

SEQUENCE LISTING

<110> Temasek Life Sciences Laboratory Limited

<120> Jatropha Curcas Curcin Genes, Tissue-Specific Promoters and Generation of Curcin-Deficient Transgenic Jatropha Plants

<130> FP5087

<150> US 61/184,416

<151> 2009-06-05

<160> 56

<170> PatentIn version 3.5

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Leu Thr Ile Thr Tyr Asp Ala Thr Thr Asp Lys Lys Asn Tyr Ala Gln
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Glu Ile Pro Val Leu Arg Ala Thr Val Ala Pro Asn Gln Lys Phe Ile
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Val Ala Lys Val Ile Asn Val Ala Asn Leu Glu Val Ser Leu Gly Leu
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Ser Lys Thr Phe Arg Pro Gly Gly Asp Ile Ile Ser Leu Glu Asn Asn
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gta tca tta gga tta aac gtc gtt aat gca tat tta gtg gct tat aag Val Ser Leu Gly Leu Asn Val Val Asn Ala Tyr Leu Val Ala Tyr Lys	110	115	120	807
gca gga ggt aca tcc tat ttc ttt aac gat ccc gaa tct ttg gct gat Ala Gly Gly Thr Ser Tyr Phe Phe Asn Asp Pro Glu Ser Leu Ala Asp	125	130	135	855
gca aaa aaa tat ctt ttc aca gac aca aag caa caa acg cta tca ttt Ala Lys Lys Tyr Leu Phe Thr Asp Thr Lys Gln Gln Thr Leu Ser Phe	140	145	150	903
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gat gtg gat tta ggg gtg ctg gca tta gat aat tac ata tat ata ctt Asp Val Asp Leu Gly Val Leu Ala Leu Asp Asn Tyr Ile Tyr Ile Leu	175	180	185	999
cac aaa agt tct caa cca gca gac att gct aaa cct cta gtt ggt ttt His Lys Ser Ser Gln Pro Ala Asp Ile Ala Lys Pro Leu Val Gly Phe	190	195	200	1047
atc gaa atg gtt cca gag gca gca aga ttc aaa tat att gag aaa aaa Ile Glu Met Val Pro Glu Ala Ala Arg Phe Lys Tyr Ile Glu Lys Lys	205	210	215	1095
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Leu Thr Ile Thr Tyr Asp Ala Ala Ala Asp Lys Lys Asn Tyr Ala Asn
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Phe Ile Arg Asp Leu Arg Glu Ala Phe Gly Phe Ser Tyr Ser Ser His
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Glu Ile Pro Val Leu Arg Ala Thr Val Ala Ala Asn Gln Lys Phe Ile
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Val Ala Lys Val Ile Asn Val Ala Asn Leu Glu Val Ser Leu Gly Leu
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Asn Val Val Asn Ala Tyr Leu Val Ala Tyr Lys Ala Gly Gly Thr Ser
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Tyr Phe Phe Asn Asp Pro Glu Ser Leu Ala Asp Ala Lys Lys Tyr Leu
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Phe Thr Asp Thr Lys Gln Gln Thr Leu Ser Phe Thr Gly Ser Tyr Ala
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Asp Phe Leu Ser Arg Ala Asn Val His Arg Glu Asp Val Asp Leu Gly
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Val Leu Ala Leu Asp Asn Tyr Ile Tyr Ile Leu His Lys Ser Ser Gln
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Pro Ala Asp Ile Ala Lys Pro Leu Val Gly Phe Ile Glu Met Val Pro
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Glu Ala Ala Arg Phe Lys Tyr Ile Glu Lys Lys Val Leu Thr Gln Ile
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Ser Glu Thr Phe Arg Pro Arg Gly Val Ile Ile Ser Leu Glu Asn Asn
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Trp Gly Asp Leu Ser Tyr Gln Ile Gln Lys Ser Val Asn Gly Ile Phe
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Leu Lys Pro Val Gln Leu Gln Arg Glu Asn Tyr Thr Asn Ile Leu Val
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Asn Asn Val Thr Gln Val Thr Gly Leu Met Gly Val Leu Leu Asn Ala
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Ala	Lys	Val 100	Ile	Asn	Ser	Gly	Asp 105	Ile	Glu	Val	Ser	Val 110	Gly	Leu	Asn	
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Lys Ile Pro Val Leu Arg Ala Thr Val Ala Ala Asn Gln Lys Phe Ile
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Val Ala Lys Val Ile Asn Ser Gly Asp Ile Glu Val Ser Val Gly Leu
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Asn Val Ile Asn Ala Tyr Leu Val Ala Tyr Lys Val Gly Ser Asn Ser
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Tyr Phe Phe Asn Asp Ser Glu Ser Leu Ala Asp Ala Lys Lys Asn Leu
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Phe Thr Asp Thr Asn Gln Gln Thr Leu Ala Phe Thr Gly Ser Tyr Ala
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Asp Phe Glu Ser Arg Ala Lys Leu His Arg Glu Glu Val Asp Leu Gly
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Val Val Ala Leu Asp Asn Tyr Val Tyr Thr Leu Glu Lys Ser Ser Gln
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Pro Ala Asp Ile Ala Lys Pro Leu Val Gly Phe Ile Glu Met Val Pro
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Glu Ala Ala Arg Phe Lys Tyr Ile Glu Lys Lys Ile Ser Thr Gln Ile
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Ser Lys Thr Phe Arg Pro Arg Gly Asp Ile Ile Ser Leu Glu Asn Asn

