggcattcg ccaacggtac acgtacggcg tgtccatcaa 480

tcttgccttt cagatccggg aaaatttcga taatcgcttt agcagagccg gtggttgtgg 540

ggatgaggct cataccgcaa gcacgtgcac ggcgtaaatc tttatgcggt gcatccaaaa 600

tggtttgcgt attggttagg ttatggatgg tagtaaaaga ggcttgtgcg atacccagtt 660

tttcatggat tactttcacc actggagcaa tacagttagt ggtacaagaa gcggcagtga 720

caatgcgatg ttgctccgga ttgaagatgt gatcgttcac cccgaccacg atattggcga 780

tcccctcttc tttgacaggc gctgaaacga cgacgcgttt tactccttgt gccaaatact 840

ggttcaagaa ttcgccttta cggtgcttac ccgtagcctc aatcaccaca tcacagcccg 900

accaatccac tgcatcaatc gatttttctt gtgttgtgcg aatgcgtttg ccgttgatca 960

ggatagcatc cgcttcactg cccacagcat gatgccaacg accttgtacc gaatcgaact 1020

ccaaaaggtg cgctaatgtt gcagcatcac ccgccacatc gttgatctgt acaaactcaa 1080

tctcaggcca atcaaacgaa gctcttaaag ccaaacgccc aatacgacca aatccattaa 1140

ttccgacttt aattgccatt gatttagttt cggtgtctat ctcttaatag cctcgattta 1200

ttttcggggc tattaatcaa ctctcagagg cgacaagctt cttcttccct tacgacgttt 1260

ttattggttg gacatggcaa ggttctctct tctgccgtta 1300

<210> 111
<211> 1498
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 111, Example 111: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled Phosphoglycerate Mutase DNA construct (1498 bp)

<400> 111
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatgaaa tatgtaatct tacttggcga 180

cggcatggcc gacgaaaaaa ttgccgaact ggacggcaaa acgcctcttc aatacgccag 240

cacacccaat atggacaggc tggcggcagg cggggaaacc ggcatggtac ataccgtccc 300

ggatggattt ccgcctggca gcgatgtagc caacctctcg gtaatggggt acaatccgcg 360

ggaatattat accgggcgtt ctccgctgga agcggtaagc atgggggttg aactttcaga 420

tgacgatgta gccttccgct gcaacctggt taccctgtca gaagaagagg tatatgaaaa 480

caagattatg gtggattaca gctcggacga aattaccacc tctgaatcgc atgaactgat 540

cagggaagtc gccaaccgcc tgggcagtaa agagttgcgc ttttacccgg gtttcggatt 600

tagacacctt cttgtatgga aaacagggcc tgttggcggg aagctaacac caccccacga 660

tatctcgggg cgtaccattg ccccatacct ccccaaaggc gagggtagcg acactttaaa 720

gcggttaatg aaagaaagca acaggttcct gccagagcac ccggttaacc aaaaaagggt 780

aagggccggt cttaggcctg ccacttccat ctggttctgg ggacagggaa agaaaccctc 840

gataccgaag ttctacgaca aatacggggt aaccggctct gttatctctg ccgtggacct 900

gattaagggg attggcatct gtgccggctt cgatatagtt aaggtggagg gtgtaacggg 960

caccatccat accaacttcc gggggaaagt gcaggccgcc ctggaagaac tgaaaaaggg 1020

aaaggacctg gtctacattc acgttgaggc tccggacgca gcaagccaca ggggtgaaac 1080

tgttaccaaa gttaaagcta ttgaaatggt ggacaacatg ctgggccagc ttttaaacaa 1140

actggacgaa ttcggcatgt acaaaataat gctcttgccc gatcatccaa ccccgctcag 1200

cactaaaacc cactctaaca gccctgtccc ctttgttatc tatgccaagg ggcggaaaaa 1260

taaaagcgcc gcttcttttg acgaagaaac ggcggcaaaa agcggacttg ttttccgggc 1320

gggccatgag ttaatggatt actttatccg cagctaatga tttagtttcg gtgtctatct 1380

cttaatagcc tcgatttatt ttcggggcta ttaatcaact ctcagaggcg acaagcttct 1440

tcttccctta cgacgttttt attggttgga catggcaagg ttctctcttc tgccgtta 1498

<210> 112
<211> 1588
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 112, Example 112: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled Enolase DNA construct (1588 bp)

<400> 112
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatggtg tacgtggaaa tcgtggatgt 180

aagagcaaga gaggtcctgg attcgagagg aaatcccacc gttgaagcgg aagtcgtgct 240

tgaagacgga acaatgggaa gagccatcgt gccctctggt gcctccactg gaaaattcga 300

agccctggaa atcagagaca aagacaagaa gagatacctc gggaagggtg ttctgaaggc 360

cgtagagaac gtgaacgaaa ccatagctcc cgcgctgatt ggaatgaacg cattcgacca 420

gccactcgtt gacaagacac tgatagaact ggatggcaca gagaacaaat ctaaactggg 480

tgccaacgct atactcgccg tttctatggc agttgccaga gcggcggcga attacctcgg 540

attgcccctc tacaaatacc ttggaggagt caacgcaaag gttctgccag tacctttgat 600

gaacgtgatc aacggtggac agcacgcaga caacaatctt gaccttcagg aattcatgat 660

cgttcccgcc ggatttgaca gcttcagaga agctttgagg gcaggagcgg aaatattcca 720

cacgttgaaa aagatactcc acgaagccgg tcacgtgaca gcagtaggag acgagggtgg 780

attcgcaccc aatctgtctt ccaacgaaga agccataaag gttctgattg aagccataga 840

gaaagctggc tacaagcccg gagaagaagt cttcatagct cttgattgcg cagcatcttc 900

cttctacgat gaggaaaagg gagtttacta cgtcgatggt gaagaaaaat ccagcgaagt 960

tctcatggga tactacgaag aactggtggc gaagtacccc atcatatcca tcgaagatcc 1020

gttcgcggag gaagactggg atgcatttgt ggaattcaca aagagagtag gaaacaaggt 1080

tcagatcgtt ggagatgacc tttacgtgac caacgtgaaa agactttcca aaggaataga 1140

actcaaagcg accaactcca tactcatcaa actcaatcag ataggcaccg tcacggaaac 1200

tctcgacgcg gtggagatgg cacagaagaa caacatgaca gccatcattt cccacagatc 1260

tggagagagt gaagacacgt tcattgcgga tctcgctgtg gcaacgaacg ctggtttcat 1320

caagacaggt tccctctcca gaagcgaaag gatagccaag tacaaccagc ttttgagaat 1380

cgaggaagaa ctcggaaaag tggcagaatt cagaggtttg aaatctttct actctataaa 1440

gagataatga tttagtttcg gtgtctatct cttaatagcc tcgatttatt ttcggggcta 1500

ttaatcaact ctcagaggcg acaagcttct tcttccctta cgacgttttt attggttgga 1560

catggcaagg ttctctcttc tgccgtta 1588

<210> 113
<211> 1717
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 113, Example 113: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled Pyruvate Kinase DNA construct (1717 bp)

<400> 113
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatgatg agaaaaacca agcttatatg 180

ttcgatagga cctaaaaccg agaaaccaga gaaaataaag gaattgctaa aaagaggggt 240

aaatgctttt aggataagcg cagttcatta cacgatggaa aaaatcacag agctggtaga 300

gctaatcaaa gatattagat atgaactcaa aatgcctgtt tccatcattc ttgatttacc 360

aggttgcaaa ctccggacgg gagatcagaa agaagaaatc atcgaactta gacaaggtga 420

aaaagtgact gtaacaagcg aaaaaacttt ttcttctcgg gatactataa gcataaattt 480

ttccggacca tttcagggtg taaaaaccgg cgatttaatc ctcgtagatg atggaaaaat 540

acaactcaga gtggaaagaa tttctccaaa aaaagtagaa tgcgtcgtgg agataggagg 600

aattttgaag aaaaacagtg gcgtcaattt tcccaattct gatctacctg tcgaagtacc 660

aacagaagaa gatattaaga tcatagctga aactgtcaat atgggactgg actattactg 720

tgtatcattt gcaagaaacg caaaagatgt tcaaaaaatc aaaaaacatc ttgaatcttt 780

cgattcaagt gcgaaaattc ttacgaaaat agaaacaaaa aaatccatag aaacgctgga 840

agatatatgt cgcgtgagcg atggaataat cgtagcaaga ggagatttag cggtggagac 900

atctctgata gatttgccga tattgcaaaa aaagataata aataccgcat caaattataa 960

aatacctgtg atcgtcgcaa ccgaaatact caattctatg atcaacagtt catcaccaac 1020

aagggttgaa ataatggatg ttgcaaacat agttttagat ggagcagatg ctatactgct 1080

aacctctgaa acagctgtgg ggaactttcc gatcgaaaca gttgaaaaaa ttaatgagat 1140

tgttgaaaat gttgagaact acctacccga aatcaatgct cattttaaag aacgcaggtt 1200

tgaaaaaatc gaagatccat ctgaagctat tgcaaggagt agttactaca tttctgaaga 1260

aataaatgcc aaagctataa taatatcaac agcttctgga agcactgcaa gaagggtggc 1320

ctatttcaag ccacttcgtc ctatcatagc tacgacccca gatgaaaaca cctttcatca 1380

gttgtctatt gtttggggga tagttccgat gctaattcca gaagtccatt ccacagatat 1440

aatgatccac gtggccgtcg agaaggttaa agctgtcgga tatgttcaaa attccgacat 1500

tgtggttgtt acttctggtg ctccgtgtgg tattgttgga acaactaaca tgctcaaagt 1560

tcacatagtt gagtagtgat ttagtttcgg tgtctatctc ttaatagcct cgatttattt 1620

tcggggctat taatcaactc tcagaggcga caagcttctt cttcccttac gacgttttta 1680

ttggttggac atggcaaggt tctctcttct gccgtta 1717

<210> 114
<211> 2017
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 114, Example 114: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled Acetolactate Synthase DNA construct (2017 bp)

<400> 114
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatgtca agattgctta gaggcttctt 180

tattaaaatg ttcctcaaat ttttttggaa aacgctgatc ggccaaatga atgttgtcgc 240

tgtaatcgac cggaatatca atgacaacag gcccctctgc atcaagacca gctttaagca 300

cctctgccaa ttcgtcaggt gaattgaccc ttaaaccttt tgcaccaaag ctttcagcat 360

attttacaat atcgattccg ccgaagtcga ctccggacgt ccgcttgtat ttcatctcct 420

gctggaacgc aaccatatcg tatgtgctgt cattccagac aatgtgaacg atcggcgctt 480

ttaatctgac cgctgtctca agctccatcg cggagaacag gaagcccccg tccccggaaa 540

cagacacgac tttctgtccc ggattgacca gcgttgctgc aatcgcccac ggcaaagcca 600

ccccaagcgt ctgcatgccg ttggaaatca gcagtccatg cggacggtag gtgcggaaat 660

atctagacat ccaaatcgca tgggagccga tgtcgcaagt caccgttatg tcatcgctca 720

gcagttcacg caaatcgcga acgatttgca gcggatgaac aagatcagtt tttgtttctt 780

taggaggttc gctttgctcc tccagtgctt tcttcaagta atcaaggaca ggtgcaaagg 840

actcgtcgat ggaaaccggc agagaatcat gttcaatatg gtttaacgtc tctgcgatat 900

cgccgatcaa ctcgatttcg ggctgatagt catgatcgat atcggcttgt atttcgtcaa 960

gatgaatcac gcttcgttcg ccttttccat tccaaaagac cggatcgtat tcaatcggat 1020

catagccgac cgtcaaaacg acatccgctt tttccaatag catgtctccg ggctgattgc 1080

ggaatagtcc gatccggccg aagtactggt cttccaaatc gtgagacagc gtacccgctg 1140

cttggtatgt ttcaacaaac ggcagtttca ctttccttag cagacgccga accgcttcaa 1200

tcgcttcagg tcttccgcct ttcatcccga caagcacgac aggaaggttc gcattgtgaa 1260

ttttggcgat ggccgcgctg atttgttcgt ccgaagccgc gcccagcttc ggcgccggca 1320

tggttttcac cggcttggca gttgccggac cggccgtaac gtcctgcgga aagctgagaa 1380

acgctgcgcc agcctgtcca gaagccgccg ctctgaatgc attggttaca gcctcaggta 1440

tgttgttcgc atcttccact tctgcgctat atttcgtaat cggctgaaac aacgccgcat 1500

tatccatcga ttgatgagtt tttttgagac gatccgctct ttttacagca cccgccaggg 1560

caacaaccgg atctccttct gtattggctg ttacaagacc ggtcgctaaa ttagacgctc 1620

ccggacctga agtcaccagg caaacaccgg gctttccagt caatcgtccg actgccgccg 1680

ccataaatgc tgcattctgc tcgtgacggc aaacgatcaa ttcaggcccc ttgtctttca 1740

atacgtcaaa caccgcatcg attttcgctc ccggaatacc gaaaacatga gtgacacctt 1800

gctgaatgag actatccacc acaagctctg ctcctcttac agtaagagtt tcatttttag 1860

cggctacatt attcaatgat ttagtttcgg tgtctatctc ttaatagcct cgatttattt 1920

tcggggctat taatcaactc tcagaggcga caagcttctt cttcccttac gacgttttta 1980

ttggttggac atggcaaggt tctctcttct gccgtta 2017

<210> 115
<211> 1588
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 115, Example 115: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled Ketol-Acid Reductoisomerase DNA construct (1588 bp)

<400> 115
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatgtca ctcctcatcc acgttcctct 180

ccttgagcca aggcatcatt tttctgagtt cttttcctac tttttctatg agatgctctg 240

attctttctt tctcatggtg tagaagtagg gtcttcccgc ctgattttcg agtatccagt 300

ccttggcgaa ctttcccgtc tgaatgtcct tgagcatctg cttcatgttc tccctcactt 360

cttttgtaac gatcttttcc tgactgatgt agtcaccgta ctccgcggtg ttgctgacgg 420

agtatctcat gaaagagaga ccaccctcgt agatgaggtc aacgatgagc ttgagctcat 480

tgagacactc aaagtaagct atttccggtt gataacccgc ctccacaaga gtttcgaaac 540

cagcttttat gagagccgtt actccaccac agaggaccgc ctgctctcca aacaaatccg 600

tttccgtctc ttccttgaag gtcgtctcta tcacacccgc ccttgtcaca ccgatacctt 660

tggcataagc gagcgctata tctttggctt taccggtgta gtcctgatag accgctacga 720

gagccggcac accccttcct tcgacgtatt ctcttctcac gatgtgacca gggctcttcg 780

gagcgatcat cgtcacatcc acgttcttcg gaggtatgat ctggtgatag tggatgttga 840

acccgtgggc gaacatcagc atcttaccct cggtgaggtg tttttctatg tatttttgt 900

agatctccgg ctggttctca tctgggatga gcatcatgat gatgtcggcc tcttttgccg 960

cttcttctat tgctttcacg gtgagaccct gttcctccgc cttcttccag ctcttgcttc 1020

cctctctcaa tccgaccaca acgttgagac cgctgtcttt cagattcaac gcgtgcgcat 1080

gcccctgact tccgtaccct atgatcgcga tctttttgtc cctgatcagt tcgagatccg 1140

cgtctttgtc ataataaatc actgccattg atttagtttc ggtgtctatc tcttaatagc 1200

ctcgatttat tttcggggct attaatcaac tctcagaggc gacaagcttc ttcttccctt 1260

acgacgtttt tattggttgg acatggcaaa acaatccagt cgagagctag cgcttgaacg 1320

ccgtaaggcc ctgagtaatt caggtaagaa atcaaccaca ttaaatggat caagtcctaa 1380

tcgcatccgt actgcctctg atgcacgtct aaccaggact gatcaatctt tcgttaaggc 1440

tgggaaagaa tctgtgcagc taaccgctcc taagagagag caactagata cgtcttttgt 1500

tgcttctaga gaatcatccg gagcttcgcg ccgtcaagtg aaaacgatcc gaaattcaag 1560

cagagaatgg ttctctcttc tgccgtta 1588

<210> 116
<211> 1960
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 116, Example 116: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled

Dihydroxy-Acid Dehydratase DNA construct (1960 bp)

<400> 116

agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatgcta atctttcaag atagcgcctg 180

tactggcgga ttgcaccatt tttgaatatc ttttcatata gcctgagttt atcttgggtt 240

ccggaactcg ccactgcgtt ctcctggcag caagttcctc gtcgctaagt cgtacactaa 300

ggctgtggtt cggtatatca atgacgatta tgtctccgtc ctgaataaga gcaatattgc 360

ccccttgtgc cgcctcggga gatacgtgcc ctatagaagc tccccgggta gcaccagaaa 420

aacggccatc ggttataagg gctacgtcct tgtctagccc catccccgct atagcagaag 480

taggcgtgag catttccctc atccctggcc ctccgcgcgg cccttcatac cggattacga 540

cgacttctcc tttttcaatc ttgcctccta gaatggctgc aacagcttct tcttccgagt 600

cgaaaacccg tgctttaccc tcgtgataga gcatgtccgg gtcaactgcc cccttcttca 660

ccaccgcgcc ctcctcggcc aggttaccga acagtatagc caacccccg gtagtactgt 720

gcggattctc tatactacgg atgacctcgt ggtccttcac agggtagtca ttgataacct 780

ccccaaccgt cttaccagta accgtcaggc actggcggtt taccagccct gccttgtcta 840

actcgttgaa aatggcctga actccacccg cagcgtacaa gtcttctata aaatggttgc 900

cggcaggttc gattttacat aggtgaggag tggtatcgct gatatggttt atcaggttca 960

agtccagctt aacgccggct tcgtgagcga tagccataag atgcaaaacc gtattggtag 1020

aacaacctat tgccatgtcc aggcgtaagg cattgatgaa agcctcttgg gtcatgatat 1080

cccggggctt tatgtccctt tcccatagct ccatcacttt catgcccgcc tgtttggcta 1140

gacggattcg ttcagagtgt accgccggta tagttccgtt cccgggtaag cccattccta 1200

ccgcttccgt caggcagttc atggaattag cggtaaacat accggcacag ctgccacaac 1260

ccgggcaagc tacatcttca agctccgcta agtccgaaag cgacatctta cctgcgctga 1320

ccgcgcctac cccttcaaag accgtgttga ggctgacctt gcgcccccgg aaattgccag 1380

ccaacatcgg ccctccgctg acaaacatac aaggaagatt gaggcgagcg gccgccatca 1440

gcatcccagg gatgattttg tcgcagttag gtataaaaac cagggcatcg aaaggatgag 1500

ccatagccat tatctcaata gaatcggcaa tcagttcccg gctggccaga gagtatttca 1560

taccgatatg gttcatggca ataccatcgc atacccctat agtagaaaac tctataggag 1620

tgccccctttt catcctcacc ccggctttga ccgcctcggc tatacggtct agatgaatat 1680

gccctggaat aatctcgttg gccgagttga ctataccgac taagggtctc tccaactcct 1740

catcggtcaa tcctaaagct ttaaacagtg aacggtgagg tgctttttct agacccttt 1800

tcgccaggtc acttctcatt gatttagttt cggtgtctat ctcttaatag cctcgattta 1860

ttttcggggc tattaatcaa ctctcagagg cgacaagctt cttcttccct tacgacgttt 1920

ttattggttg gacatggcaa ggttctctct tctgccgtta 1960

<210> 117
<211> 1945
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 117, Example 117: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled 2-Keto Acid Decarboxylase DNA construct (1945 bp)

<400> 117
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatgtta tgatttattt tgttcagcaa 180

atagtttacc catttttttc agtacttttg gtgcatcttc ttttgccaaa actaactcaa 240

tccagtacat tctatttgga tctgcttgag cttctttcat gacagacaca aattcatttt 300

cagttctaac gattttcgag actactcgtt cttctgttgc tccaaatgat tctggtaatt 360

ttgagtaatt ccacattgga atatcattgt agctttgatt tggtccatga atttctcttt 420

cgactgtata accatcatta ttgataataa agcaaattgg attaattttt tctctgattg 480

ctaatcctaa ttcttgcact gtaagttgaa gtgaaccatc accaataaat aaaaggtgtc 540

tgctttcttt atctgcaatt tggcttccta atgctgctgg gaatgtatat ccaattgatc 600

cccataaggg ttgaccaata aaatgactct ttggttttaa gaaaattgat gaagcgccaa 660

agaatgatgt cccttgttca gcaacgattg tttcattgct ttgagttagg ttttcaactg 720

cttgccatag gcggtcttgt gataaaagcg catttgatgg aacaaagtct tcttgctttt 780

tatcgatata ttttcctttg tattctattc cgcttaggtc taagagagag gagatgaggg 840

attcaaaatc aaaattttgg atgctttcgt taaatatttt tccttcgtct atgttcagtg 900

aaatcatttt attttcattt aaatgatggg taaatgctcc tgttgaagag tctgtgagtt 960

taactccaag catcaggatg aagtcggctg attccacgaa ttctttaaga ttaggctctg 1020

agagtttacc attatagatt cctaaaaatg aagggagagt ttcatcaact gaacttttc 1080

caaagtttaa tgtcgtaata gggagttttg tctttgaaat aaattgagtg actgtatttt 1140

ctaagccaaa gctaattatt tcatgtcctg taatcacgat tggtttttg gcatttttca 1200

agctttcttg aattttattc aaaatctctt ggtcacttgt atttgaagtt ggattttctt 1260

ttttcaaagg gagtgagggt ttctctgctt ttgcagcagc aacatcaact ggtaagttga 1320

tatagacagg ttttctttct tttagtagtg cagaaagtac tcggtcaatt tcaacggttg 1380

cattttctgc tgtcagtaaa gttcgagctg ctgtaacagg ttcgtgcatt ttcataaagt 1440

gtttaaaatc accgtcagcc agcgtatgat gaacaaattt tccttcattt tggacttttg 1500

atgtaggtga tcccactatt tctactactg gtaaattttc ggcgtaactt cctgctaatc 1560

cattaactgc actcaattca cctactccaa aggttgtaag aaatgcggca gctttttag 1620

tacgagcata gccatcagcc atataagaag catttaattc attagcattt ccgacccatt 1680

tcatatcctt gcgggaaata atttgatcta aaaattgtaa gttatagtct ccagggactc 1740

caaaaatttc ttcaattcct aactcgtgta atcggtctaa taggtaatct cctactgtat 1800

acattgattt agtttcggtg tctatctctt aatagcctcg atttattttc ggggctatta 1860

atcaactctc agaggcgaca agcttcttct tcccttacga cgtttttatt ggttggacat 1920

ggcaaggttc tctcttctgc cgtta 1945

<210> 118
<211> 1138
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 118, Example 118: designer Prochlorococcus marinus MIT9313 nirA-promoter-controlled Alcohol Dehydrogenase DNA construct (1138 bp)

<400> 118
agaaaatctg gcaccacacc cctctagttg ccaacatcag ccgggttcag aatgtacaca 60

aagacaccaa ttcttgaatt tcacacaaat gctcagtttt gttcaatctg ataccgccaa 120

taccctcttc catcaggctt aatgactcca ttcgcaactt acccttgctt caataatggc 180

agggcctaaa aaccatggct atcgaatgcg cgaataaaat ttaaacaaca tgatcacttc 240

ttttcaagtt taatttcaac aaaatttcat gttgtcaccg gtggagcgaa tgggatcggc 300

aaggcgatcg ctagagcaat tcgcaaaaca gggagcgaac gtcgtgatca tcgaccgcga 360

tattcaaaac ggtgaagcgt tcgccgcgca attgcaatcg gacgggttcg aggcgatctt 420

tgtggcggcg gatgtgcgga aggtggacga tattgaacgg tttgtacaag aagctgccgg 480

ccgcttcggc cgcattgact atttgatcaa caatgctggc gtctcacgct ggaagtcgcc 540

gtatgagctg acggttgagg agtgggatga cgtgctgtca acgaatttgc gcagcgcttt 600

ttttgcttct cgagaagcag ctaaatatat gcgccgcaat gcaaaaggcg gagcaatcgt 660

caacattgcc tcgacaaggg cgctcatgtc cgagccgaat tccgaggcgt acgctgcatc 720

gaaaggcggc cttgtcgctt tgacccatgc gctggcggtg tcgtttgcgg atgatcgcat 780

tcgcgtcaat tgcatcagcc ccggttggat tgaaacgggc gattatgggc aactgcgaga 840

cattgaccac cggcagcacc cggccggccg cgtcggcaaa ccggatgata tcgcccgcgc 900

ttgtctgtat ttatgcgatg aggaaaacga ttttatcacc ggggtaaatt tggtcatcga 960

cgggggaatg accaggaaaa tgatttatat tgagtagtga tttagtttcg gtgtctatct 1020

cttaatagcc tcgatttatt ttcggggcta ttaatcaact ctcagaggcg acaagcttct 1080

tcttccctta cgacgttttt attggttgga catggcaagg ttctctcttc tgccgtta 1138

<210> 119
<211> 1816
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 119, Example 119: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled 2-Isopropylmalate Synthase DNA construct (1816 bp)

<400> 119
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatggtg agccagcgcg tttatatttt 180

tgacaccact ttgagggacg gcgagcagtc gcccggcgta agcctgaacg taggcgagaa 240

ggtgcaaatt gccaggcagt tagccaagct cggggtggac ataattgagg ccggctttcc 300

gattacctcg ccgggggact ttaaagccgt aagcgaaatt gcccggcagg tgaagggcgt 360

tacggtggcc gccctggcca gggccaactt ccaggatatc gaccgggcct gggaggccgt 420

gcgccacgcc gagcagccgc ggattcatac ctttattgcc acttccgaca ttcatttaaa 480

atacaagctg cgcatgagcc gggaggaagt cctggatgcg gcggtggcgg cggtaaagcg 540

cgccagggcc tacaccggcg atgtggagtt ttcggcggag gacgcctccc gctccgacct 600

ggacttcctc tgccgggtgc tggccgcggc cattgaggcg ggggctaccg taataaatat 660

accggatacg gtcggttatg ccgttcctga ggaatggggg aaatttatca atactattta 720

tcataaagtt cccggaattg aaaaggtcat tgtcagcgtg cactgccaca acgacctggg 780

catggccgtg gccaactccc ttgctgccgt aatgaacggc gccaggcagg tggaaggggc 840

catcaacggc attggcgagc gggcgggaaa cgctgccatc gaagagatgg taatggccct 900

ttatacccgt aaagatcagt acaaccttta caccaacatc aaaaccgagg aaatttacag 960

gaccagcaag ctggtgagcg ccctgacggg catgaaggtg cagccgaaca aggccgtggt 1020

gggcaaaaac gcctttgccc acgaggccgg cattcaccag gacggggtgc tgaaggagcg 1080

caccacctac gagataatga acccggccat ggtagggatc agcaagagca acctggtgct 1140

gggcaagcat tccgggcggc atgcattccg ccaccggctg gaggaaatgg gctacaatct 1200

ttcggacgaa gagctgaaca gcgcctttga gcgcttcaaa aagctggccg acaagaagat 1260

ggagattacc gacgaagacc tggaagccat atagaagaa gaaatgcgcc ttgtgccgca 1320

cacctacacc cttgagtacc tgcatatttc cagcggcacc acggtggtgc ctaccgccac 1380

ggtgggctta aagcgggacg ggcagcttat ggaagaggcg gcctgcggca acggcccggt 1440

ggacgccatc tgcaaggcaa ttgataaaat aacggggctt aactgcacca tgacgagctg 1500

gggaatcaac gccgtcactg cgggcaagga cgcccttggc gacgtcagcc tgaaggtgac 1560

cgccgacggc gagaaggttt acgttgggcg cggaatcagc accgatgtgc tggaggccag 1620

cgccaaagct tacgtcaacg cggtcaacaa actcatctgg gattcgcaga aataatgatt 1680

tagtttcggt gtctatctct taatagcctc gatttatttt cggggctatt aatcaactct 1740

cagaggcgac aagcttcttc ttcccttacg acgtttttat tggttggaca tggcaaggtt 1800

ctctcttctg ccgtta 1816

<210> 120
<211> 2199
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 120, Example 120: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled 3-Isopropylmalate Dehydratase DNA construct (2199 bp)

<400> 120
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatgatg gccatgacca taaccgaaaa 180

aattctggcc gatcacgccg gcaaaaagca ggttgagccc ggcgaactga tcagcgtaaa 240

ggttgatctg gtgctgggca acgacataac ggcgccggtg gcgattaaag agtttgagaa 300

aataggggtg gcggaagtct ttgaccggga gcgggtggcc ctggtcccgg atcactttac 360

ccctaacaag gacattaagt cggcggaaca gtctaaaatt ctaagggagt tttccaaaaa 420

gcacaacctt gccaactatt tcgaggtggg ccgggccggc attgagcact gccttctgcc 480

cgaggaaggg ctggtaggcc ccggcgacct ggttatcggc gccgactcgc acacctgcac 540

ctacggcgcc ctgggggcct tctccacggg cgtgggcagc accgacctgg cggctgccat 600

ggcgctgggg gaaacctggc tgaaagtgcc ggagtcaatc aaattcgaat atgacgggga 660

aatgcagccc tgggtaggcg gcaaggacat gatcctgcac acaatcgggg atatcggggt 720

ggacggggcc ctttacaagg ctatggagtt taccggcccg gccgttgaaa aactttccat 780

ggacgggcgc tttaccatgt gcaacatggc cgtagaggcc gggggtaaga acggcattat 840

tgctccggac gaaacaaccc gggtctatgt cgagggccgc tgcaagcgac cctatcgttt 900

ttatcggagc gacccggacg ccaaatacga aaagatctac cgctacgacg cggcgcagat 960

cgaaccgcag gtggcctttc cccacctgcc cgaaaactcc cggccggtca gcgaggcagg 1020

caacattgaa atcgatcagg ttgttatcgg ctcctgcacc aacggccgga tggaggacct 1080

gcgggaggcc gccagggtgc tgaagggcag aaaagtgcat aaaaacgtcc gccttattat 1140

ttttccggga acgccgaaaa tttacctgca ggccttgcgg gaggggctga tcgaaacttt 1200

tgtcgaagct ggcggagtcg tgagcacgcc cacctgcggg ccctgcctgg gcggccactc 1260

gggcattctg gccaggggag agcgctgcgt tgccaccacc aaccgcaact ttgtaggcag 1320

gatggggcat cctgaaagcg aagtgtacct gtccaacccg gcagttgccg cggcttcggc 1380

cgtgctgggc cggataggcg gtccatggga ggtggattga ccctttcaga gcggcgcaac 1440

attaccactg catggcgaga tcttctcagg gttcggtgac ccgcacaggt atccactagt 1500

cggcacagca tcaacacaca tagggttggc actcaatggc cacgagtgct actcatgatg 1560

gaaattaaag ggaaagtgtg gaagttcggc ccggatatcg atacagacgc cattataccg 1620

gcaaggtacc tcaacacctc cgacccggaa gaactggcca ggcactgcat ggaggatgcc 1680

gacccgtcct ttcccgcccg ggtcaggccc ggcgacgtga ttgtggccgg caagaatttc 1740

gggtgcggca gttcccggga gcacgccccc atagcaatca aggccgccgg ggtgtcgtgc 1800

gtgattgccg cgtcgtttgc gcggatcttc taccgcaacg ccttcaacat agggctgccc 1860

attttcgagt ctcccgaagc cgccgggggc attggccagg gcgacgaggt ggcggtggac 1920

gcggctgccg gcattataac cgacctgacc accggcaaga cctaccgggc ggcgccggtt 1980

ccgcctttca tgcggcagat cattgccgcc ggagggctga tcaattacgt ggccgggaag 2040

gtgagaggca atgcataatg atttagtttc ggtgtctatc tcttaatagc ctcgatttat 2100

tttcggggct attaatcaac tctcagaggc gacaagcttc ttcttccctt acgacgtttt 2160

tattggttgg acatggcaag gttctctctt ctgccgtta 2199

<210> 121
<211> 1378

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 121, Example 121: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled 3-Isopropylmalate Dehydrogenase DNA construct (1378 bp)

<400> 121
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatgcta cacctcgacc tcctcaactt 180

ttctcgctac taaatcaccc atttccctgg tgttaaccag cttctgatcc ggctccgtaa 240

tgtccggcgt ccggtagcct tcggccagaa cttcgcggac cgcctgctca accgccaaag 300

cctcttgttc caaatcgaac gaatacctca gcatcatggc agccgacagt atcgtagcca 360

acgggtttgc tttcccctgc ccggcgatat cgggagctga cccgtgagaa ggctcataca 420

ttcctacttt cccgccaata gaggcagaag gtagcattcc caaagatccg gtcagcatag 480

aggcttcgtc ggtcaatata tctccaaaca tgttttcagt tacgatcaca tcgaattgac 540

gcggattgcg tatgagctgc atggcacagt tgtcgacgta catgtggctg aattcgacgt 600

caggatactc cagagctact cgattggcca cctcgcgcca taacctagag ctttctagaa 660

cattggcctt gtccaccgat gtcactttct ttctccgttt cctcgccgcc tcgcaggcca 720

aacgaactat gcgttcgatc tcatacgtcg agtactccag aacatcgata gccctttctc 780

cgcccagaag cttctcccgc cgcttctccc cgaagtacaa cccgccggtc agttccctca 840

ctaccaagag atctactccc tcgataatat cgggtttcag ggaggaagca tgaaccagtt 900

ccgggaacag gtaagcgggc cgcaggttag cgtaaagccc aagttcctta cgcagagcca 960

acagcgctgc cgcctcgggc ctgagcgcag ccggcaggtt atcccatttg ggaccaccta 1020

tggctcctag aagaacagcg tcgctatctt tgcacagggc cagggtttct tcaggcaaag 1080

gaacccccac ctcgtcgata gccgctcccc cgaccagggc ttcggtaaaa gcgaattcgt 1140

gtttgaacct cttagcaact gctttcaata ctttttgcgc ttcaggtacg atctcggtcc 1200

cgataccatc cccgggtaac acggctatct taaacactga tttagtttcg gtgtctatct 1260

cttaatagcc tcgatttatt ttcggggcta ttaatcaact ctcagaggcg acaagcttct 1320

tcttccctta cgacgttttt attggttgga catggcaagg ttctctcttc tgccgtta 1378

<210> 122
<211> 1327
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 122, Example 122: designer Prochlorococcus marinus MIT9313 groE-promoter-controlled 3-Methylbutanal Reductase DNA construct (1327 bp)

<400> 122
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatgatg tcagttttcg tttcaggtgc 180

taacgggttc attgcccaac acattgtcga tctcctgttg aaggaagact ataaggtcat 240

cggttctgcc agaagtcaag aaaaggccga gaatttaacg gaggcctttg gtaacaaccc 300

aaaattctcc atggaagttg tcccagacat atctaagctg gacgcatttg accatgtttt 360

ccaaaagcac ggcaaggata tcaagatagt tctacatacg gcctctccat tctgctttga 420

tatcactgac agtgaacgcg atttattaat tcctgctgtg aacggtgtta agggaattct 480

ccactcaatt aaaaaatacg ccgctgattc tgtagaacgt gtagttctca cctcttctta 540

tgcagctgtg ttcgatatgg caaaagaaaa cgataagtct ttaacattta acgaagaatc 600

ctggaaccca gctacctggg agagttgcca aagtgaccca gttaacgcct actgtggttc 660

taagaagttt gctgaaaaag cagcttggga atttctagag gagaatagag actctgtaaa 720

attcgaatta actgccgtta acccagttta cgtttttggt ccgcaaatgt ttgacaaaga 780

tgtgaaaaaa cacttgaaca catcttgcga actcgtcaac agcttgatgc atttatcacc 840

agaggacaag ataccggaac tatttggtgg atacattgat gttcgtgatg ttgcaaaggc 900

tcatttagtt gccttccaaa agagggaaac aattggtcaa agactaatcg tatcggaggc 960

cagatttact atgcaggatg ttctcgatat ccttaacgaa gacttccctg ttctaaaagg 1020

caatattcca gtggggaaac caggttctgg tgctacccat aacacccttg gtgctactct 1080

tgataataaa aagagtaaga aattgttagg tttcaagttc aggaacttga aagagaccat 1140

tgacgacact gcctcccaaa ttttaaaatt tgagggcaga atataatgat ttagtttcgg 1200

tgtctatctc ttaatagcct cgatttattt tcggggctat taatcaactc tcagaggcga 1260

caagcttctt cttcccttac gacgttttta ttggttggac atggcaaggt tctctcttct 1320

gccgtta 1327

<210> 123
<211> 2004
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 123, Example 123: designer Cyanothece sp. ATCC 51142 nirA-promoter-controlled 2-Isopropylmalate Synthase DNA construct (2004 bp)

<400> 123
agaaaatctg gcaccacacc tattaaatct aaaatagctg ttttagctaa aatagtcaat 60

agcaagtctt ataggtaatc aaacgcaact aaaatgcaaa aaatccataa ttaaaatgca 120

aaaaacggat ttttaataca attttgttac attagctaca aaatatctca aatggtagag 180

gttaaatagg tacaactcga ccagatggag ggttttccct gtgatgaact gttccttctt 240

cccttatact ctccttggat agaatgtagt tccttctcat gatggctctg tttaaggcat 300

ctacaaaacc gcttacgctg gcttttatta tgtccgtatc cacgcctcta cctgaggctt 360

ttacattatc cagctctatc acaaggcgcg cctctgcctg cgcatccgtg ttgggggtga 420

gagcttttat agaaaagtca atgagtctgg gctccacctt aagagctttc tgtatggctt 480

ttatcacagc atccacagga ccgtttcccg tagatgtggc agtcctttct tcacctctaa 540

agctcagcac tactgtagcg gtaggaagca ggttgtcccc tgtctgaacc tgatagtgtt 600

ttacctttat aggctcttcc tcctccacct tcataaactc ttcgtatatg agggcttcca 660

aatcctcatc atatacctcc tttttcttat ccgcaagagc cttgaacttt tcaaagatcc 720

tctccaggtc ttcatcgctt agcttaaagc caagttcatt cagtctcctc tttagagcgt 780

gcctccctga gtgtttacca agtattattc tggtggaggg aaaacctaca tcctcggggt 840

tcattatctc gtaggtgaga gggtgagcca gcacaccgtg ctggtgtatg cccgattcat 900

gagcaaaggc attatccccc actatagcct tgttgggttg aacaaaagag ccggttatcc 960

tgcaaaggag cctgctggtt ttgtatatct ctctggtgtt tatgtccgtg tagagccctc 1020

caaagaagtc tttgcgcact ttgagagcca tcactatctc ctcaagggct gcgtttcctg 1080

ctctttcacc tatgccgttg atggtgcact ctacctgtct tgcaccgtgc tttaccgcca 1140

taagggagtt ggcaacagcc atcccaaggt catcatgaca gtgcacgctt ataatggctc 1200

tgtctatgtt gggcacgttg ttccttatgt cctctatgag ccttgcaaac tcttctggca 1260

ccgcatagcc aacggtgtcg ggaatgttta taacggtagc acctgccttt atggctgttt 1320

ctatcaccct gtagaggaac tctctctggc ttctggtggc atcctcgcag gaaaactcca 1380

catcgtcagt aaaccttctg gcaaactcca cagctttttt agcccctttcc agaacctcct 1440

ctggggacat cctaagcttg tacttcatgt gtatctcgga agtagctatg aaggtgtgta 1500

tcctctttct tctggctggc tttagagcct cccctgctag ctctatgtcc ttttccaatg 1560

ctctggcaag ggagcatatt atcggacctt ctacctgctg tgctatcaga tggacgctct 1620

caaagtctcc cttagatgct gctgcaaagc ctgcctctat aacatccacc cccagcttgg 1680

caagttggtg agccatctga agtttttcat cagcagtcat agaaaaaccc ggcgcttgct 1740

ctccgtctct cagcgtggtg tcaaatatgt aaaccttctc cattaagctg ttttagagaa 1800

atttgttcgg taaatattag cctacctaca gttgttgtgg gtaggctaat attatgaatt 1860

gagtcctact gaaccaatga ttatcgttac gactaaaagt aataaatgtc atcagcagga 1920

taggggttga taggaaaagt tttttaatcg gatggttttc gagttagagg ttagggtttc 1980

tttaggttct ctcttctgcc gtta 2004

<210> 124
<211> 2648
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 124, Example 124: designer Cyanothece sp. ATCC 51142 nirA-promoter-controlled Isopropylmalate Isomerase large/small subunits DNA construct (2648 bp)

<400> 124
agaaaatctg gcaccacacc tattaaatct aaaatagctg ttttagctaa aatagtcaat 60

agcaagtctt ataggtaatc aaacgcaact aaaatgcaaa aaatccataa ttaaaatgca 120

aaaaacggat ttttaataca attttgttac attagctaca aaatatctca aatggtagag 180

gttaaatagg tacaactcga ccagatggag ggttttccct gtgatggtgc caaagacgat 240

tattgaaaaa atttgggatg aacacgtggt ttaccgtgaa gatgggaaac ccgatttatt 300

atatattgat ttacatctcg ttcatgaagt gacatcgccg caagcttttg aaggattgcg 360

acaaaaagga agaaaagtgc gtcgcccaga tttaacattt gcgacgatgg accataacgt 420

tccaacgatt aatcggtccg ttgttgaaga tgaagtggcg aaaaatcaaa tgacagcatt 480

ggagcggaac tgtcgtgagt tcggtgttcc gcttgccgat ttaaacagtc cagaacaagg 540

gattgttcat gtcatcggtc cagaactcgg gttgacacag cctgggaaaa ccattgtgtg 600

tggagatagc catacgtcta cacatggcgc ttttggggca ttagcgttcg ggatcggaac 660

gagtgaagtc gaacacgtat tagcgacgca aacgttatgg caacatcgtc caaagacgat 720

gcaagtgaac gttacgggat cgttagcacc gggcgtatca gcaaaagacg ttattttagc 780

gatcattggc aagtttggag ttgattttgg cacaggctac gtgcttgagt ttacaggcga 840

tgttattcgt cgtatgtcaa tggaagagcg gatgacaatt tgcaatatgt cgattgaagc 900

aggggcacga gctgggttaa ttgccccaga tgatgtgacg tttgcatatt taaaagagag 960

aaaatatgca ccgaaaggag aagcgtttga gcaggcagtt gaaaagtgga agcagttatg 1020

cacagatgaa ggagcggtat acgatcgtgt cgttcatatt gatggaagtg aaattgctcc 1080

aacagtgaca tggggcacaa cgccagcaat gagctctccg atcgatggaa ctgttccaga 1140

tccgaacgag tttgcgacag aaacagagag aaaagctgta cagttagcgt tgcaatatat 1200

gggattaaag ccaggaacga aaatgacgga tattgcggtg caacatgtgt ttatcggatc 1260

atgcacaaac tcgcgcataa gcgatttacg ggaagcggcg caaattgtaa aaggaaaaaa 1320

agtcgcaccg ggcgtcagag cgctcgtcgt tccgggctca caacaagtaa aaaagcaggc 1380

agaagaagaa ggaattgctc aaacgtttat tgacgcaggc tttgaatggc gcgattccgg 1440

ctgtagcatg tgtcttggaa tgaatccaga tactgttcca gcaggggaac attgcgcctc 1500

aacgtcaaac cgcaatttcg aagggagaca aggaaaaggg gcgcgcacgc atctcgtgag 1560

tccagcaatg gcagccgcgg ctgcgattta cgggcatttt gtcgatgtgc gtacattgta 1620

taaagaagtg gtaagatagt attaaatcta aaatagctgt tttagctaaa atagtcaata 1680

gcaagtctta taggtaatca aacgcaacta aaatgcaaaa aatccataat taaaatgcaa 1740

aaaacggatt tttaatacaa ttttgttaca ttagctacaa aatatctcaa atggtagagg 1800

ttaaataggt acaactcgac cagatggagg gttttccctg tgatggaacc attcgtcgtt 1860

cataaaggaa aagtggctgg cttagatcga gcaaatatag atacggatca aattattccg 1920

aaacaatttt taaaacgaat tgaacgcacc ggatttggtc aatttctttt ttacgattgg 1980

cgttatttat cggacggaac accaaaccca cattttgagt taaaccgtcc tgaaaacgag 2040

ggcgcgacca ttttagtcgc aaatgaaaat ttcggatgtg gttcatcgcg cgaacacgct 2100

ccttgggcgc ttgcggatta cggatttcgt gccattattg ctccttcatt tgctgatatt 2160

ttttacaaca actgtttgaa aaatagttta cttcctatta aacttccaaa agaagacgtc 2220

gcttatttgt taaaacaagc ggaacgggca gattacgaac taacgatttc gcttgaacaa 2280

caagtcgttt ttgatgatga agggtttaca agctcgttcg acatcgatcc gtatcgaaaa 2340

cagctccttt taaaaggttg ggacgaaatt gatttaacgt tcgtgtatga accatatatt 2400

atcgcctacg aaaaaaaacg ctcttgataa gctgttttag agaaatttgt tcggtaaata 2460

ttagcctacc tacagttgtt gtgggtaggc taatattatg aattgagtcc tactgaacca 2520

atgattatcg ttacgactaa aagtaataaa tgtcatcagc aggatagggg ttgataggaa 2580

aagttttta atcggatggt tttcgagtta gaggttaggg tttctttagg ttctctcttc 2640

tgccgtta 2648

<210> 125
<211> 1530
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 125, Example 125: designer Cyanothece sp. ATCC 51142 nirA-promoter-controlled 3-Isopropylmalate Dehydrogenase DNA construct (1530 bp)

<400> 125
agaaaatctg gcaccacacc tattaaatct aaaatagctg ttttagctaa aatagtcaat 60

agcaagtctt ataggtaatc aaacgcaact aaaatgcaaa aaatccataa ttaaaatgca 120

aaaaacggat ttttaataca attttgttac attagctaca aaatatctca aatggtagag 180

gttaaatagg tacaactcga ccagatggag ggttttccct gtgatggcaa ccacgtatcg 240

cattgctgtt ttggcggggg atggtattgg cccagaaatt acggccgttg cccttgatgt 300

attgcgggcg atcgcccctc gctttgggtt ggactttgac tttgttcccg cccttgtggg 360

gggctgcgcc attgatgctg tgggggaacc cttgccagca gcaacgctag ccacctgtcg 420

tcagagtgat gccgtgctcc tagctgccat tggcggaacg cagtgggata gcctaccccg 480

tcatctgcgc ccggaaaccg gattacttgc cctgcggtct ggtctaggtt tatttgccaa 540

cctacgcccc gccaaaatct ttccccagct tctccatgcc tcctccctca agccggaagt 600

gattgccggt gtggatctca tggtggtgcg cgaactgacg ggtggcattt actttggtca 660

accgcgcggt attttcacca ctgaaacggg tgagcagcgg ggggtgaata cgatggccta 720

taccgccacg gaaattgatc gcattggccg tgttgccttt gaaaccgctc gcaaacggca 780

gggcaaactc tgctccgtgg ataaggccaa tgtccttgaa gtctcccaac tgtggcgcga 840

tcgcctgacc gccctcagtg ctgagtaccc ggatgtggaa ctgacgcacc tttatgtgga 900

caatgcagca atgcaactgg tgcgcgcccc gaaacagttt gacacgattg tgaccagtaa 960

cctctttggt gatatcctct ccgatattgc cgccatgctc accggtagta ttggcatgct 1020

tccctccgcc agcctagggg aatcggggcc agctctgttt gaaccggttc atggctctgc 1080

ccccgacatt gccggccaag acaaggccaa ccccctcgcc atggtgctca gtgcggcaat 1140

gatgctgcgt tatggtctga accaaccagc ggcagcgcaa gcgatcgaag aggccattac 1200

tgccgtttta gatcagggct accgcaccgg cgatttaatg tctgagggct gcacgcttgt 1260

gggctgtcgc gaaatgggca acctcctaat caaggaattg tcccgataat aagctgtttt 1320

agagaaattt gttcggtaaa tattagccta cctacagttg ttgtgggtag gctaatatta 1380

tgaattgagt cctactgaac caatgattat cgttacgact aaaagtaata aatgtcatca 1440

gcaggatagg ggttgatagg aaaagttttt taatcggatg gttttcgagt tagaggttag 1500

ggtttcttta ggttctctct tctgccgtta 1530

<210> 126
<211> 2088
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 126, Example 126: designer Cyanothece sp. ATCC 51142 nirA-promoter-controlled 2-Keto Acid Decarboxylase DNA construct (2088 bp)

