

SEQUENCE LISTING

<110> KANEKA CORPORATION

<120> MODIFIED CARBONYL REDUCING ENZYME AND GENE

<130> B130138W001

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<151> 2013-03-28

<160> 47

<170> PatentIn version 3.1

<210> 1

<211> 335

<212> PRT

<213> Vanderwaltozyma polyspora

<400> 1

Met Ser Val Leu Val Thr Gly Ala Thr Gly Tyr Ile Ala Leu His Val
1 5 10 15

Ile Asp Leu Leu Leu Lys Glu Asn Tyr Arg Val Ile Gly Thr Val Arg
20 25 30

Ser Lys Glu Lys Ala Ala Lys Leu Glu Lys Gln Phe Asn Tyr Asn Lys
35 40 45

Asp Leu Thr Phe Glu Ile Val Glu Asp Ile Ala Asn Leu Ser Ala Phe
 50 55 60

Asp His Val Ile Lys Asn His Ala Asn Glu Ile Asn Tyr Val Ile His
 65 70 75 80

Met Ala Ser Pro Val Thr Phe Thr Ala Asp Asp Phe Glu Lys Asp Ile
 85 90 95

Leu Ile Pro Ala Val Asn Gly Thr Lys Gly Ile Leu Glu Ser Ile Lys
 100 105 110

Gln Tyr Ala Pro Lys Ser Val Lys Lys Phe Val Ile Thr Ser Ser Ile
 115 120 125

Ala Ala Met Met Asp Leu Thr Asn Pro Thr Ala Ile Leu Thr Glu Gln
 130 135 140

Ser Trp Asn Pro Thr Thr Trp Glu Gln Ala Gln Glu Asn Gly Ile Ala
 145 150 155 160

Ala Tyr Ser Gly Ser Lys Lys Phe Ala Glu Lys Ala Ala Trp Asn Phe
 165 170 175

Leu Glu Glu Asn Lys Gly Ile Val Asp Phe Lys Leu Thr Thr Ile Asn

180

185

190

Pro Val Phe Val Phe Gly Pro Gln Lys Phe Asp Glu Asp Ala Lys Gly
 195 200 205

Lys Leu Asn Ser Ser Cys Glu Ile Ile Lys Glu Ala Met Phe Ala Pro
 210 215 220

Thr Glu Ser Glu Ile Asp Lys Ser Val Phe Gly Ser Tyr Val Asp Val
 225 230 235 240

Arg Asp Val Ala Arg Ala His Val Cys Ser Leu His Asn Asp Glu Leu
 245 250 255

Thr Gly Lys Arg Leu Ile Leu Ser Asn Ala Ser Phe Thr Lys Gln Asn
 260 265 270

Ile Val Asn Ile Met Asn Lys Arg Phe Pro Gln Leu Lys Gly Lys Ile
 275 280 285

Ala Pro Ala Asp Asn Ser Glu Leu Pro Gln Gly Gly Arg Val His Asn
 290 295 300

Glu Lys Thr Lys Ala Leu Leu Gly Tyr Ile Phe Lys Asp Leu Glu Glu
 305 310 315 320

Ile Val Val Asp Met Ala Asp Gln Ile Leu Lys Val Gln Glu Gln
325 330 335

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gcatattcag	gttcaaagaa	atttgcagaa	aaagctgctt	ggaacttctt	agaagagaat	540
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aaatttgatg	aagacgocaa	gggtaaactg	aattcctcat	gtgaaatcat	caaggaagct	660
atgtttgctc	caacagaaaag	tgaaattgat	aaatctgttt	ttggtagtta	tgttgatgta	720
cgtgatgtag	caagagctca	tgtctgttct	ttacataatg	atgagttaac	tggtaaaagg	780

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 cgtgtccata acgagaagac taaggctcta ttgggttata tttttaaaga tttagaagaa 960
 attgttgtcg atatggctga tcaaattattg aaggttcaag aacaatag 1008

<210> 3

<211> 1008

<212> DNA

<213> Artificial Sequence

<220>

<223> Mutational gene sequence for cutting NdeI site

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atgagtgttt tagttacagg tgctactggt tacattgcat tacatgtaat tgaccttttg 60
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 gagaaacaat ttaattataa taaggattta acttttgaaa ttgttgaaga tattgctaatt 180
 ttatctgctt ttgatcatgt aattaataat catgctaattg aaattaacta tgtgattcac 240
 atggcttcac ctgttacttt tactgcagat gattttgaaa aagatatctt aatcccagct 300
 gttaatggta ctaaaggat ccttgaatca attaagcaat atgctccaaa atctgtgaag 360
 aaatttgta taacttcttc aattgctgcc atgatggatt taacaaatcc aactgcaatt 420
 ttaacagaac aatcatggaa cccaactact tgggagcaag ctcaggaaaa tgggattgct 480

gcatattcag gttcaaagaa atttgcagaa aaagctgctt ggaacttctt agaagagaat 540
 aaaggtattg ttgattttta attaactacg atcaaccacg tttttgtctt tggtcctcag 600
 aaatttgatg aagacgcaa gggtaaactg aattcctcat gtgaaatcat caaggaagct 660
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 cgtgtccata acgagaagac taaggctcta ttgggttata tttttaaaga tttagaagaa 960
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<223> Primer for PCR to amplify a wild type gene

<400> 4

gggaattcca tatgagtgtt ttagttacag g 31

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<211> 35

<212> DNA

<213> Artificial Sequence

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<223> Primer for PCR to amplify a wild type gene

<400> 5

atacgcgtcg acttactatt gttottgaac cttca

35

<210> 6

<211> 33

<212> DNA

<213> Artificial Sequence

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<223> Primer for PCR to amplify a mutation type gene