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gctattatat cttcgagcca ctttctatta cactttgtag ttgcttctat attatccaaa	240
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gcaatgcttt ctgcttttga tgaggaacgt aaaaaagtct gactgtttgt taagttctag	360
cagactaatt acattatcta aggtaaacac aataacttgt aatagatttg tgtgtgtcta	420
aacagccggc ccagtcgtaa ccattagatg ctttaagcta aaagaaaaat tagatgggaa	480
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ctatctcttt ttaatcattt ttataatttt atgcaaactt attataataa tcgtattcgt	2040
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cgaacaccac ataattacct gcacttgta tttatgatac agagagcaag tttttcttca	240
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tggttgtctt tccaatgtga gctattggca atctcgtgtt atttgttgtg actacaacac	360
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Cys Pro Phe Ser Ser Asn Gln Asn Tyr Lys Ala Gly Ser Thr Pro Thr
35 40 45

Leu Ala Ile Thr Tyr Asp Ala Thr Thr Asp Lys Lys Asn Tyr Ala Gln
50 55 60

Phe Ile Glu Asp Leu Arg Glu Ala Phe Asp Phe Ser Tyr Leu Ser His
65 70 75 80

Lys Ile Pro Val Leu Arg Ala Thr Val Ala Ala Asn Gln Lys Phe Ile
85 90 95

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

Asn Val Ile Asn Ala Tyr Leu Val Ala Tyr Lys Val Gly Ser Asn Ser
115 120 125

Tyr Phe Phe Asn Asp Ser Glu Ser Leu Ala Asp Ala Lys Lys Asn Leu
130 135 140

Phe Thr Asp Thr Asn Gln Gln Thr Leu Ala Phe Thr Gly Ser Tyr Ala
145 150 155 160

Asp Phe Glu Ser Arg Ala Lys Leu His Arg Glu Glu Val Asp Leu Gly
165 170 175

Val Val Ala Leu Asp Asn Tyr Val Tyr Thr Leu Glu Lys Ser Ser Gln
180 185 190

Pro Ala Asp Ile Ala Lys Pro Leu Val Gly Phe Ile Glu Met Val Pro
195 200 205

Glu Ala Ala Arg Phe Lys Tyr Ile Glu Lys Lys Ile Ser Thr Gln Ile
210 215 220

Ser Lys Thr Phe Arg Pro Arg Gly Asp Ile Ile Ser Leu Glu Asn Asn
225 230 235 240

Trp Gly Asp Leu Ser Tyr Gln Ile Gln Lys Ser Val Asp Asp Val Phe
245 250 255

Leu Lys Pro Val Gln Leu Gln Arg Glu Asn Tyr Thr Asn Ile Leu Val
260 265 270

Asn Asn Val Thr Gln Val Lys Gly Leu Met Gly Val Leu Leu Asn Ala
275 280 285

Val Asn Tyr Lys Val Ser Met Glu Glu Ile Ile Phe Asn Asp Gln Lys
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Trp Leu Pro Trp Leu
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<210> 11
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<212> PRT
<213> Jatropha curcas