<400> 126
agaaaatctg gcaccacacc tattaaatct aaaatagctg ttttagctaa aatagtcaat 60

agcaagtctt ataggtaatc aaacgcaact aaaatgcaaa aaatccataa ttaaaatgca 120

aaaaacggat ttttaataca attttgttac attagctaca aaatatctca aatggtagag 180

gttaaatagg tacaactcga ccagatggag ggttttccct gtgatgtata cagtaggaga 240

ttacctgtta gaccgattac acgagttggg aattgaagaa atttttggag ttcctggtga 300

ctataactta caatttttag atcaaattat ttcacgcgaa gatatgaaat ggattggaaa 360

tgctaatgaa ttaaatgctt cttatatggc tgatggttat gctcgtacta aaaaagctgc 420

cgcatttctc accacatttg gagtcggcga attgagtgcg atcaatggac tggcaggaag 480

ttatgccgaa aatttaccag tagtagaaat tgttggttca ccaacttcaa aagtacaaaa 540

tgacggaaaa tttgtccatc atacactagc agatggtgat tttaaacact ttatgaagat 600

gcatgaacct gttacagcag cgcggacttt actgacagca gaaaatgcca catatgaaat 660

tgaccgagta ctttctcaat tactaaaaga aagaaaacca gtctatatta acttaccagt 720

cgatgttgct gcagcaaaag cagagaagcc tgcattatct ttagaaaaag aaagctctac 780

aacaaataca actgaacaag tgattttgag taagattgaa gaaagtttga aaaatgccca 840

aaaaccagta gtgattgcag gacacgaagt aattagtttt ggtttagaaa aaacggtaac 900

tcagtttgtt tcagaaacaa aactaccgat tacgacacta aattttggta aaagtgctgt 960

tgatgaatct ttgccctcat ttttaggaat atataacggg aaactttcag aaatcagtct 1020

taaaaatttt gtggagtccg cagactttat cctaatgctt ggagtgaagc ttacggactc 1080

ctcaacaggt gcattcacac atcatttaga tgaaaataaa atgatttcac taaacataga 1140

tgaaggaata attttcaata aagtggtaga agattttgat tttagagcag tggtttcttc 1200

tttatcagaa ttaaaaggaa tagaatatga aggacaatat attgataagc aatatgaaga 1260

atttattcca tcaagtgctc ccttatcaca agaccgtcta tggcaggcag ttgaaagttt 1320

gactcaaagc aatgaaacaa tcgttgctga acaaggaacc tcatttttg gagcttcaac 1380

aattttctta aaatcaaata gtcgttttat tggacaacct ttatggggtt ctattggata 1440

tacttttcca gcggctttag gaagccaaat tgcggataaa gagagcagac acctttatt 1500

tattggtgat ggttcacttc aacttaccgt acaagaatta ggactatcaa tcagagaaaa 1560

actcaatcca atttgtttta tcataaataa tgatggttat acagttgaaa gagaaatcca 1620

cggacctact caaagttata acgacattcc aatgtggaat tactcgaaat taccagaaac 1680

atttggagca acagaagatc gtgtagtatc aaaaattgtt agaacagaga atgaatttgt 1740

gtctgtcatg aaagaagccc aagcagatgt caatagaatg tattggatag aactagtttt 1800

ggaaaaagaa gatgcgccaa aattactgaa aaaaatgggt aaattatttg ctgagcaaaa 1860

taaatagtaa gctgttttag agaaatttgt tcggtaaata ttagcctacc tacagttgtt 1920

gtgggtaggc taatattatg aattgagtcc tactgaacca atgattatcg ttacgactaa 1980

aagtaataaa tgtcatcagc aggatagggg ttgataggaa aagttttta atcggatggt 2040

tttcgagtta gaggttaggg tttctttagg ttctctcttc tgccgtta 2088

<210> 127
<211> 1503
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 127, Example 127: designer

Cyanothece sp. ATCC 51142 nirA-promoter-controlled Hexanol Dehydronase DNA construct (1503 bp)

<400> 127

agaaaatctg gcaccacacc tattaaatct aaaatagctg ttttagctaa aatagtcaat 60

agcaagtctt ataggtaatc aaacgcaact aaaatgcaaa aaatccataa ttaaaatgca 120

aaaaacggat ttttaataca attttgttac attagctaca aaatatctca aatggtagag 180

gttaaatagg tacaactcga ccagatggag ggttttccct gtgatggaac tcgacctcga 240

cggtcccggg gttggtgaag tgctgatcaa gtacaccgcc gcggggttgt gccattcgga 300

cctgcacttg accgacgggg acctaccgcc gcgctatcca atcgtcgggg ggcacgaggg 360

gtcaggcatc atcgaggacg tcggacctgg ggtcaccaag gtcaaaccag gcgatcacgt 420

tgtttgcagc ttcatcccga actgcggaac ctgtcggtac tgcgccaccg gacgctccaa 480

cctctgcgat atgggcgcca ccatcctcga agggtgcatg cccgacggca gttaccggtt 540

ccacagtaac ggcctggatt tcggtgcgat gtgcatgctc ggcacattct ccgaacgcgc 600

aactatctcc cagcattcgg tggtcaagat cgacgactgg ctgccgctcg agaccgcggt 660

ggtcgtcggc tgcggcgtgc cgactggctg gggcacctcc gtctatgccg gcggggttcg 720

ttgcggtgac accaccgtca tctatggcgt cggcggcctg ggagtcaacg ccgtccaagg 780

cgcggtgagt gcgggcgcga agtacatcgt ggtcgtcgat ccggttgcgt tcaaacgcga 840

caccgcgctc aagttcggcg ccacccacgc gttcgccgac gccgccaccg ccgcggccaa 900

ggtcgacgaa ctgacctggg gacagggtgc cgatcaggcg ctgatcctgg tcggcaccgt 960

cgacgaggac gtggtctcgg cggcgactgc ggtgatcggt aagggaggca ccgtcgtgat 1020

caccggactg gcggacccag caaagctcac ggtgcacgtt tcgggaacgg acctgacgct 1080

taacgagaag acaatcaagg gcacgttgtt cggctcgtcc aatccgcaat acgacatcgt 1140

acggctgctc cgtctctacg acgccggcca gctaaaactc gacgatctga tcaccacccg 1200

atacacgctc gaccaggtca accagggcta ccaggatctg cgagacggca agaacatccg 1260

cggcgtgatc atccacgcct gataagctgt tttagagaaa tttgttcggt aaatattagc 1320

ctacctacag ttgttgtggg taggctaata ttatgaattg agtcctactg aaccaatgat 1380

tatcgttacg actaaaagta ataaatgtca tcagcaggat aggggttgat aggaaaagtt 1440

ttttaatcgg atggttttcg agttagaggt tagggtttct ttaggttctc tcttctgccg 1500

tta 1503

<210> 128
<211> 1149
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 128, Example 128: designer Cyanothece sp. ATCC 51142 nirA-promoter-controlled short-chain Alcohol Dehydrogenase DNA construct (1149 bp)

<400> 128
agaaaatctg gcaccacacc tattaaatct aaaatagctg ttttagctaa aatagtcaat 60

agcaagtctt ataggtaatc aaacgcaact aaaatgcaaa aaatccataa ttaaaatgca 120

aaaaacggat ttttaataca attttgttac attagctaca aaatatctca aatggtagag 180

gttaaatagg tacaactcga ccagatggag ggttttccct gtgatgaagg ttgccgtaat 240

tactggggca tcccgtggaa tcggggaagc tatagcaaag gcccttgctg aagatggata 300

ttcccttgcc ttaggggcta gaagtgttga taggttagag aagattgcca aggaactcag 360

cgaaaaacat ggggtggagg tattttacga ctacctcgat gtatcaaaac cagaaagcgt 420

tgaagagttt gcaaggaaaa cgctagctca ctttggagat gtggacgttg ttgtggccaa 480

tgcggggctt ggttactttg gtaggcttga agagcttaca gaagagcagt tccacgaaat 540

gattgaagta aacctttttgg gagtttggag aacaataaaa gctttcttaa actccttaaa 600

gcggactgga ggagtggcta ttgttgttac ttcagatgtt tctgcaaggc tacttccata 660

cggtggaggt tatgtggcaa ctaaatgggc tgcaagagca ttggtaagga ccttccagat 720

tgagaatcca gatgtgaggt tcttcgagct aagacctgga gcagtagata catattttgg 780

agggagcaaa gctgggaagc caaaggagca agggtattta aaacctgagg aagttgctga 840

ggcagtaaaa tacctcctaa gacttccaaa ggatgttagg gttgaggaat taatgttgcg 900

ctcaatttat caaaaacctg agtattgata agctgtttta gagaaatttg ttcggtaaat 960

attagcctac ctacagttgt tgtgggtagg ctaatattat gaattgagtc ctactgaacc 1020

aatgattatc gttacgacta aaagtaataa atgtcatcag caggataggg gttgatagga 1080

aaagtttttt aatcggatgg ttttcgagtt agaggttagg gtttctttag gttctctctt 1140

ctgccgtta 1149

<210> 129
<211> 1910
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 129, Example 129: a designer Nial-promoter-controlled chloroplast-targeted Phosphoglycerate Mutase DNA construct (1910 bp)

<400> 129
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgactc gtgtcatcat tgtgcgtcat ggtcaaagta 360

catataatgt tgaacgacgt atccaaggac gtactgatgc gtcaacttta acggataaag 420

gtcggagcga tgctggtaaa gtgggtaaag ccctgagtaa tatagcattt acagcaatat 480

atagcagtcc tctcaaccga gcgaagacga cagcggaaat tattcgcagt gagttggttg 540

aacattcgtc cgtgattcag gtttctgaac atctggttga agtagattta cctttgtggg 600

caggaatgtt atctcttgat gtgaaagaga agtttcctga tgactatagt atttggaaaa 660

aacgtcccca cgaattgcat atgattgtca gtgacgcaca cgggacacga gaacttttcc 720

cagttctggc tttatatgaa caagccaagc agttttggca agaaatgtta tctcgtcatc 780

aaggggaaac tattctcatt gttggacata atggtattaa ccgcgctctg attagtacgg 840

ctttgggtat tcctcccagt gtttatcacg gactacaaca gtctaattgc gcgattagcg 900

ttttaaattt tgcgggtggt ttgggtgata cggttcagct agattcaatg aatcagacgc 960

aacatttgga agatacttta cccactttgc gaccaaatca tcaaggattt agattattat 1020

tagtacgtca tggggaaaca gaatggaatc gtcaaggtaa gtttcaaggc caaattgacg 1080

ttcctctgaa tgataatggc agagcgcaag caggaaaaac tggggagttt ctccaagagg 1140

tggcgcttga ttttgctttt agtagcacta tggcgcgtcc aaaagaaaca gcggaaatta 1200

ttcttcagaa gcatgctgat ataaagttgg aattactaga tggtttacgg gaaatcagtc 1260

acggcagttg ggaaggcaag tttgagtcag aaatagaaca agagtttccc ggagtgttgg 1320

aacgctggcg tactgtacct gctgaagtac aaatgccgca aggggaaaat ttacaacagc 1380

tatgggaacg tagtgtggct gcttggcagt caatattaca atcggctgag gtaaatcaat 1440

ggcaaattgg gttggtagtg gctcacgatg ctactaataa aactttactc tgcaatatct 1500

tgggtttatc tccagaaaat ttctggaatt tccgtcaagg taatggggca gttagtgtta 1560

ttgactaccc tttaggcgct agtggtttac cagtactgca agcgatgaac attactagtc 1620

atttgagtgg tggtgtatta gataaaacgg cagcaggagc attgtagtaa atggaggcgc 1680

tcgttgatct gagccttgcc ccctgacgaa cggcggtgga tggaagatac tgctctcaag 1740

tgctgaagcg gtagcttagc tccccgtttc gtgctgatca gtcttttca acacgtaaaa 1800

agcggaggag ttttgcaatt ttgttggttg taacgatcct ccgttgattt tggcctcttt 1860

ctccatgggc gggctgggcg tatttgaagc ggttctctct tctgccgtta 1910

<210> 130
<211> 1856
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 130, Example 130: designer Nial-promoter-controlled chloroplast-targeted Enolase DNA construct (1856 bp)

<400> 130
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgctta ggtcctaaac caacagtacc agcataaaca 360

gcgcgatcgc ctaattcatc ttcaattctg agtaaacgat tgtattttgc tacccgttca 420

ctacgacaaa gagaaccagt tttaatttga cctgcacgag tggctacagc caaatcagca 480

atagttgtat cctcagtttc accagaacga tggctaatga ctgagcggaa accgttgcga 540

gtagctaaat caatagtttc caaagtttca gtcagtgaac caatttgatt caacttaatc 600

aaaatcgagt tacctgcttt ttgctcaatc ccttttttgta accgagtagc gttagtaaca 660

aataaatcat cacccaccaa ctgtactcgt gaacccaact tctgagtcag taattgccaa 720

ctttcccaat cttcctcatg taaaccatct tcaatggaaa caatcggata ttggtcaacc 780

aactggccta aataatcaat aaactcaact gggctatggg gtttaccatc ataaacatac 840

tgcccatttt tgtaaaactc actcgctgcc acatccaagg ctaaagcaac ttcttcccca 900

ggcttgtaac cagcttgttt aatagcagct agcaataatt ctaaagctac ttggttagag 960

tccaggttag gtgcaaaacc accttcatca ccaacaccag tcagcaaacc cttatcatcc 1020

aaaaccttgc tgagagttgc aaaaacttcc gcaccccaac gcaaagcttc ctggaaggaa 1080

ggcgcactga cgggtacaat cataaactcc tgaaaatcga cattattggc tgcgtgcgct 1140

ccaccattga tcacattcat caaaggtaca ggtagcaaat ttgctaaagg cccacccaca 1200

tagcgataca aaggaattcc caaagactca gcagcagctt tagcagctgc tagtgaaacc 1260

gacaaaattg catttgcgcc caaattagct ttattgggtg aaccatccaa agagatcatg 1320

attttatcta atgattcttg gtctagggca tccaagccta acaattgggg tgctaatacc 1380

tctttcacat tctgcactgc cttgagtact cctttgccac cataacggct tttatcacca 1440

tctcgcagtt catgagcctc aaaagtacct gtggaagcac cgctaggaac ttgcgctagt 1500

cctactgtac cattagccaa atgtactgca gcctcaacag tcggtcttcc ccgtgaatca 1560

agaatttcgc gggcgataat agcttcaata gcggtatcca gaaattttgt cattaaatgg 1620

aggcgctcgt tgatctgagc cttgccccct gacgaacggc ggtggatgga agatactgct 1680

ctcaagtgct gaagcggtag cttagctccc cgtttcgtgc tgatcagtct ttttcaacac 1740

gtaaaaagcg gaggagtttt gcaattttgt tggttgtaac gatcctccgt tgattttggc 1800

ctctttctcc atgggcgggc tgggcgtatt tgaagcggtt ctctcttctg ccgtta 1856

<210> 131
<211> 1985
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 131, Example 131: designer Nial-promoter-controlled chloroplast-targeted Pyruvate-Kinase DNA construct (1985 bp)

<400> 131

agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgaaac ccttaaattt tcggactaaa attgttgcta 360

ctatcggtcc tgcgagtaat actcccgaag tattacgtca aatgctctta gccggagtca 420

atgttgcgcg gttgaatttt tcccacggta gctacgaaga tcacgctcag atggttaaac 480

tcttacgttc tttgtccgaa gaattagact tacccctgac cattttacaa gaccttcaag 540

gtccaaaaat tcgggtaggc aaattacccc cagacggact taacctcatc gaaggacaat 600

ctctaacctt ggttcccctt gctgcttgga aaaatcaagc caataccgtt ggcattgatt 660

atccctacgt cgctgaagaa gcgcaacccg gtactcaagt gctgcttgat gacggtttat 720

tggagttaac cgttgaacaa gtcaagggaa atgaggtcat ctgtcaagtg gttgaaggag 780

gcattctcaa aagcaataag ggggttaatt tgccaaccct caatctacgc ttgccttcca 840

tgaccgaaaa agataagaaa gatctcgaat ttggactatc ccaaggcgtt gacatcattt 900

ccctaagctt tgtccgcaaa cccgaagata ttcaagaact caaggaattt attgcccaaa 960

gatcggcaaa agttcccgtt ttagcgaaaa ttgaaaagcc ccaagccgtt gacaatattg 1020

aagccattat cgatgaatgc gatgctatta tggttgcgcg gggagactta ggggtagaaa 1080

tgcgccccga aaaggttcca ggtatccaaa aacgcatcat taagctgtgt aaccaaaaag 1140

gcatccccgt tattaccgcc acccagatgc tcgatagcat gattcgtaac ccccgtccca 1200

cccgtgctga agccagtgac gtagccaatg ctatcattga tggaaccgat gcggttatgt 1260

tatcaggaga atcagcgatc ggagattatc ccgtgcaagc ggtgcaaatg ctggctaata 1320

ttgccaaaga tattgaacca ggactgaatt ttgccaatta tcctcctcga cggcagaata 1380

aagcccacgc catagccgaa gctctcaata ccatcgacaa gattcttgat ttacaatgta 1440

ttgtcacctt tacggaaacc gggtattctg ctaaattagc tgctgctgaa cggccacggg 1500

ttcccatagt ggctttaaca cctgatcacc aagtttatca tcgccttaat ttagtttggg 1560

gagtccgacc cattttattt gactacgatg agtcttccct agacgacttg atggttaaag 1620

tagaagatat gttaaaaacc cgaaactacg cgacatcagg ggataaagtg ttgattatgg 1680

gtggtttacc cctcagaaaa gccagtacca cgagttttct cgatattcat acgattactt 1740

aataaatgga ggcgctcgtt gatctgagcc ttgccccctg acgaacggcg gtggatggaa 1800

gatactgctc tcaagtgctg aagcggtagc ttagctcccc gtttcgtgct gatcagtctt 1860

tttcaacacg taaaaagcgg aggagttttg caattttgtt ggttgtaacg atcctccgtt 1920

gattttggcc tctttctcca tgggcgggct gggcgtattt gaagcggttc tctcttctgc 1980

cgtta 1985

<210> 132
<211> 1568
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 132, Example 132: designer Nial-promoter-controlled NADPH-dependent chloroplast-targeted NADPH-dependent Glyceraldehyde-3-phosphate dehydrogenase DNA construct (1568 bp)

<400> 132
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtcaa cgaatattgc aattaatgga atgggtagaa 360

ttggaagaat ggtgctaaga atagcactaa agaatgaagc attgaatgta gttgccatca 420

atgctagcta tcctcctgaa acaattgcac atttaattaa ttatgacaca acacatggga 480

gatacgataa aagagtagaa cctattgaaa gtggaattcg agtggaaggc catgatatta 540

aattagtgtc tgatagaaac ccagaaaatt taccctggaa agatttagaa atagatatcg 600

tcattgaagc gaccggtaaa tttaaccatg gtgataaagc taaggcacat attcaagcag 660

gagctaaaaa agtgttattg acaggaccat caaaaggcgg aaaagtacag atggtggtta 720

aaggtgttaa cgatcaagac ttagatacag atacatatga catatttagt aatgcgtcgt 780

gtactacgaa ttgtatcgga ccagttgcaa aagttttaaa tgatagtttt ggcattgaaa 840

atggcttaat gacaacggta catgcaatta caaatgatca aaataatata gataatccgc 900

ataaagattt gagaagagcg cgttcttgtg gggaaagtat tataccaaca tcaacaggtg 960

ctgctaaagc attaaaagaa gttatgccag aattgaatgg caaactacat ggcatagcac 1020

ttcgtgtgcc aactcaaaat gtatcattag ttgatttagt cattgattta aaacaaaaag 1080

tgacagtaga tgaagttaat catgcattta gagatgcaaa cttacaagga attattgatg 1140

ttgaagaggc ccctctagtt tctaaggact ataatacaaa tcctcattca gcagttatag 1200

atgctaaaaa tacaatggtc atgggagata ataaggttaa agttatagcc tggtatgata 1260

acgaatgggg atattctaat agagtagttg aggtagcaaa tcaacttgga gaactaatta 1320

aataataaat ggaggcgctc gttgatctga gccttgcccc ctgacgaacg gcggtggatg 1380

gaagatactg ctctcaagtg ctgaagcggt agcttagctc cccgtttcgt gctgatcagt 1440

ctttttcaac acgtaaaaag cggaggagtt ttgcaatttt gttggttgta acgatcctcc 1500

gttgattttg gcctctttct ccatgggcgg gctgggcgta tttgaagcgg ttctctcttc 1560

tgccgtta 1568

<210> 133
<211> 1571
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 133, Example 133: designer Nial-promoter-controlled chloroplast-targeted NAD-dependent Glyceraldehyde-3-Phosphate Dehydrogenase DNA construct (1571 bp)

<400> 133
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtaaa ctggctgaat gtacaagcat atccgcaagt 360

ttgttggagt aacccatttc gttatcgtac catgaaacta ctttcacgaa atttggagat 420

aacataattc ccgcatcctt gtcgaatacc gaagttctct tctcgcccac gaaatcctga 480

gaaaccacag cgtcttcagt ataccctaaa attcctttaa gttcaccttc cgatgccgct 540

ttcattgctg cacagatttc ttcgtatgaa gtagatttct ctaatctgac cgttaaatcc 600

actacagaaa catctgcagt tgggactctg aatgacatac cggttaattt accgttaagg 660

gcaggaatta cttttcctac tgcttttgca gctccggtag aagatgggat gatgttgttc 720

aatgcagaac gcccgcctct ccagtctttc atagaaggcc cgtcaacagt tttctgggtt 780

gcagtagttg cgtgcacggt cgtcattaaa ccttcgatga ttccgaaatt atcgtgaagt 840

actttgcta atggagcaag acagttagtc gtacagctcg cgttagaaaa aatagtaacg 900

tcatctgtaa gatccttgtg gttaacaccc attacgaaca tcggcgtatc gtcttttgaa 960

ggagcagaaa ggattgcttt ttttgcaccc gcgttgatat gtgcctgtgc cgcctccttg 1020

gtaaggaata aaccggttga ttccacgatg tattctgcgc ctacttcgtt ccatttcagg 1080

ttgttaggat ctttttcggc ggttacacga atctttttgc cattcacgat aaggtcgttt 1140

ccttctacag aaacttcgcc cgcaaatgtg ccgtgtaccg agtcatactt aagcatgtac 1200

gccatatatt tggcatcgat aagatcgtta attcccacca cttcgatgtt ttctctctcg 1260

gccatcgctc tgaaaaccaa gcgtccaatc ctaccgaatc cgttgattcc tactttaatt 1320

gttgacatta aatggaggcg ctcgttgatc tgagccttgc cccctgacga acggcggtgg 1380

atggaagata ctgctctcaa gtgctgaagc ggtagcttag ctccccgttt cgtgctgatc 1440

agtctttttc aacacgtaaa aagcggagga gttttgcaat tttgttggtt gtaacgatcc 1500

tccgttgatt ttggcctctt tctccatggg cgggctgggc gtatttgaag cggttctctc 1560

ttctgccgtt a 1571

<210> 134
<211> 2150
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 134, Example 134: designer Nial-promoter-controlled chloroplast-targeted Citramalate Synthase DNA construct (2150 bp)

<400> 134
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatggagc aggtttttat ctacgacacc accttgaggg 360

atggctcgca ggcagaaggt ataaactttt ccgtagagga taagatgcgc atacttcaaa 420

aactggacga atttggagtg cattacatag agtgcggatg gcccggtgcg aacccaaaag 480

acactattct ctttgaaagg ctgagaaaga taaaaactca aaatgccaaa atagtagcct 540

ttggtgcaac aagaaaagct ggaaagaagg cgcacgaaga taagcaggtg gaaaaccttt 600

tgaaatcggg tgccaaggtg ataaccgtat ttggcaagag ctgggacttt catgtaacgc 660

atgccatagg gaccacctta gaggaaaacc tggacatggt ttacgagacg gtaagctatc 720

ttaaaaagca tgtggaggag gttatctttg acgcagagca cttctttgac ggatacaggc 780

acaacgaaag ctatgctttt aaggtattgg aggcagcttt tcaggcaggt gcggactgga 840

tagtcctctg cgataccaac ggtggcaccc ttcccaatga ggtttatgag ataaccaaaa 900

aggttgtaca aaagtttcca caggcacgcg taggcataca cgctcacaac gattcagata 960

ctgctgtggc taactctctt atggcggtgc ttgcaggtgc aaggcaggtt cacggcacta 1020

taaacggctt gggggaaaga acgggcaatg ctaatctgtg ttccataata cctaaccttc 1080

agctcaagct gggctttagt gtagtgcctt cccaaaacct caaaaagctc accgagcttg 1140

ctcactttgt ctccgaaatc tccaacacgc cactgcccaa aaacatgcct tatgtagggg 1200

agagtgcttt tacccacaaa gcaggcgtac acgcctctgc agttatgaaa aggtcagaaa 1260

catacgaaca catagaccct tctttggtag gaaacagaag gaaggtgaca gtgtctgacc 1320

tttctggaag gagtaatata ctttacaagc tcagggaaat ggggcttgag gtggatgata 1380

agtcccctga gcttatcaaa ctccttgaaa agataaagga acttgagaag gaaggctacc 1440

actttgaagc agctgaagct tcttttgagc ttctttgcaa gaggcatttt gggcttgtta 1500

aaaactattt tgaccttgat gcttacaggg tgctaatagc cagaaggagt acagacctat 1560

ctcctgtttc ggaagccacc gtaagactct atgtggaaga cataaaggag catacagcag 1620

ctcttggtaa cggaccagtg agcgcccttg acagagccct cagaaaagcc ttggaagagt 1680

tttatccaag ccttaaagat gttcagctca tagactacaa ggtgagaata gttaacgaat 1740

cggagggtac atctgccaaa gtgagggtgc ttatagaatc taccgatggt agaagaaagt 1800

ggggaacggt gggagtttcg gaaaacataa tagaagcctc ttggatagcc ttaactgata 1860

gcctcgtata taaactctta aaagacgaag aagagggtat aatgtgataa atggaggcgc 1920

tcgttgatct gagccttgcc ccctgacgaa cggcggtgga tggaagatac tgctctcaag 1980

tgctgaagcg gtagcttagc tccccgtttc gtgctgatca gtctttttca acacgtaaaa 2040

agcggaggag ttttgcaatt ttgttggttg taacgatcct ccgttgattt tggcctcttt 2100

ctccatgggc gggctgggcg tatttgaagc ggttctctct tctgccgtta 2150

<210> 135
<211> 3125
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 135, Example 135: designer Nial-promoter-controlled chloroplast-targeted 3-Isopropylmalate/(R)-2-Methylmalate Dehydratase large/small subunits DNA construct (3125 bp)

<400> 135
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtacc atgtctgctg ttgctatctc gcccttgatt 360

gctgatgctg taacagtagc cgctgaagca agatatacaa aagaatcttt atgtcctgca 420

cgtcccttga agtttcgtgt acctgtactg ataagagtct caccctcacc gataacaccc 480

tgacagcttc cccagcatac agagcagtta ggattcataa caattgcacc tgcgtccatg 540

aatatatcaa ggagtccctc tttcatagcc tgaagatata ccgaacggct tgcaggaact 600

acaaggaatc ttaccttagg agcaaccttt ttccctttga tgatcgctgc gccaactctt 660

aaatcctcga ttcgtccatt gttacatgaa ccaagaaatg cttcatcaat ctttacacca 720

agtgattcct tagccggaac tacattgtca acaaaatgtg gctttgcaac aattggctgt 780

attgttgaaa ggtcaatatc ataaacctgc tcaaatactg catcatcatc tgatgtaaag 840

catgcctttg gctctctgcc atgctcctta agataatcca ttgcaacatc atcaacttcc 900

atgagtgcag tcttagcacc tgcctctaca caaaggttac agattgatat tctgtctgcc 960

attgaaaggc tgtgtaagcc ttctcctgca aattccattg ctttatagtt agcaccgtta 1020

gcgccaatct ttccaataat agagagtatt aaatctcttg catatactcc atcgttaagc 1080

tttcccttaa ggttgaatct taatgttccc ggaaccatta cccatgatgt tcctgtaacc 1140

attgcataca aataatctgt acaaccaaca cctgtaccaa atgcacctaa cgcaccatat 1200

gcacaagtat ggctgtctgc tccaaatata agctcacccg gcactacatg attttccatc 1260

ataacctgat gacacacacc ctcgccctcg tagaacttaa tatcattagc cttagcaaag 1320

tctctcatct tcttctgtga ggctgctgtc ttaggactgt ctgatggaat attgtggtct 1380

acaatccata caagcttatc cttgtcagca atatgaggat tctttaactt ctcatacata 1440

ccaatagtaa gatgtgttgt tccatcatta ctcataagtc tgtcaagagt aacagttgca 1500

atatcaccag ccttaacctg tgaaagacct gctgcccttg cgataatctt ctctgcaata 1560

gtcatgccat gctttgcctc atctgcaggt acggctgtac tctcagactc ttctttctca 1620

ccatcaagtg atgcaataag accaccctga ttaagaatag cctgcatctt ggctggaagc 1680

ttagtacatg tataagtctt tccattaaca gttataattc catcttctaa tgaaagctca 1740

cattcatccc ccgcattaac ttcgtcatgg agttctttac atacaataac aggaagtcct 1800

atattaatag cattacgata gaatattctt gcaaatgatt tggcaatcac tgccttgaca 1860

cctaatgcct taagtacgct tggtgcctgc tctcttgatg aaccacatcc aaagttgtca 1920

tctgcaacaa cgaaatctcc cggctttacg gcagaagcaa aatcagagtc taatgattca 1980

aatgtatgac tcttcatctc atcaattgtc ggaaacaaaa gatactgcga tgcaataatc 2040

tgatctgtat caacatcttt atcaaactta aatatcctac ccatatggta gggtgcgagt 2100

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 2160

gctcccggat ggtagggtgc gagtgacccc gcgcgacttg gaagggttca aacgaccccg 2220

ccgtacgaac ttttgtcggg gggcgctccc ggatggccgc cgtcattgcc aagtcctccg 2280

tctccgcggc cgtggctcgc ccggcccgct ccagcgtgcg ccccatggcc gcgctgaagc 2340

ccgccgtcaa ggctgccccc gtggctgccc cggctcaggc caaccagatg gtcaagaccg 2400

ttaagctttc tcattgcctt aacaagtccg cctgcattaa gtatatccac aagattatca 2460

ggaagtgaag caataggata tgcttttcca ttgtgtgtaa tctttgcatt tacttcaaca 2520

tcaatagtat cgccttccgt aacttcgtcg tgaaggtctg cattctctat aaggagaagt 2580

ccgttattaa tagaatttct gaagaatatt cttgcatatg atttggcaat aacacattta 2640

atacctaatg ccttaataac ctcaggtgcc tgctctcttg atgaaccaca accaaagttc 2700

tttcctgcaa caatgatgtc gcctggctta atctgacctg caagttctgg tcttaatggc 2760

gaaaatgcat atggtttcat atcttctact gtctttaatg caaggtactc tgtagggata 2820

atgatatctg tatcaatgtc atcaccaagt acccatactt taccgctaaa tttctcgttc 2880

attaaatgga ggcgctcgtt gatctgagcc ttgccccctg acgaacggcg gtggatggaa 2940

gatactgctc tcaagtgctg aagcggtagc ttagctcccc gtttcgtgct gatcagtctt 3000

tttcaacacg taaaaagcgg aggagttttg caattttgtt ggttgtaacg atcctccgtt 3060

gattttggcc tctttctcca tgggcgggct gggcgtattt gaagcggttc tctcttctgc 3120

cgtta 3125

<210> 136
<211> 2879
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 136, Example 136: designer Nial-promoter-controlled chloroplast-targeted 3-Isopropylmalate Dehydratase large/small subunits DNA construct (2879 bp)

<400> 136
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgaatg aactgcctta catcagaaac ttttccatta 360

accgccgccg ccactaccat cgctggactc atcaataaag tgcgaccggt tgatgacccc 420

tgacggcctt taaaattacg gttagaagaa gaagcactaa tttgatcgcc aactaactta 480

tcagggttca tggctaaaca catggaacag ccggcttctc gccattcaaa cccggcttgg 540

gtaaaaattt tatcgagtcc ttcggcttct gcttgttgtt taacccttтc cgatccggga 600

acgacaaatg ctttaacccc tgatgctacc tgtcttcctt gggcaaattt agccgcttct 660

cgtagatcgc tgatgcgtcc attggtacaa ctaccaataa aacagacatc gacaggagtc 720

cccataatag gcgatccggg tttgagttgc atatattcat aagcttcttg agcaataaag 780

cgatcgcctt ctggtaaact ttcaggagta ggaaccactt cagtcacgcc tattccttga 840

ccgggggtaa taccccaagt aacagtcggt tcgatctcac cggcatcaaa caccacgaca 900

tcatcatatt gggcattcgc atcactgcgg atactcttcc accattcgac ggccttatcc 960

cagtcttggc ctttgggaga aaagtctctg cctttgaggt attcaaaagt cacctcatca 1020

gggttaatat agccgcatct agcgccgcct tcgatggcca tattacaaac ggtcattcgt 1080

tcttccatcg acatggcctc aaaggtagtg ccggcatatt cataagcgta acctacgccg 1140

ccttttaccc ctaatttgcg gatgatgtgc aggacgacat ctttggcata gactccgggg 1200

ggtaaggttc cgttaacttc aattttacgg actttgagtt tagagagggc tagggtttgg 1260

gtagcgagga catctcgcac ttgggaggtt cctatgccaa aagcgatggc cccaaaagcg 1320

ccatgagtgg aggtatgaga gtcaccgcaa gcaatggtca ttccgggttg agttagtcct 1380

tgttcggggg cgatcacatg aacaataccc tgatttcctg agccgatatt ataaaaaggg 1440

atattattat ctttagcatt agtttcaata gcccgcatca tttcttcagc gaggtcgtct 1500

acaaagggac ggtgttggtt ctcggtgggt acaatatgat ccactgtggc gacggtgcga 1560

tcggggaata ataccttcag ttttctgtcc cgtagcatag caaaagcttg tggactggta 1620

acttcatgaa tgaggtgaag tcctataaat agttgggttt gtcccgatgg taagatgcgg 1680

acggtatgta agtcccaaac tttgtcaaac agtgttcctg tactcatatg gtagggtgcg 1740

agtgaccccg cgcgacttgg aagggttcaa acgaccccgc cgtacgaact tttgtcgggg 1800

ggcgctcccg gatggtaggg tgcgagtgac cccgcgcgac ttggaagggt tcaaacgacc 1860

ccgccgtacg aacttttgtc ggggggcgct cccggatggc cgccgtcatt gccaagtcct 1920

ccgtctccgc ggccgtggct cgcccggccc gctccagcgt gcgccccatg gccgcgctga 1980

agcccgccgt caaggctgcc cccgtggctg ccccggctca ggccaaccag ttatacctct 2040

acggcatttt tccaatttaa ataaggtaat tttttagcag tttcttgaat ttcagaaagg 2100

ttttgaatga gttgtccgca gctatcccaa gagccttcaa ttaacatttg tctagaccct 2160

tctcccatgc taacatcagc aacaaattcg ccacattgca ctttcatagc ggctaaatct 2220

aaactgaggg acaaggcagg attttcttgc aggagagatt gtatttttc tacggtttca 2280

ggagaagctg tcacacaggg aaccccgtta gcaatacaat tgccaaagaa aatttcagca 2340

aaactttcac cgataattgc tttaattccc caacgaataa tggcttgtgg ggcgtgttct 2400

cttgaagatc cacagccaaa attagcgtta actaccaaga gattagctcc ctgatattgc 2460

ggcagatcaa agggatgttt tccttgcatc tgttggcgat catcaataaa aacttgttct 2520

cctaagcctt caaaggtgac gcaacgtaga aaccgcgcag gaataatacg atcagtatcg 2580

atatcatcgc ccactaaagg gatacctcgt cctgaaattt gggtgacttg actcattaaa 2640

tggaggcgct cgttgatctg agccttgccc cctgacgaac ggcggtggat ggaagatact 2700

gctctcaagt gctgaagcgg tagcttagct ccccgtttcg tgctgatcag tctttttcaa 2760

cacgtaaaaa gcggaggagt tttgcaattt tgttggttgt aacgatcctc cgttgatttt 2820

ggcctctttc tccatgggcg ggctgggcgt atttgaagcg gttctctctt ctgccgtta 2879

<210> 137
<211> 1661
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 137, Example 137: designer Nial-promoter-controlled chloroplast-targeted 3-Isopropylmalate Dehydrogenase DNA construct (1661 bp)

<400> 137
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgactc ggcaacaccg cataacccta cttcctggcg 360

atggtatcgg acctgaaatt ttagccgtaa ccgtagatgt cctaaaggtg ataggcaaac 420

aattcgacct aaattttgag tttacagaag ccctcatcgg cggtgctgcc attgatgcaa 480

ccggaaaccc cttacccgaa gaaaccttaa agatttgtcg caacagtgat gcagtgcttt 540

tagccgccat cgggggttat aagtgggata atttgccccg tcatcaacgc ccagaaacgg 600

gattattagg catcagagcc ggcttaggat tatttgctaa cttacgtccg gccaccattt 660

taccgcagtt aatcgacgct tccaccctca aacgagaagt cgtcgaaggc gtggacatta 720

tggtggtgcg agaactcacc ggcggcattt attttggtca accgaaggga atttttgaga 780

cagaaagcgg cgaaaaacgg ggcgtgaata ccatggccta tacagaatca gaaatagacc 840

gcattgctca aatcggcttt gaaacagccc aaaaacgtcg aggaaagctc tgttctgtgg 900

ataaagccaa tgtcttagat gtctcccaat tatggcgcga tcgcgtaact ttaatggccg 960

aaaaataccc agatgtagaa ctgtctcatc tctatgttga caatgcggct atgcagctag 1020

tgcgtaaccc aaaacaattt gataccatcg tcaccggcaa tttatttggc gatatcctct 1080

cggatgcagc cgctatgtta accggtagta ttgggatgtt accctctgct agtttaggtt 1140

cagatggacc cggactattt gaaccggtac atggttcagc ccccgatatt gcaggacttg 1200

ataaagctaa cccgcttgct caggtactca gtgccgccat gatgttgaaa tatggcttaa 1260

atgagccaga agccgccgat caaatcgaac aagcggtttt agccgtatta gaaaaaggct 1320

atcgtacagg agacatcatg tcagaaggaa tgacgttagt gggatgtaag ggcatgggag 1380

aagttttgat taatgtctta gaatctttac aagggtgata aatggaggcg ctcgttgatc 1440

tgagccttgc cccctgacga acggcggtgg atggaagata ctgctctcaa gtgctgaagc 1500

ggtagcttag ctccccgttt cgtgctgatc agtctttttc aacacgtaaa aagcggagga 1560

gttttgcaat tttgttggtt gtaacgatcc tccgttgatt ttggcctctt tctccatggg 1620

cgggctgggc gtatttgaag cggttctctc ttctgccgtt a 1661

<210> 138
<211> 2174
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 138, Example 138: designer Nial-promoter-controlled chloroplast-targeted 2-Isopropylmalate Synthase DNA construct (2174 bp)

<400> 138
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtgat gctgtaacag ccgcttgttc tttttgggtt 360

ttttcttgtt ctagggcaac ataaagacgg ttaagagcgc taatataagc ccgtgccgaa 420

gcaacgataa tatcagtatt agcggcatga cccgagaaag ttcggttttc gtatttcaga 480

cgaatggtga cttctcccat tgcatcaatg ccttctgtga ctgacttaac cgaaaattca 540

atcaactggt taggaacatt aaccactcgg ttaatcgctt tataaaccgc atctacgggt 600

ccggttccaa tagccgcatc cattaattct tcgccgttgg gacctttaa gatcacggtt 660

gctgttggac gggcctgatc gccacatgac acttgtacta attcgagacg gaagatttct 720

ggggcaacat gaatttcatc attgacgatg gcttctaagt cccagtcagt aatttctttg 780

cgcttgtctg ccacttcttt aaagcgtaca aaggctttat ttagctcagt ttccgtcaat 840

tcaaagccta attcttttag acgagtgccg aaagcattac gccctgagag tttcccgagg 900

acaatttgat tattggttaa cccgatagac tcagcgtcca taatttcgta ggttaattta 960

ttttttagca cgccatcctg atgaataccg gattcatgag cgaaagcatt agcgccgaca 1020

attgccttat tcggttgtac cgccatcccg gtgagactgg aaactaaacg ggatgttttg 1080

tagatttctt tggtattgat attggttagg ggttcagtgg agtctgctgg tcgtcctaag 1140

aaaggattgt aataggagcg gcgtacatga agcgccatca ctaattcttc taaggcggcg 1200

ttgccggctc gttctcctat gccgttaata gtacattcta actgtctggc tccattttta 1260

acggcttcaa ggaagttagc caccgctaac cctaaatcat tatgtccatg aaccgagata 1320

atagcattgt ctatgttagg aacattttct ttgatgccgc gaatcaattg accaaattca 1380

gagggagtta aatagcctac ggtatcggga atattaacgg tagttgctcc ggctgctatg 1440

gctctttcta atacttgata caaaaattct gggtcactac ggcctgcatc ttctggggaa 1500

aattctacat catctacaaa agacttcgca taagccacca tttctgggac gatttctagg 1560

acttcttgac gagtcttttt gagtttatag gccaagtgaa tatcggaggt agccaaaaag 1620

gtatgaatgc ggggtttagc ggcgggtttg agggcttctg cggctttagt gatatcttgt 1680

cgagtggctc ttgccaagcc gcaaattgtg gggcctcctt ggactcctac tactttagcg 1740

atttttgta cagcttcaaa atctccggga cttgcgtaag gaaaacccgc ttctatgaca 1800

tctactccca gtcgtgccag tgcgcgagca acggttagct tctcatcaac attcagggtt 1860

gctcccgggg actgttcccc atctcggaga gtggtatcga agatgataac gcgatcgggt 1920

tgtttactca ttaaatggag gcgctcgttg atctgagcct tgccccctga cgaacggcgg 1980

tggatggaag atactgctct caagtgctga agcggtagct tagctccccg tttcgtgctg 2040

atcagtcttt ttcaacacgt aaaaagcgga ggagttttgc aattttgttg gttgtaacga 2100

tcctccgttg attttggcct ctttctccat gggcgggctg ggcgtatttg aagcggttct 2160

ctcttctgcc gtta 2174

<210> 139
<211> 2882
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 139, Example 139: designer Nial-promoter-controlled chloroplast-targeted Isopropylmalate

Isomerase large/small subunits DNA construct (2882 bp)

<400> 139

agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgcaac aactcccgca catccgcaac ttcaccctga 360

atcgccgcag tagcgaccat cgccggactc attaacaaag tgcgaccgga agctgatcct 420

tgtcgtcctt taaagttgcg gttggaggag gaagcactaa tttgtctacc ttccagcttg 480

tcggggttca tggctagaca catagaacat ccaggttcgc gccattcaaa gcctgctgct 540

tcaaagattt tatctaaacc ttcagcttcg gcagcttttt tcactcgttc ggaaccggga 600

accacaaaag ccttgactcc ttccgctacg tggcgacctt tggcaatttt cgcggcttct 660

tgcaggtcac taagtctacc gttagtgcag ctaccgataa agcaaacgtc aattttcgtt 720

cccttaatcg gttgaccagg atataaatcc atgtaacggt aagcttcttc agctacaaag 780

cggtcttctt ctaggagttc ttctggctgg ggaatcaact gattcacacc aataccttga 840

ccgggggtaa ttccccaggt aacagtgggg ggaatatccg cagcgttgaa tactattaca 900

tcatcgtatt cagcatcagc atcactcttg attgattccc accaagccac ggctttttcc 960

caatcagcgc cttgggggggc aaagtctcta ccttggagat aatcataggt aacttgatca 1020

ggattgacat aaccgcatct agcgccaccc tcaatggcca tgttgcagac agtcatccgt 1080

tcttccatat tcatttgctc aaaagtcgta cccgcgtatt cgtaggcgta acctacacca 1140

cctttcactc ccagggtacg gatgatatgc aggatgacat ctttggcata aaccccaggg 1200

ttgagtgtgc cgttaacttc aattttacgg actttgagtt tggataggga taaggtttgg 1260

gaggcgagaa cgtcccgcac ttggctagta ccaataccaa aagcgatcgc cccaaacgcc 1320

ccatgacttg aagtgtggct atcaccacag gcgatcgtca ttcccggctg tgtcagtccc 1380

agttctggcg caatcacatg aactatacct tgattgccgg aaccaatgtt ataaaaagta 1440

atgttatttt cttgacaatt ctgctctagg gcttggatca tttcctcagc caagcgatcg 1500

acaaaaggac gcgcctgatt ctctgtaggc acgatgtgat ccacagtagc cacagtccgc 1560

tcaggaaata gtacctttaa acctcgttcc cgtaacatag caaaggcttg tggactagta 1620

acttcatgga ctaggtgcag gccaataaat agctgtgtta gccctgaagg aagtgtacca 1680

acagtgtgta agtcccaaac tttatcaaac agggtgcctt tgctcatatg gtagggtgcg 1740

agtgaccccg cgcgacttgg aagggttcaa acgaccccgc cgtacgaact tttgtcgggg 1800

ggcgctcccg gatggtaggg tgcgagtgac cccgcgcgac ttggaagggt tcaaacgacc 1860

ccgccgtacg aacttttgtc ggggggcgct cccggatggc cgccgtcatt gccaagtcct 1920

ccgtctccgc ggccgtggct cgcccggccc gctccagcgt gcgccccatg gccgcgctga 1980

agcccgccgt caaggctgcc cccgtggctg ccccggctca ggccaaccag atgaccagca 2040

gccagtttac cccaactcac ataaggtaac ttagcagatg ttacccgcac ttgctcggtg 2100

ttcgctacca actgaccgca agcatcccaa gccccagtaa taaaggtgct tctggttcct 2160

tcaccaatgg agattggcgc ggtgaaatca ccaacttgta cttgcagagt ttctaagttg 2220

atgctgacat tagcttgagg attagcggct actaactctt gcaattgttt aacgatcgcc 2280

tcatcagcag tgacacaagg tacaccgatg gctacgcaat taccgaagaa aatttctgca 2340

aaactttcac caatcacgga ttgaatcccc catttagaaa gggcttgggg tgcgtgttcc 2400

cgtgaagaac cacagccaaa gttgcggtta actatgagga tatttgcgcc ttgatactgc 2460

ggttggtcaa aaggatgctc ccctttttagg gctgtgcggt catcaataaa cgcgccttca 2520

cgtaacccat caaaggtaat ggctttgaga taacgagcag gaataatgcg atcggtatca 2580

atatcattac ccactaaggg tatgccacgc cctgtaactt ctttaacttc actgaccatt 2640

aaatggaggc gctcgttgat ctgagccttg ccccctgacg aacggcggtg gatggaagat 2700

actgctctca agtgctgaag cggtagctta gctccccgtt tcgtgctgat cagtcttttt 2760

caacacgtaa aaagcggagg agttttgcaa ttttgttggt tgtaacgatc ctccgttgat 2820

tttggcctct ttctccatgg gcgggctggg cgtatttgaa gcggttctct cttctgccgt 2880

ta 2882

<210> 140
<211> 2210
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 140, Example 140: designer Nial-promoter-controlled chloroplast-targeted 2-Keto Acid Decarboxylase DNA construct (2210 bp)

<400> 140
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtata cagtaggaga ttacctgtta gaccgattac 360

acgagttggg aattgaagaa atttttggag ttcctggtga ctataactta caatttttag 420

atcaaattat ttcacgcgaa gatatgaaat ggattggaaa tgctaatgaa ttaaatgctt 480

cttatatggc tgatggttat gctcgtacta aaaaagctgc cgcatttctc accacatttg 540

gagtcggcga attgagtgcg atcaatggac tggcaggaag ttatgccgaa aatttaccag 600

tagtagaaat tgttggttca ccaacttcaa aagtacaaaa tgacggaaaa tttgtccatc 660

atacactagc agatggtgat tttaaacact ttatgaagat gcatgaacct gttacagcag 720

cgcggacttt actgacagca gaaaatgcca catatgaaat tgaccgagta ctttctcaat 780

tactaaaaga aagaaaacca gtctatatta acttaccagt cgatgttgct gcagcaaaag 840

cagagaagcc tgcattatct ttagaaaaag aaagctctac aacaaataca actgaacaag 900

tgattttgag taagattgaa gaaagtttga aaaatgccca aaaaccagta gtgattgcag 960

gacacgaagt aattagtttt ggtttagaaa aaacggtaac tcagtttgtt tcagaaacaa 1020

aactaccgat tacgacacta aattttggta aaagtgctgt tgatgaatct ttgccctcat 1080

ttttaggaat atataacggg aaactttcag aaatcagtct taaaaatttt gtggagtccg 1140

cagactttat cctaatgctt ggagtgaagc ttacggactc ctcaacaggt gcattcacac 1200

atcatttaga tgaaaataaa atgatttcac taaacataga tgaaggaata attttcaata 1260

aagtggtaga agattttgat tttagagcag tggtttcttc tttatcagaa ttaaaaggaa 1320

tagaatatga aggacaatat attgataagc aatatgaaga atttattcca tcaagtgctc 1380

ccttatcaca agaccgtcta tggcaggcag ttgaaagttt gactcaaagc aatgaaacaa 1440

tcgttgctga acaaggaacc tcatttttg gagcttcaac aattttctta aaatcaaata 1500

gtcgttttat tggacaacct ttatggggtt ctattggata tacttttcca gcggctttag 1560

gaagccaaat tgcggataaa gagagcagac acctttatt tattggtgat ggttcacttc 1620

aacttaccgt acaagaatta ggactatcaa tcagagaaaa actcaatcca atttgtttta 1680

tcataaataa tgatggttat acagttgaaa gagaaatcca cggacctact caaagttata 1740

acgacattcc aatgtggaat tactcgaaat taccagaaac atttggagca acagaagatc 1800

gtgtagtatc aaaaattgtt agaacagaga atgaatttgt gtctgtcatg aaagaagccc 1860

aagcagatgt caatagaatg tattggatag aactagtttt ggaaaaagaa gatgcgccaa 1920

aattactgaa aaaaatgggt aaattatttg ctgagcaaaa taaatagtaa atggaggcgc 1980

tcgttgatct gagccttgcc ccctgacgaa cggcggtgga tggaagatac tgctctcaag 2040

tgctgaagcg gtagcttagc tccccgtttc gtgctgatca gtctttttca acacgtaaaa 2100

agcggaggag ttttgcaatt ttgttggttg taacgatcct ccgttgattt tggcctcttt 2160

ctccatgggc gggctgggcg tatttgaagc ggttctctct tctgccgtta 2210

<210> 141
<211> 1724
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 141, Example 141: designer Nial-promoter-controlled chloroplast-targeted NADH-dependent Alcohol Dehydrogenase DNA construct (1724 bp)