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gttaattca ttagcgcgat ttttaattac atg

33

<210> 7

<211> 33

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<223> Primer for PCR to amplify a mutation type gene

<400> 7

catgtaatta aaaatcgcgc taatgaaatt aac

33

<210> 8

<211> 33

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<223> Primer for PCR to amplify a mutation type gene

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gatcaacctt tcaccgctta actcatcatt atg

33

<210> 9

<211> 33

<212> DNA

<213> Artificial Sequence

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cataatgatg agttaagcgg tgaaaggttg atc

33

<210> 10

<211> 33

<212> DNA

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ctcgttatgg acacgatctc cttgaggtaa ctc

33

<210> 11

<211> 33

<212> DNA

<213> Artificial Sequence

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gagttacctc aaggagatcg tgtccataac gag

33

<210> 12

<211> 33

<212> DNA

<213> Artificial Sequence

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<223> Primer for PCR to amplify a mutation type gene

<400> 12

gttaatttca ttagcgcgat ttttaattac atg

33

<210> 13

<211> 33

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<223> Primer for PCR to amplify a mutation type gene

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catgtaatta aaaatcgcgc taatgaaatt aac

33

<210> 14

<211> 35

<212> DNA

<213> Artificial Sequence

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<223> Primer for PCR to amplify a mutation type gene

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ggataccttt agtaccaata acagctggga ttaag

35

<210> 15

<211> 35

<212> DNA

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cttaatccca gctgttattg gtactaaagg tatcc

35

<210> 16

<211> 36

<212> DNA

<213> Artificial Sequence

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tttatcaatt tcaactgcctg ttggagcaaa catagc

36

<210> 17

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> Primer for PCR to amplify a mutation type gene

<400> 17

gctatgtttg ctccaacagg cagtgaaatt gataaa

36

<210> 18

<211> 33

<212> DNA

<213> Artificial Sequence

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gatcaacctt ttaccgctta actcatcatt atg

33

<210> 19

<211> 33

<212> DNA

<213> Artificial Sequence

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<400> 19

cataatgatg agttaagcgg taaaaggttg atc

33

<210> 20

<211> 32

<212> DNA

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gacaagatca acctttcacc agttaactca tc

32

<210> 21

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for PCR to amplify a mutation type gene

<400> 21

gatgagttaa ctggtgaaag gttgatcttg tc

32

<210> 22

<211> 29

<212> DNA

<213> Artificial Sequence

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<223> Primer for PCR to amplify a mutation type gene

<400> 22

tttgcatagt gaacggagca ttgacaag

29

<210> 23
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<223> Primer for PCR to amplify a mutation type gene

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29

<210> 24
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<400> 24

ctcgttatgg acacgatctc cttgaggtaa ctc

33

<210> 25
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 <212> DNA
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<400> 25

gagttacctc aaggagatcg tgtccataac gag 33

<210> 26

<211> 29

<212> DNA

<213> Artificial Sequence

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<223> Primer for PCR to amplify a mutation type gene

<400> 26

ccagtagcac ctgtaactaa aacaatcat 29

<210> 27

<211> 29

<212> DNA

<213> Artificial Sequence

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<223> Primer for PCR to amplify a mutation type gene

<400> 27

atgattgttt tagttacagg tgctactgg 29

<210> 28

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for PCR to amplify a mutation type gene

<400> 28

ggcagcaatt gaagaagtca gaacaaattt cttcac

36

<210> 29

<211> 36

<212> DNA

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<223> Primer for PCR to amplify a mutation type gene

<400> 29

gtgaagaaat ttgttctgac ttcttcaatt gctgcc

36

<210> 30

<211> 32

<212> DNA

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32

<210> 31

<211> 32

<212> DNA

<213> Artificial Sequence

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<210> 32
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<400> 32
ggaccaaaga ccagaactgg gttgatcg 28

<210> 33
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<400> 33
cgatcaaccc agttctggtc tttggtcc 28

<210> 34
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ctgttgagc aaacatcact tccttgatga tttc

34

<210> 35

<211> 34

<212> DNA

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gaaatcatca aggaagtgat gtttgcacca acag

34

<210> 36

<211> 35

<212> DNA

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<400> 36

cgtacatcaa catagttacc aaaaacagat ttatc

35

<210> 37

<211> 35

<212> DNA

<213> Artificial Sequence

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<223> Primer for PCR to amplify a mutation type gene

<400> 37

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35

<210> 38

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for PCR to amplify a mutation type gene

<400> 38

gtacatcac gtacatcaat ataactacca aaaac

35

<210> 39

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for PCR to amplify a mutation type gene

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gtttttggta gttatattga tgtacgtgat gtagc

35

<210> 40

<211> 33

<212> DNA

<213> Artificial Sequence

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33

<210> 41

<211> 33

<212> DNA

<213> Artificial Sequence

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cataatgatg agttaagcgg taaaaggttg atc

33

<210> 42

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for PCR to amplify a mutation type gene

<400> 42

gcatagttaa tgaagctttt gacaagatca accttcacc

40

<210> 43

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for PCR to amplify a mutation type gene

<400> 43

ggtgaaaggt tgatcttgtc aaaagottca ttcactatgc

40

<210> 44

<211> 33

<212> DNA

<213> Artificial Sequence

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<223> Primer for PCR to amplify a mutation type gene

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33

<210> 45

<211> 33

<212> DNA

<213> Artificial Sequence

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<400> 45

gagttacctc aaggagatcg tgtccataac gag

33

<210> 46

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for PCR to amplify a mutation type gene

<400> 46

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37

<210> 47

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer for PCR to amplify a mutation type gene

<400> 47

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37