<400> 141
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgggcg gcggcttcga gtatctgacg gctgacgtca 360

agggtaatat cgccgttttc acccagatgg gtcatgccgt ggtcctccaa ctgctgcacc 420

aggtcggtaa tgccttgcgc accgatgtca taggcggaca ggcgggtcgg cacaccaagg 480

ttttcaaaga attcctccgt cttgcggata accgcattga tccgctcatc ttccgttcca 540

tcggtcaggt tccatacccg tactgcatac tgaagcagtt tggcacgctt ttcctcgcga 600

cgcaccttca gcagggcagg aaataccatg gccagcgtcc gggcgtggtc aatgtggtat 660

tttgccgtga tttcgtggcc gatcatatgc gtgctccagt catgtggcac ccctgcgccg 720

atcaggccat taagcgccaa tgtcgccacc cacatgaggt tggagcgcag gtcataatca 780

tcgggtgccg ccatgatacg tggcccgatt tccacaaggc tggagagcag cccttcggaa 840

aagcgatcct gcgccattcc gtccacagga taggtcatgt actgttccat cacatggacg 900

aaggagtcca caacaccgtt gataacctgc ttcatcggca ggctcatggt gcgtgtcggg 960

tcaagcacgg aaaagcgtgg atagaccagg ggattggaaa acaggagctt atccccagtg 1020

gactgccgtg aaatcacgct catgcagttc atttcagacc ccgtggcagg cagggtgacc 1080

accgtgccca gtggcagggc cttggtcgcg gctgtgcctt tgctggtcag gatgtcccat 1140

gcctcacctt catatgggac agcggcagcg acgaacttgg tcccatccat gacagagccc 1200

ccacccacgg caagcaggaa gtcgagccct tcttcacgca ccatggttac ggccttcatc 1260

agggtttcat aggtgggatt ggcctcgatg ccaccgaatt cccgaaaggt ccggctaccg 1320

agggcggcgc gtacctcggc aagcgtcccg ctgcgctcgg cgcttgaacc gccatacagg 1380

acgaggacac gggcctgggg tgacaactga tcatctagac ggccaatcat gcctttgccg 1440

aacaggacac gtgttgggtt atagaattcg aaattctgca ttaaatggag gcgctcgttg 1500

atctgagcct tgccccctga cgaacggcgg tggatggaag atactgctct caagtgctga 1560

agcggtagct tagctccccg tttcgtgctg atcagtcttt ttcaacacgt aaaaagcgga 1620

ggagttttgc aattttgttg gttgtaacga tcctccgttg attttggcct ctttctccat 1680

gggcgggctg ggcgtatttg aagcggttct ctcttctgcc gtta 1724

<210> 142
<211> 1676
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 142, Example 142: designer Nial-promoter-controlled chloroplast-targeted NADPH-dependent Alcohol Dehydrogenase DNA construct (1676 bp)

<400> 142
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgccta tatacttttt caaataattt ctttaaatct 360

tttaaattta cttctctgac atttccacta gtacaaatat cttcaagagc agatttagac 420

ataatattta tttcattaaa atatttttct tcatctattg ctaaatcttt tacacaacta 480

ggaagtccta agtttttatt taaaacttcc actgccacag ctaaactttc tgctccttct 540

tctgtattat ttgcaggaaa acctaaatct tttgaaattt cataatatct ttgagcagta 600

gttttatttt ctgaattgaa tctaattatg tagggtaata tagttccatt tatttttcca 660

tgagctatat gaaactttcc accaatagcg tgggctatac tatgatttat tcctaaacca 720

gatttttcaa aagcaaaacc tgctatacaa gatgcctttg ccatttcaat cctagcttcc 780

tcatctttta tatctctata cattctcaaa agatttttaa aaataagtct tatagctgaa 840

agagcatata tttgagtata aaaatttgct tctttgcaag tgtatgactc aatagcatga 900

gttagagcat ctatacctga atcagctaca actgattttg gtagtgtttt tgtaagttca 960

ggatctagta ttgcatattc aggtatcatc tcattatctt ttaatggaat ttttacatta 1020

ttctttttat ctgtaagaac tgcataggaa cttacttctg aacctgttcc acttgtagtt 1080

ggtaaggcta ttaaagggat agataatcca gatttttta caaaatattt aattgactta 1140

gcagtatcaa gagaagaacc tcctcctatt gctaccatca catctggaag aaaatcaata 1200

accttatcta aggctttact aactatttca aatgctggat caacttcaac ttcattaaaa 1260

atcctataat ctatattttt ttgcttaaat atattttcaa atttttagt cattcctatt 1320

tttgacataa ctgaatcagt tactataaag gctttttag ctttaatttt attaataact 1380

tcatcaaatt tgtctcctac ataaacattt gtatttactt caaaaatttt cattaaatgg 1440

aggcgctcgt tgatctgagc cttgcccccc gacgaacggc ggtggatgga agatactgct 1500

ctcaagtgct gaagcggtag cttagctccc cgtttcgtgc tgatcagtct ttttcaacac 1560

gtaaaaagcg gaggagtttt gcaattttgt tggttgtaac gatcctccgt tgattttggc 1620

ctctttctcc atgggcgggc tgggcgtatt tgaagcggtt ctctcttctg ccgtta 1676

<210> 143
<211> 3629
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Coonstruct- Sequence No. 143, Example 143: designer Nial-promoter-controlled chloroplast-targeted Phosphoenolpyruvate Carboxylase DNA construct (3629 bp)

<400> 143
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgaccg gtatttctca ttcctgccgc aattccatta 360

atggttaata gcgctcctct gagcaactct tccttagaat aacggaaatt aatgactcca 420

gactcagctt gtgcgttgta ctgacgtagg cgtttgatga gagatacttg caaaaatcct 480

agaggaacaa ttgttccatt gcgtaactga acagaacgct gtaaggtggg atcgccatct 540

aggagccgtt tattctcggt aatttctaag actaagcggc aagtgcgatg atattcttgg 600

gctatttgct caaacagccg ctcaaagcgt tctctatctt ccggttgaga caattccttt 660

acataatgat aggcaatttg caaatctacc ttagataagg tcatttccac ttttgagatg 720

accattttaa agaagggcca tttgagataa aaatagcgca acagtttcaa atgttcttca 780

ggttcggtgc taataaactg ttctaaagcg gttcctaccc cataccaagc gggtaacaga 840

aaacgggttt gagtccaact aaagacccaa ggaattgcgc gtagggtact gaggtctttt 900

ttcccacttt tacgtctagc cgggcgagaa ctaatttgga gttgactaat ttcttgaatg 960

ggggtgacag acatgaagaa atccacaaaa tccggttctt cataaatcaa ggcacgatag 1020

gctttacgag aacaactggc gagttcttcc atgatctcat tccaaacctg aatatcatca 1080

aagccgcagc ctaacaaact cgattgaata acggcagtaa caatggtttc taggttataa 1140

agggctaatt cagggagaga atatttagaa gcgaggactt ctccctgttc agtaatttta 1200

attctgccat taaccgtcgc tgtcggttga gcgagaatag cggcataagc gggtccaccg 1260

cctcgtccta ctgaaccccc gcgtccgtga aacaggcgta aatctaagcc atatctttta 1320

gcgacttttt gtaaagcttt ttgggcttta tgaatctccc aattactgct taaaaaccca 1380

gaatctttgt tactgtcgga ataaccgacc ataatttctt gtaggttagt gggttctaag 1440

agggggggtt taagttcgcc cacattttcc ccctgtaaag aggctaaatg atcatatcct 1500

cctgccaaag tggcgcggta aagagtcaat tcaaatagcg cccgcatgat ttcgggtgcc 1560

cgtttaaggt cttctacggt ttcaaatagg ggtacaatgc ggatcgtgct ggaacaagtg 1620

gccgggtcat agagtccggc ttcttgtgcc aagagaagaa cctctaagac atcgctgacc 1680

tcattagtca tactgataat gtaggtatga cagatctcta aaccaaattc ttgttgtagc 1740

tgccgcaaca tcctcaaggt ttctatcact tcgcaggttt tctcagaaaa cggcatttcc 1800

tggggaatga gaggacgacg agtttttaat tcttcgatta accaggcggt tctttcggct 1860

tcagtcagtt ggttgtaggg tttaggcaga atttgtaaat attctgctat ttcgttgatc 1920

gcatctgagt ggttactcga ctcttggcgg aaatctagtt gcgtgaggtt aaacccataa 1980

acttctacct gacaaattaa gctatctaat tcttgacaac ttaagccagt gctttctagg 2040

ttacgccgca ttaatttgag ttcttctata aactcttctt tattttggta attgttggcg 2100

ttggttgtct tgaacactaa aaggcgttct tctgggttag ctaggcggct attgcggtcg 2160

cgggtatttt ccaggcgttt tttaatataa gctaacttaa gacgataggg ttcttgacgg 2220

taacgaatgg ctaactgatt ataaacttgt gggatttgta cgcggtcttt ttctagggag 2280

tctaacaaat ccggcaggac gttacaccaa tggagggaag gactaaggat attcgataac 2340

tcatctaccc tttcgatata tttttcgata acgacattgc gttgataaca ggccgtggcc 2400

caagtcactt ctggtgtaac aaaggggttc ccatctcgat cgcctcccac ccaagagcca 2460

aaataacaga aattattctt cggtgggcgt agtctgggga aggcactttt tagagttcgt 2520

ttgagacgaa gggctaattg aggaattgcc tcaaagagga cttcattaaa atagtgtagg 2580

gagtagtcca cttcatctaa cacggtgggt ttaaactggt gtaactcatc ggtacgccac 2640

cagaggcgaa tttcttcttt aagctgttct ttagcttctt ctgcttccca ggagttggtt 2700

agccccattc ctctaaaggt ttcttctgcc tggtctaact tttgtaaaat atgagcgata 2760

cgccgttgtt tgcgtcgaat ggtgtggcga acaatttcgg tgggatgggc tgtaaaaacc 2820

aggcgcacat ctagttgttc gagtaggcgt tgaatttgtt gaggtggaac atttaattgt 2880

tttaaatagg gaaatagcca gtgaaaagtt cctatttttt gatcattttg tttttcatcg 2940

ttcaaacttc tttctaacca atttgctcca aatgccgagg agaatatact ggtttgctcg 3000

ccgttaatgc catttttggc actggactct ccttcattgt aggtggcccg tcgtgagagt 3060

tgttggtctc gttgttcgta gtgttgttca acaatattaa tgagttggaa atagagagca 3120

aaagcgcgag acgttcttac tgcttcattg aggtcgagtt tttcaatcaa ttgggtaatg 3180

gagtcttcta acgctttttg ggcttgtcct tgttcagaac aaattgcacg cagttttatg 3240

agcagatcca ccaaatcttg cccgcattct gcctttagca cggcttccca taaatcttcg 3300

actaatttta gtctagcttg taaaaataag tctgatgtgg agaagaattg taatggggtt 3360

gtggggactt gaactagcga actcattaaa tggaggcgct cgttgatctg agccttgccc 3420

cctgacgaac ggcggtggat ggaagatact gctctcaagt gctgaagcgg tagcttagct 3480

ccccgtttcg tgctgatcag tctttttcaa cacgtaaaaa gcggaggagt tttgcaattt 3540

tgttggttgt aacgatcctc cgttgatttt ggcctctttc tccatgggcg ggctgggcgt 3600

atttgaagcg gttctctctt ctgccgtta 3629

<210> 144
<211> 1745
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 144, Example 144: designer Nial-promoter-controlled chloroplast-targeted Aspartate Aminotransferase DNA construct (1745 bp)

<400> 144
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgaacc gagacaccaa gcaggctgtt ttggaagagc 360

tgtaaccgtt ccagaccctt ttcaatcgtt tggcagtcag tggcgtagga gagccggatg 420

ctgcgatcgt cgccaaaggc aatgccggga atggctgcaa cttgatgttg atccaacagt 480

tgacggcaat aggtcatcga gtcgagacct gttttgctga tgtccacgaa gacgtagaac 540

gccccttccg gtattggaca ggagagcccc gcgatttgat tcagtccgtt caagatcaac 600

tgacgccgct ccgtaaaggc agccagcatt tctgccacac aatcctgtgg accttgcaga 660

gctgcgatcg cgccgtactg ggcaaaggtg cagacgtttg aggtgctgtg gctttgcagc 720

gatgcagcag cagcaattag ctcgctcgga cccgcgaggt agccaacccg ccatcctgtc 780

atcgagtagg ctttggcgaa gccgttgctg atcagcgttc gttcaaaaca ggcggggctc 840

aagctgccaa tgctgtggtg atcggctccg tcgtaaagga tcttttcgta aatttcatca 900

gaaacgaccc aaaagtcatg ggcttcaatg atcggcgcga tcgcttccag ttcttgccgg 960

ctatagacca tccccgtggg attggagggg gaattcagca ctagcagccg tgtccgaggc 1020

gtaatcgccc ctgccaattg ctgcggctgg agtttaaagc cgtcgctggc gaaagtttca 1080

acgatgacgg gcacaccgcc cgccaacttg accatttcgg gatagctcaa ccagtaaggt 1140

gcggggataa tcacctcatc gcccggatcg agcagcacct gcatcaggtt gtagagtgac 1200

tgcttaccgc cattggtgac gagaatgttg gcggcttggt aatcgagtcc gttgtcggcg 1260

cgcaattttt gggcgatcgc ttcgcgcaga tcaggttcac cggctgcagg accgtagcga 1320

gttttgccct ctgctagcgc ttgagctgct gcattgcgaa tgtgcaaagg tgtttcaaag 1380

tcgggctccc cggcgctgaa gctgcagaca tccaagccct cagctttcat cgctttggct 1440

tgggcagcga tcgcgagagt caacgatggt gacactcgcc ccacacgctc ggatagtttc 1500

attaaatgga ggcgctcgtt gatctgagcc ttgccccctg acgaacggcg gtggatggaa 1560

gatactgctc tcaagtgctg aagcggtagc ttagctcccc gtttcgtgct gatcagtctt 1620

tttcaacacg taaaaagcgg aggagttttg caattttgtt ggttgtaacg atcctccgtt 1680

gattttggcc tctttctcca tgggcgggct gggcgtattt gaagcggttc tctcttctgc 1740

cgtta 1745

<210> 145
<211> 2366
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 145, Example 145: designer Nial-promoter-controlled chloroplast-targeted Aspartokinase DNA

construct (2366 bp)

<400> 145

agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatggcgt taattgtcca aaaatacggt ggaacctctg 360

tcggttcagt agaacgcatt caaacagttg cccaacggat tcaaaaaaca gcccaaaatg 420

gcaatcaagt cgtggttgtt gtttcggcca tgggaaaaac caccgatact ttagtcaatt 480

tagccaaaga gattacccca aatccctgtc gtcgggaaat ggatatgtta ttgtccacgg 540

gagaacaagt atcgatcgcc ttgatgagta tggccttaca gaaattagga caagcggcca 600

tctccttaac tggggcacaa gtggggatcg tcaccgaagc agaacacagt cgagcccgca 660

tcctttccat taaaccccat cgcattcaac gccatctcga tcgcggtgaa gttgtcgtgg 720

tcgccgggtt tcaaggcatt actaacgcag atgacttaga aattaccacc ctagggcgag 780

ggggctcaga tacctccgcc gtcgccattg cggcagcctt aaaagccagt tgctgcgaaa 840

tctatacaga tgtccccggc attctcacca ccgatccccg catcgtcccc gatgcccaat 900

taatggggga aattacctgc gatgagatgc tagagttggc cagtttaggg gctaaggttc 960

ttcatccgag ggcggtggaa attgcgcgta attatggcat tcctttagtg gtgcgatcga 1020

gttggagtga tgcccccgga acccgcgtga cttctcccat tcctaaaccg cgatcgctag 1080

aaggcttaga actgacaaaa gccgttgatg gggtgcaatt tgaccccgat caagccaaaa 1140

tcgccttgtt acgagtcccc gatcgccccg gagtcgctgc ccgcctattt ggggaaattg 1200

cccaccagca ggtggatgta gacttaatta ttcaatcgat ccacgaaggg aatagtaacg 1260

atatcgcctt tacggtggtt aaaaatgtac tcactaaggc cgaagccgtc gctgaagcga 1320

tcgccccggc tttacggagt cattcagcga atagcgatga agcagaggta ttagtcgaga 1380

cgggagtggc gaaaattgcc atttcagggg caggaatgat cggacggcca ggtattgccg 1440

cgaaaatgtt caaaattctc gcccaagagg ggattaatat cgaaatgatc tccacctcgg 1500

aagtgaaggt cagttgtgtg attcgtcaag aagagggcga tcgcgccatt aaagccctat 1560

gccaagggtt tgaggtggaa ttgtccccga cggggattcc tgagtcagta gtagcggtgt 1620

tacctccagt tcgaggagtc gctttagatg aaaaacaagc acaaatcgcc ctaattcatg 1680

ttcaagatcg gccggggatg gctgctagta tctttggagt cttagcggat cataacatca 1740

gtattgatac gattattcaa tcccaacgct gtcgaattgt tgagggaata cccacccgtg 1800

atatcgcctt taccgttgcc caaattgatg tagaagctgc tcaaaatgcg ttaaaaaccc 1860

tagccagtgc gtttagtgaa atgatcgtcg atagcgatgt tgctaaagtc agtattgtag 1920

gggcgggaat ggcgggacaa cccggggtag cggccaagtt ttttgatgct ttagctagac 1980

atcaaattaa tattaaaatg attgcaactt cagaaataaa aattagttgt gttgttagca 2040

aagatcaagg aattaaagct ttaaaagcag ttcatgaagc ctttcaatta gccggagaag 2100

aacgggtaga agttccagct taataaatgg aggcgctcgt tgatctgagc cttgcccct 2160

gacgaacggc ggtggatgga agatactgct ctcaagtgct gaagcggtag cttagctccc 2220

cgtttcgtgc tgatcagtct ttttcaacac gtaaaaagcg gaggagtttt gcaattttgt 2280

tggttgtaac gatcctccgt tgattttggc ctctttctcc atgggcgggc tgggcgtatt 2340

tgaagcggtt ctctcttctg ccgtta 2366

<210> 146
<211> 1604
<212> DNA
<213> Artificial Sequence

<220>

<223> Synthetic Construct- Sequence No. 146, Example 146: designer Nial-promoter-controlled chloroplast-targeted Aspartate-Semialdehyde Dehydrogenase DNA construct (1604 bp)

<400> 146

agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtcag attcatacag agtagcaata ttaggagcaa 360

ctggtgcagt aggtacggaa ttactagaat tactggaaac tcggaacttt ccagtaggag 420

aattaaaact cttagcttca gaattttcag cgggtaagac cttaaaattt aaggaacaaa 480

gtttacaagt agaagctgta acaaatgatt catttaataa agtagattta gtgctagcat 540

cagcaggtgc atctgtatca aaagtatggg caaagaaagc agtagaggct ggagctgtag 600

ttattgacaa ttctagtgct tttcgtatgg actcccaagt acctcttgta gtcccagaag 660

ttaacccaga agcagcggct ttacataaag gtatagttgc taaccctaac tgcacaacaa 720

tattaatgag tgtagcagtg tggccattgc acaaaatcca gccagtccaa aggttagtag 780

tggccactta tcaatcagca agtggggccg ggtcaagggc tatggcagaa atgaaaattc 840

aggcccaaga aatcttagat ggaaaaactc caacaacaga tatttttccc tacccattag 900

catttaattt gttccctcat aattctcaac tcaatgagca gggatattgt caagaagaaa 960

tgaaaatgct tgatgaaacc agaaaaatat ttggctctaa ggaactgaga attacagcaa 1020

cttgtattcg agtaccagta ttaagagctc attcagaagc aattaatttg gaatttgctg 1080

aaccatttag tgtagttaaa gcacgggaag tattaagtca agcaccagga gtgacactgg 1140

tagaaaattg gcaagaaaat tattttccta tgcctatggt tgcaagtggt aaagatgatg 1200

tattggtggg gagaattcgt caggatattt ctcaagctga ggggttagaa ttatggttaa 1260

gtggagacca ggtaagaaaa ggagctgcct tgaatgcagt acaaatagct gaattattgg 1320

tggcaaaaaa ttggctgaga ataccagtag gaacatttta ataaatggag gcgctcgttg 1380

atctgagcct tgcccctga cgaacggcgg tggatggaag atactgctct caagtgctga 1440

agcggtagct tagctccccg tttcgtgctg atcagtcttt ttcaacacgt aaaaagcgga 1500

ggagttttgc aattttgttg gttgtaacga tcctccgttg attttggcct ctttctccat 1560

gggcgggctg ggcgtatttg aagcggttct ctcttctgcc gtta 1604

<210> 147
<211> 1868
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 147, Example 147: designer Nial-promoter-controlled chloroplast-targeted Homoserine Dehydrogenase DNA construct (1868 bp)

<400> 147
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgaagc actcgcagga cgctaggaat gctattaatc 360

gcttgagatt gctcaatttc agctaaggct tgccgaaaat tgccttctcg tacatcatga 420

gtgaccacga cgatttctgc taactgtccc tgaaatccaa tttgaacgac ggattctaga 480

ctaacatggt gctgaccaaa acaagttcct aaatgcccaa tcaccccagg gacatcttca 540

cagagaaagc gggcataaaa gcgagttttt aaatcttcaa ttggggtcag actacaataa 600

tgttgatggg tgacgttcaa taaaggatct aaagattgtg cttgtcctcc actgctttgc 660

agaatgccga cgatattcat aatatctgaa acgactgcac tggcggttgg acctgccccc 720

gcaccgggtc caaaaaacat cacttgtcct aacggttctc ccttgaccaa aatggcgtta 780

taaaccccat taatactggc tagtggatga tctttggcta ttaaagtggg atgtactcgc 840

acttgtaagg tttctgaatc atctccttta gaaccttggg caatggctaa taatttaatc 900

acaaatccga gtttatcagc ataagtaata tcggcggcac tgacttgacg aatgccctca 960

caataaatct cttcgcgttt tacccgtccg gcaaaaccga tggaggccaa aatagcaatt 1020

ttatcggctg catctaatcc gtctacatct gccgtcggat cggcttcagc atagcctaat 1080

ttttgggctt ctgctaatac ctcgccaaaa tcggctccct cagaggtcat ttggctgagg 1140

atataattgg tcgttccgtt aataatgcca ataatattac taatccgatt ggcccctaat 1200

gattgtttga ggggtttaat cactggaatt ccccccccca cagccgcttc taataacaca 1260

taaacgccgg ctgcattggc cgcttcataa atttcatccc cataacgagc gatcactgcc 1320

ttattggccg tgacaatgtg ctttttatgg gcaatggcct tcatgatgag tgacttggct 1380

ggttctagtc ctccgagcag ttctacgaca atatcaatct ctggatcaat gacaatactt 1440

tctagatctg ttgtaatcac ggcgggaggg agttgaactt gacggggttt gtcaagagag 1500

cgcactcctg cccgtttaat ctcgatatct tttaagatag gattacgtcc ccagggatcg 1560

agtagaattt gtgctgtccc cgttcccaca gttcccaagc ctaataaacc tattttaaat 1620

gccactaaat ggaggcgctc gttgatctga gccttgcccc ctgacgaacg gcggtggatg 1680

gaagatactg ctctcaagtg ctgaagcggt agcttagctc cccgtttcgt gctgatcagt 1740

ctttttcaac acgtaaaaag cggaggagtt ttgcaatttt gttggttgta acgatcctcc 1800

gttgattttg gcctctttct ccatgggcgg gctgggcgta tttgaagcgg ttctctcttc 1860

tgccgtta 1868

<210> 148
<211> 1472
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 148, Example 148: designer Nial-promoter-controlled chloroplast-targeted Homoserine Kinase DNA construct (1472 bp)

<400> 148
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgatta acaattttgg ccccttccat atctaaagag 360

agtgcttgca cttgcgccgc tacccccttca ttttcccacg ccaccctcat cgcttcagtc 420

accctatccg cttcaccctg agaacttaaa gcgagtaaag tgggacctgc cccactgatt 480

accataccat aagccccggc tgcgatagcc gctcgtttca ccgcttcgta acctttaatt 540

aaaccttgac gatagggttg atgcagctta tcctccatcg ccatagctaa ccagtctcct 600

cgcccctgtt cgagtccttg taacaataac cctaaacgtg caatattaaa aatagcatca 660

gcgcggctat actgagtggg taaaacgcct ctcgcttctt gagtagataa ttcaaaatcc 720

ggaatagcca caatgggaat cagtttgtca taccagggaa tctcgcaaat ttgccaattc 780

cccatttccc ccacacataa gcgactgctt cccaataaag cgggaaccac attatcggga 840

tgtccttcta aagatatggc taattccatc acttcagatt gagttaaagg gttaccggct 900

agataatttg cccccactaa acccccctaca atggctgtgg ctgaacttcc taaccctctg 960

gctaaaggaa cccctaattt gatctcaatt tctacagcag gaaccggttg attgagatgt 1020

tgatagaaaa gcgcaaaaga ttgataaagt aaattagttt tatctcgact aacccgttct 1080

gcttctgcgc cgcttacgag aattttctct tcggtttctg aagtgagagt aaacttaaat 1140

tgattataaa gggttaaagc ggctcctaga caatcaaagc ctggaccaag attagcggta 1200

gtagcaggaa cggttagggt aacggtcatt aaatggaggc gctcgttgat ctgagccttg 1260

ccccctgacg aacggcggtg gatggaagat actgctctca agtgctgaag cggtagctta 1320

gctccccgtt tcgtgctgat cagtcttttt caacacgtaa aaagcggagg agttttgcaa 1380

ttttgttggt tgtaacgatc ctccgttgat tttggcctct ttctccatgg gcgggctggg 1440

cgtatttgaa gcggttctct cttctgccgt ta 1472

<210> 149
<211> 1655
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 149, Example 149: designer Nial-promoter-controlled chloroplast-targeted Threonine Synthase DNA construct (1655 bp)

<400> 149
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac caggtgaccc taacttggcc tatttctaaa tctgcgtcct 360

ggtcaggtct gatcaacgcc taccgttcct atttacctgt cacggaagcc actccgattg 420

tcaccctgca tgaagggaac acgcccctga ttccggtgcc cagcattgcc gctgaaattg 480

gccggcaagt tcaggtctat gtcaagtacg acggtttgaa ccccacgggc agctttaaag 540

atcggggtat gaccatggcg atctccaagg ctaaggaagc cggagccaag gcggtgatct 600

gtgccagtac cggcaatacc tctgcggcgg cagcggccta tggacggcgg ggcggcatgc 660

gggtctttgt cctcatcccc gatggttatg tcgctctggg aaaattagcc caagccctgg 720

tctatggcgc agaggtgctg gccattcagg gcaactttga tcaggcattg accctggtgc 780

agcaattagc cgaaacccag cccgtcaccc tggtgaattc cgtcaacccc taccggctgg 840

aaggtcagaa aactgctgcc tttgaagtgg tggatgccct gggtaatgcc cccgactggc 900

tctgtattcc cgtgggcaat ggcggcaata tcaccgctta ctggatggga ttctgtcagt 960

atcgggaaca ggatcgttgc gatcgtctac cccggatgat gggttttcaa gcagccggct 1020

ctgctcccct tgtccatggc caggtggtga cccatcctga aactgtagcg accgccattc 1080

ggattggtaa cccggccaac tggcagcggg cgatggccgt gcgggatgcc agccagggag 1140

aattcaatgc tgtcagcgat gccgaaattc tcgctgccta ccgtctgctg gccagtcagg 1200

aagggatctt ttgtgaaccc gccagtgccg cgtccgtcgc cggtctatta aaggtgaaag 1260

atcaggttcc gacgggggca acggtggtct gtgtcctgac ggggaatgga ttgaaagatc 1320

ctgatagcgc aattaagcag caaagtaacc agttccatca gggcatccca gctcagctcg 1380

aagccgtggc agccgtgatg ggcttccgtt agtaaatgga ggcgctcgtt gatctgagcc 1440

ttgccccctg acgaacggcg gtggatggaa gatactgctc tcaagtgctg aagcggtagc 1500

ttagctcccc gtttcgtgct gatcagtctt tttcaacacg taaaaagcgg aggagttttg 1560

caattttgtt ggttgtaacg atcctccgtt gattttggcc tctttctcca tgggcgggct 1620

gggcgtattt gaagcggttc tctcttctgc cgtta 1655

<210> 150
<211> 2078
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 150, Example 150: designer Nial-promoter-controlled chloroplast-targeted Threonine Ammonia-Lyase DNA construct (2078 bp)

<400> 150
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtaag aagagtcgat aggctggatt gtcactttcg 360

ttccagtacc gatagcccag ggttttgaga aatgattccc actgagccat ctcttgtgga 420

gggacttgca tcccgacgac gattctgccg tagtctgcgc cgtgattgcg gtagtggaat 480

aggctgatgt tccaatctgg gctcattttc gtgacaaagt tagctaatgc gcccggtcgc 540

tcaggaaatt caaaccgata gagcagttcg ttttgagcta gcggtgactt gccgcctacc 600

atgtgccgca aatgcatctt ggctagctca tcatcagtta gatctagcgt cttaaatcca 660

ttgtctctaa acttgtgggc gatcgcctgc gcatcggctc tattttctat ctgaatgccc 720

acaaaaatat gagcttgatc ggcatctgca atccgatagt tgaattcgct aaggctgtgg 780

ctaccgagga tatcgcaaaa tttgctgaga ctgcctgccc gctctggaat cgtaacggca 840

aagacggctt ctcttccttc tcctagctcg gctcgctcgg ctacaaagcg cagacgatca 900

aagttcatat tggccccaca agcgatcgcc accaacgttt ctccctgaat ttcttctcgc 960

tctacatagg ctttgatacc tgcgatcgcg agcgccccag cgggttccaa aattgagcga 1020

gtatcttcaa atacgtcctt gatcgcggcg caggtatcat ctgtagttac cagcaacaca 1080

tcatcgacat actgttggca cagacgaaac gtttcctccc cgacctggcg caccgctacg 1140

ccatctgcaa acaggcctac ttgatccaac ttgacacgat tccctttttgc taatgattga 1200

cgcatggcat cagcatccac cggctccaca ccaatgatct taacttcagg acgtaagcgt 1260

ttgatataag cggcaatgcc cgaaattaaa ccacccccccc caatcgcaac aaaaatggca 1320

tgaatcggct tctgatgctg tcgcaagatc tccatgccga tcgttccctg cccggcaatg 1380

acgtctggat cgtcaaacgg atgcacaaag gtaagtcctt tttccacttc tagctggcgt 1440

gcgtgtgcat aggcatcgtc gtaggtgtca ccgtgtaaga caacgagtcc gcctctggcc 1500

ttcaccgcat caatcttgac ttgcggcgtc gtgatcggca taacaattac cgctgacgta 1560

cccaattctc tagcgcctag cgccaccccc tgtgcgtggt tgcccgcaga agctgcaatc 1620

accccacgct gcaacagttc tgaaggtagc tgcgccattt tgttataggc accgcgtagt 1680

ttgaaggaga aaacagactg tacatcttcc cgttttagca gcacctgatt acctagccgc 1740

tccgatagcc tcggcgcgat atctaaaggc gtttcttgcg ccacgtcata aacgcgggcc 1800

ttcaaaatgc gttctaaata gtcagaataa accactaaat ggaggcgctc gttgatctga 1860

gccttgcccc ctgacgaacg gcggtggatg gaagatactg ctctcaagtg ctgaagcggt 1920

agcttagctc cccgtttcgt gctgatcagt ctttttcaac acgtaaaaag cggaggagtt 1980

ttgcaatttt gttggttgta acgatcctcc gttgattttg gcctctttct ccatgggcgg 2040

gctgggcgta tttgaagcgg ttctctcttc tgccgtta 2078

<210> 151
<211> 2282
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 151, Example 151: designer Nial-promoter-controlled chloroplast-targeted Acetolactate Synthase DNA construct (2282 bp)

<400> 151
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgttga caaaagcaac aaaagaacaa aaatcccttg 360

tgaaaaacag aggggcggag cttgttgttg attgcttagt ggagcaaggt gtcacacatg 420

tatttggcat tccaggtgca aaaattgatg cggtatttga cgctttacaa gataaaggac 480

ctgaaattat cgttgcccgg cacgaacaaa acgcagcatt catggcccaa gcagtcggcc 540

gtttaactgg aaaaccggga gtcgtgttag tcacatcagg accgggtgcc tctaacttgg 600

caacaggcct gctgacagcg aacactgaag gagaccctgt cgttgcgctt gctggaaacg 660

tgatccgtgc agatcgttta aaacggacac atcaatcttt ggataatgcg gcgctattcc 720

agccgattac aaaatacagt gtagaagttc aagatgtaaa aaatataccg gaagctgtta 780

caaatgcatt taggatagcg tcagcagggc aggctggggc cgcttttgtg agctttccgc 840

aagatgttgt gaatgaagtc acaaatacga aaaacgtgcg tgctgttgca gcgccaaaac 900

tcggtcctgc agcagatgat gcaatcagtg cggccatagc aaaaatccaa acagcaaaac 960

ttcctgtcgt tttggtcggc atgaaaggcg gaagaccgga agcaattaaa gcggttcgca 1020

agcttttgaa aaaggttcag cttccatttg ttgaaacata tcaagctgcc ggtacccttt 1080

ctagagattt agaggatcaa tattttggcc gtatcggttt gttccgcaac cagcctggcg 1140

atttactgct agagcaggca gatgttgttc tgacgatcgg ctatgacccg attgaatatg 1200

atccgaaatt ctggaatatc aatggagacc ggacaattat ccatttagac gagattatcg 1260

ctgacattga tcatgcttac cagcctgatc ttgaattgat cggtgacatt ccgtccacga 1320

tcaatcatat cgaacacgat gctgtgaaag tggaatttgc agagcgtgag cagaaaatcc 1380

tttctgattt aaaacaatat atgcatgaag gtgagcaggt gcctgcagat tggaaatcag 1440

acagagcgca ccctcttgaa atcgttaaag agttgcgtaa tgcagtcgat gatcatgtta 1500

cagtaacttg cgatatcggt tcgcacgcca tttggatgtc acgttatttc cgcagctacg 1560

agccgttaac attaatgatc agtaacggta tgcaaacact cggcgttgcg cttccttggg 1620

caatcggcgc ttcattggtg aaaccgggag aaaaagtggt ttctgtctct ggtgacggcg 1680

gtttcttatt ctcagcaatg gaattagaga cagcagttcg actaaaagca ccaattgtac 1740

acattgtatg gaacgacagc acatatgaca tggttgcatt ccagcaattg aaaaaatata 1800

accgtacatc tgcggtcgat ttcggaaata tcgatatcgt gaaatatgcg gaaagcttcg 1860

gagcaactgg cttgcgcgta gaatcaccag accagctggc agatgttctg cgtcaaggca 1920

tgaacgctga aggtcctgtc atcatcgatg tcccggttga ctacagtgat aacattaatt 1980

tagcaagtga caagcttccg aaagaattcg gggaactcat gaaaacgaaa gctctctagt 2040

aaatggaggc gctcgttgat ctgagccttg ccccctgacg aacggcggtg gatggaagat 2100

actgctctca agtgctgaag cggtagctta gctccccgtt tcgtgctgat cagtcttttt 2160

caacacgtaa aaagcggagg agttttgcaa ttttgttggt tgtaacgatc ctccgttgat 2220

tttggcctct ttctccatgg gcgggctggg cgtatttgaa gcggttctct cttctgccgt 2280

ta 2282

<210> 152
<211> 1562
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 152, Example 152: designer Nial-promoter-controlled chloroplast-targeted Ketol-Acid Reductoisomerase DNA construct (1562 bp)

<400> 152
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgagcc ttttttagcc aactaaacat agctcgtaaa 360

tctttaccga cttcttcaat aggatgttca gcttcttgac gacgcatggc gataaatccg 420

ggttttcctg actggttttc taagacaaat tcccgagcaa attgaccgga ttgaatttct 480

ttaaggattt tccgcatttc ttgccgggtt tgatccgtaa caatacgagg acctctagta 540

tagtctccat attctgccgt attggaaatg ctatcgcgca tcttagctaa tccgccttct 600

accaccagat caacgattag tttaacttcg tggagacatt caaaataagc caattcaggc 660

tgatatccgg cttcgactaa ggtttcaaat ccggctttaa ttaaagcact tagaccgcca 720

cagaggacta cttgttcacc aaataaatca gtttctgttt cttctcggaa agtcgtttct 780

aaaacaccgg cacgagttcc tccaatccct ttagcataag ccatagcgcg atcgcgggct 840

tgtcctgaag catcttgaaa gactgcaaat aaacagggga ctccttcgcc ttgggtgtag 900

gtacgtctga cgagatgtcc tggacctttt ggtgccacca taaccacatc taccgtagaa 960

ggaggaatta cttgtccaaa atgaatatta aatccatgag caaacaaaag aactttgcct 1020

tcttttaaat ggggttcaat ttcattttta tagacgcttt tttgtacctc atctggcagc 1080

aaaatcataa tccagtcggc ggcggcggcg gcatcggcta cacttttaac cgttaagccg 1140

gcttcagtgg ctttttgggc tgacttactc ccaggataca gccccacaat aacattaact 1200

ccgctatctt taagattaag ggcatgggca tggccttgag aaccatagcc gataatggca 1260

accgttttat tagcaagtaa gtctaaattg gcatcttcat cgtaatacat tcgagccatt 1320

aaatggaggc gctcgttgat ctgagccttg ccccctgacg aacggcggtg gatggaagat 1380

actgctctca agtgctgaag cggtagctta gctccccgtt tcgtgctgat cagtcttttt 1440

caacacgtaa aaagcggagg agttttgcaa ttttgttggt tgtaacgatc ctccgttgat 1500

tttggcctct ttctccatgg gcgggctggg cgtatttgaa gcggttctct cttctgccgt 1560

ta 1562

<210> 153
<211> 2252
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 153, Example 153: designer Nial-promoter-controlled chloroplast-targeted Dihydroxy-Acid Dehydratase DNA construct (2252 bp)

<400> 153
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtcag ataattacag aagtcgcatc attacacaag 360

gcagtcaacg tacaccaaac cgggccatgc ttcgggcggt aggttttgga gataatgact 420

ttactaagcc cattgtggga gtggctaacg gatacagcac cattacccct tgtaatatgg 480

gcatcaatga tctcgcgctg cgggccgaag ccggactcaa gcaagcggga gccatgccgc 540

aaattttcgg caccattacc gtgagtgacg gaatttctat gggaacagaa ggaatgaaat 600

actccctcgt ctcgcgcgat gtgatcgctg actctatcga aaccgcttgt aacggtcaaa 660

gtatggatgg tgtgcttgcc attggcggct gtgataaaaa tatgcccggg gccatgatcg 720

ccatcgctcg tatgaatatc cctgctatct tcgtctatgg cggtaccatt aaacccggaa 780

aatacaacgg acaagattta accgttgtca gtgcctttga agccgtagga caacatagtg 840

ccggtaaaat agatgatgct caattattag gaatagaacg gaatgcttgc cccggggcgg 900

gttcctgtgg gggaatgttt accgctaaca ccatgtcctc cgcttttgaa gtaatgggga 960

tgagcttacc ttattcttcc actatggcag cagaagatgc agaaaaagcc gacagtaccg 1020

aaaaatccgc ttttgtgctg gtagatgcca tcagaaagca aattttgccc agtcagattt 1080

taacccgtaa agcctttgag aatgcgattt ccgtgattat ggccgttggg ggatcgacca 1140

acgcggtttt acatttatta gcgatcgctc ataccatagg ggtagaactg agcatcgatg 1200

actttgaagc cattagagct agagttcccg tactttgtga cctcaaaccg agtggacgct 1260

atgtcatcgt tgatttacat caggcggggg gcattcccca agtgatgaaa atgcttctcg 1320

tccatgactt attacacggg gatgctttaa ccatcaccgg tcaaacggtt gcagaagttt 1380

taaaagacgt acccgatgaa ccccctcaag gacaagatgt cattcgtcct tggaataacc 1440

cagtgtataa agaaggacac ctagcgatct taaaaggaaa tttagccacc gagggagcag 1500

tcgctaaaat tagcggggtc aaaaatccta aaattaccgg tccggcgcga gtatttgaat 1560

ccgaggaaag ctgtctagag gcgattcttg caggtaaaat tcaagctggc gatgtgatta 1620

ttgttcgtta tgaagggccc aaaggtggcc ccggtatgag agaaatgtta gccccgactt 1680

cagccattat tggggcagga ttgggagatt ccgtaggatt aattactgat gggcgttttt 1740

ctgggggaac ttacgggcta gtcgtcggtc atgttgcccc agaagcagca gtaggcggaa 1800

atattgccct cgtacaagag ggagatagca ttaccattga tgcgaaagag cgattattac 1860

agcttaatgt agctgaagat gaattaatcc gtcgtcgcgc taactggcaa ccgcccatcc 1920

ctcgttatac caaaggtgta ttagcgaaat atgccaaatt agtctcttct agtagtatag 1980

gagcggttac cgacaaagat ttattctaat aaatggaggc gctcgttgat ctgagccttg 2040

ccccctgacg aacggcggtg gatggaagat actgctctca agtgctgaag cggtagctta 2100

gctccccgtt tcgtgctgat cagtcttttt caacacgtaa aaagcggagg agttttgcaa 2160

ttttgttggt tgtaacgatc ctccgttgat tttggcctct ttctccatgg gcgggctggg 2220

cgtatttgaa gcggttctct cttctgccgt ta 2252

<210> 154
<211> 1496
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 154, Example 154: designer Nial-promoter-controlled chloroplast-targeted 2-Methylbutyraldehyde Reductase DNA construct (1496 bp)

<400> 154
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatggcag ttccatccaa ttctactaaa actttcaagc 360

tgaacaacgg cctgtccatt ccagcagtcg gtctcggaac atggcaatcc accgatgaag 420

aggcttacaa tgccgttatt gctgcattga aagctggata cagacacatc gacacagctt 480

actgttacgg aaatgaagag ccaattggca aagctattaa ggactctgga gttgcaagaa 540

aggacatttt tattactacc aaactttggg gaactgacca caccagaact gaggaaggtt 600

tggataggtc tctgaaattg ttgggtttgg actatgttga tctgttcttg atgcattggc 660

cagttccaat gaaccctaat ggaaaccacg acaaatttcc tacattacca gacggtaaac 720

gtgacattct gtttgactgg aacttcgttg atacatacag agagatgcaa aaattagttg 780

cctctggaaa gaccaaggca atcggtgtgt ccaatttttc tatcactaac ttgaagaaat 840

tgcttgcaga cccagaaatc accatcaagc cagttgtcaa ccaagttgaa attcacgggt 900

atctgccgca gcagagactt ttggagtatg cgaaggaaaa tgatattgtt ttggaggcat 960

attcaccgtt gggatccact ggtgccccat tgctgaaaga tgagctggtg caggacctag 1020

ccaagaagaa tggtatttct gaatctactc tcttaatttc ctgggcagtg tggagaggta 1080

tcgtcgtttt accaaaatct gtaacgcctt ccagaattgc tgataatctt aagatcattg 1140

agttgtgtga ggaggatgga aaaaaactta atgaattggc ctcgattaga ggagaaaaac 1200

gattagttag ccctccttgg gatcctattg tcgtcttcaa cgatgaagac taataaatgg 1260

aggcgctcgt tgatctgagc cttgcccct gacgaacggc ggtggatgga agatactgct 1320

ctcaagtgct gaagcggtag cttagctccc cgtttcgtgc tgatcagtct ttttcaacac 1380

gtaaaaagcg gaggagtttt gcaattttgt tggttgtaac gatcctccgt tgattttggc 1440

ctctttctcc atgggcgggc tgggcgtatt tgaagcggtt ctctcttctg ccgtta 1496

<210> 155
<211> 1595
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 155, Example 155: designer Nial-promoter-controlled chloroplast-targeted 3-Methylbutanal Reductase DNA construct (1595 bp)

<400> 155
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgtcag ttttcgtttc aggtgctaac gggttcattg 360

cccaacacat tgtcgatctc ctgttgaagg aagactataa ggtcatcggt tctgccagaa 420

gtcaagaaaa ggccgagaat ttaacggagg cctttggtaa caacccaaaa ttctccatgg 480

aagttgtccc agacatatct aagctggacg catttgacca tgttttccaa aagcacggca 540

aggatatcaa gatagttcta catacggcct ctccattctg ctttgatatc actgacagtg 600

aacgcgattt attaattcct gctgtgaacg gtgttaaggg aattctccac tcaattaaaa 660

aatacgccgc tgattctgta gaacgtgtag ttctcacctc ttcttatgca gctgtgttcg 720

atatggcaaa agaaaacgat aagtctttaa catttaacga agaatcctgg aacccagcta 780

cctgggagag ttgccaaagt gacccagtta acgcctactg tggttctaag aagtttgctg 840

aaaaagcagc ttgggaattt ctagaggaga atagagactc tgtaaaattc gaattaactg 900

ccgttaaccc agtttacgtt tttggtccgc aaatgtttga caaagatgtg aaaaaacact 960

tgaacacatc ttgcgaactc gtcaacagct tgatgcattt atcaccagag gacaagatac 1020

cggaactatt tggtggatac attgatgttc gtgatgttgc aaaggctcat ttagttgcct 1080

tccaaaagag ggaaacaatt ggtcaaagac taatcgtatc ggaggccaga tttactatgc 1140

aggatgttct cgatatcctt aacgaagact tccctgttct aaaaggcaat attccagtgg 1200

ggaaaccagg ttctggtgct acccataaca cccttggtgc tactcttgat aataaaaaga 1260

gtaagaaatt gttaggtttc aagttcagga acttgaaaga gaccattgac gacactgcct 1320

cccaaatttt aaaatttgag ggcagaatat aataaatgga ggcgctcgtt gatctgagcc 1380

ttgccccctg acgaacggcg gtggatggaa gatactgctc tcaagtgctg aagcggtagc 1440

ttagctcccc gtttcgtgct gatcagtctt tttcaacacg taaaaagcgg aggagttttg 1500

caattttgtt ggttgtaacg atcctccgtt gattttggcc tctttctcca tgggcgggct 1560

gggcgtattt gaagcggttc tctcttctgc cgtta 1595

<210> 156
<211> 1739
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 156, Example 156: designer Nial-promoter-controlled chloroplast-targeted NADH-dependent Butanol Dehydrogenase DNA construct (1739 bp)

<400> 156
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgaata attttacttt ttataatcct actaaaatta 360

actttggtag aggagttgaa tcctctgttg gagaagagat taaaagctta ggagctagta 420

aagtgctttt tcattatggt ggaggaagta ttagaaaaaa tgggttatat gatagaattt 480

tagattcttt aaataaagca ggattacatg taatagaact tggaggagtt aagcctaatc 540

ctagattaag cttagttaaa aagggaatag aactttgtaa aaatagtaaa gttgatttta 600

tacttgcagt tggaggagga agtgttattg actcagctaa agccatagct cttggtgttc 660

cttatgatgg agatgtatgg gatttcttta ctaaaaatat taaaatagaa aaagctttac 720

cattaggtac agtattaaca ataccagcgg caggaagtga atcaagctca ggaactgtta 780

taactaatga agatggatgg tataagagat caacaggatc accacttcta tatcctaaat 840

tttcaatgtt aaatccagaa ctatgcttta ctttaccaga atatcaaata gcatcaggaa 900

gtgcagatat tttagcacat ttaatggaaa gatatttcac aaacacaaag aatgttgaac 960

ttatagatag attaattgag ggaacaatga aaacagtaat aaataatgtt cctaaggtat 1020

taaaaaataa ggaagactat gatagctttg cagaggttat gtgggctgga acaatagcac 1080

ataataatct tttaagcaca ggaagagaaa cagattgggc atcacataat atagaacatg 1140

aattaagtgg aatatatgat gttactcatg gtgcaggatt agctgttata ttcccagctt 1200

ggatgaagtt tgtttataag catgatttag atagattcaa ccaatttgct actagagtat 1260

ttgatgttca agttgaagat aaaactaagg aagaggttgc cttagaagga attaagaaac 1320

ttgaagaatt cttcaaatca ataaatcttc cagtaacttt aaaagagtta gaaataggtg 1380

aagatagatt agaagaaatg gctaaaaaat gcacagataa tgatgagcat acagtaggtc 1440

attttgtaga attaaacaca gaggacatcc ttgaaatata caaattagct ttatagtaaa 1500

tggaggcgct cgttgatctg agccttgccc cctgacgaac ggcggtggat ggaagatact 1560

gctctcaagt gctgaagcgg tagcttagct ccccgtttcg tgctgatcag tctttttcaa 1620

cacgtaaaaa gcggaggagt tttgcaattt tgttggttgt aacgatcctc cgttgatttt 1680

ggcctctttc tccatgggcg ggctgggcgt atttgaagcg gttctctctt ctgccgtta 1739

<210> 157
<211> 1733
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 157, Example 157: designer Nial-promoter-controlled NADPH-dependent chloroplast-targeted NADPH-dependent Butanol Dehydrogenase DNA construct (1733 bp)

<400> 157
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgatga gatttacatt accaagagat atttattatg 360

gaaaaggatc actagaacaa ctaaaaaatc ttaaaggtaa aaaggcaatg ctagtacttg 420

gtggcggttc gatgaaaaga tttggatttg tcgataaggt gttaggatac ttaaaggaag 480

ctggaataga agtaaaatta atagaaggag ttgaaccaga cccatcagtt gaaacagtgt 540

tcaagggcgc tgagttaatg agacaatttg aaccagattg gattatagct atgggtggtg 600

gatcaccaat tgatgctgca aaagcaatgt ggatttttta tgaacaccca gaaaaaactt 660

ttgatgacat taaagatccg tttacagtac cagaattaag aaataaggct aagttcctag 720

cgattccatc aacaagtggt acagcaacag aagtaacagc attttctgta attacagatt 780

ataagactga aataaaatat cctttagctg attttaatat aactccagat gtagctgtag 840

tagattcaga attagctgaa acaatgccac ctaagttaac tgcccataca ggaatggatg 900

cattaactca tgcaattgaa gcttatgtag caacattaca ttcaccattt actgatccac 960

tagctatgca agcgattgaa atgattaatg aacatttatt taaatcatat gaaggcgata 1020

aagaagctag agaacaaatg cattatgctc aatgtttagc tggaatggct ttctctaatg 1080

cactattagg aatatgtcat agtatggcgc ataaaacagg ggctgtattc catatccctc 1140

atggatgtgc gaatgcaatc tatttaccat atgtaattaa gtttaattca aaaacttcat 1200

tagaaagata tgctaaaata gcaaaacaaa tttcattagc aggaaataca aatgaggaat 1260

tagttgattc attaataaac ttagttaaag aattaaataa gaagatgcaa ataccaacaa 1320

cattaaaaga atatggtatt catgaacaag aatttaagaa taaggttgat ttgatttcag 1380

aaagagctat tggagatgct tgtactggat caaatccaag acaattaaat aaagatgaaa 1440

tgaaaaagat ttttgaatgc gtatattatg gtacagaagt tgatttttaa taaatggagg 1500

cgctcgttga tctgagcctt gccccctgac gaacggcggt ggatggaaga tactgctctc 1560

aagtgctgaa gcggtagctt agctccccgt ttcgtgctga tcagtctttt tcaacacgta 1620

aaaagcggag gagttttgca attttgttgg ttgtaacgat cctccgttga ttttggcctc 1680

tttctccatg ggcgggctgg gcgtatttga agcggttctc tcttctgccg tta 1733

<210> 158
<211> 1745
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 158, Example 158: designer Nial-promoter-controlled chloroplast-targeted 3-Ketothiolase DNA construct (1745 bp)

<400> 158
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgaccg acatcgtcat cgtcgccgca gcccgcaccg 360

ccgtgggcaa gttcggcggc tcgctggcca agatcccggc gcctgagctg ggcgctgccg 420

tgatcaaggc cctgctggaa aaaaccggcg tgggcgccga ccagatcggt gaagtcatca 480

tgggccaggt gctggccgcc ggcgcgggcc agaacccggc tcgccaggcc atgatgaagg 540

cgggcatcgc caaggaaacg ccggcgctga ccatcaacgc cgtgtgcggc tccggcctga 600

aggccgtgat gctggcggcc caagccatcg cctggggcga cagcgagatc gtcatcgccg 660

gcggccagga aaacatgtcc gccagcccgc acgtgctgca aggcagccgc gacggccagc 720

gcatgggcga ctggaagatg gtcgacacca tgatcaacga cggcctgtgg gacgtgtaca 780

acaagtacca catgggcatc acggccgaga acgtcgccaa ggcgcacgac atcacccgtg 840

agcagcagga cgccctggcc ctggccagcc agcaaaaggc caccgccgcc caggaagccg 900

gcaagttcaa ggacgagatc gttcccgtcg ccattccgca gcgcaagggc gatccggtga 960

tgttcgacac cgacgagttc atcaacaaga agaccaacgc cgaagcgctg gccggcctgc 1020

gtccggcctt cgacaaggcc ggctcggtga ccgcgggcaa cgcctccggc atcaacgacg 1080

gcgccgccgc cgtgatggtc atgtcggccg ccaaggccga gcaactgggc ctgaagccgc 1140

tggcgcgcat cgccagcttc ggcaccagcg gcctggaccc cgccaccatg ggcatgggcc 1200

cggtgccggc cacgcgcaag gcgctggagc gcgccggctg gcaagtcggc gacgtggacc 1260

tgttcgagct gaacgaagcc ttcgccgccc aagcctgcgc ggtgaacaag gagctgggcg 1320

tggacccggc caaggtcaac gtcaacggtg gcgccatcgc catcggccac cccatcggcg 1380

cctccggctg ccgcgtgctg gtgacgctgc tgcacgaaat gcagcgccgc gacgccaaga 1440

agggcgtggc cgcgctgtgc atcggtggcg gcatgggcgt gtcgctggcc gtcgagcgct 1500

gataaatgga ggcgctcgtt gatctgagcc ttgccccctg acgaacggcg gtggatggaa 1560

gatactgctc tcaagtgctg aagcggtagc ttagctcccc gtttcgtgct gatcagtctt 1620

tttcaacacg taaaaagcgg aggagttttg caattttgtt ggttgtaacg atcctccgtt 1680

gattttggcc tctttctcca tgggcgggct gggcgtattt gaagcggttc tctcttctgc 1740

cgtta 1745

<210> 159
<211> 1439
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 159, Example 159: designer Nial-promoter-controlled chloroplast-targeted 3-Hydroxyacyl-CoA dehydrogenase DNA construct (1439 bp)

<400> 159
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatggaga ttcggaagat cggcgtgatc ggcgcagggc 360

agatggggtc gggcatcgcc caggtggcgg cccagtcggg ttacgaggtc gtgctaatgg 420

acgtcgagga gctgagcctc aagaaggggc tcgaggccat ccgaaggtcg ctcgaccgct 480

tcctgcgcaa ggagaagatc acccaggagg aggccgaaaa ggccctggcc cgcatcaaga 540

cgacgctcaa ccccgccgac ttcgcggact gcgacctggt cgtcgaggcc atcgtggaga 600

acgagtcggt caagggtaag ctcttccaga cgctcgacaa ggtggtgaag cctgaggccg 660

tcttcgcttc caacacctcc tcgattccca tcaccaagct ggccagctac acctcccgcc 720

ccgagcgttt catcggcatg cacttcatga acccggtgcc gctgatgaag ctcgtcgagg 780

tcatccgcgg ctacaagacc tcggacgagg tcacccgggt ggtcatggcg acggccgaga 840

agatgggcaa ggtgccggtc gaggtcaacg actaccccgg cttcgtctcc aaccgcgtgc 900

tcatccccat gctcaacgag gccatccaag cggtcatgga gggcgtggcc acccccgagg 960

ccatcgacac cgtgatgaag ctgggcatga accaccccat gggcccgctg acgctcgccg 1020

acttcatcgg cctcgacacc gtgctggcca tcatggaggt gctgcacgag ggctttggcg 1080

acagcaagta ccgcccctcg ccgctgctca agaagatggt ccaggcgggt ctgctgggcc 1140

gcaagagcgg gcaggggttc tacaagtacg acgagaaggg gaacaagatc ggctagtaaa 1200

tggaggcgct cgttgatctg agccttgccc cctgacgaac ggcggtggat ggaagatact 1260

gctctcaagt gctgaagcgg tagcttagct ccccgtttcg tgctgatcag tctttttcaa 1320

cacgtaaaaa gcggaggagt tttgcaattt tgttggttgt aacgatcctc cgttgatttt 1380

ggcctctttc tccatgggcg ggctgggcgt atttgaagcg gttctctctt ctgccgtta 1439

<210> 160
<211> 1337
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 160, Example 160: designer Nial-promoter-controlled chloroplast-targeted Enoyl-CoA Dehydratase DNA construct (1337 bp)

<400> 160
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgacgg ttcgactgga atacgatggc gggttcgcgc 360

acctgacgct cagccgcccg caggtcctga atgcgctcag tttcgagctg ctcgccgagt 420

tgagccgggc gcttgccggc gtcgccgaat ccgatgcgcg cgccctgatc gtcacgggcg 480

agggcgacaa ggcgttctgc gccggcgcgg acattcccga gctgatgaat cggccgctca 540

tgcaagagct cgaaggggcc gcgaaaggcc aggcggtgtt cagccggatc gccgagctga 600

agattccgtc tgtcgccgtc atccagggtt atgccttcgg cggcgggctg gagcttgccc 660

tggcatgcac attccgcgtt gccactgatc gcgcccgcat ggggctgccc gaggtcaagc 720

tcggcctgat cccgggttat ggcggaacgc agcgtctgcc gaggctgatc ggcgaggggc 780

gcgcactcga cctgatcatg tccggccgca cgatagacgg cggggaagcc gagcgaatcg 840

gcctggtcaa tcgcatagac aacgagggga cgcccctgga gatcggcaag cggtttctgg 900

agccttatct caagcacagt ctctgcgcct tgtattttgc ccgcgaggcc gtgcagaggg 960

gaggcggtgt cgccattgcg gatggcctgc gcatcgagcg ggatctttcc acgctggctt 1020

accggagcca ggatgcggcc gaggggctgc gcgcttttgt ggaaaaacgg cccgcgtctt 1080

tcaaggactg ctgataaatg gaggcgctcg ttgatctgag ccttgccccc tgacgaacgg 1140

cggtggatgg aagatactgc tctcaagtgc tgaagcggta gcttagctcc ccgtttcgtg 1200

ctgatcagtc tttttcaaca cgtaaaaagc ggaggagttt tgcaattttg ttggttgtaa 1260

cgatcctccg ttgattttgg cctctttctc catgggcggg ctgggcgtat ttgaagcggt 1320

tctctcttct gccgtta 1337

<210> 161
<211> 1736
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 161, Example 161: designer Nial-promoter-controlled chloroplast-targeted 2-Enoyl-CoA Reductase DNA construct (1736 bp)

<400> 161
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatggccg gcgcgcagca ggatcttgcc gctgcgtccg 360

ggcttgtcgc tggccgcggc ggccttggcg gcatcgtgca ggtcgaacac cgcttccacc 420

ggcagcgcca ggctgccatc gagcgcggcg gtgagcagtt cgccgatcat gcggcgcttg 480

tcctcggcct tggtggcctg catcaccttg ctgccccaga agccacgcac ggtggcctgc 540

ttgaagatca catcgccgct ggatatctgc agcggctcgc cggtcatcga gccaaaggaa 600

atcagctcgc cgccttcggc cagcaaggcc atcagctcac ccgctgcatt gccggccacc 660

gaatcgatgg cgcgcacgat gggcgcatcg ccggccagcg cgcgcacctt gtcctgccag 720

cctgcttgcg cagtggagat tgcgttgccg atgcccagcg ctttcagctc gtccacgccg 780

gcgtcgcggc gcaccaggtt gatcacgttg atgccgcgtg cggcggcgag catcgccacc 840

gtcttgccga ccgcaccgtt ggcggtgttc tgcacgatcc agtcgccctg tttcacctgc 900

aggaattcga tcagcatcag cgcgctcagc ggcatggcga tcaactggca accacgctcg 960

tcgtccaggc catccggcaa cggcaccacg ccggaggcgt cggcaaggaa gtactcggcc 1020

caggcctcat gcacaccggc ggcgaccacg cgctggccaa cctgcaagcc ctcgacaccc 1080

tcacccagcg catcgatgac acccgccgct tcgctgccgc cgatggctgg cagttccggc 1140

ttgtagccgt aattgccgcg cacggtccac aggtcatggt tatggatcgg cgcgcgccgc 1200

atcgcaacgc gcacctggcc cttgcctggc tgcggcgtgg ggcgctcgcc cagttcgagc 1260

accttggccg gatcgccgaa ttgggtatgg atggctgcgc gcatggaggt ctcctgccgg 1320

gcacgctctt gctgcgacgc gcccgatcgt tgtgaaaggt ggcgcgatgc tatcggcagg 1380

gctgcaagga agggatgaag cgaacggaac tgctgtgtga agttgttggc gtgcgcgcgt 1440

agtgacgatg ctctgctgca gcgccggagg actgcgtgca ggccgaccct cattaaatgg 1500

aggcgctcgt tgatctgagc cttgcccccc gacgaacggc ggtggatgga agatactgct 1560

ctcaagtgct gaagcggtag cttagctccc cgtttcgtgc tgatcagtct ttttcaacac 1620

gtaaaaagcg gaggagtttt gcaatttttgt tggttgtaac gatcctccgt tgattttggc 1680

ctctttctcc atgggcgggc tgggcgtatt tgaagcggtt ctctcttctg ccgtta 1736

<210> 162
<211> 2036
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 162, Example 162: designer Nial-promoter-controlled chloroplast-targeted Acyl-CoA Reductase DNA construct (2036 bp)

<400> 162

agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatggatg acgataatgt tgtaaaaccc atttactatg 360

gtaaaataga ggttcaaaat aatggcacgg gagtatggga gcctaccgtt gagtggttga 420

atgagttttt aaaccggagt atggaactat cacagagtct tttacaacta ggctttagta 480

gaagggttag agtgttgagc gagatgggga agatttggag ggagaagctt tcgttagtcg 540

aggagaaact agctcctaat atttctaaga atacaggcta cagcgtggag aatgtgaaaa 600

tggacttaag actggttgaa gaagtgttta atgagaccaa tattgttgag ctcttcgata 660

aaggcttaat cgggggatgg cgtagtcttg acaagcccgt tgaaatcatt gatggggagt 720

tcgtgtggaa tagaccgcta ggcgtatccc ttataatatc ctccggaaac accgtcatac 780

cagctattct cccagcagtg gtttctttag catcggggaa cgtaactata ctaaggccgt 840

ctttcagcaa ctaccaagca gtagtcgaaa tttttaaaac acttttcgat ctagcagaca 900

gctccgtaga aggtgctaga gaaatggctt cggctcttct ggtcgcatac tttaaacatg 960

agagcaaggt atttgaacac ctattagcat cagcacctct cggcatcgtc aattactggg 1020

gcggggagcc aggtagaagc gtgatcgcta gtagggtttt gaagaatccg tttcatccta 1080

agttaatcgt caatggacct ctaacggggt tagcgataat agatgaagag tcagcgtcgg 1140

aaaaagtagc ctacggatta gcgagggatg tggtactgta tgatcaacag ttatgtagct 1200

ctcccactta cgccatattc ataggttcga aagatagcgc gttgaagttt gcacagagac 1260

taggggaagc cctgaataat gtggggagaa ggttcccccg tgatttgaag gaaggagaac 1320

tgtacaattt aatactgctt aggaaaaacc ttgagatcca aggtgtgaga gttttctact 1380

cggaaaaccc cggaaatgct tggacgattg cggtgaaaac actagagtca gtcactaatt 1440

ttgcatatag tttaaaatat ccacatacaa tccctaggag acggttcatt gaaataatag 1500

tgttgaaaga cgccaaagaa ctcaaggaga cgatcttaca cctaattgaa gacttgagga 1560

gaaacggggt tgataagttc cagacagcat cgataaaggt ttctgaaaga aaccttaacc 1620

acttattgaa ggttctctat attcttggga tttacagggt tgtcccaata ggggaatcct 1680

tttttagaac gccgttagaa ccgtacgatg gtgaattctt acctaaatac ttcacttaca 1740

cgatgtatct tagatttatc gagaagtcgg atgcgctaaa acaccctgaa tgataaatgg 1800

aggcgctcgt tgatctgagc cttgcccccc gacgaacggc ggtggatgga agatactgct 1860

ctcaagtgct gaagcggtag cttagctccc cgtttcgtgc tgatcagtct ttttcaacac 1920

gtaaaaagcg gaggagtttt gcaattttgt tggttgtaac gatcctccgt tgattttggc 1980

ctctttctcc atgggcgggc tgggcgtatt tgaagcggtt ctctcttctg ccgtta 2036

<210> 163
<211> 1625
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 163, Example 163: designer Nial-promoter-controlled chloroplast-targeted Hexanol Dehydronase DNA construct (1625 bp)

<400> 163
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatggaac tcgacctcga cggtcccggg gttggtgaag 360

tgctgatcaa gtacaccgcc gcggggttgt gccattcgga cctgcacttg accgacgggg 420

acctaccgcc gcgctatcca atcgtcgggg ggcacgaggg gtcaggcatc atcgaggacg 480

tcggacctgg ggtcaccaag gtcaaaccag gcgatcacgt tgtttgcagc ttcatcccga 540

actgcggaac ctgtcggtac tgcgccaccg gacgctccaa cctctgcgat atgggcgcca 600

ccatcctcga agggtgcatg cccgacggca gttaccggtt ccacagtaac ggcctggatt 660

tcggtgcgat gtgcatgctc ggcacattct ccgaacgcgc aactatctcc cagcattcgg 720

tggtcaagat cgacgactgg ctgccgctcg agaccgcggt ggtcgtcggc tgcggcgtgc 780

cgactggctg gggcacctcc gtctatgccg gcggggttcg ttgcggtgac accaccgtca 840

tctatggcgt cggcggcctg ggagtcaacg ccgtccaagg cgcggtgagt gcgggcgcga 900

agtacatcgt ggtcgtcgat ccggttgcgt tcaaacgcga caccgcgctc aagttcggcg 960

ccacccacgc gttcgccgac gccgccaccg ccgcggccaa ggtcgacgaa ctgacctggg 1020

gacagggtgc cgatcaggcg ctgatcctgg tcggcaccgt cgacgaggac gtggtctcgg 1080

cggcgactgc ggtgatcggt aagggaggca ccgtcgtgat caccggactg gcggacccag 1140

caaagctcac ggtgcacgtt tcgggaacgg acctgacgct taacgagaag acaatcaagg 1200

gcacgttgtt cggctcgtcc aatccgcaat acgacatcgt acggctgctc cgtctctacg 1260

acgccggcca gctaaaactc gacgatctga tcaccacccg atacacgctc gaccaggtca 1320

accagggcta ccaggatctg cgagacggca agaacatccg cggcgtgatc atccacgcct 1380

gataaatgga ggcgctcgtt gatctgagcc ttgccccctg acgaacggcg gtggatggaa 1440

gatactgctc tcaagtgctg aagcggtagc ttagctcccc gtttcgtgct gatcagtctt 1500

tttcaacacg taaaaagcgg aggagttttg caattttgtt ggttgtaacg atcctccgtt 1560

gattttggcc tctttctcca tgggcgggct gggcgtattt gaagcggttc tctcttctgc 1620

cgtta 1625

<210> 164
<211> 1249
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 164, Example 164: designer Nial-promoter-controlled chloroplast-targeted Octanol Dehydrogenase DNA construct (1249 bp)

<400> 164
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgttgg gaggccaaga agccgctggt gattgaggac 360

attgaggtgg cgccacctca ggcttggcag gttcgcatca agattacagc cactggcgtt 420

tgccacacgg attcttttc gttgagcggc tctgatcctg agggtctctt tcccgtggtc 480

cttggccatg agggcgccgg catcgtggag agcgttggcg agggcgtaac caactttaag 540

gccggcgatc atgtcattgc cctctacata ccccagtgca atgagtgcaa attctgcaag 600

agcggcaaga caaatctctg ccagaagatt cgcctcaccc agggcgctgg tgtcatgccc 660

aatggatcct cccgcttgtc gtgcaagggt cagcagctgt tccatttcat gggcacctca 720

actttcgccg agtacgcggt ggtggccgac atatcggtga ccaaaatcaa cgagtcggct 780

ccattggaga aggtgtgcct tctgggctgt ggcatttcca cgggctatgg tgccgccttg 840

aacaccttta ggtggaacct ggcagcactt gcgccgtctg gggtctgggt gctgttggac 900

tggcagtggg tctgggctgc aagaaggctg gcgccgccaa ggtctacggc atcgacatca 960

atccctccaa attcgagctg gccaggaagt tcggcttcac cgactttaaa tggaggcgct 1020

cgttgatctg agccttgccc cctgacgaac ggcggtggat ggaagatact gctctcaagt 1080

gctgaagcgg tagcttagct ccccgtttcg tgctgatcag tctttttcaa cacgtaaaaa 1140

gcggaggagt tttgcaattt tgttggttgt aacgatcctc cgttgatttt ggcctctttc 1200

tccatgggcg ggctgggcgt atttgaagcg gttctctctt ctgccgtta 1249

<210> 165
<211> 1769
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- Sequence No. 165, Example 165: designer Nial-promoter-controlled chloroplast-targeted Short Chain Alcohol Dehydrogenase DNA construct (1769 bp)

<400> 165
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgatca tcaaaccgcg cgtgcgtggc ttcatctgcg 360

tgaccactca tccggtcggc tgcgaggcca acgtcaagga acagatcgac tacgtgactt 420

cgcacggccc gatcgccaac ggcccgaaga aggtgctcgt gatcggcgcg tcgaccggct 480

acggcctcgc ggcccggatc tcggccgcct tcggctcggg cgcggacacg cttggcgtgt 540

tcttcgagcg cgccggcagc gacaccaagc cgggcaccgc cggctggtac aacagcgccg 600

cgttcgagaa attcgccgcc gaaaaggggc tctatgcgcg cagcatcaac ggcgacgcgt 660

tctccgacaa ggtcaagcag atcacgatcg acacgatcaa gcaggacctc ggcaaggtcg 720

atctggtcgt ctacagcctg gccgcgccgc gccgcacgca tccgaagacg ggcgagacga 780

tcagctcgac gctgaagccg gtcggcaagt cggtgacgtt ccgcggcctc gacaccgaca 840

aggaaacgat ccgcgaggtg acgctcgagc cggcgacgca ggaagagatc gacggcaccg 900

tcgccgtgat gggcggcgag gactggcaga tgtggatcga cgcgctcgcc gacgccggcg 960

tgctggccga cggcgcgaag accaccgcgt tcacgtatct cggcgagcag atcacgcacg 1020

acatctactg gaacggctcg atcggtgagg cgaagaagga tctcgacaag aaggtcgtgt 1080

cgatccgcga gaagctcgcc gtgcatggcg gcgacgcgcg cgtgtcggtg ctgaaggccg 1140

tcgtcacgca ggcgagctcg gcgatcccga tgatgccgct gtacctgtcg ctgctgttca 1200

aggtgatgaa ggaaaagggc acgcacgaag gctgcatcga gcaggtgtac gggctgctga 1260

aggacagcat gtacggcgcg acgccgcaca tcgacgaaga aggccggctg cgcgcggact 1320

acaaggaact cgatccgcag gtgcaggcgc aggtcgtcgc gatgtgggac aaggtcacga 1380

acgacaacct gtacgagatg accgacttcg ccggttacaa gaccgagttc ctgcgtctgt 1440

tcggcttcga gatcgccggc gtcgactacg acgcggacgt gaacccggac gtgaagatcc 1500

ccggcatcat cgacacgacg gcctgataaa tggaggcgct cgttgatctg agccttgccc 1560

cctgacgaac ggcggtggat ggaagatact gctctcaagt gctgaagcgg tagcttagct 1620

ccccgtttcg tgctgatcag tctttttcaa cacgtaaaaa gcggaggagt tttgcaattt 1680

tgttggttgt aacgatcctc cgttgatttt ggcctctttc tccatgggcg ggctgggcgt 1740

atttgaagcg gttctctctt ctgccgtta 1769

<210> 166

<211> 6110
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 166, example 166: a designer hox-promoter-controlled Formylmethanofuran dehydrogenase (Fmd) DNA construct (6110 bp)

<400> 166
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatgagcgt ctataaaaat gtgacatgtc ccgtctgcgg agggtcttgt 240

gatgacatag aggttctcta tgatgggaaa acaataaaaa caaggaatgc ttgcaggatg 300

gggaatgcaa agtttcagga gatggtcagc tcccacagaa tacttagacc ccagattaaa 360

actgaaagtg gtttcagatc cgcagaatgg gatgaagccc ttgacgctgc agcagagata 420

cttacagagt caaaaagacc aaccctattc atgggtagtg agatgtcaac tgaagccatg 480

gctgcaggtc ttgaacttgg tgagtatcta aatgccatgg tggattcaaa tgcaaccata 540

tgtcatggcc ccacattaat gggaatccag gaagctggac agagcgctgc tacggcaggt 600

gagataaaga atagagctga cgtcatcatt tattggggta caaatgttat ggactccatg 660

cctcgccaca tgtcacgtta cagcatattc atgcgcggat ttttcagaga acgtggtaaa 720

aaagatagaa ctgtcatctc cgtggatccc cgtgaaacag caacaactaa agcctccgat 780

atccatctgc agctgaaacc aaactcagat tatgaacttt tttcagcact gcttacagtt 840

ataaggggca atgaaccgca caggagtatt gagagtataa cagggatatc agttgaaacc 900

ataaaggaag tcgcagacat aatgctgaat gcgcagtttg gagccatcta tggaggtctt 960

ggacttgcat catcagaagg taagcataga aacgttgaga tggttctcaa actggtagct 1020

gcacttaatg aacacaccaa atttacaata ggagccataa gaggtcattg taatgttgca 1080

ggatttaatc aggtggcttc atgggagtat ggtttcccct ttggtgttga ttttacaagg 1140

ggttatccac gctacaaccc cggagaaaca actatagtcg atcttctcca gagaaaagaa 1200

tccgatgcgg tcctcgttat atgttcagat cttggagctc acctccccaa agaatgcgtt 1260

gagtatatga aagagattcc tgtaatatgc atagatattg ccccatgtcc aacaacactt 1320

gtatctgatg ttgtgatccc tggagttatt gatgctatgg agtccagcgg caccttctac 1380

cgctttgaca atgttcccat ccaccataag gcattcacaa catcaccatt ccctgaaaca 1440

gagagcaacg aacatactct tagacagatc cttgagaggg ttaaatcaat taaaggcgaa 1500

taaatgggat ttgtgttggt accaaaatca gatttccaga tacctctgga agcagatacc 1560

ataagacccg atctgtttga agggctggat cttgatgaaa ttcgttccct tcaagtatac 1620

gaagggaaca tcaaaagacc cctaggcgaa ttttttgaga tagcagagac atcccatgaa 1680

gatcagttaa tacggatcga tggggatgtc agcagggtga agtatatcgg ttcagggatg 1740

aaatccggaa aaatcatcat aaacggcgat gtcggactcc agcttggctg tgaaatgaaa 1800

ggcggtgaaa tagaggtaaa tggaaatgtt tcttcatgga tcggcatgga aatgcatggt 1860

ggcaccataa aaattaatgg aaacgcgggg gattatgttg gctgcgcata taggggagag 1920

tggcgtggca tgaaaggagg taaaatcatt atacagggta atgcagggaa caatattggg 1980

ggtggtatga tggccggaga aatttatata ggtggagatg caggtaattt ctgcggcatc 2040

cgaatgaatg ggggtgaaat aacagtacgc ggggatgctg gaagggcccc cggagcagag 2100

atggtatcag gtatcatcaa aattcatgga cggatctcct ctctcctccc gggattcaag 2160

gagatctcaa cattcaaaga agatggatcc cttatgatcc tattcaaagg agatctatcc 2220

gaaaaaaatc cggagggtaa tctatacatc aattataata agaaccttca cattctagag 2280

aatgagaccg atgaagggag agtcatcaca aaaaagggaa ttaaagtaat ctacaacagt 2340

ggaagtacga tccgtgaagg gcagataata aagggaggca ataaactcac agatgattat 2400

atagatgaat gtgcacgctg ctgtattagt cctgaagact ataagctcct aggtgaaccc 2460

gaaaatgttg tcgtatcatc acatggaaat gaagttgttc tgagagctgt tgaggaccct 2520

ggaatccaga tgggaacaat attcataccc agaggtatat gggccaatgt gctaacgcca 2580

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gcttcacaag gtgaaaggat cctgagtgcc gaggaacttg tagaggaata cggggtggga 2700

aaatgagtgg ggcaggtcag agaatacctt gatttaataa aaaatttcag tgggttcgca 2760

agcccgggca gtgtcatagg agctcatatg ttactaatag ccaggaaggt ccttgatttt 2820

gaagtcgatg aagaaattta tgttacatgt gaaacgacaa actgtttacc cgacgcattc 2880

caggccatat gcaaatcaac aataggaaat gggagactga atatcctgga cactggaaaa 2940

atggctgtca tcatcaacag aaagggtatg cctggagaaa cagtccaggc tcttagaata 3000

atactggatc ctgaaaagac cgtcaattac ccgatcatac atgaatggta catgaacacc 3060

cgcaaggtat ccgcagaaga agtgaatcca gaactcataa gagccggtga aaatctatat 3120

tcctggtatt ttgttgatgt gatcgttcca gaaaaagaaa agaagataat tgaaatctgt 3180

aatctttgca acgaaccttt cataaaaaga aatgagctgg atctctgtcc agcttgtctg 3240

aaaagataaa tggaatatat tttaaaaaat ggtattgtat ttgatccagc aaataatatt 3300

gatggagaaa aaaaggacat actaataaaa gatggataca tagttagtga agtatcaaag 3360

gatgcaaaga ttatagatgt tacaaataaa ttagtaatgc ctggaggagt agatttacac 3420

tcacacatag caggaccaaa actatcagtg ggaagattat atcgtccaga agatacaaga 3480

cgtggaataa aacctgcacc atgtggtgct attgagggat ttgaagcagg attttccata 3540

ccaacatgtc caacaactgg gtacaggtat actcgtatgg gatatacaac agtaacagaa 3600

gcagcagtac cacccttaga ggcaaaacat gcacatgaag aaataaacag tattccaaac 3660

cttgatatac caacattaac actctttggt aataactggt tcatgcttaa atatgttaag 3720

gaaaataact tagaaaaact agctttattc atatcaaaat ggttgaaact agcaaagggt 3780

tatggaatta aaatagtaaa tccatgtgga agtgaagcat ggggttgggg aaaaaatgta 3840

gatggacttg atgatccaga accacactgg ggtgtaacag gacgtcaagt aatacaggct 3900

ctaactaaag taaatgaaaa attaggttta ccccattctg tgcatgttca tacaaatgac 3960

cttggacatc ctggaaacta tgaaacaaca cttgaaacat ttgattgtgt aaaggatatt 4020

aagaaaaata agaatgtaac aagagatcaa gtgttacatg caacacacgt acagttccat 4080

gcatataagg gaacatcatg gagggatgtt acatcaggtg caccagaatt gattgattat 4140

ataaataagt caaaacatat gacttgtgat attggacaga taaccttcga tgaaacaaca 4200

acaatgactg cagatgcacc aatggagtat gatttataca gactaacagg acttaaatgg 4260

gcaaataagg atatagaggt tgaaacttca tctggactta ttccatcaat atattctaaa 4320

cgagcaccag taagtgtact tcaatgggct attgggcttg aattcttcct tggaataaaa 4380

gatccatgga aattggcatt aacaactgat tcaccaaatg gtggtccatt tatcagatat 4440

ccacgtgtaa tttcatggat aatgagtaat gaaaaactaa atgatatgct tgataatcaa 4500

gtacatagtt gggcaacaag aagaacatca cttggaagtt atgataggga atattcctgg 4560

aatgaaatag caacaattac aagggcaagt ccagcaaaaa tacttggatt aacagataga 4620

ggacatcttg gtgtaggtgc aaaggctgat gtttcagtat atgatataga tgtctatgac 4680

tttgatacaa cacttcttaa aaattcacaa acacttgaaa acaagttatt aaacagttta 4740

tacactataa aagatggtat gatcatggtt gatcatggaa aaattgttaa attagtagat 4800

agtaaacata tatggactaa tgtttgtggc ttagaaaaag aagaggctaa tcttgtagat 4860

gaaataacac cagaatttaa taagtattat actataaaat atgaaaatta tggtgttcca 4920

gatcattata taaaacctga tacttgtgta gatatagaat atgaggatta gatggatgaa 4980

atggatatta tcataaatac aggtacgagt attatccaag cattttatga aaagaaaggt 5040

tctacattaa aggatgaata cagacaatct acagctgtag cttttatgga tccaagggat 5100

atgaaaaaat tatctctaaa accacgtgat aaaataaatg taacatctaa atggggaagt 5160

gtaacaatat atgcagataa atcccatgat gcaccacatg aaggtatgat attcatacca 5220

aggggaccat gggccaatat agtaataagt ccagaaacat attgctgtaa tattccaaca 5280

tataagggag taaaagcagt aattaaaaaa acagacgatg aagtattact cgtagcaaat 5340

ctaatgcata aaacatacaa taaatataaa tataacacaa aaactcttgg acaaaagcca 5400

gtatataaaa aaatagggga gtaaatgtta tgtgttaatc aagatcattg tttagggtgt 5460

ggagcatgtg ttatagtatg tcctgttaat caagaaatct atccagaggt tattggaggt 5520

aatgggccag atacaacaga tgtggtaatg ttagttgaaa atggagtaat aaaactattc 5580

catccagaaa aatgtgtaac atgtatgaaa tgtaatgata catgtccaac aaaggcaata 5640

tatcataagg gagactaatg aagtaagtag gaagcaggga gcaggggaaa gaaaattgac 5700

aactgtacaa gattaatcgc gtctctgagc aatgaccaaa tacatctacc tccacggttt 5760

tcttccagcc ccctatctgc gaaagcacaa gatattagca agcgtttcgc ccaaattcac 5820

atacagctaa caatccctga tctcaatgct ggtgaatttt ctcagttaac aatcacgcgc 5880

caaattcaac aagttgccgc aattttccct gataattctg aaccaataac gctgataggt 5940

tctagtttag gcggtttaac tgctgcttat ctaggacagc gatatttaca agtacaacgc 6000

ttagttttat tagcgccagt ttggtttttt atcccattgg ttgcccaaaa tgggtgaaga 6060

agctgtcaca agttggcaac aaacgatata ggttctctct tctgccgtta 6110

<210> 167
<211> 1538
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 167, example 167: a designer hox-promoter-controlled Formyl transferase DNA construct (1538 bp)

<400> 167

agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttagaaga ggtcatggag tttgatctgg tatgctccaa ggttgccgcc 240

gtagttccct gcacttatct taattatgcc tggaacggta catgcggcct ttataccttc 300

cttcattgcc tcccttacaa cctcttcgtt gacaccgtct ataactatct catatacccc 360

gttgacgttt tcaggtatct cgctgccctc aacctcatcc ttgagtgtca cgcacatctt 420

ctcattggtt gaggcgttga ggaacttgta cttgtttgat ccaacctttg aacctgaagc 480

caccacacca ccggggaatg gtgttaccgt gccttcaact gcggctattg catccactgc 540

agcctgggcc gcaaggaggg ctgatgcctg actgtcaccc atgatgaaga agtttccgcc 600

tgcaaccccg tcctttattc caaattcgct ttcaatgagg aagtcgcctg acattatcgg 660

gattgagtgg attttccttc catcaatttc aagttccttc tcgtagccat ccccgaagaa 720

cttgagtttg aatcccacat tgagcttctc gtcctcgtca tcgagagcat cgaatactgc 780

ggttgttggt gctgtaagta tacccatccc tatcctttca aggagttcat ggtccaggtt 840

cttctttgat gggttgcaga tcattattat gtatccgggc cttccatcgg gtgtctcctc 900

tggtggaacg tagcagtcta tacctgcctc tgcagggcac cctataacag atgtaccgta 960

acctgttgcc tcggttgcag ctatctttgc aagtttttg gttgctgcag ttacaaggac 1020

ccttgaaacc ttgataccga aggcctccgc aaatgtatcc tctatttcaa caccatttat 1080

ctccattgaa gtaagtagga agcagggagc aggggaaaga aaattgacaa ctgtacaaga 1140

ttaatcgcgt ctctgagcaa tgaccaaata catctacctc cacggttttc ttccagcccc 1200

ctatctgcga aagcacaaga tattagcaag cgtttcgccc aaattcacat acagctaaca 1260

atccctgatc tcaatgctgg tgaattttct cagttaacaa tcacgcgcca aattcaacaa 1320

gttgccgcaa ttttccctga taattctgaa ccaataacgc tgataggttc tagtttaggc 1380

ggtttaactg ctgcttatct aggacagcga tatttacaag tacaacgctt agttttatta 1440

gcgccagttt ggttttttat cccattggtt gcccaaaatg ggtgaagaag ctgtcacaag 1500

ttggcaacaa acgatatagg ttctctcttc tgccgtta 1538

<210> 168
<211> 1631
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 168, example 168: a designer hox-promoter-controlled 5,10-Methenyl-tetrahydromethanopterin (H4 methanopterin) cyclohydrolase DNA construct (1631 bp)

<400> 168
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatgagtga aagtatgaac atagcagcaa agaaaattgc tgataaaatg 240

gttcaagatg cagaaaaatt aaaagtaatt ccatcaacat tatccaatgg aacatctatt 300

atagattgtg gtgttaatgc taagggaagt attaaaggtg gggaattatt tacaaaagta 360

tgtcttggtg gaatttgtga tgttggaatt tcaatacctg gtgacttaag tgatataatg 420

gctatgcctg ctgttaaggt taaaactgat tttccagcat taaccactct tggttctcag 480

aaagcaggat ggaaaataga tgttaatgga tattatgcta taggttctgg acctgctcag 540

acacataaat ttaaagataa taacatttat aaaataacta actatattga agattcagat 600

attgcagtta ttactcttga agcagataaa ttacctgatg aagatattgc taattatatt 660

gcagatgagt gtggtgtaaa accagaaaat ttaaccatac ttgttgcacc tacatcttct 720

cttgttggat ctattcaaat atctggtaga gctcttgaaa ctggaatata caaaatgtat 780

gaaataatga acttcgatgt tactaaaatt acatatgctg caggtattac ccctattaca 840

ccagttgatc ctgatagtct taaagctatg ggtaaaacta atgatgctat catgtttggt 900

ggaagagcat attattatat tgaacctgat gaaggtgaag atttagaaga attagctgct 960

aatttaccat catctgcttc tgataattat ggtcaaagct ttattgaatt atttaaagaa 1020

gcaaatcagg atttctataa aatgcctaag gatatttttg caccagcaca agttattgtt 1080

aatgatatga taactggtca aatgttccac acaggattta tagatcttaa acgtctaaaa 1140

aaatcttttg aagttaaaga aataatttat gaaaaataat gaagtaagta ggaagcaggg 1200

agcaggggaa agaaaattga caactgtaca agattaatcg cgtctctgag caatgaccaa 1260

atacatctac ctccacggtt ttcttccagc cccctatctg cgaaagcaca agatattagc 1320

aagcgtttcg cccaaattca catacagcta acaatccctg atctcaatgc tggtgaattt 1380

tctcagttaa caatcacgcg ccaaattcaa caagttgccg caattttccc tgataattct 1440

gaaccaataa cgctgatagg ttctagttta ggcggtttaa ctgctgctta tctaggacag 1500

cgatatttac aagtacaacg cttagtttta ttagcgccag tttggttttt tatcccattg 1560

gttgcccaaa atgggtgaag aagctgtcac aagttggcaa caaacgatat aggttctctc 1620

ttctgccgtt a 1631

<210> 169
<211> 1475
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 169, example 169, a designer hox-promoter-controlled 5,10-Methylene-H4-methanopterin dehydrogenase DNA construct (1475 bp)

<400> 169
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tccccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatggttgt aaaaattggt ataataaaat gtggtaacat cgggacctca 240

cctgtgctgg acctgttact tgatgagagg gcagacaggc caaacataga tgtctgtgtc 300

gtgggttcag gtgcaaaaat gaaccccgat gaaatcgaaa gggcagtacc aaccatgctt 360

gaaatggaga gggactttgt tatattcata agcccaaacc ccggtgcacc tggccctgca 420

aaggcaaggg agctcctttc agcggctgat gttccagcca tgatcatagg tgacgcacca 480

ggcctcaggg tcaaggatga aatcgaggag cagggacttg gatacataat agtaaaggcc 540

gacccgatga taggggcaag aagggagttc ctggacccaa cagagatggc atccttcaac 600

tccgacgtta taaaggtcct tgcattcaca ggcgcataca gggttgtgca gaacacaatc 660

gatgcaatga ttgcagatgt tgaagccgga aaggcacctg aacttcctca ggtggtaata 720

gacacagata aggcggttga ggcagcaggc tacaccaacc catatgcaaa ggccaaggcc 780

atggctgcat atgagatagc aaccaaggtg gctgacatag acgtcagggg ctgcttcatg 840

gtacaggacc ctgaccagta cataccaatc gttgcctcag cacacgaaat gctatctgca 900

gctgccaaac ttgcaattga agcaagggaa atcgaaaagg ccaacgacac cgtgctgaga 960

acaccacacg gtaaggaagg caaaacactt agcaagaagg atcttctggc caagccagaa 1020

tagtgaagta agtaggaagc agggagcagg ggaaagaaaa ttgacaactg tacaagatta 1080

atcgcgtctc tgagcaatga ccaaatacat ctacctccac ggttttcttc cagccccta 1140

tctgcgaaag cacaagatat tagcaagcgt ttcgcccaaa ttcacataca gctaacaatc 1200

cctgatctca atgctggtga attttctcag ttaacaatca cgcgccaaat tcaacaagtt 1260

gccgcaattt tccctgataa ttctgaacca ataacgctga taggttctag tttaggcggt 1320

ttaactgctg cttatctagg acagcgatat ttacaagtac aacgcttagt tttattagcg 1380

ccagtttggt tttttatccc attggttgcc caaaatgggt gaagaagctg tcacaagttg 1440

gcaacaaacg atataggttc tctcttctgc cgtta 1475

<210> 170
<211> 2594
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 170, example 170: a designer hox-promoter-controlled methylenetetrahydrofolate reductase and/or methylene-H4-methanopterin reductase DNA construct (2594 bp)

<400> 170
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgctactcta ccttgggacg gggatacagg ccggcttcct tgacgatggt 240

ggggatgata tcttcccaca tgacggccat gatatggacg ccggctacac cctcgatgga 300

ctgcaggtgt ttaatctgtt ccacacagat ggccacccct tcggccttgg ggtcggaggc 360

ttttccatg cggttgacga tttcgtcggg gacaatcatc ccggccaccg attgttgcat 420

atatttggcg gcccgggcgg atttcagggg catgacgccg gcaataattt tggctctttt 480

atgcaggccg cgctcccgga ccagggccat aaagcgttca aaacgctcca tatcaaaaat 540

gcactgggtt tgaataaagt cggcgccggc attgatcttc ttctccaggc gcatgacccg 600

gaactcaaag gggtcggcaa aggggttggc ggcggcgccg atgaagaagc ggggttcctg 660

gcccttaatc tcttcaccgc aggcgaattt tttctcatcc cggaggtcct tcacgatccg 720

gatcagctgg agggaatcca cgtcatggac gtttttcgcc gtcggatggt taccaaaaga 780

ttgatggtcg ccggacaggc agaggacgtt ccgcatcccc aggctgtagg cacccaggag 840

atcactctgg agggcgatac ggttgcggtc ccgaaccgtc atctggataa tgggttcgcc 900

cccggcctgg aggacgtgga ccccagcggc gatactcgac aggcggacga tggccgtctg 960

gttgtccgtc aggttcatgg catcaacgta gtccttgagg agagcggcgt gcttcttgat 1020

ctctgtagga tcggcgtgct tcggcggtcc aatctcaccg ctgaccagaa attgcccctg 1080

ggagaggatt ttcgccatct tgctttcaac catatgacca ttaaaaaagt tgcaatcttg 1140

ggagcaggat gttacagaac acatgctgca acaggaatca ccaactttgc aagagcatgc 1200

gaagttgcgg aaaaagttgg caaaccggag atagcgatga cgcactccac aattgccatg 1260

gctgcagagt tgaaatacct ggctggaata gacgatatcg tcatctcgga tccgtcattt 1320

gccggtgaat tcactgttgt gaaggacttc gattacaatg aagtcatcaa agcccacaaa 1380

gacaatcccg aaacgattat gccgaagatc agggagaagg ttaacgaact cgccaagaca 1440

gttccaaaac ccccgaaggg cgccatacac tttgttcatc ccgaagacct aggcctgaag 1500

gtaacgactg acgacaggga agcagtacgt gatgcagacc tgataatcac ctggctgcca 1560

aaaggcgaca tgcagaaagg cattatagaa aaattcgcag gagatatcaa agagggagca 1620

ataatcaccc acgcctgtac gattccgaca acccttttct ataagatatt cgaggaactc 1680

ggtatcgcag ataaggtgga agttacatcc tatcaccccg gctcagttcc tgagaacaag 1740

ggccaggtct acatcgcgga aggatatgcc tcagaagaag ctatcaatac aatatacgaa 1800

cttggaaaga aagcccgcgg acatgccttc aaacttcctg cagaacttat cgggccggta 1860

tgcgacatgt gtgcagcact taccgctata acctacgccg gactgcttgt ataccgtgat 1920

gccgttatga atattctcgg tgcacctgcc ggattcagcc agatgatggc gacggaatca 1980

ctggaacaga tcaccgccta tatgaagaag gtaggcataa agaaccttga agagaacctt 2040

gacccgggtg tattccttgg aactgcagac tcaatgaact tcggacctat cgccgagatc 2100

cttcccacag ttcttaaatc acttgagaaa agggcaaaat aatgaagtaa gtaggaagca 2160

gggagcaggg gaaagaaaat tgacaactgt acaagattaa tcgcgtctct gagcaatgac 2220

caaatacatc tacctccacg gttttcttcc agccccctat ctgcgaaagc acaagatatt 2280

agcaagcgtt tcgcccaaat tcacatacag ctaacaatcc ctgatctcaa tgctggtgaa 2340

ttttctcagt taacaatcac gcgccaaatt caacaagttg ccgcaatttt ccctgataat 2400

tctgaaccaa taacgctgat aggttctagt ttaggcggtt taactgctgc ttatctagga 2460

cagcgatatt tacaagtaca acgcttagtt ttattagcgc cagtttggtt ttttatccca 2520

ttggttgccc aaaatgggtg aagaagctgt cacaagttgg caacaaacga tataggttct 2580

ctcttctgcc gtta 2594

<210> 171
<211> 2819
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 171, example 171: a designer hox-promoter-controlled Methyltetrahydrofolate:corrinoid/iron-sulfur protein methyltransferase DNA construct (2819 bp)

<400> 171
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgtcaggcct taatcttccc ggcccgggcg gcagatatat actccaggca 240

gtattcatcc tggccgtaca gggcggtggc ggcccgcaac aggcccatta atggcatatc 300

caggggatca aggataaagg aatccatacc tttagtgagg cacataacca taaaggcccg 360

gttcagcagt cgcctttccg gcaggccata ggaaacgttg gaaaggccgc agatggtgtg 420

aaccccgggg tatttttgcc gcagggcggc aaccgattcc agagcctcca cgccgtactg 480

gctgttaact cccaggggtt taatcagggg atcaaggtag atatcgtctt ccggtatgcc 540

ggcctctacc agcccgggta ccagcttacc agcaacgcga aggcggtcct ctaccgaatc 600

cggcatgccg ccgtcatcca tgcaaagggc gataacctta gccttatatt tctgcactaa 660

aggcaaaact tcctcccagc gctgcttctc ggcggtgatg gagtttacca ttgcctggcc 720

cttatgggct gccaggccgg cagccagggc ctcggcgctg gggctatcaa tacacagggg 780

aacatcaacg acttcctgga cgatattcac gagccaggtc attaccttat tttcttcgcc 840

gatgcttgtc ccgcagttaa catcgataat atcggctccg gcctcggcct gcttcctggc 900

cagttcctgg atataatcct tatcccggtt agcaatagcc tgggcaatgg ctttgcggct 960

ggagttaatt aactctccga caacgagcat ttgcaggtaa ctgccatgga tgtataccga 1020

ttacttccaa aaacaaactg tggtaaatgt gacgagtcat catgcatggc cttcgccaca 1080

aaactcatag aaaaggaact cacactggat gactgcccgc agctcagtgg ggatgaaaga 1140

cagaagctcg aggacctcct tgcgccggct gtgagggaaa tcaccttcgg cccagaaaag 1200

aaccaggtgg tggttggggg tgatgaggtc ctctacaggt ttgaactcac atactataac 1260

cccacagccc tcgtggttga tcttccagat gacctaccat cagaggagat caggaagagg 1320

gccagtgata tcatgaatct taaattcgag cgtaccggtg aggaactgac cctggatgcc 1380

atagcgctca ggaacaaatc aggaagccct gaaaaatttg cagaggcagc agggaccctg 1440

gctgaactta acttccctgt tgttctatgc acattcgatc cagaggcaat gagggctgcc 1500

ctcgaggtcc tgggggatca gaggcccctc atgtatgcgg ctacaaagga caacctccag 1560

gagatggctg atctttccat ttcatacggc tgccccctgg tgctcttctc accgggggac 1620

cttgaggaga tgaagaacct cacaagaaga ctgcgggcaa tgggccttac tgaaattatc 1680

ctggaccccg gaacattcac aggtgaggga ataggcgaca ccatagacaa ctttgtcatg 1740

ataaggcgcc ttgcagttga ggaaagggat gaggacttcc gcttccccat catgggcata 1800

ccagcactct caaggctttc aggaggggat ccagttgagg ataacataaa ggaggccact 1860

gttgcagcca cactcatgaa ccgctacgcc gacattctta tactcggagg aacagatatc 1920

tgggaactta tgcccatact caccctcaga cagggcctct acactgatcc aaggaagcca 1980

cagactgttg atccgggaat atatgagttt ggagacgttg atgagaactc ccctgtgata 2040

ctcacaacca acttctcact cacatactac acagtggagg gtgacctcaa ggcaggtgat 2100

gttacggcat atctccttgt gcttgacaca gagggaaggg ctgtggacgt ttcactggct 2160

ggaggacagc tcacgggaac cgcagtggct gaccttataa aggatagtgg tatagaggat 2220

agggtaaagg atagggttct catcattcct ggacttgcgg cacctgctag tggtgaaata 2280

gaagatgata ctggatggaa ggtgcttgtg gggccaaggg attcctcagg gatacctgac 2340

taccttgaaa aactggcatc ggagtagtga agtaagtagg aagcagggag caggggaaag 2400

aaaattgaca actgtacaag attaatcgcg tctctgagca atgaccaaat acatctacct 2460

ccacggtttt cttccagccc cctatctgcg aaagcacaag atattagcaa gcgtttcgcc 2520

caaattcaca tacagctaac aatccctgat ctcaatgctg gtgaattttc tcagttaaca 2580

atcacgcgcc aaattcaaca agttgccgca attttccctg ataattctga accaataacg 2640

ctgataggtt ctagtttagg cggtttaact gctgcttatc taggacagcg atatttacaa 2700

gtacaacgct tagttttatt agcgccagtt tggtttttta tcccattggt tgcccaaaat 2760

gggtgaagaa gctgtcacaa gttggcaaca aacgatatag gttctctctt ctgccgtta 2819

<210> 172
<211> 2771
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 172, example 172: a designer hox-promoter-controlled Corrinoid iron-sulfur protein DNA construct (2771 bp)

<400> 172
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatggccgt ccagatttta cgtgatcgta gccgagctgc cgtccagaaa 240

gttgtcctgg gcgccaccaa agaccagggg ggtacccgca gccataccat cgtcgtcggt 300

ggcgatgctg ccctgccttt ccaccatttc gaaggagaga ttgtcaacag gccggtaatc 360

ggtatggaag tgcaggatat cgtacccgac tggcccgacg ttctcaaaga tcccttcacc 420

gatgttatta atgaaccagg gcgctgggcc caaaagtgcg tagccgagta tggtgctgac 480

cttatctacc tgaaacttga cggggccgac cccgaaggcg ccaaccattc tgtggaccag 540

tgcgtagcta ctgttaaaga ggtcctgcag gccgtggggg taccctggt agtggtaggt 600

tgcggcgatg tggaaaagga ccatgaggtc ctggaagcag tagccgaggc tgctgccggc 660

gagaatctcc tcctgggtaa cgctgaacag gaaaactata aatccctaac ggcagcctgc 720

atggtccaca agcataatat catcgcccgt tcgcccctgg atattaacat ttgtaaacaa 780

ctcaacatcc tgatcaatga aatgaacctg cccctggatc atatcgtcat cgacccgtcc 840

atcggcggcc tgggttatgg tattgaatac tccttctcga ttatggaacg catccgtctg 900

ggggccctgc agggagataa gatgctctcc atgccggtca tctgcaccgt aggctatgag 960

gcctggcgcg ccaaggaagc ctcggcaccg gtgagcgaat acccgggctg gggtaaggaa 1020

accgagcgtg gcatcctctg ggaagccgtt accgccactg ccctgctcca ggccggcgcc 1080

cacatcctcc tcatgcgcca tccggaagcc gtagccaggg tgaaggagaa tatcgaccag 1140

ttaatggtga gcaacgccta ttaaatggat aaattaacgg aacttctgaa attacttcag 1200

aacacggaat ccatcgaaat aaatgagttc aggattgatg ttgacgaact tgaactctac 1260

ctgatgcctg tggttcagca ggccatccag aaaacagttg aggttaggga ggcagttgag 1320

gcactccctg aggaggaatt tgaaccaccg gtaaagacat accctggtga ggttgcccag 1380

gtgaaactgg gtgagggtac aaggaaacct gtttaccttg gcggtcagaa ggccctctac 1440

agatttgagg aaccccagcc aaacccaccg gtggttacat tcgacgtctt tgacataccc 1500

atgccgggtc tcccaaggcc gataagggag cacttcagcg acgtcatgga ggaccctggc 1560

gactgggcca ggaaggcggt aaaggagtat ggtgccaaca tggtcacaat acacctcatc 1620

ggaacaggac ccaaggtaat ggacaagtca ccgagggagg ctgcaaatga cattgaggag 1680

gtcctccagg ccgttgatgt ccccctggta atcgggggct caggggaccc tgaaaaggat 1740

ccactggttc ttgaaaaggc tgccgaggcc gccgagggcg aaaggtgtct cctggcatca 1800

gcaaacctgg accttgacta cagaaaggtt gcaagggcag cccttgacca caaccacgcg 1860

gtcctatcat gggccataac agacgtcaac atgcagaaaa ccctcaaccg ttacctcatg 1920

aaggagggcc ttagtagaga ggacatagtg atggacccaa caacctgtgc actgggttac 1980

ggtatagaat tttcaataga cgtcatcaca aggacaaggc tcgcggccct caagggtgat 2040

gcagaccttc agatgccaat gtcctctgga acaaccaacg cgtggggttc aagggaggcc 2100

tggatgaaga aggatgaatg gggacccaca gactacaggg gccctctatg ggagatagta 2160

accggactta caatgatgct ctcaggtgtg gatatattca tgatgctcca cccaacatct 2220

gtgaggcttc tgcgggagat aggggaaacc ttcacaaggg aatacatgac gaccgaaaca 2280

cctgatctcc gggaatggat aactgaactt gaatattgat gaagtaagta ggaagcaggg 2340

agcaggggaa agaaaattga caactgtaca agattaatcg cgtctctgag caatgaccaa 2400

atacatctac ctccacggtt ttcttccagc cccctatctg cgaaagcaca agatattagc 2460

aagcgtttcg cccaaattca catacagcta acaatccctg atctcaatgc tggtgaattt 2520

tctcagttaa caatcacgcg ccaaattcaa caagttgccg caattttccc tgataattct 2580

gaaccaataa cgctgatagg ttctagttta ggcggtttaa ctgctgctta tctaggacag 2640

cgatatttac aagtacaacg cttagtttta ttagcgccag tttggttttt tatcccattg 2700

gttgcccaaa atgggtgaag aagctgtcac aagttggcaa caaacgatat aggttctctc 2760

ttctgccgtt a 2771

<210> 173
<211> 7061
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 173, example 173: a designer hox-promoter-controlled CO dehydrogenase /acetyl-CoA synthase DNA construct (7061 bp)

<400> 173
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgtcacataa tgggatccat ggtcaaggcc gggtgtccct tttcctccaa 240

gtagggcaag atttcatcca cggtggtacc gatggtctca tcagctattt tatcgataaa 300

gtcctctccc aggccctcct caacactacg acgtacaaag tcgtcgtgga ggaaatcctt 360

cagagatttg ggcatccaga cgatccgggc gataccacca tcggcggaaa taaacttttt 420

gctgacgata taggtgcggc cgatgcccat aaagcccggg gtctgggtgc caccgccgat 480

catcccggcc agggtagaga aggtcatccc cgaaggagtc atgccggcgt gatccctggt 540

ggtaatcatg atgccgttgc actccggcag gatggccata atggcctcaa agcaaccgca 600

ggaggtcatg ggattctcca taagggtgta caggcagacc tgttccaggt tacggttgga 660

agctgtatag agatagtcat ttacactctt ccagataccc ttaatgggat caatttcccc 720

ttctttaggg atgggctggt taggaccggc atggttgatt tcataggacg ccttggcgtc 780

cagccagctt acggctccac acaggcccac ccgttccggg gtgacaatac acacatggtt 840

gggggcaaag gactggcaga ggacgcagga gtaaaaggta tccactgttt catcggtaag 900

gccgcgcatg cggtcgtcac gttccttgta tttctcccgg gcgacctcca tatattcttt 960

gaccttggct tcatcggtaa aaatggttac ctggacccgg tccacaatgg cggggaattc 1020

ttctttcatt ttggctacca ggatttcacc gtagttcttg aaacggaaac ccttggctac 1080

ggcatctttg ctgacccgca accagttgat gttacgctgg ccggtgtgcc agagaccttc 1140

accgtagttg atgaagtcgt ggatgcgccg ttcgaggact ccttcaaaat cggcctgcat 1200

tttacggcca tagatgtcca ccagaatgcc caggggcagt ttgctccctt ccggtatctg 1260

gtcaatatca ggacctatga cttcaatctt accatcagtg atctcggatt ccgaaacggt 1320

gcgtaccagc tcaaaggccg gcgtccggtt gccgcccatt tctacgtaca tatcgccctt 1380

acggatactc tcgccctcaa aggcagggcc aaagttaatg ggcagatcca acttgatctt 1440

ggtgagcttg atcccacggg tctccatggc tatctggact attttatcat agtcctcaac 1500

gctgaagaac caatccggga tctgtttgtc ctccggtagg ggctggtcgg tgattaccgg 1560

aaagccggta aagatggccc cgaaggcggc agccgtcttg accatgtcat gctcgccgag 1620

ataaaggaca aaggcgcgga tacggcggcg ctggtaatcg cgctgttctt cacgggcacc 1680

cggggtaacg ccaccgaaca tcataccagc ccgcagggca tagttggcgg catgaacaat 1740

ctgggtgaag ttccccaggg gataggcgat atagtcaatc cccagtttga cgttttcttc 1800

cagcagctgt tctaccgctt catcacagat gaagagcata aagcccatac ccatgagttc 1860

cttgacgatt ttggccaggg ccttcgagtc tttggctcga cccaggataa tagcttcacc 1920

cggaatggtc cagtcgacca tcttgatacc gaaacggcgg acaaccgggt cgccgatgaa 1980

acccgtccag ggtgggggca ggaggggttc atcaggctta tatttaaggt aacgcagggc 2040

ttcaatgatc tcggccgcat accaggtggc ttccccggcc aggcgggcat tctcgaaatt 2100

caggacaggg cttacctgcg ctcgcttgcg gtttaaaata ggtggtaaat cccccagttt 2160

tttgacctct tccccgctga aacagcgaat aaccggcagg taataggctg tatcaggata 2220

accgacggga tggtcgggac cataggtccg gatggcctgg tttaaaagga tttccgcgta 2280

actggtagct gtaatggcgc cgtggtaaac ctcccggaac agggctaccg gctctttacc 2340

ttctggaata gcaccctcga agattttatc aaaatcagtc atgtggcacc cgaatcaaaa 2400

aaagccaaga accttaaagg ggatttctgg gaccttaaaa atatccagat atccatagga 2460

gaaattataa ctgaggaaaa acctcaggag gaagaggcta ggggtccaaa accccgcccc 2520

catgttaccg acctcaggtc atgggacatg aagctccttg aaagatacga accattctat 2580

gcacctttct gtgacatgtg ctgcctctgc acctacggta aatgcgacct cctcggtaag 2640

aagggagcat gtggtataga cgcagccacc cagcaggcac gcatagtact tctcgcatgt 2700

ctcataggga ccgccgccca tgcgggacac gcaaggcacc ttgtggacca cctcatagag 2760

aaactgggag aggactatga aatagacttg ggcatgaatg tggatataga ggcacccata 2820

acaaggaccg ttatgggaag gaggccgcgg accctgggcg acctcatgga ggttatggac 2880

tacgccgagg aacagatgtc acacctcctc tcggcatgcc acacgggaca ggagggcgac 2940

agcagggact ttgaatcgaa ggcattccat gctggactca tggatgacct cacgagggag 3000

gttgcggata tcgcccagat agttgccctg gatctcccta agggtgatga ggacgcaccc 3060

ctcgttgaac tgggattcgg tacaatagac aacaccaaac ccgtgatact ctgcataggc 3120

cacaacgtcc tccctggagc ggatatagtg gactacgtca ccgagaggga actcgaagac 3180

gaagttgagg tatgcggcat atgctgtgca gcaatagatg ttacaaggta cagcgaggct 3240

gccaaggtcg tcgggcccct ctcaaagcag ctcagattca taagaagtgg cgtggccgat 3300

gtgatagtgg tggacgagca gtgcgtgagg acagacgtgc tggaggaggc cctcaaaaac 3360

aggtcagcgg tgattgcaac aaccgataag atgtgcctgg gactacctga tgtgacagat 3420

gaggaccccg acaaaatcgt gaatgacctc ataaacggta acatagaggg ggcactaatc 3480

cttgaccccc ataaggttgg tgaggtggca gttaaaactg caataaaact ggcaccaatc 3540

aggaaatccc tcaaaaaatt gccagaggtt gatgagataa tccggatggc atcagagtgc 3600

acagattgcg gctggtgcca gagggtctgc cccaacagcc tccctgtcat ggatgcagtt 3660

aagagcgcgg ccgagggtga tctgagcaaa cttgaggaga tggcacttga ggagctctgc 3720

tacacctgtg gacgctgcga acaggagtgt gaaagggaca tacctatagt atccatggtg 3780

acaaaggcag gtgaaaggcg cgtaaaggac gaaaaataca agataagggc tggccgtggc 3840

cctgcccagg atgtggagat aaggagggtc ggcgcaccca tacccctcgg ggacataccc 3900

ggtgtcatag cctttgtggg ttgctcaaac taccctgagg gtggaaagga tgttgccctc 3960

atggcaaagg agttccttga gagaaactac atcgtggtca caacgggatg cggtgcaatg 4020

tccatcgggg aatacaggga cgaggatgga aagacactct atgaaaaata cggtggacag 4080

ttcgatgcaa agggacttgt taacatgggc tcctgcgtat caaacgccca tatatcaggt 4140

gccgccataa agatagccaa catattcgca cagaaaccac tcgaggggaa ctttgaggag 4200

atagcggatt acatacttaa ccgtgtaggg gcatgtggtg tcgcatgggg tgcctactcc 4260

cagaaggcgg cggccatagc aaccggtgtg aaccggtggg gaatacccgt cgtcctggga 4320

ccccacggat cgaagtaccg cagactgttc cttggaaggg cagatgaccc agagaagtgg 4380

aaactgaacg acctcagaac aggtgaggtc atcgatgggg agccagctcc agaacacctt 4440

ctctatgcag cggagaaccg ggaggaagca acggtgatgg tggccaaact ctgcataagg 4500

ccaacagaca cacccaaggg tcgccagatg aaactcagca actacataga cctccacaaa 4560

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gtggaggtca tagggcccga gataagtgag atggaacagg gccagatcta tccattcgcc 4920

ataaacgtgg agatagcagg aagcgaactc gaggaggaac ttgaaagcgt tatagagcgg 4980

agactccatg aactctgcaa ctacgtccag ggtttcatgc acctcaacca gagggaccag 5040

atatggtgcc gtgtaagcac agaggcaagg gacgcaggat tcatgcttga acaccttgga 5100

aaggcactat cagtcctctt cagggaggag ttcccaataa tcgaatcaat atcagtgaca 5160

atcatgaccg atgaggacgc tgttaaagaa ttccttgaaa cagccaggga aaagtatgag 5220

ataagggatt caagggcaag ggaactctca gacgaggacg ttgacgtatt ctacgggtgc 5280

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ctatgtggtg ccataaactg gttcgactgc cgcgcagcct ataagatgga ccccgacggt 5400

ccaatattcg aaattcaaaa gggagatgta attgacccgg agaagggaga atatgagaat 5460

gttaacgctg cggtggcaga gaactcacag ggtacaacag agagggttta cctccacagc 5520

gtgttcgggt atccacacac atcatgtggc tgcttcgagg cagtggcatt ctacatacca 5580

gaactggatg gcataggcat cgtgaacagg gacttcaggg gcgaaacacc ccttggaata 5640

ccattctctg caatggcagg gcagtgctca ggcggaaaac aggttgaagg gttttcaggt 5700

ctcagccttg agtacatgag gtcacccaag ttcctgcagg cagatggtgg gtactcaagg 5760

ataatctgga tgccaaagga tctgaaggaa tctgtcattg acttcatccc tgaagacctg 5820

agggataaga tagccacaga ggtggatgca acatcaataa aggaactcag aaggttcctt 5880

agggagaagg agcaccctgt ccttgaaagg gcaccagcag aagttgagga agctgaagtc 5940

gttgaggaag aggaaaccca tgctgaggag gcccccgtca ctgagggaat acctgtaatg 6000

gcgtccccag agatcagcct tccagcagct ggcggattca ggataattct caagaacgca 6060

aagatctacg ctgagaaggt aataataaag cgtaaataac tactgctcca gggcatctat 6120

gagttcatcg agccatctga gccattctgt gtacttcatg ctggggtatg agatgtctgc 6180

atttggatgc atgtacctgc agagggtcac tgttttaagg tgtggtgcaa aggccttgag 6240

ggttgaaagg ccctgtgaac ctatgtaata tgggacacct atgaagcata caaggtcata 6300

gttgccattt ccatcgaagc cctcccagtc aggatttttg aggttgttta caagttcgat 6360

taccctatt atgtttttc tttccagttt agttaacctg agacctgatc ctccggttag 6420

ggcaacctcc attttccctt tttttattat tttaactatc ctatccacta tatcttgtgg 6480

aaggtcattt aacagcgacc ctaccaccat gagtggtctt tcagactttt ttatggccga 6540

tgcaaccatt tcaggggca tgacggttgc attccttatt gatgttagag ctgggttcca 6600

tgcggtcatt gaagtaagta ggaagcaggg agcaggggaa agaaaattga caactgtaca 6660

agattaatcg cgtctctgag caatgaccaa atacatctac ctccacggtt ttcttccagc 6720

cccctatctg cgaaagcaca agatattagc aagcgtttcg cccaaattca catacagcta 6780

acaatccctg atctcaatgc tggtgaattt tctcagttaa caatcacgcg ccaaattcaa 6840

caagttgccg caattttccc tgataattct gaaccaataa cgctgatagg ttctagttta 6900

ggcggtttaa ctgctgctta tctaggacag cgatatttac aagtacaacg cttagtttta 6960

ttagcgccag tttggttttt tatcccattg gttgcccaaa atgggtgaag aagctgtcac 7020

aagttggcaa caaacgatat aggttctctc ttctgccgtt a 7061

<210> 174
<211> 1847
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 174, example 174 of a designer hox-promoter-controlled Thiolase (07) DNA construct (1847 bp)

<400> 174
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatgggcaa agaaagtagt tttagctgtg catgtcgtac agccatcgga 240

acaatgggtg gatctcttag cacaattcct gcagtagatt taggtgctat cgttatcaaa 300

gaggctctta accgcgcagg tgttaaacct gaagatgttg atcacgtata catgggatgc 360

gttattcagg caggacaggg acagaacgtt gctcgtcagg cttctatcaa ggctggtctt 420

cctgtagaag tacctgcagt tacaactaac gttgtatgtg gttcaggtct taactgtgtt 480

aaccaggcag ctcagatgat catggctgga gatgctgata tcgttgttgc cggtggtatg 540

gaaaacatgt cacttgcacc atttgcactt cctaatggcc gttacggata tcgtatgatg 600

tggccaagcc agagccaggg tggtcttgta gacactatgg ttaaggatgc tctttgggat 660

gctttcaatg attatcatat gatccagaca gcagacaaca tctgcacaga gtggggtctt 720

acacgtgaag agctcgatga gtttgcagct aagagccaga acaaggcttg tgcagcaatc 780

gaagctggcg cattcaagga tgagatcgtt cctgtagaga tcaagaagaa gaaagagaca 840

gttatcttcg atacagatga aggcccaaga cagggtgtta cacctgaatc tctttcaaag 900

cttcgtccta tcaacaagga tggattcgtt acagctggta acgcttcagg tatcaacgac 960

ggtgctgcag cactcgtagt tatgtctgaa gagaaggcta aggagctcgg cgttaagcct 1020

atggctacat tcgtagctgg agcacttgct ggtgttcgtc ctgaagttat gggtatcggt 1080

cctgtagcag ctactcagaa ggctatgaag aaggctggta tcgagaacgt atctgagttc 1140

gatatcatcg aggctaacga agcattcgca gctcagtctg tagcagttgg taaggatctt 1200

ggaatcgacg tccacaagca gctcaatcct aacggtggtg ctatcgctct tggacaccca 1260

gttggagctt caggtgctcg tatccttgtt acacttcttc acgagatgca gaagaaagac 1320

gctaagaagg gtcttgctac actttgcatc ggtggcggta tgggatgcgc tactatcgtt 1380

gagaagtacg aataatgaag taagtaggaa gcagggagca ggggaaagaa aattgacaac 1440

tgtacaagat taatcgcgtc tctgagcaat gaccaaatac atctacctcc acggttttct 1500

tccagccccc tatctgcgaa agcacaagat attagcaagc gtttcgccca aattcacata 1560

cagctaacaa tccctgatct caatgctggt gaattttctc agttaacaat cacgcgccaa 1620

attcaacaag ttgccgcaat tttccctgat aattctgaac caataacgct gataggttct 1680

agtttaggcg gtttaactgc tgcttatcta ggacagcgat atttacaagt acaacgctta 1740

gttttattag cgccagtttg gttttttatc ccattggttg cccaaaatgg gtgaagaagc 1800

tgtcacaagt tggcaacaaa cgatataggt tctctcttct gccgtta 1847

<210> 175
<211> 1514
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 175, example 175: a designer hox-promoter-controlled 3-Hydroxybutyryl-CoA dehydrogenase DNA construct (1514 bp)

<400> 175
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatgcaaaa gatttgtgta ataggtgctg gaacaatggg ctcaggcatc 240

gctcaagtat ttgcacaaaa tggctttgaa gtaattttac gcgatattga tatgaagttc 300

gtagaaaaag gatttggcac aattgaaaaa atttacaaag aaatgttgac aaagggaaaa 360

ttacagcaga tgagaaaacg aattttaagc agaatcagag gtacaacaaa tttggaagac 420

gcaaaagaag cagattttgt agttgaagcg gctatagaaa atatggatct caagaaacaa 480

atattcaaag agctagatga aatatgcaaa atggaaacaa tccttgcgtc aaatacatca 540

tcactatcca taacagaaat agcaagtgcg acaaaaagac ctgagaaagt cataggaatg 600

catttcttca acccagttcc agtaatgaaa cttgttgaag tcataaaagg attaaagaca 660

tcagagcaaa catttaatgt cgtcagagaa ttggctttaa aagtagacaa aacacctata 720

gaggtcaaag aagcacctgg atttgttgta ataggattt taatcccaat gattaatgaa 780

gcaattggaa tacttgcagt ggtgttggca actgacaaga gcatagatga agctatgaaa 840

cttggtgcaa atcatccaat aggacctttg gcattgtcta gtttgatagg caatgacgtc 900

gttcttgcta taatgaatgt gctttatgaa gagtacggcg attcgaaata cagaccacat 960

ccacttctaa aaaaagtggt aagaggcgga ttgctgggta gaaaaactgg caaaggtttc 1020

tttgaataca aaattaatct tttaaggagg agaatatcat gatgaagtaa gtaggaagca 1080

gggagcaggg gaaagaaaat tgacaactgt acaagattaa tcgcgtctct gagcaatgac 1140

caaatacatc tacctccacg gttttcttcc agccccctat ctgcgaaagc acaagatatt 1200

agcaagcgtt tcgcccaaat tcacatacag ctaacaatcc ctgatctcaa tgctggtgaa 1260

ttttctcagt taacaatcac gcgccaaatt caacaagttg ccgcaatttt ccctgataat 1320

tctgaaccaa taacgctgat aggttctagt ttaggcggtt taactgctgc ttatctagga 1380

cagcgatatt tacaagtaca acgcttagtt ttattagcgc cagtttggtt ttttatccca 1440

ttggttgccc aaaatgggtg aagaagctgt cacaagttgg caacaaacga tataggttct 1500

ctcttctgcc gtta 1514

<210> 176
<211> 1430
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 176, example 176: a designer hox-promoter-controlled Crotonase DNA construct (1430 bp)

<400> 176
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatggaatt aaaaaatgtt attcttgaaa aagaagggca tttagctatt 240

gttacaatca atagaccaaa ggcattaaat gcattgaatt cagaaacact aaaagattta 300

aatgttgttt tagatgattt agaagcagac aacaatgtgt atgcagttat agttactggt 360

gctggtgaga aatcttttgt tgctggagca gatatttcag aaatgaaaga tcttaatgaa 420

gaacaaggta aagaatttgg tattttagga aataatgtct tcagaagatt agaaaaattg 480

gataagccag ttatcgcagc tatatcagga tttgctcttg gtggtggatg tgaacttgct 540

atgtcatgtg acataagaat agcttcagtt aaagctaaat ttggtcaacc agaagcagga 600

cttggaataa ctccaggatt tggtggaact caaagattag caagaatagt tggaccagga 660

aaagctaaag aattaattta tacttgtgac cttataaatg cagaagaagc ttatagaata 720

ggcttagtta ataaagtagt tgaattagaa aaattgatgg aagaagcaaa agcaatggct 780

aacaagattg cagctaatgc tccaaaagca gttgcatatt gtaaagatgc tatagacaga 840

ggaatgcaag ttgatataga tgcagctata ttaatagaag cagaagactt tgggaagtgc 900

tttgcaacag aagatcaaac agaaggaatg actgcgttct tagaaagaag agcagaaaag 960

aattttcaaa ataaataatg aagtaagtag gaagcaggga gcaggggaaa gaaaattgac 1020

aactgtacaa gattaatcgc gtctctgagc aatgaccaaa tacatctacc tccacggttt 1080

tcttccagcc ccctatctgc gaaagcacaa gatattagca agcgtttcgc ccaaattcac 1140

atacagctaa caatccctga tctcaatgct ggtgaatttt ctcagttaac aatcacgcgc 1200

caaattcaac aagttgccgc aattttccct gataattctg aaccaataac gctgataggt 1260

tctagtttag gcggtttaac tgctgcttat ctaggacagc gatatttaca agtacaacgc 1320

ttagttttat tagcgccagt ttggtttttt atcccattgg ttgcccaaaa tgggtgaaga 1380

agctgtcaca agttggcaac aaacgatata ggttctctct tctgccgtta 1430

<210> 177
<211> 1784
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 177, example 177: designer hox-promoter-controlled Butyryl-CoA dehydrogenase DNA construct (1784 bp)

<400> 177

agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatgaattt ccaattaact agagaacaac aattagtaca acaaatggtt 240

agagaattcg cagtaaatga agttaagcca atagctgctg aaatcgacga aacagaaaga 300

ttccctatgg aaaacgttga aaaaatggct aagcttaaaa tgatgggtat cccattttct 360

aaagaatttg gtggagcagg cggagatgtt ctttcatata taatagctgt ggaagaatta 420

tcaaaagttt gtggtactac aggagttatt ctttcagcgc atacatcatt atgtgcatca 480

gtaattaatg aaaatggaac taacgaacaa agagcaaaat atttacctga tctttgcagc 540

ggtaaaaaga tcggtgcttt cggattaact gaaccaggtg ctggtacaga tgctgcagga 600

caacaaacaa ctgctgtatt agaaggggat cattatgtat taaatggttc aaaaatcttc 660

ataacaaatg gtggagttgc tgaaactttc ataatatttg ctatgacaga taagagtcaa 720

ggaacaaaag gaatttctgc attcatagta gaaaagtcat tcccaggatt ctcaatagga 780

aaattagaaa ataagatggg gatcagagca tcttcaacta ctgagttagt tatggaaaac 840

tgcatagtac caaaagaaaa cctacttagc aaagaaggta agggatttgg tatagcaatg 900

aaaactcttg atggaggaag aattggtata gctgctcaag ctttaggtat tgcagaagga 960

gcttttgaag aagctgttaa ctatatgaaa gaaagaaaac aatttggtaa accattatca 1020

gcattccaag gattacaatg gtatatagct gaaatggatg ttaaaatcca agctgctaaa 1080

tacttagtat acctagctgc aacaaagaag caagctggtg agccttactc agtagatgct 1140

gcaagagcta aattatttgc tgcagatgtt gcaatggaag ttacaactaa agcagttcaa 1200

atctttggtg gatatggtta cactaaagaa tacccagtag aaagaatgat gagagatgct 1260

aaaatatgcg aaatctacga aggaacttca gaagttcaaa agatggttat cgcaggaagc 1320

attttaagat agtgaagtaa gtaggaagca gggagcaggg gaaagaaaat tgacaactgt 1380

acaagattaa tcgcgtctct gagcaatgac caaatacatc tacctccacg gttttcttcc 1440

agccccctat ctgcgaaagc acaagatatt agcaagcgtt tcgcccaaat tcacatacag 1500

ctaacaatcc ctgatctcaa tgctggtgaa ttttctcagt taacaatcac gcgccaaatt 1560

caacaagttg ccgcaatttt ccctgataat tctgaaccaa taacgctgat aggttctagt 1620

ttaggcggtt taactgctgc ttatctagga cagcgatatt tacaagtaca acgcttagtt 1680

ttattagcgc cagtttggtt ttttatccca ttggttgccc aaaatgggtg aagaagctgt 1740

cacaagttgg caacaaacga tataggttct ctcttctgcc gtta 1784

<210> 178
<211> 2051
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 178, example 178, a designer hox-promoter-controlled Butyraldehyde dehydrogenase DNA construct (2051 bp)

<400> 178
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gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatgattaa agacacgcta gtttctataa caaaagattt aaaattaaaa 240

acaaatgttg aaaatgccaa tctaaagaac tacaaggatg attcttcatg tttcggagtt 300

ttcgaaaatg ttgaaaatgc tataagcaat gccgtacacg cacaaaagat attatccctt 360

cattatacaa aagaacaaag agaaaaaatc ataactgaga taagaaaggc cgcattagaa 420

aataaagaga ttctagctac aatgattctt gaagaaacac atatgggaag atatgaagat 480

aaaatattaa agcatgaatt agtagctaaa tacactcctg ggacagaaga tttaactact 540

actgcttggt caggagataa cgggcttaca gttgtagaaa tgtctccata tggcgttata 600

ggtgcaataa ctccttctac gaatccaact gaaactgtaa tatgtaatag tataggcatg 660

atagctgctg gaaatactgt ggtatttaac ggacatccag gcgctaaaaa atgtgttgct 720

tttgctgtcg aaatgataaa taaagctatt atttcatgtg gtggtcctga gaatttagta 780

acaactataa aaaatccaac tatggactct ctagatgcaa ttattaagca cccttcaata 840

aaactacttt gcggaactgg agggccagga atggtaaaaa ccctcttaaa ttctggtaag 900

aaagctatag gtgctggtgc tggaaatcca ccagttattg tagatgatac tgctgatata 960

gaaaaggctg gtaagagtat cattgaaggc tgttcttttg ataataattt accttgtatt 1020

gcagaaaaag aagtatttgt ttttgagaac gttgcagatg atttaatatc taacatgcta 1080

aaaaataatg ctgtaattat aaatgaagat caagtatcaa agttaataga tttagtatta 1140

caaaaaaata atgaaactca agaatactct ataaataaga aatgggtcgg aaaagatgca 1200

aaattattct tagatgaaat agatgttgag tctccttcaa gtgttaaatg cataatctgc 1260

gaagtaagtg caaggcatcc atttgttatg acagaactca tgatgccaat attaccaatt 1320

gtaagagtta aagatataga tgaagctatt gaatatgcaa aaatagcaga acaaaataga 1380

aaacatagtg cctatattta ttcaaaaaat atagacaacc taaataggtt tgaaagagaa 1440

atcgatacta ctatctttgt aaagaatgct aaatcttttg ccggtgttgg ttatgaagca 1500

gaaggcttta caactttcac tattgctgga tccactggtg aaggaataac ttctgcaaga 1560

aattttacaa gacaaagaag atgtgtactc gccggttaat gaagtaagta ggaagcaggg 1620

agcaggggaa agaaaattga caactgtaca agattaatcg cgtctctgag caatgaccaa 1680

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tctcagttaa caatcacgcg ccaaattcaa caagttgccg caattttccc tgataattct 1860

gaaccaataa cgctgatagg ttctagttta ggcggtttaa ctgctgctta tctaggacag 1920

cgatatttac aagtacaacg cttagtttta ttagcgccag tttggttttt tatcccattg 1980

gttgcccaaa atgggtgaag aagctgtcac aagttggcaa caaacgatat aggttctctc 2040

ttctgccgtt a 2051

<210> 179
<211> 1808
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 179, example 179: a designer hox-promoter-controlled NADH-dependent Butanol dehydrogenase DNA construct (1808 bp)

<400> 179
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gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttacaggg aagcgcgcaa aatggcgagc acatcatcgc ggttcaatgt 240

tttgaaacgg ccgaactcgc caaacgccat cgctttatcg gccatcagct ccaagttttc 300

ctcgccgatg ccatagtccg caagccgcga cggcgccccg aggctcgacc agaactcgcg 360

cagccgctcg atgccttcaa gcgccacatc ccgctccgat ttgcccgccg gatcgacatc 420

aaagacgcgc accgcgagct gggcgaaacg gctgacattt tcatcgagca catgcttcat 480

ccagttcggg aacaaaatcg ccaatccccc ggcgtgcggg atgtcataca cggcggaaac 540

ggcatgctca atattgtgcg tcgcccagtc gccgcggacg cccatttgca agaagccgtt 600

taaggcgatc gtgcccgagt acatgatcgt ctcgcgcagc tcgtagtttt ccaaatcgtt 660

gatcagtttg ggcgccgttt cgatcacggt tttcaacacc gcttcacaca tccggtcttg 720

caatggcgtg ttcggcgtat ggtggaaata ttgctcaaac acatgcgaca tcatatcgac 780

aatgccgtaa accgtatggt ctttcggaac ggtcatcgta tacgtcggat ccaaaatcga 840

aaattgcggg aacgtaaacg ggctgcccca gccgtatttt tctttcgtct cccagtttgt 900

gatcaccgaa ccagaattca tctccgaccc ggtcgccgcc agcgtcaaga cgacgccaaa 960

cggcagggcg ccggtgacgg gcgctttttt cgtgataaac tcccacggat cgccatcgaa 1020

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aggggaaaga aaattgacaa ctgtacaaga ttaatcgcgt ctctgagcaa tgaccaaata 1440

catctacctc cacggttttc ttccagcccc ctatctgcga aagcacaaga tattagcaag 1500

cgtttcgccc aaattcacat acagctaaca atccctgatc tcaatgctgg tgaattttct 1560

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ccaataacgc tgataggttc tagtttaggc ggtttaactg ctgcttatct aggacagcga 1680

tatttacaag tacaacgctt agttttatta gcgccagttt ggtttttat cccattggtt 1740

gcccaaaatg ggtgaagaag ctgtcacaag ttggcaacaa acgatatagg ttctctcttc 1800

tgccgtta 1808

<210> 180
<211> 10538
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 180, example 180: a designer hox-promoter-controlled Energy converting heydrogenase (Ech) DNA construct (10538 bp)

<400> 180
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gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttattcta acattttctt aatatatggc tcaagaggga taatatctcc 240

agttgaacga ggtgttaaag ctgaaactgt taaaacacgt tcttcttgat ccatactaac 300

agtgatagta ccaggtgtta atgtgatagt atttgatagt attgcaagag atactggtct 360

ttcaagatca ggtttaatct ttacaactat aggatcaaca tcgcccttga gacagcaaat 420

acttgtgtca agtattgctt taattatttc gactactaat actacgaaaa attctattcc 480

gtagattatt ctagttaaaa acatttataa atcgccccca cctaatacgt aggatacagc 540

tattgttcct acaggactta atataagtat tgcaaatgct atgtctctac agaaatctat 600

tccagtaagt gaagatacca ttgttaaaac aattgcaagt gcaattgtga aacctgctac 660

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aacaattaga cataacatga ggaacaattc agatattgtt aaaaaatcca tttattgctc 780

cccctgttct ccacggaagt gtccacttgc tattgcatga gttgcaaatg gtgctaatat 840

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tactaatgtt ggtacaatag ctgctcccac tacagcttgt gttaatgcta catcgggtgc 1200

taataaaact tgataaattg ctgctaaaat aaaaccagta atactagtta atacagccat 1260

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aagtactaat gcaaatggta atggatatga tgcttgacct aagaagttat ttacttccat 1560

attttgtaaa aagatatatg taattccgtt aactttgtaa cctaatgaaa ttaataataa 1620

atttacacca tcacctataa atgcagcccc aataattttc ttaacaacat tatctagata 1680

aactaatgct actgtaccca taatcattaa aagtgctgct gtaattaaag ctcctaattg 1740

tactgataac atttacatta ttaaagcgga aaaagccatg actccaagtc tatttactac 1800

taaatcagga cataaaccta taattaaaca aataattaag aagaatacca ttattgccat 1860

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atcatcatta actggaatta cttccaatcc taatgcttca tgttcttcaa tccattcatc 9300

attaagaaca ggaacttcta gtttaattgg ttcatcttca tgattaacta caattaaatt 9360

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accccatact ttatccatag aaggagatag ttttacttct ttgacttctg gaaattccat 9900

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ggtttaactg ctgcttatct aggacagcga tatttacaag tacaacgctt agttttatta 10440

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ttggcaacaa acgatatagg ttctctcttc tgccgtta 10538

<210> 181
<211> 3416
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 181, example 181: a designer hox-promoter-controlled [NiFe]-hydrogenase MvhADG DNA construct (3416 bp)

<400> 181
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gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttagatcc tttttacaag gtcgccttca ctgtcgtata cttccaaggt 240

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tgttcccctt ggtgcctcaa ctatacccac accgtcgcct gcctgccttt caagtgaatc 540

agggaatttt tctccggata ggtctccttc aagtgcatcg gctgcacatt cggcacatgc 600

gaggacttct atgagccttg cccagtggta caggagtgtc tgctgtgcgt atccaaattt 660

gtcctggaac tccttgaagt aatcctgtgc ctttggagct gcatcaggca tcttatctgc 720

gacgttgagc cttgagagtg gtgagacacg gtagacacca tcagggtatc caaggtcctt 780

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cagtgagttc acgaggtcaa tgttctcctc gaatattgga actgcaagtt ccagggtggc 1020

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attgacaact gtacaagatt aatcgcgtct ctgagcaatg accaaataca tctacctcca 3060

cggttttctt ccagcccccc atctgcgaaa gcacaagata ttagcaagcg tttcgcccaa 3120

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acgcgccaaa ttcaacaagt tgccgcaatt ttccctgata attctgaacc aataacgctg 3240

ataggttcta gtttaggcgg tttaactgct gcttatctag gacagcgata tttacaagta 3300

caacgcttag ttttattagc gccagtttgg ttttttatcc cattggttgc ccaaaatggg 3360

tgaagaagct gtcacaagtt ggcaacaaac gatataggtt ctctcttctg ccgtta 3416

<210> 182
<211> 6695
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 182, example 182: a designer hox-promoter-controlled Heterodisulfide reductases (HdrABC, HdrDE) DNA construct (6695 bp)

<400> 182

agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgtcaggaac cgcctcctac aggcttcggg agcctgagag cagcgagctc 240

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gttgcagagg aacccgacga tgaaggggta ctgccccttg accgccgtcg ccgcccggac 660

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gcaacaaacg atataggttc tctcttctgc cgtta 6695

<210> 183
<211> 3407
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 183, example 183: a designer hox-promoter-controlled Coenzyme F420-reducing hydrogenase (Frh) DNA construct (3407 bp)

<400> 183
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agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatgttaaa caatgcgatc gcaacgccgg ccctccagcc attccaggaa 240

ctcgagcaga gcgtctggaa gaaggagatg tgcgccggat gccggggctg tatcaccgta 300

tgcccggcca acacgttagc ctatgacctg aagctggcca ggccgtacca gatcactccc 360

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aataagcgct accagaacgg cggcgccgtt actgcgttgc tgaagaccgc gctggacgaa 540

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gagaagatcg cggtcgtcgg caccccgtgc cagatctacg cggtccagaa gatgaggctg 1560

tacggcgtcg gcgcgagaca catccccgac aaggtagcca tgaccgtagg catcttctgt 1620

acggagaact tctcttatgc cggcctcagg accgttatcg aggaccactg caaagtgccc 1680

atcgaatcgg tcaccaagat ggagatcggc aagggcaagt tctgggtcaa gggagccaag 1740

gacgtgtcca ttcccatcaa ggagacccac aagtacgagc aggacggctg ccacgtttgc 1800

tccgacctga ccgccgagtt cgcggacatc tccacgggct ctatcggcac tcccgacggc 1860

tggtccacca ccttcgcccg ctcgaccagg ggtaaggacc tcctgagcaa ggccatcgca 1920

gacggcctgt tcgagaagaa gtccatggac gagttcaagt ccgctccgga cgccaagatc 1980

aagagcggcc tcgacctcct gggcaacctg gaaaagggca agaaggacaa ggcaaagaag 2040

catttcgacg agcgcaaggc tctcggcctc ttcgtaaccc cggaaatcct gtactaaatg 2100

gcataccagg gtttcgggaa atataaggaa gtcttgagcg cccggtctgc ggacgaggag 2160

atccgtaaca tcgcccagga cgggggggacc acgacggcac tgttgtgttt tgccctcgag 2220

accggcttca tcgacggggc ggtgctgacg aaaaaatcga gcagggagtg ggtgcccgcc 2280

cagtacgtgg cgacgacccg ggacgagatc ctccagtcgg cgaagagcgt ctacgcgctg 2340

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gacatctact attgatgaag taagtaggaa gcagggagca ggggaaagaa aattgacaac 3000

tgtacaagat taatcgcgtc tctgagcaat gaccaaatac atctacctcc acggttttct 3060

tccagccccc tatctgcgaa agcacaagat attagcaagc gtttcgccca aattcacata 3120

cagctaacaa tccctgatct caatgctggt gaattttctc agttaacaat cacgcgccaa 3180

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agtttaggcg gtttaactgc tgcttatcta ggacagcgat atttacaagt acaacgctta 3300

gttttattag cgccagtttg gttttttatc ccattggttg cccaaaatgg gtgaagaagc 3360

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<210> 184
<211> 5417
<212> DNA

<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 184, example 184: a designer hox-promoter-controlled Methyl-H4MPT: coenzyme M methyltransferase (MtrA-H) DNA construct (5417 bp)

<400> 184

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gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatggcaga taaaaaagaa gttattcaaa attggccctt agaaactgga 240

gattatgcag tgggaaatgt tgaaagtcca gtagcagtag tctctctagg ttctaatatg 300

aatgatgaat tggtagctgc aggggctgca atttcaggac cattacacac agaaaacttg 360

ggaatagaaa aggttgttgc aaatataata tcaaattcaa acatacgtta tgttcttata 420

tgtggatctg aggttcaagg acatattact ggtaaaacag ttgaagcttt atatgaaaat 480

ggtattgatg aagagaaaaa atcaattatt ggttctcctg gagctattcc attcgttgaa 540

aacttaccag tagaagctgt tgaaagattc caaaaacaag tttctattgt tagtatgata 600

aataatgagg atgttagtga aatatcatct aaaatagatg aatgtattag taatgatcct 660

ggagcatatg atgaagatgc aatgattgtt gaatttaatg aaacacctga agaggagttt 720

gaagttgatg aagtcacatt ttctgatgat tcagcagttg atttagcatc aatagttcta 780

cttgaggttg aaaatcgtat aagtatgatg aataatgaaa taaaacaaat tgcttcttta 840

gaaaaaatat cttcaggata ttatgctgga aaaatagaag gtatagttat tggatttatt 900

ttaacattgg tttttcttat aattattatt caaggtttgt gattggtaga tacaacagca 960

gttataattg atgatgattt agttttagat gttaataatg gtataatagg aacaaaagat 1020

aataatcaaa aacaacatct tccatttgat gatctggtag aaaaaataga tactctggaa 1080

gtggcaatta ataatctaga atcatcatta gatcctagaa caacatctaa tctatcacaa 1140

cctggaagag aaggaatata tgaaaaagca ggattaatta caaacattgt aattggtgtg 1200

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aatcaaaatt tattatatcc aatatttagt atgataatag caatgataat tgcttttgta 1560

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atgatattat cagtcatggc aatacaaaat ccatataatt cttgtatggg accaaatgaa 1800

gatcagtata gaacattatc attatcctta tccaatgcat ttttaatgct tataataatt 1860

tcaattatta gtattttaaa tagttcatac tggtatattt acattataat atcaattatt 1920

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cagaactaca tcttcggggc ggggctcaac gccgccaact ccggtgacat cgtcaccagg 3360

gccgaggctg gcctgaggag ctccatcgac aacgtctggt tctgcgcccg attcggaggc 3420

cccgtcaccg ggatggcctt cgggctgacg gtcttcctgg acaactggcg gaccaccatc 3480

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gaccaaatac atctacctcc acggttttct tccagccccc tatctgcgaa agcacaagat 5100

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gaattttctc agttaacaat cacgcgccaa attcaacaag ttgccgcaat tttccctgat 5220

aattctgaac caataacgct gataggttct agtttaggcg gtttaactgc tgcttatcta 5280

ggacagcgat atttacaagt acaacgctta gttttattag cgccagtttg gttttttatc 5340

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tctctcttct gccgtta 5417

<210> 185
<211> 5042
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 185, example 185: a designer hox-promoter-controlled Methyl-coenzyme M reductase (Mcr) DNA construct (5042 bp)

<400> 185
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatggataa tgagaaaaaa ttattcttaa aggctttaaa agaaaaattc 240

gatgaagacc ctgaagaaga aaacactaaa ttgcactgct atggtggatg ggaacaatcc 300

gcaagaaaaa gagaatttgc tgaagaagct gaaaaagctg tagaagcacg tggaggatta 360

ccattctaca acccagatat aggtgtacct cttggacaaa gaaaattaat ggcataccaa 420

gtatctggaa cagacacata tgtagaagga gacgaccttc acttctgtaa caactctgca 480

attcaacaat tagtagacga tattaaaaga actgtaattg taggtatgga tacagctcac 540

ggtgtacttg aacaaagatt aggtgtagaa gttactcctg aaacaatcaa cgaatacctt 600

gaaacaatca accacgcact ccctggagga gcagttgtac aagaacacat ggtagaagtt 660

gaccctggat tagtaactga ttcctacgca aaaatattca ctggtgacga cgacttatta 720

gatcaattag atcaaagatt tgtaatcgac atcaacaaag agttccctga agaacaagct 780

gaaatgctca aaaaatacat aggtcagaag acctaccaag taagtagagt acctacatta 840

gtagtacgtg cttgtgatgg aggtacaacc tccagatggt ctgctatgca aattggtatg 900

agtttcattt ctgcatacaa attatgtgca ggagaagcag ctattgctga tttctcatac 960

gcagcaaaac acgcagatgt aatttccatg gctagtgcaa tgccatcaag aagagcaaga 1020

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agagtaacag atgacccagc tgaagtaact ttagaagtta ttggtggagc agcaccatta 1140

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cactttggtg gatcacaaag agcagcagtt cttgcagcag gtgcaggttg ttcagtagca 1440

ttcgcaactg ctaactctaa cgcaggtgta aatggatggt acttaagtca attattacat 1500

aaagaaggtc acagtagatt aggattctat ggttacgact tacaagatca atgtggatca 1560

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agagaattta tgcctagcgg tgaacgtgac ttaatcatcc cagctttata aatgccaaca 1860

tatgaagaca aaatagattt gtatggggta gatggaaaac ttttagaaga acaagtacct 1920

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cgttctgttg ctataaactt agcaggtatt gaaaaatcat tagcaaacgg agcatacggt 2040

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gcaattgctg acaaaattga aaaaatgtta aaaattagtg atgatgatga tttcaattta 2160

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gaaatgggtg acacagtagg tgcattcgaa agaagccacc ttttaggatt agcataccaa 2580

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ccaaaagaca cgcctagtgg tggaggacaa ggtttatttg gtgtaactcc taaggaaatt 3480

tcccagatga gtagacataa tattgtattg ttccattttg gaggagtaaa aaatcatata 3540

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gaaaaatctg aaacacaggg tactattgtt gaactcataa ctgatgttat tcgtggagaa 3720

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tatactaagt aaatggcata tgaagtacaa tattatcctg gagaaagtgt tattgcagaa 3840

aaccgtaaaa aacacatgaa tccagatcat gaacttaaaa aacttagaaa tattgcagat 3900

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ccacctcttg atgaaatgga ctttgaagaa gatactatga aagacttcgt agaaccaatc 4020

gacggagcta aaaaaggaat tcgtataaga tacatacaat tcgcagactc aatgtataat 4080

gcacctgctc aaccatacga cagagcaaga tcatacatga gaagattcag aggagtagat 4140

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gaacttgatg aacctattga tgtaggagaa ccattaccag aagacgaact taagaaaata 4440

acaaccatct acagatctga caacgtcagc ttaagagatg atgaagaagt tattaaagta 4500

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cctccacggt tttcttccag ccccctatct gcgaaagcac aagatattag caagcgtttc 4740

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acgctgatag gttctagttt aggcggttta actgctgctt atctaggaca gcgatattta 4920

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ta 5042

<210> 186
<211> 5450
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 186, example 186: a designer hox-promoter-controlled Formate dehydrogenase DNA construct (5450 bp)

<400> 186
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gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatggttaa cctgaccatt gacggacaaa gggttacggc tccagagggc 240

atgaccatcc tggaggtggc ccgggaaaat ggtatccata tccccaccct gtgccaccat 300

ccaaagttgc ggcccctggg gtattgccgt ctgtgcctgg tcgacatcga gggcgccgca 360

aaacccatga cggcctgcaa tacgccggtc gccgagggta tggtgatccg gaccagcacg 420

cctgttatag aggagatgcg caagggtatt attgaaatgc ttttaagcct ccacccggag 480

gactgcctga cctgcgaaaa agcaggtaac tgccagctcc aggattgcgc ctacacttac 540

ggtgtaaagc atggcgaact gccagtaaaa cgcgaggaat tgcccgtttt gaaggaaaat 600

cccttcattg tgcgggatta taataaatgt atcgtttgcg gccgttgcgt ccgcgcctgc 660

caggaggtgc aggtccagag ggtcgtggac ctggtgggta aaggcagcgc cgcccgggtg 720

ggggcgacga aggccggagc ggaagtaagc ctggaagaag ggggctgcgt cttttgcggt 780

aactgtgtcc aggtctgccc ggtgggagct ctgacggaga aggccggcct gggccagggc 840

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gtaaacaacg gctggctgtg cgtaaaaggc cgctttggtt ttgactatat tcacaatcct 1020

gacaggataa ccaggccgtt gatccgggag ggagataggg aaaaaggcta tttccgggag 1080

gcttcctggg aagaagcttt agcccttgta tcccagaaat taactcagat taaaggcagc 1140

tacggctctg aagctctggg ctttctttgt tcagctaaat gtaccaatga agagaattat 1200

ctcttacaaa agctggcccg gggggtactg ggcaccaata atgttgatca ctgtgctcgc 1260

ctctgacact cttctacagt tgccggtctg gcaacaacct ttggcagcgg tgcaatgacc 1320

aattctatcg ctgacatcgc cagcgcagat tgtatctttg tcattggcag caatacaacc 1380

gagaaccatc ctgttattgc ccttaaagta aaagaagctg tccgtcgtgg agccaggctc 1440

attgttgctg atccccggcg tattgaactg gtgaacttca gttacttgtg gttaagacaa 1500

aaacccggaa cagatcttgc tctgctgaat ggactgcttc atgtaatcat caaggaagag 1560

ctttatgaca aagaatttat tgcccagagg acggaaggtt ttgaggctct aaaacttgcc 1620

gtagaggagt atacaccagc aaaggtgtca gaagttacag gtgttccggc aggcgatatt 1680

atcgaggcag caaggactta tgcccggggt ccgagctcta ctattttgta cgcaatggga 1740

ataacccagc atataactgg tacggccaac gtgatggccc tggccaacct ggccatggcc 1800

tgtggtcagg tcggtaaaga aggtaacggc gtaaatcccc tgcgggggca gagcaatgtc 1860

cagggtgcct gcgatatggg tggattaccc aatgtattac cgggatacca accagtaaca 1920

gatccggggg ttcgccataa atttagcgaa acctgggggg taccggactt acccggagaa 1980

cctggcctga cattaatgga gatgatggcg gcagcccaag aaggcaaatt gaaagggatg 2040

tatattttag gagaaaaccc tgtcttgact gatccagatg tctcccatgt aaaagaggcg 2100

ttaaagaacc tggagtttct ggtggtacag gatatttttt tgacggagac agccaggatg 2160

gcggatgttg ttttacctgg agcttccttt gcggaaaagg aaggtacctt taccagtacg 2220

gagcgccggg tgcagctttt gcataaagcc attgaacctc ccggtgaagc acggccggat 2280

tggcttattt taaacgattt gttgctgtta atgggatatc cgcggaaata ttcgtcgcct 2340

ggggagataa tgcaggagat agcagggtta actcccagct atgcgggtat aacttatgag 2400

cgcctggaag ataaagggtt acagtggccg gtgctttccc tcgaacatcc gggtacaccc 2460

gttctccatc gggaaaaatt tagcagaggt tatgggcagt tccaggtagt gcattaccgg 2520

ccgccggccg aagaacctga tgaagagtac ccgttcttat ttaccactgg caggaatttg 2580

tatcactatc atactgttat ttcccgtaag tccaggggggc tggaagagat gtgtcctgct 2640

cctgtggtgg agattaatga taacgatgca gcccgtttgg gtatacggga aggagaaatg 2700

attgagattg tttcccgacg tggtaaagta agggttaaag cattggttac ggatcgcata 2760

ccccggggcc aggtatttat gaatttccat ttccatgaag cagcagccaa cctgcttaca 2820

attgctgccc tggatccggt tgctaaaata ccgattataa aacctgtgct gtagttggga 2880

gaggtggtat ttagcacctg gggaggaaaa gttgtcgatc accggggcgg tccgtcgggg 2940

ggaggaccgt cctgggccgg ggaatttggc ggtcggcagt taaaggcctt tattggctgg 3000

gatggtctcg tagtcaccga cccggccgta gacctgctgg ctgctttaca ggcttactac 3060

caggccgtcc agggggaatc ctgcggccgc tgcgtaccct gccgggtagg gaccagggtt 3120

atttacaatg tcctggtacg catcgccggg ggcgaaggcc ttcccctccga tttagacctt 3180

ctccgacggg tggcctggat tgtacgggat ggttctctgt gcgagctcgg ccaggctggg 3240

gccaaagctg ttcttgattt tttagattat tatagcgagg ccttgcgacc tttcctggag 3300

gatagcggca gggtcgccgg gggtcaacgg agaccagggc ctggaggccg ggtgcaggtt 3360

ctggcttccg gacgggtcct ggtggggaac gaccgcggaa agggagcggc cgccgcttcc 3420

ccggcagccg gtttaaccta taaacctttt gttactgcgc cctgcctcaa gcggtgcccg 3480

gcccacctgg acatcccggc ttatattgac gccattaagg atggccgcta tgaggaatcc 3540

ctggccatca tccgccagcg gaccgccctg gccggtgtcc tgggacgggt ctgcgtccac 3600

ccgtgtgaag aaaactgccg ccgcggcaat gttgacgaac ccctggccat ccggggcctg 3660

aagcgcttcg tagccgatta tgaggtgaaa cgcggccgcc ggccggtcgc cgtctgcggg 3720

ggtaatctct ttacgggacc ctggcggccg gcaggacagg ccggtgggga agaaacaacg 3780

gccgtcactt caggcaagaa ggtagccatc atcggtgccg gaccggcggg tctcagcgcc 3840

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gtggccgtcg tcggcggcgg caatgtagcg atggattgcg cccgttccgc cctgcgccgg 4260

ggggcccggg aggtgcacct tatttaccgg cgttcccggg cggaaatgcc ggcccatgcg 4320

accgaggtca gggatgccga ggccgagggg gttatttatc acttcctggt taatcccacc 4380

gccctggtag cggaaaaagg caatatcaag ggtatgcagt gcgtccggat gaaacttggc 4440

gagccggacg attctggccg gcgccggccc gtacccgtgc cgggaacgga gtttttcctg 4500

ccctgcgata ttgtggtgcc ggctatcggc caggcggccg acctgtcttt cctggacggc 4560

cggatcgagg tgggcaaacg tggtaccatc agtgttgacc cggtgaccct ggctaccagt 4620

gtccccggcg tcttcgccgg cggcgatatc gtcctggggg ccaggacggt agttgaggcc 4680

gtggcccagg gcaaccgggc ggcagtttcc attgaccagt acctgcgcca ggggaccacc 4740

agtcccacgg tagaggacga gctggacgcg tggctggaaa aggtcggcgt ctatgacccg 4800

gaagaggatg taggaatcta cggcggccgg ccgcggcagg cagaaagggt ggcgccgttg 4860

gccgagcggg taaaggactt ccgggaagtt gaaggcggct tcgatttcta cgcaggcagg 4920

gccgaagccg aacgctgcct gcgctgttac cgggtcggga tgatggtcct ggccggagag 4980

ggggagagta atggttaatg aagtaagtag gaagcaggga gcaggggaaa gaaaattgac 5040

aactgtacaa gattaatcgc gtctctgagc aatgaccaaa tacatctacc tccacggttt 5100

tcttccagcc ccctatctgc gaaagcacaa gatattagca agcgtttcgc ccaaattcac 5160

atacagctaa caatccctga tctcaatgct ggtgaatttt ctcagttaac aatcacgcgc 5220

caaattcaac aagttgccgc aattttccct gataattctg aaccaataac gctgataggt 5280

tctagtttag gcggtttaac tgctgcttat ctaggacagc gatatttaca agtacaacgc 5340

ttagttttat tagcgccagt ttggtttttt atcccattgg ttgcccaaaa tgggtgaaga 5400

agctgtcaca agttggcaac aaacgatata ggttctctct tctgccgtta 5450

<210> 187
<211> 2324
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 187, example 187: a designer hox-promoter-controlled 10-Formyl-H4 folate synthetase DNA construct (2324 bp)

<400> 187
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttgtccaa ggtacccagt gatattgaga ttgcccaggc agccaaaatg 240

aaaccggtca tggaactggc ccggggactg ggcatccaag aggacgaggt cgagctttat 300

ggtaagtaca aggccaagat ctccctcgat gtctatcgtc gcctcaaaga caagcctgac 360

gggaaactaa tcctggtaac cgccattacc cctactccgg ccggcgaagg gaaaactact 420

accagtgtcg gtctcaccga tgccctggct cgcctgggga aaagggtgat ggtctgcctg 480

cgggagccct ccctgggacc cagctttggt atcaaaggcg gtgccgccgg cggtggttat 540

gcccaggtag tacccatgga agatatcaac ctgcacttca ccggcgatat ccacgccgtc 600

acctatgccc acaacctgct ggcggccatg gtggataacc acctgcagca gggtaacgtc 660

ctgaatattg atccccgtac catcacctgg cgccgggtca tcgaccttaa tgaccgggct 720

ctgaggaaca tagtcatcgg cctgggtggc aaagccaacg gcgtaccgcg ggagacaggg 780

tttgacatct ccgttgcctc ggaggttatg gcctgcctgt gcctggccag cgacctcatg 840

gatctcaagg aacgtttcag ccgcattgtt gtcggctaca cctatgacgg caaaccggtc 900

accgccggcg atctggaggc ccagggttcc atggctcttc tcatgaagga cgccattaaa 960

cccaacctgg tccaaaccct ggagaatacg ccggccttta tccacggtgg tcccttcgcc 1020

aatatcgccc acggttgcaa cagcattatc gcaaccaaga cggccctgaa actggcggat 1080

tatgtcgtga cggaagccgg tttcggtgcc gacctgggtg ccgagaagtt ctatgacgtt 1140

aaatgccgtt atgccggctt taaacccgat gccacagtca tcgtggctac cgtccgcgcc 1200

ctcaagatgc acggcggcgt acccaaatca gacctggcca ctgaaaacct ggaagccctg 1260

cgggaaggct ttgccaacct ggagaaacac atcgaaaata tcggcaagtt cggcgtaccg 1320

gcagtcgtgg ccatcaatgc cttccccacc gataccgagg ccgagctaaa tctcctctac 1380

gagttgtgcg ccaaagctgg ggccgaagtt gccctctcgg aagtctgggc taagggcggc 1440

gaaggcggtc tggaacttgc ccggaaggtg ttgcagaccc tggagagcag gccatccaac 1500

ttccatgtcc tctacaacct ggacctgagt attaaagaca aaattgccaa aatcgccacc 1560

gagatctacg gggccgacgg cgtcaactat acggccgaag ccgacaaagc tatccagcgt 1620

tatgaatccc tgggctacgg caacctgccg gtggtcatgg ccaagaccca atactccttt 1680

tccgatgaca tgaccaagct cgggcggccg cggaacttta ccatcaccgt gcgcgaggtg 1740

cgcctctcgg ccggagcagg ctttatcgtc cccatcaccg gcgccataat gaccatgccc 1800

gggctgccca aacgcccggc ggcctgcaac atcgacatcg atgccgacgg cgtcattacc 1860

ggtcttttct agtgaagtaa gtaggaagca gggagcaggg gaaagaaaat tgacaactgt 1920

acaagattaa tcgcgtctct gagcaatgac caaatacatc tacctccacg gttttcttcc 1980

agccccctat ctgcgaaagc acaagatatt agcaagcgtt tcgcccaaat tcacatacag 2040

ctaacaatcc ctgatctcaa tgctggtgaa ttttctcagt taacaatcac gcgccaaatt 2100

caacaagttg ccgcaatttt ccctgataat tctgaaccaa taacgctgat aggttctagt 2160

ttaggcggtt taactgctgc ttatctagga cagcgatatt tacaagtaca acgcttagtt 2220

ttattagcgc cagtttggtt ttttatccca ttggttgccc aaaatgggtg aagaagctgt 2280

cacaagttgg caacaaacga tataggttct ctcttctgcc gtta 2324

<210> 188
<211> 1487
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 188, example 188: a designer hox-promoter-controlled 10-Methenyl-H4 folate cyclohydrolase DNA construct (1487 bp)

<400> 188
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgctagcgcc gggccgcctc gactgtattc ttcaagagca tggcaatggt 240

catgggacct accccgccgg gtacgggagt gatccaaccg gccttctggg ccgcactctc 300

gaagtggacg tcgcccacca gctttttctc gccgacccgg ttgataccta cgtcgataac 360

taccgcgccc tctttaatca tatccccggt aatcaactcc ggcttcccta cggccgcaat 420

gagaatgtcg gcctgccggc attcggctgc caggtccctg gtgcgggagt gacagatggt 480

caccgtggcg tggcgggcca ggagcatcat tgctactggc ttgccgacga tattgctccg 540

gccgacgacc actgcctttt taccccttggg atcaataccg gcttttttcca gcaaaaccat 600

acagccgtgg ggtgtgcatg gatagaagca tttatcgccg ataaccaggt tgccgacgtt 660

ggccgggctg aacccgtcaa catccttttc cagggcgatg gcatcgatga ctttcttctc 720

atcaatatga tcaggcaacg gcaactggac caggatgccg tgaatcttgg gatctttatt 780

gagctggtcg atcagcttta agagttcggc ctggctggtc gccgccggca ggcggtgaac 840

ctcggagtag ataccgacct cctcacaggc gcggtgcttg ttacggacgt acacctggga 900

agccgggtct tcgcccacca ggactacggc caggcctggg ttaatacctt ccgcctttaa 960

ccgggatacc tcctccttta cttcagccct tacttcggca gcaatctttt tcccgtcgag 1020

gatctgggct ggcattgaag taagtaggaa gcagggagca ggggaaagaa aattgacaac 1080

tgtacaagat taatcgcgtc tctgagcaat gaccaaatac atctacctcc acggttttct 1140

tccagccccc tatctgcgaa agcacaagat attagcaagc gtttcgccca aattcacata 1200

cagctaacaa tccctgatct caatgctggt gaattttctc agttaacaat cacgcgccaa 1260

attcaacaag ttgccgcaat tttccctgat aattctgaac caataacgct gataggttct 1320

agtttaggcg gtttaactgc tgcttatcta ggacagcgat atttacaagt acaacgctta 1380

gttttattag cgccagtttg gtttttttatc ccattggttg cccaaaatgg gtgaagaagc 1440

tgtcacaagt tggcaacaaa cgatataggt tctctcttct gccgtta 1487

<210> 189

<211> 1487
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 189, example 189: a designer hox-promoter-controlled 10-Methylene-H4 folate dehydrogenase DNA construct (1487 bp)

<400> 189
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgctagcgcc gggccgcctc gactgtattc ttcaagagca tggcaatggt 240

catgggacct accccgccgg gtacgggagt gatccaaccg gccttctggg ccgcactctc 300

gaagtggacg tcgcccacca gctttttctc gccgacccgg ttgataccta cgtcgataac 360

taccgcgccc tctttaatca tatccccggt aatcaactcc ggcttcccta cggccgcaat 420

gagaatgtcg gcctgccggc attcggctgc caggtccctg gtgcgggagt gacagatggt 480

caccgtggcg tggcgggcca ggagcatcat tgctactggc ttgccgacga tattgctccg 540

gccgacgacc actgcctttt taccccttggg atcaataccg gctttttcca gcaaaaccat 600

acagccgtgg ggtgtgcatg gatagaagca tttatcgccg ataaccaggt tgccgacgtt 660

ggccgggctg aacccgtcaa catccttttc cagggcgatg gcatcgatga ctttcttctc 720

atcaatatga tcaggcaacg gcaactggac caggatgccg tgaatcttgg gatctttatt 780

gagctggtcg atcagcttta agagttcggc ctggctggtc gccgccggca ggcggtgaac 840

ctcggagtag ataccgacct cctcacaggc gcggtgcttg ttacggacgt acacctggga 900

agccgggtct tcgcccacca ggactacggc caggcctggg ttaatacctt ccgcctttaa 960

ccgggatacc tcctccttta cttcagccct tacttcggca gcaatctttt tcccgtcgag 1020

gatctgggct ggcattgaag taagtaggaa gcagggagca ggggaaagaa aattgacaac 1080

tgtacaagat taatcgcgtc tctgagcaat gaccaaatac atctacctcc acggttttct 1140

tccagccccc tatctgcgaa agcacaagat attagcaagc gtttcgccca aattcacata 1200

cagctaacaa tccctgatct caatgctggt gaattttctc agttaacaat cacgcgccaa 1260

attcaacaag ttgccgcaat tttccctgat aattctgaac caataacgct gataggttct 1320

agtttaggcg gtttaactgc tgcttatcta ggacagcgat atttacaagt acaacgctta 1380

gttttattag cgccagtttg gttttttatc ccattggttg cccaaaatgg gtgaagaagc 1440

tgtcacaagt tggcaacaaa cgatataggt tctctcttct gccgtta 1487

<210> 190
<211> 1565
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 190, example 190: a designer hox-promoter-controlled 10-Methylene-H4 folate reductase DNA construct (1565 bp)

<400> 190
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgctactcta ccttgggacg gggatacagg ccggcttcct tgacgatggt 240

ggggatgata tcttcccaca tgacggccat gatatggacg ccggctacac cctcgatgga 300

ctgcaggtgt ttaatctgtt ccacacagat ggccacccct tcggccttgg ggtcggaggc 360

ttttccatg cggttgacga tttcgtcggg gacaatcatc ccggccaccg attgttgcat 420

atatttggcg gcccgggcgg atttcagggg catgacgccg gcaataattt tggctctttt 480

atgcaggccg cgctcccgga ccagggccat aaagcgttca aaacgctcca tatcaaaaat 540

gcactgggtt tgaataaagt cggcgccggc attgatcttc ttctccaggc gcatgacccg 600

gaactcaaag gggtcggcaa aggggttggc ggcggcgccg atgaagaagc ggggttcctg 660

gcccttaatc tcttcaccgc aggcgaattt tttctcatcc cggaggtcct tcacgatccg 720

gatcagctgg agggaatcca cgtcatggac gtttttcgcc gtcggatggt taccaaaaga 780

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gttgtccgtc aggttcatgg catcaacgta gtccttgagg agagcggcgt gcttcttgat 1020

ctctgtagga tcggcgtgct tcggcggtcc aatctcaccg ctgaccagaa attgcccctg 1080

ggagaggatt ttcgccatct tgctttcaac cattgaagta agtaggaagc agggagcagg 1140

ggaaagaaaa ttgacaactg tacaagatta atcgcgtctc tgagcaatga ccaaatacat 1200

ctacctccac ggttttcttc cagcccccta tctgcgaaag cacaagatat tagcaagcgt 1260

ttcgcccaaa ttcacataca gctaacaatc cctgatctca atgctggtga attttctcag 1320

ttaacaatca cgcgccaaat tcaacaagtt gccgcaattt tccctgataa ttctgaacca 1380

ataacgctga taggttctag tttaggcggt ttaactgctg cttatctagg acagcgatat 1440

ttacaagtac aacgcttagt tttattagcg ccagtttggt tttttatccc attggttgcc 1500

caaaatgggt gaagaagctg tcacaagttg gcaacaaacg atataggttc tctcttctgc 1560

cgtta 1565

<210> 191
<211> 1442
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 191, example 191: a designer hox-promoter-controlled Methyl-H4 folate: corrinoid iron-sulfur

protein Methyltransferase DNA construct (1442 bp)

<400> 191

agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttaatccg ctaacaaatc tttacgatat gcctttaaaa agttcttgcc 240

gaaacggtcg ttacccagca gtaaatcggt ggtggtgact gcagtcatga tttttccatc 300

caagggatcg agaatggccg cgtccatgcc gctcgccata catattgtca ggaagtaacg 360

gttgatgagc ttcctcttcg gcatgttaaa cgagatgttg cttaaaccgg atactgtctt 420

cactttaaat aacctcttga tttccctcag gcactggaaa aacatcaccg cgttggtgtg 480

gtttacggcc agggggagaa ccagcggatc gatatacagg ttgctcaaat cataattctt 540

cctgctcagg gtctctatca gtccctcagt tatcttgatc ctttcttcag ccgttttcgg 600

gataccattg tcgtcaaccg tcaggccgat taccgggcac tggtattcga gtacaagtgg 660

caatacttct tccagccgct ttttttccat ggatatggag ttgattatca ccttgctctt 720

atcgcccttg acggtctcca gacccttttt tattgcctcc cctgctgtgc tatcaatgca 780

taaaggtaca tcagttactt cttgcactgt atgcacaagc cactccatat cggccacttc 840

gtcacagtgg gcggtattta gatccaggta atctgctccc gcttccgcct gcctgcgggc 900

caggtcctgc acggccgcgg cgtttttgtc attaatgatt tgacggacac tggggatcgc 960

gctatttagt ttttcaccga tgattaacat tgaagtaagt aggaagcagg gagcagggga 1020

aagaaaattg acaactgtac aagattaatc gcgtctctga gcaatgacca aatacatcta 1080

cctccacggt tttcttccag ccccctatct gcgaaagcac aagatattag caagcgtttc 1140

gcccaaattc acatacagct aacaatccct gatctcaatg ctggtgaatt ttctcagtta 1200

acaatcacgc gccaaattca acaagttgcc gcaattttcc ctgataattc tgaaccaata 1260

acgctgatag gttctagttt aggcggttta actgctgctt atctaggaca gcgatattta 1320

caagtacaac gcttagtttt attagcgcca gtttggtttt ttatcccatt ggttgcccaa 1380

aatgggtgaa gaagctgtca caagttggca acaaacgata taggttctct cttctgccgt 1440

ta 1442

<210> 192
<211> 2942
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 192, example 192: a designer hox-promoter-controlled Corrinoid iron-sulfur protein DNA construct (2942 bp)

<400> 192
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatggcttt aacaggatta aatatattta aattaacacc aaaaaagaat 240

tgtaaggatt gtggtttccc tacttgtcta gctttttcaa tgaaagtagc agcaggagct 300

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<210> 193
<211> 4859
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 193, example 193: a designer hox-promoter-controlled CO dehydrogenase/acetyl-CoA synthase DNA construct (4859 bp)

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<211> 6428
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 194, example 194: a designer hox-promoter-controlled F420 systhesis enzymes DNA construct (6428 bp)

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ccctgcgagc gagcgctcat agatgtcctt tagcattgaa gtaagtagga agcagggagc 6000

aggggaaaga aaattgacaa ctgtacaaga ttaatcgcgt ctctgagcaa tgaccaaata 6060

catctacctc cacggttttc ttccagcccc ctatctgcga aagcacaaga tattagcaag 6120

cgtttcgccc aaattcacat acagctaaca atccctgatc tcaatgctgg tgaattttct 6180

cagttaacaa tcacgcgcca aattcaacaa gttgccgcaa ttttccctga taattctgaa 6240

ccaataacgc tgataggttc tagtttaggc ggtttaactg ctgcttatct aggacagcga 6300

tatttacaag tacaacgctt agttttatta gcgccagttt ggtttttat cccattggtt 6360

gcccaaaatg ggtgaagaag ctgtcacaag ttggcaacaa acgatatagg ttctctcttc 6420

tgccgtta 6428

<210> 195
<211> 1778
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 195, example 195: a designer hox-promoter-controlled Pyridoxal phosphate-dependent L-tyrosine decarboxylase(mfnA for methanofuran synthesis) DNA construct (1778 bp)

<400> 195
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttgaggga gcatggggtc gacgaagata cgataatacg ggagctaaag 240

ggcgcctgtg cgaggaacgt cccgtacgag cgcgtgctca gctccatgtg cacgaccccg 300

catcccatcg ccattaaagc ccataaagag ttcatcgtct ctaacctggg cgaccccagg 360

ctttttccgg gtacggcctc gctcgagcat gcctgtatcg gcatgctggg cgagcttttg 420

catttgccat ccgccgtggg ctatatcact accgggggca ccgagagcaa tattcaggcc 480

cttcgtacgg cccgtcagtt aaaacacgtc gacccgggca aggccaacat cgtgctgccc 540

gagtccgcac attattcgtt tgataaggcg gcccagatgc tgggcgtatc cctccggcgc 600

acaccgcttg acgacgaaat gaaagccgac atggacgcca tggccggcct cgtcgataaa 660

aacaccatcg ccctcgtggc cgtcgccggc accacggagt tcgggcaggt cgaccccata 720

ccggccatca gtaagctggc gctcgatgag aacatctttt tacacgtcga cgccgccttc 780

ggcggcttcg tcataccgtt catgaaagac ccgtcgaagt acaggttcga cttcgagctc 840

cccggcgtca tgtccatcgc catcgacccc cacaagatgg gcatgagcac gataccctcc 900

ggagggctgc tttaccggga cgagcgccac atgaagtcgc ttgagatcag cgcccagtac 960

cttacttccc aggtccagtc gtcccttgcc ggcacccgca ccggcgcctc cgctgcggcg 1020

acctatgcgg tcatgcgcca cctggggatg gacggctacc gccgggtcgt gtcagagtgc 1080

atggataaca ccatgttcct ccgggacagc ctggtcgaca tggacattga gctggccctc 1140

gagcccatta tgaacatagt gacggcgaag ctgcccgatg cgcagtcgac ccgcaagaag 1200

ctctgcgaca tgggctggtt cgtctccacg acgtcgaggc ccgaagcgct ccgcatggtc 1260

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tcgtagtgaa gtaagtagga agcagggagc aggggaaaga aaattgacaa ctgtacaaga 1380

ttaatcgcgt ctctgagcaa tgaccaaata catctacctc cacggttttc ttccagcccc 1440

ctatctgcga aagcacaaga tattagcaag cgtttcgccc aaattcacat acagctaaca 1500

atccctgatc tcaatgctgg tgaattttct cagttaacaa tcacgcgcca aattcaacaa 1560

gttgccgcaa ttttccctga taattctgaa ccaataacgc tgataggttc tagtttaggc 1620

ggtttaactg ctgcttatct aggacagcga tatttacaag tacaacgctt agttttatta 1680

gcgccagttt ggttttttat cccattggtt gcccaaaatg ggtgaagaag ctgtcacaag 1740

ttggcaacaa acgatatagg ttctctcttc tgccgtta 1778

<210> 196
<211> 3215
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 196, example 196: a designer hox-promoter-controlled Methanopterin synthesis enzymes DNA construct (3215 bp)

<400> 196
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatgacagt ttcagaattt ccagatactc aggataaaca accatccatt 240

ccaatatcac taacaagagt tggagtaaca ggtgtaaaga aattaataaa aataaaaaga 300

gaagataaac gtcctattat tctaatacca acatttgatg cttttgtaga tttacctagt 360

actcagaaag gagtacacat gtctagaaat ccagaagcta tatctgaaat tgttgatgag 420

gctgcaaatc aatcggaaat tcatcttgaa aatatatgtg caaatcttgt aaaaagatta 480

cttgaaaaac atgaatatgc attacatgca gaaacagagg caaggggaga atatattata 540

aataaattat ctccagtatc taaaagaaaa acacaggaaa caacacatat catagcaaga 600

gcaattgcta tgaaagatga tgagggtaat atttctgtta gaaaaatgat tggtgcagaa 660

gttattggaa tgactgtatg tccatgtgca caagaatctg ttgaaaagga ttctaaagat 720

aaattactgg aatttttaga tgaagaaact acacaaaaag tgttggatgt agtaacattt 780

gcttctcata atcaaagggg tgttgggaca atacttcttg aagtaccaga aaaacaagat 840

gttaatgtgg atgatttaat aaaaataata caggatgcta tgagttctcc tgtttgtgaa 900

atattaaaac gtccagatga aaatagaatt gtaacaaatg cacatcaaaa tccagtattt 960

gttgaggatt gtgtaagaaa catggtaata ggattacttg aaaaatatcc taatttacct 1020

gatgattctg tagttacaat taaacaagta aatcaagaaa gtattcatca acataatgct 1080

tatgctgaaa aagttgcatc ttttggtaaa ttacgagaag aaaataagga gtagatgaat 1140

gatctgatcg ctcttgcaga ggatattaag aacgaaaaat taaaaaaaaa ggttgtcgaa 1200

tttataaacg atccgattcc aaaacatcct gaaattgaaa gtactggcat aacacttgaa 1260

acctcccccg caagcgttaa aagacatcac aaatactccg gaggattaat cgaacatacg 1320

atcgcagtta caaaaatggc tgtaaaaatg gctgaagcct tggaagaaac atatggaatt 1380

gaattaaata gagatttgct aatttccgga ggaatactcc acgatcttat gaaaccacaa 1440

aattatcagt taaaagacgg aaaattcgac catctttcaa attttcacct cgaccatttg 1500

acacttggaa ttgcagaact gtacagaagg gactttccac ttgaagttat aaaagttgta 1560

gctagccatc acggagatca tggtcctgta agtccagatt caatagaagc gtggctaatt 1620

catcattcag acaatgtaga cgctgcaatt aatgatatag gaattagaat atgtcaggcg 1680

agagctagag aatttggaat tgatgattca caaatatata aaatcgtcaa tccattaaaa 1740

ttatatgaaa tgcgtaaaaa attgggaaaa gataaagtga aagaattttt aaaggaaaaa 1800

ttggaaataa aggatgaata attgttaagg atacgaacac cttcccgcct ccacatgacg 1860

ctcatcgaca tgaacggaga gatcggcagg atcgacggcg ggatcggaat aacgctcgac 1920

aagccttata tcgagatcac ggcgaaaaag agcgatacgg tcacggttaa gggagaccct 1980

gacctgcgcg agcgcatgcg caaggcatgc gaggcattcg gcccgggata tggcgtggag 2040

atcgacatta aaaagtcgta ctggaaccat atcggcctcg gatcgggtac ccaggccgct 2100

ctggccgcgg gcaccgccgt agcaaaattg tatggcctgg atatgtcgtc cgccgaggtt 2160

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gattgtatgg tcatgaagac aagggcccgt aattcggggg cagatatcga atgcctcccg 2760

tagtgaagta agtaggaagc agggagcagg ggaaagaaaa ttgacaactg tacaagatta 2820

atcgcgtctc tgagcaatga ccaaatacat ctacctccac ggttttcttc cagccccta 2880

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cctgatctca atgctggtga attttctcag ttaacaatca cgcgccaaat tcaacaagtt 3000

gccgcaattt tccctgataa ttctgaacca ataacgctga taggttctag tttaggcggt 3060

ttaactgctg cttatctagg acagcgatat ttacaagtac aacgcttagt tttattagcg 3120

ccagtttggt tttttatccc attggttgcc caaaatgggt gaagaagctg tcacaagttg 3180

gcaacaaacg atataggttc tctcttctgc cgtta 3215

<210> 197
<211> 4226
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 197, example 197: a designer hox-promoter-controlled Coenzyme M synthesis enzymes DNA construct (4226 bp)

<400> 197
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttaaagat tcacctttcc gagagtatct cccctcaagc ctcttcttat 240

ggtttcaagg gctgttatct cttcgggggg tatgtttcca aggttaacgt ctggtcctat 300

tttcagtatg aagtaaacct gctggttttt ctgggggggcc tcccatatta tcctatcctg 360

cgggagttca ttgaggaggt ggttgaattc ttcctccttt acgtttccat tctcatcgta 420

tatacctata ttatggccgc tctcccgggc ctccatgagc accatgcagg ctccagcttt 480

gaggtcggcc ctgacaagtt caaccctatc ctccgggctg agaagtctgt cccttaccgg 540

gtccttttta ccaacctctg atatgatctg gaacccctcg ttgaccgctt tctctataag 600

ttcacatttt tcatcggttt caatctcaac ggttccattt gatatttcca gtgtttcaaa 660

accaaggctt cttgcctcgt caaagtactc ctgaatttta tcgttgagat aggcgatctc 720

aaatagggtg cccccaggat aggcctccac atcgaatgaa cggtacatct caatttttc 780

catgacagcg tcacgtctgt ggaggggggag ggttccccat ccaaacttta tgaaatcaac 840

gtaatctgat gaaatctcca tgaggtcacg ggctgtttta atgcccattc ccttatcgag 900

aaccatggtt attccatttt ttctgggttt cccacgcctt ggaggtgtga gaaagtcaaa 960

ggcgttcata tgagggtaag tctcagcttt gaaaaaccgg agggcagtgg actctgcata 1020

atggtggacc ttctgagggc aagtgcaacc ataacctctg ccctggacag tttcagggag 1080

gtcatccctg ttggggacgt tgaggaggca acggaatact ccaggatggg ctatgtggtg 1140

gcaggggagc gtggtggtga gaccctgcca ggattcctgg ccaactcccc actggaggtg 1200

agggaacatt caggtgatgc ccttgtgcta accaccagta acggtacaag gatccttgag 1260

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tacgctgagg cctcagtact tgcagttcag gacaggtcca tggttgatga tgccataaga 1500

aaatccaggt cagccaggag gctcagggaa cttggttttg ccggtgatat tgaatactgc 1560

ctcagaagga atataacaga aaacgtaccc gtatacaggg acggcaggat atcgctgatc 1620

taaatgagga taagtgctga agaggaagtt agaatcataa aggaaatact caccgccatg 1680

gaggttccag aggaggtttc agagatagtg gctgatgtta ccctggacgc ggacctgaag 1740

ggtttcagtt cacatggaat cggtcgtttc ccccagtacg ttgaggggct gcgatgtggg 1800

acaataaagc cccatggtga cataaccatt gaaagggaaa ccccctcaac ggccctcata 1860

aacggtaacc acatgttcgg acactttgtt gcctgcaggg caatggaact tgcaattgaa 1920

aaggccaggg ataccggcgt cgggcttgtt ggtgtccatg actcaaacca ctttggtgtt 1980

gccggatact actcggacat ggcggtcatg aacgacatga taggggttgt gatagcaaat 2040

acagagcctg ctgtggcacc cataggtggc aaaacaccca tcctgggaac aaaccccgtg 2100

gccataggga tcccatcaaa caggcactat gtctcggttg acatggcaac ctcagcatcc 2160

gccaggggca aactcctgga ggccgccagg aagggtgaga gtatacccga aaacatagca 2220

atggacgccg atggaaaccc cacaaccgac cctgaacttg cccttaaggg gtccatactc 2280

cccttcggtg ggcataaggg ttatgcgctt tcattcatga tagagatcct agcaggtccc 2340

cttgtggggg ctgcctttgg ggctgcggtg aagggaaccg cgaacccccg ggagatgtgc 2400

accaagggcg acctcatgat ggccatagac ccctcaaaga tggtcgacct ccaggaattc 2460

aaatccagcg tggatgaatt catcgaggag gttaaatcat ccggggacgt cctcataccc 2520

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ctgggccttg tttccgctat cggccagggc ctggccatgg gcctgagccg ggaggtcatc 3420

acgctggacg gcgacggcag tattttaatg aacccgaacg tgctggcgag cgtcgcccag 3480

gaaaagcccg agaacctcac catcatttgc ttcgataaca gcgcccacgg ctccactggc 3540

aaccagaaga cctattcgga gagcatggac ctcgagcttc tggcgaaggc gttcggcatc 3600

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cctttgacac cggtagagat caaggagcgg tttatggggg cggtcacgcg ctgatgaagt 3780

aagtaggaag cagggagcag gggaaagaaa attgacaact gtacaagatt aatcgcgtct 3840

ctgagcaatg accaaataca tctacctcca cggttttctt ccagcccccct atctgcgaaa 3900

gcacaagata ttagcaagcg tttcgcccaa attcacatac agctaacaat ccctgatctc 3960

aatgctggtg aattttctca gttaacaatc acgcgccaaa ttcaacaagt tgccgcaatt 4020

ttccctgata attctgaacc aataacgctg ataggttcta gtttaggcgg tttaactgct 4080

gcttatctag gacagcgata tttacaagta caacgcttag ttttattagc gccagtttgg 4140

ttttttatcc cattggttgc ccaaaatggg tgaagaagct gtcacaagtt ggcaacaaac 4200

gatataggtt ctctcttctg ccgtta 4226

<210> 198
<211> 5198
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic Construct- SEQ ID NO: 198, example 198: a designer hox-promoter-controlled Coenzyme B synthesis enzymes DNA construct (5198 bp)

<400> 198
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgttgcccga tcgggtacgg atcttcgaca cgacgctaag agacggtgag 240

cagacaccgg gcgtcagcct cacggtggag gaaaaggtcg agatcgcgag gaagttggac 300

gagttcggcg tggataccat cgaagcgggc ttccccgtag ccagtgaggg tgagttcgag 360

gcagtgaggg cgatagcagg cgaggaactg gacgcggaga tatgcgggtt ggccaggtgc 420

gtgaaggggg acatagacgc ggcgatcgac gccgacgtgg actgcgtgca cgtgttcata 480

gccacgtcgg acatccacct cagatacaag ttggagatgt cccgggaaga ggcattggag 540

cgtgccatag agggcgtgga gtatgccagt gaccacggag tcaccgtgga gttctccgcg 600

gaggacgcca cacggacgga ccgggactac ctactcgagg tctataaagc taccgtggaa 660

gccggcgcgg atcgtgtcaa cgtcccggat actgtgggag ttatgacccc tcccgagatg 720

tatcgactga cggcggaagt tgtcgacgcc gtagacgtgc cggtcagcgt gcactgccac 780

aacgacttcg gcatggccgt ggccaactca ttggccgccg tcgaagccgg ggctgaacag 840

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gcggagacgt acgaacctat acggcccgag gacgtcggtc atagacggcg tatagtacta 1140

ggtaagcacg ccggtcggca cgcgatcaag aagaagctcg aggagatggg gatcgaggtc 1200

acggaggaac aactcgacga gatcgttcgg cgcgtcaagg agctcgggga taagggcaag 1260

cgcgtcaccg aagacgatct tgaagccata gcccgagacg tcgtcggcga ggtacccgag 1320

tccgaagctg cggtcaagct ggaagagatc gccgtgatga ccgggaacaa attcacgccg 1380

acggcgtcgg tccgtgtgta cctggacggt gaagagcacg aagcggcatc gaccggtgtg 1440

ggctccgttg acgcggcgat acgggcactg cgcgaagcga tcgaggagct cggtatggac 1500

gtggagctga aggagtaccg cctagaggcc atcaccgggg gcaccgacgc cctcgccgag 1560

gtcacggtga ggttggagga cgaggacggg aacgtcacca cggcccgcgg tgccgccgag 1620

gatatcgtga tggccagcgt gaaggcgttc gttcggggcg tgaatcggct ggcacgtcga 1680

cgtagggact aagtgaacgc gtcgccgacc gtcgtggtaa tccccgggga cgggatcggg 1740

ccggaagtca tcgacgcggc cctgaaggtc gtgcgggcgg ttctgggtga cgaactcgag 1800

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gagacgatcg agcgctgccg cgaggcggac gccatgctct tcggcgcgtg cacgactccg 1920

gaggacccgg aggccaagag tcccatcgtg acgctgcgga aagagctcgg actctacgcc 1980

aacgtccgtc ccgctcgctc ctggcccgta ccgcgacctg tcgacaccga gttcgacctg 2040

gtgatcgtcc gggagaacac cgagggtctc tacaccggat gcgagtgcga gatccacgac 2100

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ggaggcacag cgctcgccag ggttaagccg atcatcattc ataccgaggc acattgagca 2880

tcccgccgcc cgccactcga aaccagcatt tcgaaaaatc atatccagac cttcccgctc 2940

tgcctgcagg cgaacctggc cagaccctgg aacaatcaga gcctgtttca ccgaccggtg 3000

cactttctgt ccctgcacca gattagcgac ggctctcaag tcctccatgc gggcattggt 3060

gcaagaacca atgaaaacct tgtcgattga caacccccttc agggggcgcc cgggctcaag 3120

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atccggggtt ttgccatcaa taccggtgac catctctggg gatgtgcccc aggttacctg 3240

cggcaccagg gcttccagcg gaaaatgctc ctcgcgatca aaatctgcct ccgcatccga 3300

aaccaacgtg cgccaatact cacgagcctg ctccaggcgc tcgccaactg gcgcctgggg 3360

tctgccctcc acgtattgtt ccgtcacccg gtcataagca accatgcctg cccgggcacc 3420

ggcttcaatg ctcatgttgc agatggtcat gcgcccctcc atggacaggt tacgaatggc 3480

tgcaccggcg tattcaatgg catatccgtt gccgccagcg gtccctatac gcccaatcag 3540

cgccagaatc aggtcttttg gggtcacccc gaaacctggc tgaccttcga acaccactcg 3600

catgtttttc tgtttctggg tccgcagggt ctgggtggcc agcacatgct ccacctcgct 3660

ggtaccgatt cccatggcga gcgtcgcgaa agcgccgtga gtggaggtat gagagtcgcc 3720

gcaaacgatg gtcatgcccg gcaaggtcag gccctgctcc ggacccacca cgtgtacgat 3780

cccttgccgg gcatcttcca gttcaatcaa cggaataccg aattcctcgc aattacgcga 3840

cagggtttcc acctgttttc gcgcaacacg gtcggcaata cctgcgacgc cgagttcccg 3900

tttccgggtt ggtacggcat gatcgggcac cgctacattg gccggaattc gccagggctt 3960

tcgaccagcc gagcgcagac cggaaaaagc ctggggcgtg gtcacttcgt gcagcaaatg 4020

acggtcgatg tagagcaacg cggaaccgtc aggcagttca tccaccaggt ggcgctgcca 4080

gagtttgtcg tagagcgtac gcgcagccat ctactcaaaa agccagggtt ccagggttct 4140

tcggttcgcc tcgtaggcct gaatggagcc tgaaaaagtc agggtacgac ctatctcatc 4200

cagaccgctg aggaggttct cccgccgacc cgactcaacc acgaaacgcc aggtcttctt 4260

cggactgcga atctcgcatt gctccaaatc caccgtcagt tccagaccgt ccgtgtcact 4320

ggccaaattg aacaattcgt caatggttga ctcgtcgagt attaccggaa gcaggccatt 4380

gttaaagcag ttgttaaaga aaatatcccc aaaactgctg gcaataaccg ctcgaacgcc 4440

aaagtccttc agggcccaga ccgcgtgttc ccgggatgac ccacagccaa agtttgccct 4500

ggccagcagg atggaagcac ggtcgtaggg cgcccggttc agaatgaagt cgggatccgg 4560

tctgcgctcc gacacgggga tgtccacatc accggggtcc agatatcgct catcatcaaa 4620

gaggaagtct gcaaacccgg ttttctccag cattttaaga tactgcttgg gcagaattgc 4680

gtcggtgtcc acattcgacc ggtcgaaagg aacgaccaga ccggtgtgtg ttttgaatgc 4740

ctccattgaa gtaagtagga agcagggagc aggggaaaga aaattgacaa ctgtacaaga 4800

ttaatcgcgt ctctgagcaa tgaccaaata catctacctc cacggttttc ttccagcccc 4860

ctatctgcga aagcacaaga tattagcaag cgtttcgccc aaattcacat acagctaaca 4920

atccctgatc tcaatgctgg tgaattttct cagttaacaa tcacgcgcca aattcaacaa 4980

gttgccgcaa ttttccctga taattctgaa ccaataacgc tgataggttc tagtttaggc 5040

ggtttaactg ctgcttatct aggacagcga tatttacaag tacaacgctt agttttatta 5100

gcgccagttt ggtttttat cccattggtt gcccaaaatg ggtgaagaag ctgtcacaag 5160

ttggcaacaa acgatatagg ttctctcttc tgccgtta 5198

<210> 199
<211> 1636
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 199 presents example 199 of a designer Synechocystis sp. strain PCC 6803 nirA-promoter-controlled NAD-dependent formate dehydrogenase DNA construct (1636 bp)

<400> 199
agaaaatctg gcaccacacc ctaaatgcgt aaactgcata tgccttggct gagtgtaatt 60

tacgttacaa attttaacga aacgggaacc ctatattgat ctctacatga tgaaaatcgt 120

tctcgttttg tactccgctg gtaagcacgc cgccgatgaa ccaaagttgt atggttgtat 180

cgaaaatgaa ttgggtatta gacaatggct tgagaagggc ggccatgaat tggttactac 240

atcagacaaa gagggtgaaa actctgagtt agaaaagcac attcctgacg ctgatgtgat 300

tatttccact ccattccatc cagcctacat cacgaaggag agaatccaaa aagccaagaa 360

gctgaagttg ttggtcgttg ctggtgtcgg ttccgaccac attgacttgg actacattga 420

acaaaatggc ctagatattt cggtcctaga ggttactggt tccaacgttg tttcagtggc 480

tgagcatgtc gttatgacta tattgaactt ggtgagaaac tttgttccag ctcacgagca 540

aattgttaac cacggctggg acgttgctgc catcgccaag gacgcctacg atatcgaagg 600

taagaccatc gcaacaattg gtgctggaag aattggttac agagtcttag agagacttgt 660

ggctttcaac cctaaggaat tgttgtacta cgactaccaa ggtcttccaa aagaggccga 720

ggaaaaagtt ggtgccagaa gagtcgacac tgtcgaggag ctggttgctc aagccgatgt 780

tgttaccgtc aatgccccac tgcacgcagg tactaagggt ttagttaaca aggagcttct 840

gtccaagttc aagaagggtg cttggttggt taacacagcc agaggtgcca tctgcaatgc 900

tcaagatgtc gctgatgccg ttgcatctgg tcaattgaga ggttacggtg gtgacgtctg 960

gttccctcag ccagctccaa aggaccatcc atggagagat atgagaaaca agtacggata 1020

cggaaacgcc atgactcctc attactcagg taccactttg gacgcccagg tcagatatgc 1080

cgaaggtacc aagaacatct tgaactcatt ccttaccaag aagtttgact acagacctca 1140

agatgtcatt cttttgaacg gtaagtacaa gaccaaggct tatggtaatg acaaaaaggt 1200

cgcataatag taatgagtta cagttttggc aattactaaa aaactgactt caattcaatg 1260

ttagcccgct cccgcgggtt ttttgttgct ttttcacagt gactataggt aatcagcaac 1320

acaatacggc cctgttcttt ggacagtttt tgtataatgt tgaccgcatc ctgaccggat 1380

tttttatcta agtggggaat tgtcaattgt caattaaagc taagttctac taatgtttta 1440

gaaggcattg tcgattgaaa ataagggttg aatggagaaa attttgagcc tttgtcaaag 1500

ataaaaattt atttcaacag ttttttaact agccgaacca gagaatgacc cagtggcgct 1560

gactttgctc ccgagttttt gttagaaatt accctcaaga agtaatctaa taataaggtt 1620

ctctcttctg ccgtta 1636

<210> 200

<211> 1567
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 200 presents example 200 of a designer Synechocystis sp. PCC 6803 nirA-promoter-controlled Formaldehyde dehydrogenase DNA construct (1567 bp)

<400> 200
agaaaatctg gcaccacacc ctaaatgcgt aaactgcata tgccttggct gagtgtaatt 60

tacgttacaa attttaacga aacgggaacc ctatattgat ctctacatgg tggacatcgt 120

cgtcccggat cccgggcccg gcgaagccgt cgtcgatatc agcgcttgcg gcgtttgtca 180

caccgatctg acctaccgcg agggcggcat caacgacgag tacccgttcc tgttgggcca 240

cgaggccgcg ggcacggtcg aagcggttgg gcccggggta accaacgtgg agccaggcga 300

tttcgtgatc ctgaactggc gtgcggtgtg cggccagtgc cgggcctgca aacggggccg 360

gccgagctac tgtttcgaca cgttcaacgc cgagcagaag atgacactga ccgacggcac 420

cgaactcacc ccggcactgg gcatcggggc attcgccgac aagacgctgg tgcactccgg 480

ccaatgcacc aaggttgatc ccgcggccga ccccgccgtg gcgggcctgt tgggttgcgg 540

ggtgatggcc ggactgggcg ccgcggtcaa caccggtggc gtcacccgcg atgacaccgt 600

cgcggtgatc ggttgtggcg gcgtgggtga tgccgccatc gccggtgcgg cgctggtcgg 660

agccaagaag atcatcgccg tcgacaccga caacaccaaa ctggagtggg cgcgcgcctt 720

cggcgccacc cacaccctca acgcccgcga actcgacgtc gtcgaaacga tccaggacct 780

caccggcggc tttggggtcg acgtggtgat cgacgcggtc ggccggcccg aaacctggaa 840

gcaggcgttc tacgctcgtg atctggccgg aaccgttgtc ctggtggggg ttcccacccc 900

cgacatgcgg ctggacatgc cgctggtgga cttcttctcc cgcggtggcg cgttgaagtc 960

gtcctggtac ggcgattgcc tacccgagcg cgacttcccc accctgatcg acctctacct 1020

gcagggccgg cttccgctgg acaagttcgt ttccgagcag atcggtctgg gcggtatcga 1080

ggaggcattc gagaagatgc acgccggcaa ggtgctgcgc tcggtggtgg tgttgtagta 1140

gtaatgagtt acagttttgg caattactaa aaaactgact tcaattcaat gttagcccgc 1200

tcccgcgggt tttttgttgc tttttcacag tgactatagg taatcagcaa cacaatacgg 1260

ccctgttctt tggacagttt ttgtataatg ttgaccgcat cctgaccgga ttttttatct 1320

aagtggggaa ttgtcaattg tcaattaaag ctaagttcta ctaatgtttt agaaggcatt 1380

gtcgattgaa aataagggtt gaatggagaa aattttgagc ctttgtcaaa gataaaaatt 1440

tatttcaaca gttttttaac tagccgaacc agagaatgac ccagtggcgc tgactttgct 1500

cccgagtttt tgttagaaat taccctcaag aagtaatcta ataataaggt tctctcttct 1560

gccgtta 1567

<210> 201
<211> 1549
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 201 presents example 201 of a designer Synechocystis sp. PCC 6803 nirA-promoter-controlled NAD(P)H-dependent Alcohol dehydrogenase DNA construct (1549 bp)

<400> 201
agaaaatctg gcaccacacc ctaaatgcgt aaactgcata tgccttggct gagtgtaatt 60

tacgttacaa attttaacga aacgggaacc ctatattgat ctctacatga tgaaaggtaa 120

atctattgtc gttgagtctg gcggtggttt tgagcgtgtc agagtcagtg atgccgaggc 180

gcaagcgcct aaagcggggg aagttctggt caggatacat gccaattcac tgaattatca 240

tgattatgct gttgttaaag ggttatggcc tgcatctgaa aacagaatac caatggctga 300

tggcgcaggt gaagtgattg aggttggccc aaatgtaact gaatttgcag tgggtgacag 360

cgtcgtgagt acgttttcc cttcctgggt aaacggtgcc cccatcgttg acggtttctc 420

aacggttccg ggcgatggcg tagatggtta tgcaagagaa tatgtgactg ccagtgctga 480

ggctttcaca aagtcgccca caggatggtc tcacaccgaa gcggcgactt tgaccacagc 540

tgcggtgaca gcttggcgag ctttgtttga ttttaatcca cttaaacccg gtgaaacggt 600

gcttttgcaa ggtacgggtg gagtctctat tttcgcttta caatttgcca aaatggctgg 660

cgccaaagtg atcgtcactt cctccagtga gcaaaaactc gcaaggctca aggagatggg 720

agctgatcat gtgatcaact acaaaaaaga acctaaatgg ggctttttag ccagagaact 780

taatgatgga aaaggggttg atcacgtcgt cgagattgga ggcgctgaaa cactagagca 840

gtctctcaac gcgatacgtg tcgctggcca aatttcacta atcggtatcc tgtctggaca 900

aacttgcgat ataaatattg tgaagtcttt tgtgaaacag gcgaggctgc agggtgttct 960

tgttggcagt agagggcatc agcaggagat gattagagct atcgaggtta ataagctcaa 1020

gccgattatt gatcgtacgt ttgctttgca cgagattgtt caggcatttg agtatcaaga 1080

gacgaatcag catttcggaa aaatttgttt agagttttaa tagtaatgag ttacagtttt 1140

ggcaattact aaaaaactga cttcaattca atgttagccc gctcccgcgg gttttttgtt 1200

gctttttcac agtgactata ggtaatcagc aacacaatac ggccctgttc tttggacagt 1260

ttttgtataa tgttgaccgc atcctgaccg gatttttat ctaagtgggg aattgtcaat 1320

tgtcaattaa agctaagttc tactaatgtt ttagaaggca ttgtcgattg aaaataaggg 1380

ttgaatggag aaaattttga gcctttgtca aagataaaaa tttatttcaa cagtttttta 1440

actagccgaa ccagagaatg acccagtggc gctgactttg ctcccgagtt tttgttagaa 1500

attaccctca agaagtaatc taataataag gttctctctt ctgccgtta 1549

<210> 202
<211> 1180
<212> DNA
<213> Artificial Sequence

<220>

<223> SEQ ID NO: 202 presents example 202 of a designer Thermosynechococcus elongatus nirA-promoter-controlled Formate dehydrogenase DNA construct (1180 bp)

<400> 202

agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac cttgaacgat aaagtaactg cggtcaggga tgtatggcgc tatgaacaag 300

gggaaataag caaagtagaa gaccggatgg tgacggaatt ccctttgaca gtaatactga 360

atggcagtga atttgtgacg ctcgtttgta cgcctgagca tatcgaagag cttgtcatcg 420

gatttctcgc atcagagggt gttatacgat ttcaaaaaga aattaaaagg tttacaatag 480

atgaaagtct cggttttgta tatgtcgacc tcgttcaccc tgagacattg gatcaaaagg 540

attatacgaa acgggtgatc ggctcatgct gcggaaaggg ccgtcatttt tattttcagc 600

aggatgtcaa aacagccaag acggctgtca gccaaatcaa gatatcgcct gaggcatgtc 660

tggcgcttat gaaagacatg cagcaaggga gcgggacgtt tcaggatacg ggaggcgtcc 720

ataatgcggc gctttgcgac acagagaagc ttctgttgat gcgcaccgat atcggtcggc 780

acaacgcact tgataaacta tacggacact gccttctaaa cgggatgtcc gtacgcgaca 840

aactgattgt gtttagcggc agaatctcat cagaggtcct gttaaaagcg gccaaaatcg 900

gcgtgtcgat tgtcatttcc aaatcggccc cgacggagct tgcgattcaa atggctgaag 960

aattgaatat cacagcgatt ggatttgtca gaaacggatc atttaatgta tatacacacc 1020

ctgagagaat cagggagtag taaggctgag atcttcttca gtgcattgta gttgaatgaa 1080

gggttagggg ggaaatgccc ccctattttt tgtctagcca tcctgccacg tttgacaggg 1140

tagcaatttc gacacgatag ggttctctct tctgccgtta 1180

<210> 203
<211> 1432
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 203 presents example 203 of a designer Thermosynechococcus elongatus nirA-promoter-controlled formaldehyde dehydrogenase DNA construct (1432 bp)

<400> 203
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgaaagca cttacatacc tagggccagg aaaaaaagaa ttaatggaaa 300

aaccaaagcc aaaaattgaa aaggaaaccg atgcaatcgt caaaataata aaaacaacga 360

tttgtggaac ggatttgcac attctttcag gagatgttcc tactgttgaa gaagggcgga 420

ttttaggaca cgaaggcgtc ggaattattg aagaagttgg ttcggccgta aagaatttta 480

aaaaaggcga cagagtgttg atttcttgca ttacctcttg tggaaaatgc gaaaattgca 540

agaaagggtt atacgcccat tgcgaagatg gcggctggat cttaggccac ttaattgatg 600

gaactcaagc agaatatgta agaattccgc acgcagacaa cagcctttat cctattccgg 660

aaggcgtgga tgaagaggct cttgtcatgc ttagtgacat tcttccaaca ggatttgaaa 720

tcggcgtgtt gaacggcaaa gttcagcctg gacaaaccgt cgccattatc ggagctggtc 780

ccgtaggtat ggcagcgcta ttaacagccc aattttattc accagcagag atcattatgg 840

ttgatttaga cgataaccgt ttagaagttg cgaaaaaatt tggcgcgacc caagtggtga 900

atagcgctga tggcaaggca gtggaaaaaa ttatggaatt aaccggcggg aaaggtgtag 960

acgtcgcgat ggaagccgtc ggaattccgg caacatttga tatttgtcaa gaaattgtca 1020

aaccaggtgg ctatatcgcc aatatcggtg ttcatggaaa aagcgtggaa tttcacattg 1080

aaaaattatg gatacgcaac attacgttga caaccggtct tgtcaacacg acttctacgc 1140

cgatgttatt aaaaacggtg cagtcgaaaa aattgaagcc ggaacaatta attacccatc 1200

gtttcgcctt ttcagacatt atgaaagcgt atgaagtatt tggaaatgca gcaaaagaaa 1260

aagcgttaaa agtcattatt tccaacagtt aataaggctg agatcttctt cagtgcattg 1320

tagttgaatg aagggttagg ggggaaatgc ccccctattt tttgtctagc catcctgcca 1380

cgtttgacag ggtagcaatt tcgacacgat agggttctct cttctgccgt ta 1432

<210> 204
<211> 1579
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 204 presents example 204 of a designer Thermosynechococcus elongatus nirA-promoter-controlled thermophilic NADPH-dependent Alcohol Dehydrogenase DNA construct (1579 bp)

<400> 204
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catggcaggt tattcgaaat ggttcagggt tccgcgggat atagtgttcg 300

gctggggcag cctggaatac cttaaagaac tggaaggcaa aagggccttt atagttaccg 360

acaaaaccat gcaggagctt ggctttgtgg acaaggtgaa gagctacctg gccgaagccg 420

gaattgaaag cgccgtattc aacgaagtag agcccgatcc ttcccggcaa accgtgaaaa 480

aaggcgccag gctgatggag cagtttcagc cggacctgat tgtcgggctg ggcggcggct 540

cttccctgga cgccggcaag ggaatgtgga ttttctacga atatccggat gcaaagtggg 600

aagacatttt cgttcccttc accggcgtgc cgaagctgag aaacaaggcc aggtacgtgg 660

ccattccttc caccagcggc accgccaccg aggtaaccct ggcggcggtt atcaccaacc 720

gcgacgttgt gccgaacgtt aaggacttta ccctttccta cgaggttacg ccggacattg 780

ccatctgcga tccggagttg ccttccacaa tgccacctgc cgtcaccgcc aacaccggct 840

ttgacgtgat cgttcacgcc gttgaggcat acgtttctgt aaacgccacc gacgttaccg 900

acccgattgc cctgcggtct gccgccatgg cttataaatg gttgcctctg gccttcgcca 960

acggcggaaa caaagaagca agggaaaaaa tgcacacggc ctcgctcatg gccggcttta 1020

cctttaccaa caccgccctg gggctggtcc acagcaccgc ccaccagatc ggggcggaat 1080

acggcgtgcc gcacggccgg gccaacgcaa tcatgctgcc gtatgtggtg cagtacaacg 1140

ccccggcggc cgccgcacgt tacgccgata tggcccaggc cttcgggtat gcttccaccg 1200

atccgttcga gggcacggtc aagttcatcg acgccgtccg gaagctgcaa aagattctgg 1260

gcatccctgc ctgtctgaag gatgccggca ttaaagaaga ggacttcctg aagaaagtgg 1320

acatgctcac caagaacgcc atgaacgacg gcagcacgcc ggccaacccg cgggtcccaa 1380

ccctggcgga aatcaagaac atcttcctct gcgcctatta cggaaacgac gtgatttaat 1440

aaggctgaga tcttcttcag tgcattgtag ttgaatgaag ggttaggggg gaaatgcccc 1500

cctatttttt gtctagccat cctgccacgt ttgacagggt agcaatttcg acacgatagg 1560

gttctctctt ctgccgtta 1579

<210> 205
<211> 1822
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 205 presents example 205 of a designer

Thermosynechococcus elongatus nirA-promoter-controlled lipase (using butanol) DNA construct (1822 bp)

<400> 205

agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgggtatc tttgactata aaaaccttgg caccgagggt tccaaaacgt 300

tgttcgccga tgccatggcg atcacgttgt attcctatca caacctggat aacggctttg 360

ccgtgggcta ccagcacaac gggttgggct tggggctacc ggccacgctg gtcggtgcgc 420

tgctcggcag cacggattcc cagggcgtga tccctggcat cccgtggaac ccggattcag 480

aaaaagccgc ccttgaggcg gtgcagaaag ccggttggac accgatcagc gccagtgccc 540

tgggctacgc cggcaaggtc gatgcacgtg gcaccttctt tggggaaaaa gccggctaca 600

ccacggccca ggtcgaggta ctcggcaaat acgatgacgc cggcaagctg ctcgaaatcg 660

gcatcggttt tcgtggcact tcggggccac gggaaacctt gatcagcgac tcgatcggcg 720

acttgatcag cgatctgctc gcggccctgg ggcccaagga ttacgcgaaa aactacgccg 780

gcgaagcctt cggcggcttg ctcaagaatg ttgccgacta cgccggtgcc catggcctga 840

ccggcaagga cgtggtggtc agcggccaca gcctgggcgg gctggcggtc aacagcatgg 900

cggacttgag caactacaaa tgggcggggt tctacaagga cgccaactat gttgcctatg 960

cctcgccgac ccagagtgcc ggcgacaagg tgctcaatat cggttacgaa aacgacccgg 1020

tgttccgcgc gctggacggc tcgtcgttta acctgtcgtc gctgggcgtg cacgacaaac 1080

cccacgagtc caccaccgat aacatcgtca gcttcaacga ccactacgcc tcgacgctgt 1140

ggaatgtgct gccgttttcc atcgtcaacc tgcccacctg ggtctcgcat ttgccgacgg 1200

cgtacggcga tggcatgacg cgcatcctcg agtccggctt ctacgaccag atgacccgtg 1260

actccacggt gattgttgcc aacctgtccg atccggcgcg ggccaacacc tgggtgcagg 1320

acctcaaccg caatgccgag ccccacaagg gcaacacgtt catcatcggc agcgacggca 1380

acgacctgat ccagggcggc aacggtgcgg actttatcga gggtggcaaa ggcaacgaca 1440

cgatccgcga caacagcggg cacaacacct ttttgttcag cggccacttt ggcaatgatc 1500

gcgtgattgg ctaccagccc accgacaaac tggtgttcaa ggacgtgcaa ggaagcaccg 1560

acctgcgtga ccacgcgaag gtggtcggcg ccgatacggt gcttacgttt ggggccgact 1620

cggtgacgct ggtcggcgtg gggcatggcg ggctgtggac ggagggcgtg gtgatcggct 1680

gataaggctg agatcttctt cagtgcattg tagttgaatg aagggttagg ggggaaatgc 1740

ccccctattt tttgtctagc catcctgcca cgtttgacag ggtagcaatt tcgacacgat 1800

agggttctct cttctgccgt ta 1822

<210> 206
<211> 1486
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 206 presents example 206 of a designer Thermosynechococcus elongates nirA-promoter-controlled lipase (using ethanol) DNA construct (1486 bp)

<400> 206
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catggccagg acgatgcgtt ccagggtggt ggcaggggca gtggcatgcg 300

cgatgagcat cgcgccgttc gcggggacga ccgcggtgat gacgctcgcg acgacgcacg 360

cggcaatggc ggccaccgcg cccgccgctg gctacgcggc gacgcgttac ccgatcatcc 420

tcgtgcacgg gctctcgggt accgacaagt acgccggcgt gctcgagtat tggtacggca 480

tccaggagga cctgcaacag aacggtgcga ccgtctacgt cgcgaacctg tcgggtttcc 540

agagcgacga cggcccgaac gggcgcggcg aacagttgct cgcttacgtg aagacggtgc 600

tcgcggcgac gggggcgacc aaggtcaatc tcgtcggtca cagccagggc ggcctctcgt 660

cgcgctatgt tgctgccgtc gcgcccgatc tcgttgcgtc ggtgacgacg atcggcacgc 720

cgcatcgcgg ctccgaattc gccgacttcg tgcaggacgt gctcgcgtac gatccgaccg 780

ggctttcgtc atcggtgatc gccgcgttcg tcaatgtgtt cgggatcctg acgagcagca 840

gccacaacac caaccaggac gcgctcgccg cactgcagac gctgaccacc gcacgggccg 900

ccacgtacaa ccagaactat ccgagcgcgg gcctgggtgc gccgggcagt tgccagaccg 960

gtgcgccgac cgaaaccgtc ggcggcaaca cgcacctgct gtattcgtgg gccggcacgg 1020

cgatccagcc gacgctctcc gtgttcggcg tcacgggcgc gacggacacg agcacccttc 1080

cgctcgtcga tccggcgaac gtgctcgacc tgtcgacgct cgcgctgttc ggcaccggca 1140

cggtgatgat caaccgcggc tccgggcaga acgacgggct cgtgtcgaag tgcagtgcgc 1200

tgtacggcaa ggtgctgagc acgagctaca agtggaacca cctcgacgag atcaaccagc 1260

tgctcggcgt gcgcggcgcg tatgcggaag atcccgtcgc ggtgatccgc acgcatgcga 1320

accggctgaa gctggcgggc gtgtaataag gctgagatct tcttcagtgc attgtagttg 1380

aatgaagggt taggggggaa atgccccccc atttttgtc tagccatcct gccacgtttg 1440

acagggtagc aatttcgaca cgatagggtt ctctcttctg ccgtta 1486

<210> 207
<211> 2098
<212> DNA
<213> Artificial Sequence

<220>

<223> SEQ ID NO: 207 presents example 207 of a designer Thermosynechococcus elongatus nirA-promoter-controlled Pyruvate Decarboxylase DNA construct (2098 bp)

<400> 207

agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catgagttat actgtcggta cctatttagc ggagcggctt gtccagattg 300

gtctcaagca tcacttcgca gtcgcgggcg actacaacct cgtccttctt gacaacctgc 360

ttttgaacaa aaacatggag caggtttatt gctgtaacga actgaactgc ggtttcagtg 420

cagaaggtta tgctcgtgcc aaaggcgcag cagcagccgt cgttacctac agcgttggtg 480

cgctttccgc atttgatgct atcggtggcg cctatgcaga aaaccttccg gttatcctga 540

tctccggtgc tccgaacaac aacgaccacg ctgctggtca tgtgttgcat catgctcttg 600

gcaaaaccga ctatcactat cagttggaaa tggccaagaa catcacggcc gccgctgaag 660

cgatttacac cccggaagaa gctccggcta aaatcgatca cgtgatcaaa actgctcttc 720

gcgagaagaa gccggtttat ctcgaaatcg cttgcaacac tgcttccatg ccctgcgccg 780

ctcctggacc ggcaagtgca ttgttcaatg acgaagccag cgacgaagca tccttgaatg 840

cagcggttga cgaaaccctg aaattcatcg ccaaccgcga caaagttgcc gtcctcgtcg 900

gcagcaagct gcgcgctgct ggtgctgaag aagctgctgt taaattcacc gacgctttgg 960

gcggtgcagt ggctactatg gctgctgcca agagcttctt cccagaagaa aatgccaatt 1020

acattggtac ctcatggggc gaagtcagct atccgggcgt tgaaaagacg atgaaagaag 1080

ccgatgcggt tatcgctctg gctcctgtct tcaacgacta ctccaccact ggttggacgg 1140

atatccctga tcctaagaaa ctggttctcg ctgaaccgcg ttctgtcgtt gtcaacggca 1200

ttcgcttccc cagcgttcat ctgaaagact atctgacccg tttggctcag aaagtttcca 1260

agaaaaccgg ttctttggac ttcttcaaat ccctcaatgc aggtgaactg aagaaagccg 1320

ctccggctga tccgagtgct ccgttggtca acgcagaaat cgcccgtcag gtcgaagctc 1380

ttctgacccc gaacacgacg gttattgctg aaaccggtga ctcttggttc aatgctcagc 1440

gcatgaagct cccgaacggt gctcgcgttg aatatgaaat gcagtggggt cacattggtt 1500

ggtccgttcc tgccgccttc ggttatgccg tcggtgctcc ggaacgtcgc aacatcctca 1560

tggttggtga tggttccttc cagctgacgg ctcaggaagt tgctcagatg gttcgcctga 1620

aactgccggt tatcatcttc ttgatcaata actatggtta caccatcgaa gttatgatcc 1680

atgatggtcc gtacaacaac atcaagaact gggattatgc cggtctgatg gaagtgttca 1740

acggtaacgg tggttatgac agcggtgctg ctaaaggcct gaaggctaaa accggtggcg 1800

aactggcaga agctatcaag gttgctctgg caaacaccga cggcccaacc ctgatcgaat 1860

gcttcatcgg tcgtgaagac tgcactgaag aattggtcaa atggggtaag cgcgttgctg 1920

ccgccaacag ccgtaagcct gttaacaagc tcctctagta aggctgagat cttcttcagt 1980

gcattgtagt tgaatgaagg gttaggggggg aaatgccccc ctatttttg tctagccatc 2040

ctgccacgtt tgacagggta gcaatttcga cacgataggg ttctctcttc tgccgtta 2098

<210> 208
<211> 1567
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 208 presents example 208 of a designer Synechocystis sp. PCC 6803 nirA-promoter-controlled Lipase DNA construct (1567 bp)

<400> 208
agaaaatctg gcaccacacc ctaaatgcgt aaactgcata tgccttggct gagtgtaatt 60

tacgttacaa attttaacga aacgggaacc ctatattgat ctctacatga tgaagctact 120

ctctctgacc ggtgtggctg gtgtgcttgc gacttgcgtt gcagccactc ctttggtgaa 180

gcgtctacct tccggttcgg accctgcctt ttcgcagccc aagtcggtgc tcgatgcggg 240

tctgacctgc cagggtgctt cgccatcctc ggtctccaaa cccatccttc tcgtccccgg 300

aaccggcacc acaggtccac agtcgttcga ctcgaactgg atccccctct caacgcagtt 360

gggttacaca ccctgctgga tctcaccccc gccgttcatg ctcaacgaca cccaggtcaa 420

cacggagtac atggtcaacg ccatcaccgc gctctacgct ggttcgggca acaacaagct 480

tcccgtgctt acctggtccc agggtggtct ggttgcacag tggggtctga ccttcttccc 540

cagtatcagg tccaaggtcg atcgacttat ggcctttgcg cccgactaca agggcaccgt 600

cctcgccggc cctctcgatg cactcgcggt tagtgcaccc tccgtatggc agcaaaccac 660

cggttcggca ctcaccaccg cactccgaaa cgcaggtggt ctgacccaga tcgtgcccac 720

caccaacctc tactcggcga ccgacgagat cgttcagcct caggtgtcca actcgccact 780

cgactcatcc tacctcttca acggaaagaa cgtccaggca caggccgtgt gtgggccgct 840

gttcgtcatc gaccatgcag gctcgctcac ctcgcagttc tcctacgtcg tcggtcgatc 900

cgccctgcgc tccaccacgg gccaggctcg tagtgcagac tatggcatta cggactgcaa 960

ccctcttccc gccaatgatc tgactcccga gcaaaaggtc gccgcggctg cgctcctggc 1020

gccggcagct gcagccatcg tggcgggtcc aaagcagaac tgcgagcccg acctcatgcc 1080

ctacgcccgc ccctttgcag taggcaaaag gacctgctcc ggcatcgtca ccccctgata 1140

gtaatgagtt acagttttgg caattactaa aaaactgact tcaattcaat gttagcccgc 1200

tcccgcgggt tttttgttgc tttttcacag tgactatagg taatcagcaa cacaatacgg 1260

ccctgttctt tggacagttt ttgtataatg ttgaccgcat cctgaccgga ttttttatct 1320

aagtggggaa ttgtcaattg tcaattaaag ctaagttcta ctaatgtttt agaaggcatt 1380

gtcgattgaa aataagggtt gaatggagaa aattttgagc ctttgtcaaa gataaaaatt 1440

tatttcaaca gtttttaac tagccgaacc agagaatgac ccagtggcgc tgactttgct 1500

cccgagtttt tgttagaaat taccctcaag aagtaatcta ataataaggt tctctcttct 1560

gccgtta 1567

<210> 209
<211> 2075
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 209 presents example 209 of a designer Anabaena PCC 7120 hox-promoter-controlled Lipase DNA construct (2075 bp)

<400> 209
agaaaatctg gcaccacacc gcagaaatat aggggctagg agttgagggt actctggttc 60

gtcaagcatt tgggatgatt tcccctcaca agttcctcaa attattctcc tataaacaat 120

agatataagg tcaaaacttg agttatgagt gctgagtaaa aaattactct ccacgcctca 180

gaggtagata tgatgggtat ctttgactat aaaaaccttg gcaccgaggg ttccaaaacg 240

ttgttcgccg atgccatggc gatcacgttg tattcctatc acaacctgga taacggcttt 300

gccgtgggct accagcacaa cgggttgggc ttggggctac cggccacgct ggtcggtgcg 360

ctgctcggca gcacggattc ccagggcgtg atccctggca tcccgtggaa cccggattca 420

gaaaaagccg cccttgaggc ggtgcagaaa gccggttgga caccgatcag cgccagtgcc 480

ctgggctacg ccggcaaggt cgatgcacgt ggcaccttct ttggggaaaa agccggctac 540

accacggccc aggtcgaggt actcggcaaa tacgatgacg ccggcaagct gctcgaaatc 600

ggcatcggtt ttcgtggcac ttcggggcca cgggaaacct tgatcagcga ctcgatcggc 660

gacttgatca gcgatctgct cgcggccctg gggcccaagg attacgcgaa aaactacgcc 720

ggcgaagcct tcggcggctt gctcaagaat gttgccgact acgccggtgc ccatggcctg 780

accggcaagg acgtggtggt cagcggccac agcctgggcg ggctggcggt caacagcatg 840

gcggacttga gcaactacaa atgggcgggg ttctacaagg acgccaacta tgttgcctat 900

gcctcgccga cccagagtgc cggcgacaag gtgctcaata tcggttacga aaacgacccg 960

gtgttccgcg cgctggacgg ctcgtcgttt aacctgtcgt cgctgggcgt gcacgacaaa 1020

ccccacgagt ccaccaccga taacatcgtc agcttcaacg accactacgc ctcgacgctg 1080

tggaatgtgc tgccgttttc catcgtcaac ctgcccacct gggtctcgca tttgccgacg 1140

gcgtacggcg atggcatgac gcgcatcctc gagtccggct tctacgacca gatgacccgt 1200

gactccacgg tgattgttgc caacctgtcc gatccggcgc gggccaacac ctgggtgcag 1260

gacctcaacc gcaatgccga gccccacaag ggcaacacgt tcatcatcgg cagcgacggc 1320

aacgacctga tccagggcgg caacggtgcg gactttatcg agggtggcaa aggcaacgac 1380

acgatccgcg acaacagcgg gcacaacacc tttttgttca gcggccactt tggcaatgat 1440

cgcgtgattg gctaccagcc caccgacaaa ctggtgttca aggacgtgca aggaagcacc 1500

gacctgcgtg accacgcgaa ggtggtcggc gccgatacgg tgcttacgtt tggggccgac 1560

tcggtgacgc tggtcggcgt ggggcatggc gggctgtgga cggagggcgt ggtgatcggc 1620

tgatgaagta agtaggaagc agggagcagg ggaaagaaaa ttgacaactg tacaagatta 1680

atcgcgtctc tgagcaatga ccaaatacat ctacctccac ggttttcttc cagcccccta 1740

tctgcgaaag cacaagatat tagcaagcgt ttcgcccaaa ttcacataca gctaacaatc 1800

cctgatctca atgctggtga attttctcag ttaacaatca cgcgccaaat tcaacaagtt 1860

gccgcaattt tccctgataa ttctgaacca ataacgctga taggttctag tttaggcggt 1920

ttaactgctg cttatctagg acagcgatat ttacaagtac aacgcttagt tttattagcg 1980

ccagtttggt tttttatccc attggttgcc caaaatgggt gaagaagctg tcacaagttg 2040

gcaacaaacg atataggttc tctcttctgc cgtta 2075

<210> 210
<211> 2290

<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 210 presents example 210 of a designer Synechococcus sp. strain PCC 7942 nirA-promoter-controlled Lipase gene DNA construct (2290 base pairs (bp))

<400> 210
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgat gggtgtgtat 120

gactacaaaa acttcggcac ggcggattcc aaggcgttgt tcagcgatgc catggcgatc 180

acgctgtatt cctaccacaa cctcgataac ggttttgccg ccggttatca gcacaacggt 240

tttggccttg gcctgccggc gacgctggtc acggcgttgc tcggcggtac cgattcccag 300

ggcgtcatcc ccggcattcc gtggaatccc gattcggaaa aactcgccct cgaagccgtg 360

aaaaaggccg gctggacgcc gatcacggcc tcgcaactgg gctacgacgg caagaccgac 420

gcacgcggaa ccttctttgg cgagaaggcc ggttactcga cagcgcaggt cgagattctc 480

ggcaagtacg acgcccaggg ccatctcaca gaaatcggca tcgcctttcg cggcaccagc 540

ggcccgcgcg agaacctgat ccttgattcc atcggcgacg tgatcaacga cttgctcgcc 600

gcgttcggcc ccaaggatta cgccaagaac tacgtcggcg aagcgttcgg caacctgctc 660

aatgacgtgg tcgcctttgc caaggccaat ggcctcagcg gcaaggacgt gctggtcagc 720

ggccacagcc tcggcgggct ggcggtcaac agcatggcgg atttgagcgg cggcaagtgg 780

ggcgggttct tcgccgactc caactacatc gcctatgcct cgccgaccca gagcagcacc 840

gacaaagtgc tcaacgtcgg ctacgagaac gacccggtgt tccgcgccct cgacggttcg 900

aatttcaccg gcgcctcgat tggcgtgcac gacgcgccga aggaatcggc caccgacaac 960

atcgtcagct tcaacgatca ctacgcctcg acggcgtgga atctgctgcc gttctccatc 1020

ctcaacatcc cgacctggat ctcgcacctg ccaaccgctt acggcgacgg catgaaccgg 1080

gtgatcgagt cgaagttcta cgacctgacc agcaaggact cgacgatcat cgtcgccaac 1140

ctgtcggatc cggcgcgggc caacacctgg gtgcaggatc tcaaccgcaa cgccgaaacc 1200

cacaagggca gcaccttcat catcggcagc gacgccaacg atctgattca gggtggcagc 1260

ggcaatgact atctggaagg tcgcgccggc aacgacacct ttcgcgacag cggcggctac 1320

aacatcatcc tgggcgggca gggcagcaat acgctggact tgcagaagtc ggtgaatacc 1380

ttcgacttcg ccaacgacgg cgccggcaat ctgtacattc gcgatgccaa cggcgggatc 1440

agcatcaccc gcgacatcgg cgccatcgtc accaaagagc cgggcttcct ctggggtctg 1500

ttcaaggacg acgtgaccca cagcgtcacg gccagtggct tgaaggtcgg caacaacctg 1560

accgcctacg agtcgagcgt gaagggcagc aacggcgccg acacgctcaa ggcgcatgcc 1620

ggcggcgact ggttgttcgg cctcgacggc aacgatcatc tgatcggcgg ggcgggcaac 1680

gatgtgtttg ttggcggcgc cggtaacgat ctgatggagt ccgggggcgg ggcggatacg 1740

ttcctgttca acggcgcgtt cggccaggat cgggtggtgg gattcacgtc caacgacaaa 1800

ctggtgtttc tcggcgtgca gggtgtgttg cctggcgatg acttccgagc gcatgcctcg 1860

gcagccgggc aggataccgt gctgaagttc ggcggcgatt cggtgacatt ggttggcgtt 1920

tcgctgggga gtttgagtgg cgatggaatt gtgatcgcct gataatagtg atcccggccg 1980

ctactaaagc ctgatttgtc ttgatagctg ctcctgcctt tgggcagggg ctttttctg 2040

tctgccattc ttgaggatgg cggactcttt ccctttgct ctacgcccat gaatgcgatc 2100

gcagtctccc ctgtccagca cgttggagtg attggtggtg gccagttagc ttggatgctg 2160

gcaccagcag cgcaacagtt ggggatgtcg ctgcacgttc aaacacccaa tgatcacgac 2220

ccagcagtag cgatcgcgga tcaaaccgta ttagcagcag ttgctgacgc ggttctctct 2280

tctgccgtta 2290

<210> 211
<211> 1231

<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO:211 presents example 211 for a designer Prochlorococcus marinus MIT9313 groE-promoter-controlled Lipase DNA construct (1231 bp)

<400> 211
agaaaatctg gcaccacacc ccctttcaga gcggcgcaac attaccactg catggcgaga 60

tcttctcagg gttcggtgac ccgcacaggt atccactagt cggcacagca tcaacacaca 120

tagggttggc actcaatggc cacgagtgct actcatggtg ctggggctgt tcgccgcgcc 180

ccggctgaat atgcgggagg actacgagaa ggtccgtcat ctgcagcggc agcttgccgc 240

ccgacccggg cagcggttcc gggccgcctc ctggcggacc atcgccgagg acggcgacag 300

tcatgtgccg gtccgggtct ttacgccgaa ggagcgtcgg cgcgaggacc tgctcctgtt 360

cttccatggg ggcggctggg tcaccggcga tatcgagagc tacaccccgg cctgctccac 420

gatggcggac ctcaccggct gcgtcgtcat ctccgtcgac taccggctcg cccccgagca 480

cccgtacccc gcgggtctcg aggactgcta ccagatcgtg cagcgactgc tggatgaacc 540

ggagctggcc cagctcgacg atccgcatcg gatcgtcctg gtgggcgact ccgcgggcgg 600

caacctcgcg gccgccgtct ccctgctgct gcgcgagcgc ggccatcgtg gggtggaccg 660

gcagatcctg ctgtacccgg tgacccattg ggatcatgac ccggagacct ccccttcgc 720

ctccgtgcgc caccacggtg aggactatcg cctgaccaac accgaggtcc aggactacat 780

ggagctctat gtccccgatc cgaccatgcg ccgcgacccg ctggtgtccc cgctgatggc 840

gacggacctc tcctcccaac cggcgacgct gctgatcagc gcagagctcg acctgctgtg 900

cgacgagggc gaggcctacg gtcgggctct cgaggaggcc gggaacaccg tgcgcatcca 960

ccgcgtggag ggggctctgc acggcttcat ctccctgccc cggttctccc ggtcgctccg 1020

agacgcctac gaggtgatca acgcgttcct cgacgaggac ggggccgccc atccggagga 1080

gacgacgtga tgatttagtt tcggtgtcta tctcttaata gcctcgattt attttcgggg 1140

ctattaatca actctcagag gcgacaagct tcttcttccc ttacgacgtt tttattggtt 1200

ggacatggca aggttctctc ttctgccgtt a 1231

<210> 212
<211> 1386
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO:212 presents example 212 for a designer Cyanothece sp. ATCC 51142 nirA-promoter-controlled Lipase DNA construct (1386 bp)

<400> 212
agaaaatctg gcaccacacc tattaaatct aaaatagctg ttttagctaa aatagtcaat 60

agcaagtctt ataggtaatc aaacgcaact aaaatgcaaa aaatccataa ttaaaatgca 120

aaaaacggat ttttaataca attttgttac attagctaca aaatatctca aatggtagag 180

gttaaatagg tacaactcga ccagatggag ggttttccct gtggtgagca cgttcacact 240

tccgctgccc gtggtcgcat tcttgttgaa gccgtacttc cgtctggctt tcaactcgcg 300

actgccgtac cggattcaac gtccgttgct cgacgccggg gcaccgctac agcaggttcc 360

agcgggcgct gtcgtgcgcc cgctggagct cgcctgccga ccggcggaga agatcaccgt 420

cggcgcaacc gagcgcccca ccgcagttct gtacctgcac ggcggggcgt acacgcttgg 480

ctcgctggca acccaccgtt ctctcgcagc gcatctcgcg cgtgaatcgt ccagtgcggt 540

cttcaccttg gactaccgcc tcgcaccgga gaacccgtat cccgcagctc tcgacgacgc 600

ggtctccgcc ttcatgcagt tggtcaccga gttcgactat tcggaagacc gcgttgccat 660

cgccggcgat tcggccggtg gcggtttggc cgccgcgacc gctctgcgtc tgatcgaacg 720

tcacggtgtg acccccggtg cgcttgctct gatctcgccg tgggtcgatc ccggcgatcg 780

aggtgccacc aagaaggccg acctggtcgt caatacagcc tggtccttcg atgccgccga 840

cgcttacctt gccggcggcg atcgcacaga tcccggctac gcaccgatgc acgggaagct 900

cgacgggttg ccgcccacca ggattcacgt cggttccgaa gaagttctct acccgcagat 960

catgacgttc accgacaagc tctccgctgc cggcgtcgat gtgtccctgg tcgagtacgc 1020

aagactgtgg cacgtggctc acgcacaggc gtcactggtg aaggaagcag cagacgccgt 1080

cgccgatctg gggggcttca tcgcatcgaa actgattcgc gccaagaatg attcgagttc 1140

agcagtaggc tcgaacagtc actgataagc tgttttagag aaatttgttc ggtaaatatt 1200

agcctaccta cagttgttgt gggtaggcta atattatgaa ttgagtccta ctgaaccaat 1260

gattatcgtt acgactaaaa gtaataaatg tcatcagcag gataggggtt gataggaaaa 1320

gtttttaat cggatggttt tcgagttaga ggttagggtt tctttaggtt ctctcttctg 1380

ccgtta 1386

<210> 213
<211> 2420
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO. 213 presents example 213 of a designer Chlamydomonas reinhardtii Nial-promoter-controlled chloroplast-targeted Lipase DNA construct (2420 bp)

<400> 213
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat ggccgccgtc attgccaagt cctccgtctc cgcggccgtg gctcgcccgg 240

cccgctccag cgtgcgcccc atggccgcgc tgaagcccgc cgtcaaggct gcccccgtgg 300

ctgccccggc tcaggccaac cagatgggtg tgtatgacta caagaacttc ggcacagccg 360

attccaaagc gttattcacc gacgctatgg cgatcacgct gtattcctat cacaacctcg 420

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<210> 214
<211> 6498
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 214 presents example 214 of a designer Synechocystis sp. PCC 6803 transcription factor-arginine-based alcohol-selection DNA construct (6498 bp)

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taacgaattt ctcgtccggc cgcttgagaa gcccgtacac ctcgcaggag gcgctctctt 180

cggcgacggc gatcaattcc tcgatcagca tgtcgccagc cagcctcacc tcgatgccga 240

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cctgccagca gacctcgtag tcgaggaggc tccgcacacc cgacaccggc gccgtcttgc 420

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<210> 215
<211> 7034
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 215 presents example 215 of a designer Thermosynechococcus elongatus transcription factor and nitrate reductase-based alcohol-selection DNA construct (7034 bp)

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taacgaattt ctcgtccggc cgcttgagaa gcccgtacac ctcgcaggag gcgctctctt 180

cggcgacggc gatcaattcc tcgatcagca tgtcgccagc cagcctcacc tcgatgccga 240

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<220>
<223> SEQ ID NO: 216 presents example 216 of a designer Synechococcus sp. strain PCC 7942 transcription factor and Tetracycline resistance-based alcohol-selection and Lipase DNA construct (7006 base pairs (bp))

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<223> SEQ ID NO:217 presents example 217 for a designer Prochlorococcus marinus MIT9313 transcription factor and glyphosate tolerant protein-based alcohol-selection DNA construct (5556 bp)

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acaaaagcgg cctaatgatt tagtttcggt gtctatctct taatagcctc gatttatttt 5460

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tggttggaca tggcaaggtt ctctcttctg ccgtta 5556

<210> 218
<211> 6500
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO:218 presents example 218 for a designer Cyanothece sp. ATCC 51142 transcription factor and nitrate reductase-based alcohol-selection DNA construct (6500 bp)

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taacgaattt ctcgtccggc cgcttgagaa gcccgtacac ctcgcaggag gcgctctctt 180

cggcgacggc gatcaattcc tcgatcagca tgtcgccagc cagcctcacc tcgatgccga 240

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cctgccagca gacctcgtag tcgaggaggc tccgcacacc cgacaccggc gccgtcttgc 420

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ggcccttgac cccgaccgca tgtatgggta ggtcacggcc atccagttgc gactggacgt 720

ccggcatcag agttgctctg tcaggggcat tcatctcggt ccttcctcgg gaatggggtc 780

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cgaacggcgc ttgacgaaac ggttgaggcc aagcgggcgc tgatccttgc tgccgagccg 1620

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<211> 7187
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 219 presents example 219 of a designer Anabaena PCC 7120 transcription factor and ketol-acid reductoisomerase/dihydroxy-acid dehydratase-based alcohol-selection DNA construct (7187 bp)

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taacgaattt ctcgtccggc cgcttgagaa gcccgtacac ctcgcaggag gcgctctctt 180

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gaaaccttgg tagaagcagg ttatcaacca gaactagctt attttgaatg tctacacgaa 4740

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tctaacactg ctgaatatgg tgattacact cgcgggcctc ggattgtcaa cgaacaaacc 4860

aaagccgaaa tgcggaaggt tctcagcgaa attcaatcag gacaatttgc acgggaattt 4920

gtgttagaaa accaatctgg taaacccgga tttactgcaa tgcgtcgtca agaagctgaa 4980

cacccaattg aagaagttgg taaagattta cgggcaatgt ttagctggtt gaagaaagtt 5040

taaatgtcgg agaattttag aagcaaggct atcacacaag gggtacagcg atcgcctaac 5100

agagcaatgc tgcgggctgt tggttttcag gatgcagatt ttaccaaagc cattgtaggt 5160

gttgccaatg gttacagcac gattaccccg tgtaatatgg ggataaatca actagcacaa 5220

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cgtgtccccg ttttgtgcga cttgaaacca agcggtagat atgtggctac agacctgcac 6000

aaagctggtg gtatacccca agtcatgaaa atgttactcg tgcatggttt actccacggc 6060

gactgtatga ccatcacagg taaaaccatt gccgaagttt tagcagatat cccagaagaa 6120

ccatcgccta atcaagatgt aattcgtcct tggaataacc ccatgtatgc ccaaggccac 6180

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gcaattttgg caggtaaaat taaagccggt gacgtgattg tcatccgcta cgaaggcccc 6360

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gaattaaccc gtcgtcgtgc caattggcaa ccccgtcccc cacgttacac tacaggcata 6660

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cagctaacaa tccctgatct caatgctggt gaattttctc agttaacaat cacgcgccaa 6960

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agtttaggcg gtttaactgc tgcttatcta ggacagcgat atttacaagt acaacgctta 7080

gttttattag cgccagtttg gttttttatc ccattggttg cccaaaatgg gtgaagaagc 7140

tgtcacaagt tggcaacaaa cgatataggt tctctcttct gccgtta 7187

<210> 220
<211> 5885
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 220 presents example 220 of a designer Anabaena PCC 7120 transcription factor and argininosuccinate lyase-based

alcohol-selection lipase DNA construct (5885 bp)

<400> 220

agaaaatctg gcaccacacc tctaccacat agtccgccaa gcgccgatcc cggttgagcg 60

ccagggccac atcccggacc agatcctcga cgaatttcgg attgtcatag gcccgctcgg 120

taacgaattt ctcgtccggc cgcttgagaa gcccgtacac ctcgcaggag gcgctctctt 180

cggcgacggc gatcaattcc tcgatcagca tgtcgccagc cagcctcacc tcgatgccga 240

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tcgtcgccgg caccaggacg cgcaaggaaa aggaatactc cccggcatcg gataccgagc 360

cctgccagca gacctcgtag tcgaggaggc tccgcacacc cgacaccggc gccgtcttgc 420

tcacgaaata gggaaagcgc atctcgatcg tgcccctcct cgcctccagc ctgtccaaca 480

ttgcgagggc cagggctttg aacgccgcct gatccagcgg gccggtctgc tcctccatca 540

gttcgacgaa gcgggacatg agggttccct tgacgtgcgc cgccaaaccg acggtgagcg 600

acagggtggc aacggtcgcc agccgctcgg cgcccgaccg gatggtggca gggtatctga 660

ggcccttgac cccgaccgca tgtatgggta ggtcacggcc atccagttgc gactggacgt 720

ccggcatcag agttgctctg tcaggggcat tcatctcggt ccttcctcgg gaatggggtc 780

gaacaaaacg gagaactggc cgcactagag taaagtagat aaaatccttt ctcaatggtt 840

ttatgtataa agccccagag ccaccgaccg tgtcgatgcg gagcgcgtca ggaggcgagt 900

ccaggacagt cggagagcgt gactacatcc ggtaatgaac gtgcgctacc acactttgat 960

ggctcacccc acagacacgc tgcgtggcag accgtgcacc agggcgtcgt gccggcgcac 1020

tgcaactgga ttatgatatc gccatcgacc gccgccgacg gcaacgcccg gtagacgaac 1080

gtgtacgccg ccggcgacgg catgaacgcc aagcatcgtc ctcaatcagg tacgagatcc 1140

ggagaacctg agtgcggagc gacgttctat tttcgtattc agtaacaatt tgtcgagaat 1200

cggtctgatc cgcggcttca cgcacctgcc cgaggggctt gcgcggacct tgaggtgacc 1260

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acccggtgtc gtgctgaagg tgtcgttccc aatgcccgcc aggagttcga cccgatcccg 1560

cgaacggcgc ttgacgaaac ggttgaggcc aagcgggcgc tgatccttgc tgccgagccg 1620

gtcgtcgacg cgttgatgga gcagatgaac gacgccccca ggatgatcat cctgaacgac 1680

gaacggggcg tcgtgctgct gaaccaggga aacgacaccc tccttgaaga cgcccgccgc 1740

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aatacgattt tcacctgcac cgcggcgccg atctacgatc cgttcggcga gttcaccgga 1920

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caaaatgggt gaagaagctg tcacaagttg gcaacaaacg atataggttc tctcttctgc 5880

cgtta 5885

<210> 221
<211> 1479
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO. 221 presents example 221 of a designer Chlamydomonas reinhardtii Nial-promoter-controlled cell surface ZYS1-like protein-polyamine DNA construct (1479 bp)

<400> 221
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat gctggaagcc agcagcgtcc cagcggagag cccgcagggt tctgacgcca 240

tggagactga tgacatgtgc tggatttgcc ttgatgacac caaggaccgt gacgtactag 300

tcagcccctg ccgttgcccg cgcaaggtgc acccgcgctg cctggcgcgg tggcagctgc 360

agcaggccgg caggctggag gagaccaatt gcaggttttg ccagcacaac ctggcggact 420

ggaaggccag cctgacgccc gagaacctca agcccgacgt gcagcgcgtg cagcccatca 480

tggtggtcta cttcgagggc cagatccacc gcatccccgt caagcagggg ccgggcggcc 540

tcaaggagtt cacgcagcgc attcgcgacc tgttccggct gcccgaggac gttgacatct 600

cgctgacgtt tggctgcaag gagccgcatg ttggtcattt tgccaacctg ggtcaatctc 660

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ctcggtttct ttgggattgc acccatgcaa attctcttta cggatttctc ctttattttc 780

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attggtgttg ttcttattgc tgctatgatt gcgacaatgt ggttaacaaa ggagagacgt 1140

caaaaaaaga aaaagaaaaa gaaaaagaaa aagaaaaaga aaaagaaaaa gaaaaagaaa 1200

aagaaaaaga aaaagaaaaa gaaaaagaaa aagtgataaa tggaggcgct cgttgatctg 1260

agccttgccc cctgacgaac ggcggtggat ggaagatact gctctcaagt gctgaagcgg 1320

tagcttagct ccccgtttcg tgctgatcag tctttttcaa cacgtaaaaa gcggaggagt 1380

tttgcaattt tgttggttgt aacgatcctc cgttgatttt ggcctctttc tccatgggcg 1440

ggctgggcgt atttgaagcg gttctctctt ctgccgtta 1479

<210> 222
<211> 2717
<212> DNA
<213> Artificial Sequence

<220>

<223> SEQ ID NO. 222 presents example 222 of a designer Chlamydomonas reinhardtii Nial-promoter-controlled cell surface ZYS1-like protein-polyamine-linked Lipase-polylysine DNA construct (2717 bp)

<400> 222

agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat gggccataca caccgtgcct ccgcgtcggc ggcggctgca gtgctgctgg 240

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acaagaccgc cgccatctcc accatcttcg cccccacgga cgcggccttt gcggaacttg 480

ctgcttctct gggcctggcc tcgccagtgg acttgttcaa cgccacgctg aacgcaacgg 540

ccgccaacat caccgccctg cacgtcatcc cgggagtggc cctgaccgcc gccaacatca 600

cggccgctgg cagcatcacc gccacctccc tgctgggata caatatcact gtgacagcgc 660

tgccgaacgg cacgatcacc gccacaattc cgggcagcaa catcgttgcc gacgtcatca 720

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tgattctacc gattttcaat gtactagatg atttggatga aaatattgtg aatgcaagta 1080

aagatttggg agccaatgat tggcagacct ttaccaaggt tatttttccc ttatcgctta 1140

atggggtacg ctctggcgtc cagtcggtct ttattcctag tctcagcctc tttatgctga 1200

cacgtttgat tggtggtaac cgagttatca ccttagggac agctatcgaa cagcacttcc 1260

tcacgacaca aaactgggga atgggggcaa ccattggtgt tgttcttatt gctgctatga 1320

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gctggatctc acccccgccg ttcatgctca acgacaccca ggtcaacacg gagtacatgg 1680

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tcgatgcact cgcggttagt gcaccctccg tatggcagca aaccaccggt tcggcactca 1920

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tcttcaacgg aaagaacgtc caggcacagg ccgtgtgtgg gccgctgttc gtcatcgacc 2100

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ccacgggcca ggctcgtagt gcagactatg gcattacgga ctgcaaccct cttcccgcca 2220

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ccatcgtggc gggtccaaag cagaactgcg agcccgacct catgccctac gcccgcccct 2340

ttgcagtagg caaaaggacc tgctccggca tcgtcacccc caaaaagaaa aagaaaaaga 2400

aaaagaaaaa gaaaaagaaa aagaaaaaga aaaagaaaaa gaaaaagaaa aagaaaaaga 2460

aaaagaaaaa gtgataaatg gaggcgctcg ttgatctgag ccttgccccc tgacgaacgg 2520

cggtggatgg aagatactgc tctcaagtgc tgaagcggta gcttagctcc ccgtttcgtg 2580

ctgatcagtc tttttcaaca cgtaaaaagc ggaggagttt tgcaattttg ttggttgtaa 2640

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tctctcttct gccgtta 2717

<210> 223
<211> 3617
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO. 223 presents example 223 of a designer Chlamydomonas reinhardtii Nial-promoter-controlled cell surface ZYS1-like protein-polyamine DNA construct (3617 bp)

<400> 223
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caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat gggccataca caccgtgcct ccgcgtcggc ggcggctgca gtgctgctgg 240

cgctgctgct agcagggtgc tccgttggga caaccgcagc tgccgggcgt cgcgcgctcc 300

tgcagggccc cgttgctgac gtgcctgctg ccaacctcac gtccgaggtt cctgctccta 360

acgcgactgt tgctattgac gcctacaatg tcacgggcgc tgctcagaag gtcgccgcca 420

acaagaccgc cgccatctcc accatcttcg cccccacgga cgcggccttt gcggaacttg 480

ctgcttctct gggcctggcc tcgccagtgg acttgttcaa cgccacgctg aacgcaacgg 540

ccgccaacat caccgccctg cacgtcatcc cgggagtggc cctgaccgcc gccaacatca 600

cggccgctgg cagcatcacc gccacctccc tgctgggata caatatcact gtgacagcgc 660

tgccgaacgg cacgatcacc gccacaattc cgggcagcaa catcgttgcc gacgtcatca 720

cccctgatgt gcccttcaac gggagcattg tgcatgtgat caacaaggtc ctgctgccgc 780

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aaattctctt tacggatttc tcctttattt tcgtagctag ttacattgaa attcccttta 1020

tgattctacc gattttcaat gtactagatg atttggatga aaatattgtg aatgcaagta 1080

aagatttggg agccaatgat tggcagacct ttaccaaggt tatttttccc ttatcgctta 1140

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cacgtttgat tggtggtaac cgagttatca ccttagggac agctatcgaa cagcacttcc 1260

tcacgacaca aaactgggga atgggggcaa ccattggtgt tgttcttatt gctgctatga 1320

ttgcgacaat gtggttaaca aaggagagac gtcaaatggc caggacgatg cgttccaggg 1380

tggtggcagg ggcagtggca tgcgcgatga gcatcgcgcc gttcgcgggg acgaccgcgg 1440

tgatgacgct cgcgacgacg cacgcggcaa tggcggccac cgcgcccgcc gctggctacg 1500

cggcgacgcg ttacccgatc atcctcgtgc acgggctctc gggtaccgac aagtacgccg 1560

gcgtgctcga gtattggtac ggcatccagg aggacctgca acagaacggt gcgaccgtct 1620

acgtcgcgaa cctgtcgggt ttccagagcg acgacggccc gaacgggcgc ggcgaacagt 1680

tgctcgctta cgtgaagacg gtgctcgcgg cgacgggggc gaccaaggtc aatctcgtcg 1740

gtcacagcca gggcggcctc tcgtcgcgct atgttgctgc cgtcgcgccc gatctcgttg 1800

cgtcggtgac gacgatcggc acgccgcatc gcggctccga attcgccgac ttcgtgcagg 1860

acgtgctcgc gtacgatccg accgggcttt cgtcatcggt gatcgccgcg ttcgtcaatg 1920

tgttcgggat cctgacgagc agcagccaca acaccaacca ggacgcgctc gccgcactgc 1980

agacgctgac caccgcacgg gccgccacgt acaaccagaa ctatccgagc gcgggcctgg 2040

gtgcgccggg cagttgccag accggtgcgc cgaccgaaac cgtcggcggc aacacgcacc 2100

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tgctgtattc gtgggccggc acggcgatcc agccgacgct ctccgtgttc ggcgtcacgg     2160

gcgcgacgga cacgagcacc cttccgctcg tcgatccggc gaacgtgctc gacctgtcga     2220

cgctcgcgct gttcggcacc ggcacggtga tgatcaaccg cggctccggg cagaacgacg     2280

ggctcgtgtc gaagtgcagt gcgctgtacg gcaaggtgct gagcacgagc tacaagtgga     2340

accacctcga cgagatcaac cagctgctcg gcgtgcgcgg cgcgtatgcg gaagatcccg     2400

tcgcggtgat ccgcacgcat gcgaaccggc tgaagctggc gggcgtgatg aattcaggaa     2460

ttaaagcatc tttaggtctt aacagaagat taatattcct gcttccttac atttttatag     2520

ccattctttt agtgttttta ccaattattt taataattgt gaactcagtt attcatatag     2580

ctgatccaac ttttgattcg tttaaattgg ttaaggattc aaaaacctga accaaaattt     2640

gaagaagctt atttattgga atcatatctg ctttattgtg tctagttata ggattgccgt     2700

atgcatattt tgtagctaga agcaaaaaca aaattatgcc aatttatgct atgagtctta     2760

ttttaagtcc attagtaata tttactattg caaaaattta tgcagtacgc ggctttttct     2820

taactattgt ttcgaaagaa aacgatctta atgcaatttg atttatgatt tttggcttaa     2880

cctacttaaa cttgccatat atgataatgc cactttattc agtctttaga gatatgcccg     2940

aaaatattgt tgaagcttct catgacttag gtaacggacc aattagaaca ctatttagag     3000

taattttgcc atacagcagt aaagcaatat taagtggcct aggtattatt ttcttatcta     3060

gtgctaccaa ctttgttata agtgataaat tacttccaga tggctcgcaa caccaattaa     3120

ttggtacagt aattaataat tacaccaacc ctgcaaacca atatgaagta gcaattggca     3180

ctacattagt tattgtcgta tcagtcatat ttataggtac attcgcattg ataagcttct     3240

tgccaagagt attcaaaaga agaaagagag caagatatga gaaaaagaaa aagaaaaaga     3300

aaaagaaaaa gaaaaagaaa aagaaaaaga aaaagaaaaa gaaaaagaaa aagaaaaaga     3360

aaaagaaaaa gtaataaatg gaggcgctcg ttgatctgag ccttgccccc tgacgaacgg     3420

cggtggatgg aagatactgc tctcaagtgc tgaagcggta gcttagctcc ccgtttcgtg     3480
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ctgatcagtc tttttcaaca cgtaaaaagc ggaggagttt tgcaattttg ttggttgtaa 3540

cgatcctccg ttgattttgg cctctttctc catgggcggg ctgggcgtat ttgaagcggt 3600

tctctcttct gccgtta 3617

<210> 224
<211> 2687
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO. 224 presents example 224 of a designer Chlamydomonas reinhardtii Nial-promoter-controlled cell surface ZYS1-like protein-polyamine DNA construct (2687 bp)

<400> 224
agaaaatctg gcaccacacc atggtagggt gcgagtgacc ccgcgcgact tggaagggtt 60

caaacgaccc cgccgtacga acttttgtcg gggggcgctc ccggatggta gggtgcgagt 120

gaccccgcgc gacttggaag ggttcaaacg accccgccgt acgaactttt gtcgggggggc 180

gctcccggat gggccataca caccgtgcct ccgcgtcggc ggcggctgca gtgctgctgg 240

cgctgctgct agcagggtgc tccgttggga caaccgcagc tgccgggcgt cgcgcgctcc 300

tgcagggccc cgttgctgac gtgcctgctg ccaacctcac gtccgaggtt cctgctccta 360

acgcgactgt tgctattgac gcctacaatg tcacgggcgc tgctcagaag gtcgccgcca 420

acaagaccgc cgccatctcc accatcttcg cccccacgga cgcggccttt gcggaacttg 480

ctgcttctct gggcctggcc tcgccagtgg acttgttcaa cgccacgctg aacgcaacgg 540

ccgccaacat caccgccctg cacgtcatcc cgggagtggc cctgaccgcc gccaacatca 600

cggccgctgg cagcatcacc gccacctccc tgctgggata caatatcact gtgacagcgc 660

tgccgaacgg cacgatcacc gccacaattc cgggcagcaa catcgttgcc gacgtcatca 720

cccctgatgt gcccttcaac gggagcattg tgcatgtgat caacaaggtc ctgctgccgc 780

cgctgaacga gactgtgggc tgggctgtgc ccattgccaa cgccactgcc gcgggcgtaa 840

tggccaggac gatgcgttcc agggtggtgg caggggcagt ggcatgcgcg atgagcatcg 900

cgccgttcgc ggggacgacc gcggtgatga cgctcgcgac gacgcacgcg gcaatggcgg 960

ccaccgcgcc cgccgctggc tacgcggcga cgcgttaccc gatcatcctc gtgcacgggc 1020

tctcgggtac cgacaagtac gccggcgtgc tcgagtattg gtacggcatc caggaggacc 1080

tgcaacagaa cggtgcgacc gtctacgtcg cgaacctgtc gggtttccag agcgacgacg 1140

gcccgaacgg gcgcggcgaa cagttgctcg cttacgtgaa gacggtgctc gcggcgacgg 1200

gggcgaccaa ggtcaatctc gtcggtcaca gccagggcgg cctctcgtcg cgctatgttg 1260

ctgccgtcgc gcccgatctc gttgcgtcgg tgacgacgat cggcacgccg catcgcggct 1320

ccgaattcgc cgacttcgtg caggacgtgc tcgcgtacga tccgaccggg ctttcgtcat 1380

cggtgatcgc cgcgttcgtc aatgtgttcg ggatcctgac gagcagcagc cacaacacca 1440

accaggacgc gctcgccgca ctgcagacgc tgaccaccgc acgggccgcc acgtacaacc 1500

agaactatcc gagcgcgggc ctgggtgcgc cgggcagttg ccagaccggt gcgccgaccg 1560

aaaccgtcgg cggcaacacg cacctgctgt attcgtgggc cggcacggcg atccagccga 1620

cgctctccgt gttcggcgtc acgggcgcga cggacacgag cacccttccg ctcgtcgatc 1680

cggcgaacgt gctcgacctg tcgacgctcg cgctgttcgg caccggcacg gtgatgatca 1740

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tgctgagcac gagctacaag tggaaccacc tcgacgagat caaccagctg ctcggcgtgc 1860

gcggcgcgta tgcggaagat cccgtcgcgg tgatccgcac gcatgcgaac cggctgaagc 1920

tggcgggcgt gatgaatgct gtatatttct tgcttgtctt atccgccggg ttgttgctaa 1980

cccaagcaga tgatgcaaat gaggaaggtg ctgaagatgg tacacagggt ggagaggaga 2040

agaaggagaa ggagaagaag aagaagaaga agaagaagga gaagaaaaag aagaagaaga 2100

agaagaagaa gaagaagaag aagaagaaga aggtggcgaa gaagaaggag gcggcaaaga 2160

agaagaagtc gaaagagaga aagataaagg cgaaagagag aaaggtaaag gcgaaaaaac 2220

taaaggcgaa aaaggtagag gcgaaaaagg ccaacgcgaa aaaggcaaag aagaaggcga 2280

agaagaggta cctggaaaaa agaaaaagcc tggaaagggt aaaaaaggtg aagaagacaa 2340

atatcgtaga aaaaaagaaa aagaaaaaga aaaagaaaaa gaaaaagaaa aagaaaaaga 2400

aaaagaaaaa gaaaaagaaa aagaaaaaga aaaagaaaaa gtagtaaatg gaggcgctcg 2460

ttgatctgag ccttgccccc tgacgaacgg cggtggatgg aagatactgc tctcaagtgc 2520

tgaagcggta gcttagctcc ccgtttcgtg ctgatcagtc tttttcaaca cgtaaaaagc 2580

ggaggagttt tgcaattttg ttggttgtaa cgatcctccg ttgattttgg cctctttctc 2640

catgggcggg ctgggcgtat ttgaagcggt tctctcttct gccgtta 2687

<210> 225
<211> 3205
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 225 presents example 225 of a designer Synechocystis sp. strain PCC 6803 nirA-promoter-controlled Lipase DNA construct (3205 bp)

<400> 225
agaaaatctg gcaccacacc ctaaatgcgt aaactgcata tgccttggct gagtgtaatt 60

tacgttacaa attttaacga aacgggaacc ctatattgat ctctacatga tgcctaacat 120

tgttgaaatt gcggtgtctg acgagcgatt ctccaccttg gtgaccgctg tcactgcggc 180

caatttggtt gacgtgttgc aaagccctgg gccctttacg gttttcgctc ccacggatac 240

ggcctttgcc aaactccccc ccggtaccat taccaccctg gtacaaaata ttccccaatt 300

ggctcggatt ttaacctacc acgtggttgc cgggaagttt acccaagctg atttatgtcg 360

cctatcaact gttgattcag tagagggctc cccgatcgcc atcgactgta cggaggggtt 420

tgaagtgaaa aatgccacgg taatcatccc cgatatcgaa gcggacaacg gcattatcca 480

tgtgattgac aacgtgattt taatgggaat gagtaaagga gaagaacttt tcactggagt 540

tgttccaatt cttgttgaat tagatggtga tgttaatggg cacaaatttt ctgtcagtgg 600

agagggtgaa ggtgatgcaa catacggaaa acttaccctt aaatttattt gcactactgg 660

aaaactacct gttccatggc caacacttgt cactactttc gcctatggtg ttcaatgctt 720

ttcaagatac ccagatcata tgaaacggca tgacttttc aagagtgcca tgcccgaagg 780

ttatgtacag gaaagaacta tatttttcaa agatgacggg aactacaaga cacgtgctga 840

agtcaagttt gaaggtgata cccttgttaa tagaatcgag ttaaaaggta ttgattttaa 900

agaagatgga aacattcttg gacacaaatt ggaatacaac tataactcac acaatgtata 960

catcatggca gacaaacaaa agaatggaat caaagttaac ttcaaaatta gacacaacat 1020

tgaagatgga agcgttcaac tagcagacca ttatcaacaa aatactccaa ttggcgatgg 1080

ccctgtcctt ctaccagaca accattacct gtccacacaa tctgtccttt cgaaagaccc 1140

caacgaaaag agagaccaca tggtccttct tgagtttgta acagctgctg ggattacaca 1200

tggcatggat gaactataca aaatggtttc attcatttcc atttctcaag gtgttagtct 1260

ttgtcttctt gtctcttcca tgatgctcgg ttcatctgct gttcctgttt ctggtaaatc 1320

tggatcttcc actaccgccg tctctgcatc tgacaattct gccctccctc ctctcatttc 1380

cagccgttgt gctcctcctt ctaacaaggg aagtaaaagc gatcttcaag ctgaacctta 1440

ctacatgcaa aagaatacag aatggtatga gtcccatggt ggcaacctga catccatcgg 1500

aaagcgagat gacaatttgg ttggtggcat gactttggat ttacctagcg atgctcctcc 1560

tatcagcctc tctggatcta ccaacagcgc ctctgatggt ggtaaggttg ctgctgctac 1620

tactgctcaa attcaagagt tcaccaagta tgctggtatc gctgccactg cctactgtcg 1680

ttctgttgtc cctggtaaca agtgggactg tgtccaatgt caaaagtggg ttcctgatgg 1740

caagatcatc actaccttta cctccttgct ttccgacaca aatggttacg tcttgagaag 1800

tgataaacaa aagaccattt atcttgtttt ccgtggtacc aactccttca gaagtgccat 1860

cactgatatt gtcttcaact tttccgacta caagcctgtc aagggcgcca aggttcatgc 1920

tggtttcctt tcctcttatg agcaagttgt caatgactat ttccctgtca tccaagaaca 1980

actgaccgct aaccctactt acaaggtcat cgttaccggt cactcactcg gtggtgcaca 2040

agctttgctt gccggtatgg atctctacca acgtgaacca agattgtctc ccaagaattt 2100

gagcatcttc actgttggtg gtcctcgtgt tggtaacccc acctttgctt actatgttga 2160

atctaccggt attcctttcc aacgtaccgt tcacaagaga gatatcgttc ctcacgttcc 2220

tcctcaatcc ttcggattcc ttcaccccgg tgttgaatct tggatcaagt ccggtacctc 2280

caacgttcaa atctgtactt ctgaaattga aaccaaggat tgcagtaact ctatcgttcc 2340

tttcacctct ctccttgatc acttgagtta ctttgatatc aacgaaggaa gctgtttgat 2400

gactcagaca agtcatatgg acaagaccca aggggtcata gatgttgaag cattgaagaa 2460

agaaattcgc gagcaaattt tatccgaact gaaggaacaa aaacaagaac aaaagccaga 2520

gagaccaaag agaaagttaa gtgaaaaaca acttgctgca ttagctgctg gaagacagaa 2580

gaacccacgt ttgctggcga agaaagctag agaagaagca aaagcaaagg aagaacaaaa 2640

agcaaaggaa gctgaagcaa agaaagctga agcaaagaaa gagaaaaaga aaaagaaaaa 2700

gaaaaagaaa aagaaaaaga aaaagaaaaa gaaaaagaaa aagaaaaaga aaaagaaaaa 2760

gaaaaagaaa aagtaatagt aatgagttac agttttggca attactaaaa aactgacttc 2820

aattcaatgt tagcccgctc ccgcgggttt tttgttgctt tttcacagtg actataggta 2880

atcagcaaca caatacggcc ctgttctttg gacagttttt gtataatgtt gaccgcatcc 2940

tgaccggatt ttttatctaa gtggggaatt gtcaattgtc aattaaagct aagttctact 3000

aatgttttag aaggcattgt cgattgaaaa taagggttga atggagaaaa ttttgagcct 3060

ttgtcaaaga taaaaattta tttcaacagt tttttaacta gccgaaccag agaatgaccc 3120

agtggcgctg actttgctcc cgagtttttg ttagaaatta ccctcaagaa gtaatctaat 3180

aataaggttc tctcttctgc cgtta 3205

<210> 226
<211> 2062
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 226 presents example 226 of a designer Thermosynechococcus elongatus nirA-promoter-controlled cell surface-linked lipase (using butanol) DNA construct (2062 bp)

<400> 226
agaaaatctg gcaccacacc tgacccccat cgagagactc cgaacgtggc aaatggaggg 60

accagagttg ttcagttcac aggtagataa tgtcgcgggt cttgatagtt agcaataaat 120

acagtttcag aatatctgta atacaaaaac tgtatcgaga caagaaaaaa gtagcaaaat 180

ttacaaatgt tcatgattca tctggctaaa ttggatgttc aactgaccca ttgaagacaa 240

gggcaacaac catggccatt accctctgca tgattgtgcg ggatgaggcg acacgcttac 300

cccagtgcct agccagtgtt gccggcgttg ttgatgaagc ggtgattgtg gatacggggt 360

cgcaggatga aacggtggcg atcgcccgcg attgggggggc acgggtctat gaaattcctt 420

ggcaagatga ttttgccgct gcccgcaatg ttgctctagg gtatgtgacc actgagtggg 480

tcttagttct cgatgctgat gaaaccctca cccctgcctt tgctgctttg ctgcctcaaa 540

tttgccagca catgaggagc tcccttgtgc tgttcttcct ctctgcgtgg acggccttgg 600

cgcggcctgt tcgacgagcg gttccgcaag atctgctcga ccagtttgaa ctcttttcac 660

aatattcggc ggccgcatac tgtgcggcaa acaatcatgc tccagtgggc tcagacgtaa 720

cgtgctcgga gaatgtctgc cctgaggtag atgcggcgga cgcaacgttt ctctattctt 780

ttgaagattc tggattaggc gatgttaccg gccttctcgc tctcgacaac acgaataaac 840

tgatcgtcct ctctttccgc ggctctcgtt cagtagagaa ctggatcgcg aacctcgccg 900

ccgacctgac agaaatatct gacatctgct ccggctgcga ggggcatgtc ggcttcgtta 960

cttcttggag gtctgtagcc gacactataa gggagcaggt gcagaatgcc gtgaacgagc 1020

atcccgatta ccgcgtggtc tttaccggac atagcttggg aggcgcactg gcaactattg 1080

ccgcagcagc tctgcgagga aatggataca atatcgacgt gttctcatat ggcgcgcccc 1140

gcgtcggtaa cagggcattt gcagaattcc tgaccgcaca gacgggcggc accctgtatc 1200

gcatcaccca taccaatgat atcgtcccta gactccctcc tcgagactgg ggttacagcc 1260

actctagccc ggagtactgg gtcacgtctg gtaacgacgt cccagtgacc gcaaacgaca 1320

tcaccgtcgt ggagggcatc gattccaccg acgggaacaa ccaggggaat atcccagaca 1380

tcccttcgca tctatggtat ttcggtccca tttcagagtg tgatatgact cagacaagtc 1440

atatggacaa gacccaaggg gtcatagatg ttgaagcatt gaagaaagaa attcgcgagc 1500

aaattttatc cgaactgaag gaacaaaaac aagaacaaaa gccagagaga ccaaagagaa 1560

agttaagtga aaaacaactt gctgcattag ctgctggaag acagaagaac ccacgtttgc 1620

tggcgaagaa agctagagaa gaagcaaaag caaaggaaga acaaaaagca aaggaagctg 1680

aagcaaagaa agctgaagca aagaaagaga tgatgattcg gaggctactg tcgccgaatc 1740

ggattcgttt taaatatgtc ttacagtatc actactccat ctcagttcgt gttcttgtca 1800

tcagcgtggg ccgacccaat agagttaata aaaagaaaaa gaaaaagaaa aagaaaaaga 1860

aaaagaaaaa gaaaaagaaa aagaaaaaga aaaagaaaaa gaaaaagaaa aagaaaaagt 1920

aataaggctg agatcttctt cagtgcattg tagttgaatg aagggttagg ggggaaatgc 1980

ccccctattt tttgtctagc catcctgcca cgtttgacag ggtagcaatt tcgacacgat 2040

agggttctct cttctgccgt ta 2062

<210> 227
<211> 2053
<212> DNA

<213> Artificial Sequence

<220>
<223> SEQ ID NO: 227 presents example 227 of a designer Arthrospira platensis cell surface-linked Lipase-polylysine DNA construct (2053 bp)

<400> 227

agaaaatctg gcaccacacc atgactttga tggctaaacg gcttttgatc ctgttagtta 60

ccctaggtgg tacagcattt ttggcagctt gtggcgaacc tactgccacc gaaacccaag 120

gcgaacccac cgaacaaatt gccgaaacca gtgaaccagt aaccgctgaa accgtttctg 180

atgaaactat cgaagcccaa gcagaacccg ctggggaaga aatggctgct gtagttgact 240

cagaccccac agaaaccatt gtcggtattg ctagtggcga gagccaattc agcactctgg 300

tagcggcttt agaaaccgcc gaattagccg aaatcctttc tggggaagga cctttcaccg 360

tttttgctcc cactgacgaa gcatttgcgg ctctaccaga aggcacagtt gaagaacttc 420

tcaaacccga aaatcgtgat caactggttc aaattcttac ctatcacgtt gtcccctccc 480

aagttctgtc tgctaacatc agtgatgggt ctgttgaaac cgttgccgga atgcccttaa 540

ctattactgt tatggacggt actgtaatgg tgaatgaagc cagtgtcatt caagctgaca 600

ttttaggcag caatggggtt attcatgccg ttgacacggt aattttacct ggtgtggtcg 660

aaatgaggag ctcccttgtg ctgttcttcc tctctgcgtg gacggccttg gcgcggcctg 720

ttcgacgagc ggttccgcaa gatctgctcg accagtttga actcttttca caatattcgg 780

cggccgcata ctgtgcggca aacaatcatg ctccagtggg ctcagacgta acgtgctcgg 840

agaatgtctg ccctgaggta gatgcggcgg acgcaacgtt tctctattct tttgaagatt 900

ctggattagg cgatgttacc ggccttctcg ctctcgacaa cacgaataaa ctgatcgtcc 960

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accgcgtggt ctttaccgga catagcttgg gaggcgcact ggcaactatt gccgcagcag 1200

ctctgcgagg aaatggatac aatatcgacg tgttctcata tggcgcgccc cgcgtcggta 1260

acagggcatt tgcagaattc ctgaccgcac agacgggcgg caccctgtat cgcatcaccc 1320

ataccaatga tatcgtccct agactccctc ctcgagactg gggttacagc cactctagcc 1380

cggagtactg ggtcacgtct ggtaacgacg tcccagtgac cgcaaacgac atcaccgtcg 1440

tggagggcat cgattccacc gacgggaaca accaggggaa tatcccagac atcccttcgc 1500

atctatggta tttcggtccc atttcagagt gtgatatgac tcagacaagt catatggaca 1560

agacccaagg ggtcatagat gttgaagcat tgaagaaaga aattcgcgag caaattttat 1620

ccgaactgaa ggaacaaaaa caagaacaaa agccagagag accaaagaga aagttaagtg 1680

aaaaacaact tgctgcatta gctgctggaa gacagaagaa cccacgtttg ctggcgaaga 1740

aagctagaga agaagcaaaa gcaaaggaag aacaaaaagc aaaggaagct gaagcaaaga 1800

aagctgaagc aaagaaagag atgatgattc ggaggctact gtcgccgaat cggattcgtt 1860

ttaaatatgt cttacagtat cactactcca tctcagttcg tgttcttgtc atcagcgtgg 1920

gccgacccaa tagagttaat aaaaagaaaa agaaaaagaa aaagaaaaag aaaaagaaaa 1980

agaaaaagaa aaagaaaaag aaaaagaaaa agaaaaagaa aaagaaaaag taaggttctc 2040

tcttctgccg tta 2053

<210> 228
<211> 2971
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 228 presents example 228 of a designer Arthrospira platensis cell surface-linked Lipase-GFP-polylysine DNA construct (2971 bp)

<400> 228

agaaaatctg gcaccacacc atggcggata ttgtagatat agcagtgagt gcggggtgtt 60

tcaccacctt ggtggcagcc gtacaggcag cgggattagt ggaaaccctg aaaactcccg 120

gtccttttac cgtttttgcg ccccatgatg atgcttttgc gaaactcccc cccggaactg 180

ttcagacctt agtgcagaac ccaccccagt tagcgaggat tttaacatat catgtggctg 240

ctggcaagtt cctgaaggca gacctagaaa aactggatta tttaacttcg gtggaaggtg 300

cgcctatttc tctgaatttt accgagggat ttgaggttaa aaatgccaca gttatcaacc 360

ccgatattga agcagacaat ggggtgattc atgtgattga tacagtcatt ttaatgggga 420

tgacgttgga aaaaggtatt gcttcgctgg ttgaggagtt tattgctgcg gggcggccat 480

cagcacgaga acagagtatt gatgaccgga gaaacggcta tctcgccagc gccgttctcg 540

ctggggcaac ggaaacgcgt gtacaggttg aagacatcac gctcgatggc atgaccttgc 600

gcgtcgtctc gccgccaaaa agcaacggct tgctacccac cattgtgtat taccacggcg 660

gctgttttgt gagcggcgac tttgccaccc atgacaacca attgcgccag cttgcctggt 720

tcagtgggtg ccgggtgatc gccgtgcagt accgtctggc gccggagtac acttttccgg 780

cggcgcacga tgatgcggaa cgaggcgcca acattatcta tcggtatgcg cagcggcttg 840

gcgttgacgc cgcgcgcatc acgctggccg gcgacagcgc cggcggccac ctcgccctgg 900

tcacagcgct acgcctgaaa gcggcgggag tatggcaacc tgcgcagctt atcctgattt 960

accctatgct cgacgctacc gccagcatgg caagctacgc cagcaacggc gaggattaca 1020

tcattacccg ggatacgctg cttagcggct acgaaatgta tttagcggcc acacccgcta 1080

cccatccgga agccagtccg ctgtggcgcg aagattttaa cgggctgccg ccggttcata 1140

tcctgacggc cgaatttgat cctttgcgcg atgagggaga agcgctgtac cggcggttaa 1200

tagcacaagg gatagaaagc acctgccagc gctatctggg cgtcattcac ggtttctttc 1260

agttaggcgg gataagcctc gcggcaaagc aggcgatgcg cgatatcgcc tggcgtacga 1320

tgtctaaagg tgaagaatta ttcactggtg ttgtcccaat tttggttgaa ttagatggtg 1380

atgttaatgg tcacaaattt tctgtctccg gtgaaggtga aggtgatgct acttacggta 1440

aattgacctt aaaatttatt tgtactactg gtaaattgcc ggttccatgg ccaaccttag 1500

tcactacttt cggttatggt gttcaatgtt ttgctagata cccagatcat atgaaacaac 1560

atgacttttt caagtctgcc atgccagaag gttatgttca agaaagaact atttttttca 1620

aagatgacgg taactacaag accagagctg aagtcaagtt tgaaggtgat accttagtta 1680

atagaatcga attaaaaggt attgatttta aagaagatgg taacatttta ggtcacaaat 1740

tggaatacaa ctataactct cacaatgttt acatcatggc tgacaaacaa aagaatggta 1800

tcaaagttaa cttcaaaatt agacacaaca ttgaagatgg ttctgttcaa ttagctgacc 1860

attatcaaca aaatactcca attggtgatg gtccagtctt gttaccagac aaccattact 1920

tatccactca atctgcctta tccaaagatc caaacgaaaa gagagaccac atggtcttgt 1980

tagaatttgt tactgctgct ggtattaccc atggtatgga tgaattgtac aaaatgaatg 2040

ctgtatattt cttgcttgtc ttatccgccg ggttgttgct aacccaagca gatgatgcaa 2100

atgaggaagg tgctgaagat ggtacacagg gtggagagga gaagaaggag aaggagaaga 2160

agaagaagaa gaagaagaag gagaagaaaa agaagaagaa gaagaagaag aagaagaaga 2220

agaagaagaa gaaggtggcg aagaagaagg aggcggcaaa gaagaagaag tcgaaagaga 2280

gaaagataaa ggcgaaagag agaaaggtaa aggcgaaaaa actaaaggcg aaaaaggtag 2340

aggcgaaaaa ggccaacgcg aaaaaggcaa agaagaaggc gaagaagagg tacctggaaa 2400

aaagaaaaag cctggaaagg gtaaaaaagg tgaagaagac aaatatcgta gaaatgactc 2460

agacaagtca tatggacaag acccaagggg tcatagatgt tgaagcattg aagaaagaaa 2520

ttcgcgagca aattttatcc gaactgaagg aacaaaaaca agaacaaaag ccagagagac 2580

caaagagaaa gttaagtgaa aaacaacttg ctgcattagc tgctggaaga cagaagaacc 2640

cacgtttgct ggcgaagaaa gctagagaag aagcaaaagc aaaggaagaa caaaaagcaa 2700

aggaagctga agcaaagaaa gctgaagcaa agaaagagat gatgattcgg aggctactgt 2760

cgccgaatcg gattcgtttt aaatatgtct tacagtatca ctactccatc tcagttcgtg 2820

ttcttgtcat cagcgtgggc cgacccaata gagttaataa aaagaaaaag aaaaagaaaa 2880

agaaaaagaa aaagaaaaag aaaaagaaaa agaaaaagaa aaagaaaaag aaaaagaaaa 2940

agaaaaagta aggttctctc ttctgccgtt a 2971

<210> 229
<211> 2524
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 229 presents example 229 of a designer Phaeodactylum tricornutum cell surface-linked Lipase-polylysine DNA construct (2524 bp)

<400> 229
agaaaatctg gcaccacacc atgaaggggc tttcatctgt tgtcgtcttc aaatacttga 60

cgatcttcat agtggtcgcc agcgctcgtc gcttggagga tggcggttcg aattttgccg 120

gcgaatttct ttctgatgcg gaagtatgcg aaatgcaaga ggaagcatgg ccgagtcagc 180

tgggggaatg gttcggagcg cagcattcgt gcgaatgcaa tggtgcttcc gatgaagaag 240

gcgttgacgt cgtcgagacg aaatgtaaag caaccgagca attttgttgc cctgatacag 300

gccgatgcca cgaagcccgt cgagagcact acaacatgaa agccaaagac gtcaaccgga 360

ctaccgatca agggggtgac tggttttgga catccggagt ggaagcaaat atgtactgct 420

acacatactt gggtgacgat ctaccaaacg gacgggtaga gatttgcgaa gacaccgatt 480

ttgatcccga cgcgcctgga aacgagtgga gctgcgacat gatcaacaat ggcgaaaaat 540

gtcaagagtg ttcccagtgt gaagatgacg acgctaccac caactttgat tgttccaata 600

ttgccggcat agatgacatt cctgccgata tctttcccaa aactggaatc tgctatcgct 660

tcaatggagc ggagtgtgct tccgccttta tcaccaagcc cttatcggtg caagcgacaa 720

atggcggaga ttccggcagt acgaacgccg ttctgtcagg tctgtgtttt gttattgcga 780

ttttgatggt ttttggtaag gacgttatga cgttggaaaa aggtattgct tcgctggttg 840

aggagtttat tgctgcgggg cggccatcag cacgagaaca gagtattgat gaccggagaa 900

acggctatct cgccagcgcc gttctcgctg gggcaacgga aacgcgtgta caggttgaag 960

acatcacgct cgatggcatg accttgcgcg tcgtctcgcc gccaaaaagc aacggcttgc 1020

tacccaccat tgtgtattac cacggcggct gttttgtgag cggcgacttt gccacccatg 1080

acaaccaatt gcgccagctt gcctggttca gtgggtgccg ggtgatcgcc gtgcagtacc 1140

gtctggcgcc ggagtacact tttccggcgg cgcacgatga tgcggaacga ggcgccaaca 1200

ttatctatcg gtatgcgcag cggcttggcg ttgacgccgc gcgcatcacg ctggccggcg 1260

acagcgccgg cggccacctc gccctggtca cagcgctacg cctgaaagcg gcgggagtat 1320

ggcaacctgc gcagcttatc ctgatttacc ctatgctcga cgctaccgcc agcatggcaa 1380

gctacgccag caacggcgag gattacatca ttacccggga tacgctgctt agcggctacg 1440

aaatgtattt agcggccaca cccgctaccc atccggaagc cagtccgctg tggcgcgaag 1500

attttaacgg gctgccgccg gttcatatcc tgacggccga atttgatcct ttgcgcgatg 1560

agggagaagc gctgtaccgg cggttaatag cacaagggat agaaagcacc tgccagcgct 1620

atctgggcgt cattcacggt ttctttcagt taggcgggat aagcctcgcg gcaaagcagg 1680

cgatgcgcga tatcgcctgg cgtacgatga atgctgtata tttcttgctt gtcttatccg 1740

ccgggttgtt gctaacccaa gcagatgatg caaatgagga aggtgctgaa gatggtacac 1800

agggtggaga ggagaagaag gagaaggaga agaagaagaa gaagaagaag aaggagaaga 1860

aaaagaagaa gaagaagaag aagaagaaga agaagaagaa gaagaaggtg gcgaagaaga 1920

aggaggcggc aaagaagaag aagtcgaaag agagaaagat aaaggcgaaa gagagaaagg 1980

taaaggcgaa aaaactaaag gcgaaaaagg tagaggcgaa aaaggccaac gcgaaaaagg 2040

caaagaagaa ggcgaagaag aggtacctgg aaaaaagaaa aagcctggaa agggtaaaaa 2100

aggtgaagaa gacaaatatc gtagaaatga ctcagacaag tcatatggac aagacccaag 2160

gggtcataga tgttgaagca ttgaagaaag aaattcgcga gcaaatttta tccgaactga 2220

aggaacaaaa acaagaacaa aagccagaga gaccaaagag aaagttaagt gaaaaacaac 2280

ttgctgcatt agctgctgga agacagaaga acccacgttt gctggcgaag aaagctagag 2340

aagaagcaaa agcaaaggaa gaacaaaaag caaaggaagc tgaagcaaag aaagctgaag 2400

caaagaaaga gaaaaagaaa aagaaaaaga aaaagaaaaa gaaaaagaaa aagaaaaaga 2460

aaaagaaaaa gaaaaagaaa aagaaaaaga aaaagaaaaa gtaaggttct ctcttctgcc 2520

gtta 2524

<210> 230
<211> 2317
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 230 presents example 230 of a designer Microcoleus vaginatu cell surface-linked Lipase-polylysine DNA construct (2317 bp)

<400> 230
agaaaatctg gcaccacacc atgagcaaat tttacaattc tcaaggatgg cgcgatcggg 60

tggcggtgct agcgggaatt tttggcctca gcagtctctt gattttaccc gtcttagcgc 120

aatctaaccg cgaatcccag agcacttttc agccctcttc cgtacttgac tccccccagc 180

gatcgggcgg caacattgca gatactctca agagagaaag cgaattccaa actcttgctt 240

ctgtgttggc tgctgctggt ttgacggatc tgctcagaca agaaggtcgt cctttaacaa 300

ttttcgctcc taccaatcaa gcttttcgta aaaatgccgc tgtttacaat cagctactcc 360

agccgcaaaa caaggagaaa ttagcgagag ttttgaaata tcatttaatt gctggccgtg 420

tcactcctga agatgtgaat aaaggggaaa ttaaaacagt tgaaggcggc acagtgaaaa 480

ttcgcgtggc acctgatgga gtgattatga atgataatgt taaaggagtt caaccgtcta 540

ttgaggctaa aaacggggta attgtgcggg tagataattt acttttaccc ccggatttaa 600

tgacgttgga aaaaggtatt gcttcgctgg ttgaggagtt tattgctgcg gggcggccat 660

cagcacgaga acagagtatt gatgaccgga gaaacggcta tctcgccagc gccgttctcg 720

ctggggcaac ggaaacgcgt gtacaggttg aagacatcac gctcgatggc atgaccttgc 780

gcgtcgtctc gccgccaaaa agcaacggct tgctacccac cattgtgtat taccacggcg 840

gctgttttgt gagcggcgac tttgccaccc atgacaacca attgcgccag cttgcctggt 900

tcagtgggtg ccgggtgatc gccgtgcagt accgtctggc gccggagtac actttccgg 960

cggcgcacga tgatgcggaa cgaggcgcca acattatcta tcggtatgcg cagcggcttg 1020

gcgttgacgc cgcgcgcatc acgctggccg gcgacagcgc cggcggccac ctcgccctgg 1080

tcacagcgct acgcctgaaa gcggcgggag tatggcaacc tgcgcagctt atcctgattt 1140

accctatgct cgacgctacc gccagcatgg caagctacgc cagcaacggc gaggattaca 1200

tcattacccg ggatacgctg cttagcggct acgaaatgta tttagcggcc acacccgcta 1260

cccatccgga agccagtccg ctgtggcgcg aagattttaa cgggctgccg ccggttcata 1320

tcctgacggc cgaatttgat cctttgcgcg atgagggaga agcgctgtac cggcggttaa 1380

tagcacaagg gatagaaagc acctgccagc gctatctggg cgtcattcac ggtttctttc 1440

agttaggcgg gataagcctc gcggcaaagc aggcgatgcg cgatatcgcc tggcgtacga 1500

tgaatgctgt atatttcttg cttgtcttat ccgccgggtt gttgctaacc caagcagatg 1560

atgcaaatga ggaaggtgct gaagatggta cacagggtgg agaggagaag aaggagaagg 1620

agaagaagaa gaagaagaag aagaaggaga agaaaaagaa gaagaagaag aagaagaaga 1680

agaagaagaa gaagaagaag gtggcgaaga agaaggaggc ggcaaagaag aagaagtcga 1740

aagagagaaa gataaaggcg aaagagagaa aggtaaaggc gaaaaaacta aaggcgaaaa 1800

aggtagaggc gaaaaaggcc aacgcgaaaa aggcaaagaa gaaggcgaag aagaggtacc 1860

tggaaaaaag aaaaagcctg gaaagggtaa aaaaggtgaa gaagacaaat atcgtagaaa 1920

tgactcagac aagtcatatg gacaagaccc aaggggtcat agatgttgaa gcattgaaga 1980

aagaaattcg cgagcaaatt ttatccgaac tgaaggaaca aaaacaagaa caaaagccag 2040

agagaccaaa gagaaagtta agtgaaaaac aacttgctgc attagctgct ggaagacaga 2100

agaacccacg tttgctggcg aagaaagcta gagaagaagc aaaagcaaag gaagaacaaa 2160

aagcaaagga agctgaagca aagaaagctg aagcaaagaa agagaaaaag aaaaagaaaa 2220

agaaaaagaa aaagaaaaag aaaaagaaaa agaaaaagaa aaagaaaaag aaaaagaaaa 2280

agaaaaagaa aaagtaaggt tctctcttct gccgtta 2317

<210> 231
<211> 4552
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 231 presents example 231 of a designer Methanosarcina barkeri cell surface-linked Lipase-polylysine DNA construct (4552 bp)

<400> 231
agaaaatctg gcaccacacc atgaaagata ggggaaaatt gcattcagta cctttagtgt 60

taatggcatt atttttcgta tttttggttt caaactcagc tgtaacgtta gctgcccagg 120

aaattaagct ctcagaggat attggactaa atggagagac ttctatttac ggtgataaag 180

tggtgtggtc atattgggac aaaattcatc tttatgacct aaaaaccgga aatgatacta 240

taattaccat gcctgaacat tatgtatcac atcctgctat atatgataat aaaattgtat 300

actgtcttta taatgtaaat gagaatccag ttagggtcag actttacgtg tatgatatac 360

ttaattctac aagttcacta atcacagaga atttgtccca ttgtgttcct gatatttacg 420

gtgatagaat tgtgtgggct gcggaacgcg actacaagac cgatgtctac atgtacaata 480

tttccactca tacacaaact cagataacca caagaggatc tgcaagtaac ccttcaatat 540

atgaaaacaa aatagtatgg gtgggttacg gggacaatgg aactattata gataaaaata 600

acaattccat tagcagagat agtatttgca tttatgacct ttccactaag aaggaaacta 660

tgatcaacac tatcggaaga gcatatgctc ccgtgatcta cagtgatagg atagtatgga 720

aggatagtcg caattcagac tttactggga gaagagggga tgtctacatg tataacctct 780

caactgagaa agaaagccgg atctcttaca gcggacagtc ctcgttaggt tcgtctccag 840

ctatctatgg ggacaggata gtatgggatg ataatcgcaa tggaaaatgg gatatttaca 900

tgtacaatct ctcaactaag aaggagactc agattaccac cagtggaagt gcaatgggac 960

ctgatatcta cggagacagg atagtgtata gtgataatcg tcaaagattg acccctggtc 1020

ctggtgatgt ttatttttgt gatatctatg tgtatgatct cactgctaga cccatagaac 1080

cacaagctgg gtttacatcc aatgtgactt ccggaatagc acctctaacg gtattattca 1140

ctgataccag cactggtgga gtaccaactt cctggcattg ggacactggt gacggtattt 1200

actcaaaaca tgccatgaat gcaacccata cgtttacaaa cccaggggtg tataacgtta 1260

ctttaacagt tacaaatgaa gcaggcaata gcacggtaac gaaaccgaat tatattactg 1320

taactccccc acaaccacca gtggcagatt tttatgctaa tgtaacctct ggaaaagcac 1380

ctctaatggt gtctttccat ggtagaatta ttggcaaagc tacaagtaaa ggcgaagaac 1440

ctatttcctg gtattgggat tttggcgatg gcatttattc aaaacacacc acgaatgcaa 1500

tccacacatt tcacaccacg aatgcaatcc acacatttac aaaaccaggg atttacacag 1560

taaatcttac tgtaggaaat ttcgtgggta atagtacagc gacaaagcca gattacatag 1620

ttgttatcga tccaaaagct cccgatgcaa attttagtag taacattatc gagggttatg 1680

ttcccctgac ggtacagttt aatgacactt ctcaaaatgc aacgtcaagg gtatgggact 1740

tcgacaataa tggaaaaaca gactcaaccg atgtaaaccc tgtttataca tttacaacac 1800

caggaatcca tactgttaac ctgacagtaa gaaatgctta cggcactacc tcaaaaactg 1860

atacgataat tgtacttaca gaaaatgaga tccggattac aaccagcgaa ttagcatccc 1920

atcctgatat ctatggtaat agaatagtat ggcaagacct tcgcaacgga aactacgata 1980

tctacatgta cgatctctcc acttccaggg aaaccaggat cactgctaat gaatcaaatc 2040

agacatatcc ttcactctac tgtgatagaa tagtgtggca agatgatcgt aatggacagt 2100

atgatatcta tatgtacaat atatctactt caaaagaaac tcaaataagc actagcgggc 2160

gcgctcagag acctaaaatc tatggtgaca ggataatgtg gatggattat cgaactagaa 2220

ataaaggtat ttacgtgcac gacctatcca cttctaagga aactcggata atttcaaaag 2280

gaatacctca atatattaat atgcaaggta acttgatagt ctggcatgat cttcgataca 2340

taagtccgga tatttacatg tacgatctct ccacttcaaa ggaaactcaa ataacctcca 2400

acggagaagc aacattccct aacgtctatg gtaacaggat agtgtggaaa gagtggcaca 2460

gagaagatgt caccaccgat atctacatgt acgatttatc cacttccaag aagactcaga 2520

ttactaccaa taaatcaagt caatactatc ctgctattta tggtaataag atagtatggg 2580

aagatttccg caacgaatac atcaatattt acatgtacga tctctcaact cagaaggaga 2640

ctcagattac caccagcgga ggtgcacacg atcctgatat ctatggagac aggattgtat 2700

ataggaagta tagttatcat agatcacccg ttgatcatgt ttttttttagt gatatctata 2760

tgtatgatct cactgctaga cccatggaac cacaaactgg acttacatcc aatgtgactc 2820

tagaacaaca cctcatgacg ttggaaaaag gtattgcttc gctggttgag gagtttattg 2880

ctgcggggcg gccatcagca cgagaacaga gtattgatga ccggagaaac ggctatctcg 2940

ccagcgccgt tctcgctggg gcaacggaaa cgcgtgtaca ggttgaagac atcacgctcg 3000

atggcatgac cttgcgcgtc gtctcgccgc caaaaagcaa cggcttgcta cccaccattg 3060

tgtattacca cggcggctgt tttgtgagcg gcgactttgc cacccatgac aaccaattgc 3120

gccagcttgc ctggttcagt gggtgccggg tgatcgccgt gcagtaccgt ctggcgccgg 3180

agtacacttt tccggcggcg cacgatgatg cggaacgagg cgccaacatt atctatcggt 3240

atgcgcagcg gcttggcgtt gacgccgcgc gcatcacgct ggccggcgac agcgccggcg 3300

gccacctcgc cctggtcaca gcgctacgcc tgaaagcggc gggagtatgg caacctgcgc 3360

agcttatcct gatttaccct atgctcgacg ctaccgccag catggcaagc tacgccagca 3420

acggcgagga ttacatcatt acccgggata cgctgcttag cggctacgaa atgtatttag 3480

cggccacacc cgctacccat ccggaagcca gtccgctgtg gcgcgaagat tttaacgggc 3540

tgccgccggt tcatatcctg acggccgaat ttgatccttt gcgcgatgag ggagaagcgc 3600

tgtaccggcg gttaatagca caagggatag aaagcacctg ccagcgctat ctgggcgtca 3660

ttcacggttt ctttcagtta ggcgggataa gcctcgcggc aaagcaggcg atgcgcgata 3720

tcgcctggcg tacgatgaat gctgtatatt tcttgcttgt cttatccgcc gggttgttgc 3780

taacccaagc agatgatgca aatgaggaag gtgctgaaga tggtacacag ggtggagagg 3840

agaagaagga gaaggagaag aagaagaaga agaagaagaa ggagaagaaa aagaagaaga 3900

agaagaagaa gaagaagaag aagaagaaga agaaggtggc gaagaagaag gaggcggcaa 3960

agaagaagaa gtcgaaagag agaaagataa aggcgaaaga gagaaaggta aaggcgaaaa 4020

aactaaaggc gaaaaaggta gaggcgaaaa aggccaacgc gaaaaaggca aagaagaagg 4080

cgaagaagag gtacctggaa aaaagaaaaa gcctggaaag ggtaaaaaag gtgaagaaga 4140

caaatatcgt agaaatgact cagacaagtc atatggacaa gacccaaggg gtcatagatg 4200

ttgaagcatt gaagaaagaa attcgcgagc aaattttatc cgaactgaag gaacaaaaac 4260

aagaacaaaa gccagagaga ccaaagagaa agttaagtga aaaacaactt gctgcattag 4320

ctgctggaag acagaagaac ccacgtttgc tggcgaagaa agctagagaa gaagcaaaag 4380

caaaggaaga acaaaaagca aaggaagctg aagcaaagaa agctgaagca aagaaagaga 4440

aaaagaaaaa gaaaaagaaa aagaaaaaga aaaagaaaaa gaaaaagaaa aagaaaaaga 4500

aaaagaaaaa gaaaaagaaa aagaaaaagt aaggttctct cttctgccgt tg 4552

<210> 232
<211> 2533
<212> DNA
<213> Artificial Sequence

<220>
<223> SEQ ID NO: 232 presents example 232 of a designer Synechococcus sp. strain PCC 7942 nirA-promoter-controlled cell surface-linked Lipase-polylysine DNA construct (2533 base pairs (bp))

<400> 232
agaaaatctg gcaccacacc cttcttgcag aacatgcatg atttacaaaa agttgtagtt 60

tctgttacca attgcgaatc gagaactgcc taatctgccg agtatatgat ggccaaaatc 120

cttgaggttg cccgcgaggc gggttgtttt cagacgctac tcacagccgt tgaagtcgct 180

ggcttagtcg atgcactcaa tagcgacggt ccttttaccg tctttgcacc taccgatgat 240

gcttttgctg cactaccacc gggcacagtg acaacgctgg ttcagaaccc gccgcaacta 300

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cgcccgtcag ttgattcgtt agaaggcgca ccaattccca ttggacgagc agagccgttt 420

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