<400> 11

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Cys Pro Phe Ser Ser Asn Gln Asn Tyr Lys Ala Gly Ser Thr Pro Thr
35 40 45

Leu Val Ile Thr Tyr Asp Ala Thr Thr Asp Lys Lys Asn Tyr Ala Gln
50 55 60

Phe Ile Glu Asp Leu Arg Glu Ala Phe Asp Phe Ser Tyr Leu Ser His
65 70 75 80

Lys Ile Pro Val Leu Arg Ala Thr Val Ala Ala Asn Gln Lys Phe Ile

85 90 95
 Val Ala Lys Val Ile Asn Ser Gly Asp Ile Glu Val Ser Val Gly Leu
 100 105 110
 Asn Val Ile Asn Ala Tyr Leu Val Ala Tyr Lys Val Gly Ser Asn Ser
 115 120 125
 Tyr Phe Phe Asn Asp Ser Glu Ser Leu Ala Asp Ala Lys Lys Asn Leu
 130 135 140
 Phe Thr Asp Thr Asn Gln Gln Thr Leu Ala Phe Thr Gly Ser Tyr Ala
 145 150 155 160
 Asp Phe Glu Ser Arg Ala Lys Leu His Lys Glu Glu Val Asp Leu Gly
 165 170 175
 Val Val Ala Leu Asp Asn Tyr Val Tyr Thr Leu Glu Lys Ser Ser Gln
 180 185 190
 Pro Ala Asp Ile Ala Lys Pro Leu Val Gly Phe Ile Glu Met Val Pro
 195 200 205
 Glu Ala Ala Arg Phe Lys Tyr Ile Glu Lys Lys Ile Ser Thr Gln Ile
 210 215 220
 Ser Lys Thr Phe Arg Pro Arg Gly Asp Ile Ile Ser Leu Glu Asn Asn
 225 230 235 240
 Trp Gly Asp Leu Ser Tyr Gln Ile Gln Lys Ser Val Asp Asp Val Phe
 245 250 255
 Leu Lys Pro Val Gln Leu Gln Arg Glu Asn Tyr Thr Asn Ile Leu Val
 260 265 270
 Asn Asn Val Thr Gln Val Lys Gly Leu Met Gly Val Leu Leu Asn Ala
 275 280 285
 Val Asn Tyr Lys Val Ser Met Glu Glu Ile Ile Phe Asn Asp Gln Lys
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 Trp Leu Pro Trp Leu
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 <211> 309
 <212> PRT
 <213> Jatropha curcas

<400> 12

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 Cys Pro Phe Ser Ser Asn Gln Asn Tyr Lys Ala Gly Ser Thr Pro Thr
 35 40 45
 Leu Val Ile Thr Tyr Asp Ala Thr Thr Asp Lys Lys Asn Tyr Ala Gln
 50 55 60
 Phe Ile Glu Asp Leu Arg Glu Ala Phe Asp Phe Ser Tyr Leu Ser His
 65 70 75 80
 Lys Ile Pro Val Leu Arg Ala Thr Val Ala Ala Asn Gln Lys Phe Ile
 85 90 95
 Val Ala Lys Val Ile Asn Ser Gly Asp Ile Glu Val Ser Val Gly Leu
 100 105 110
 Asn Val Ile Asn Ala Tyr Leu Val Ala Tyr Lys Val Gly Ser Asn Ser
 115 120 125
 Tyr Phe Phe Asn Asp Ser Glu Ser Leu Ala Asp Ala Lys Lys Asn Leu
 130 135 140
 Phe Thr Asp Thr Asn Gln Gln Thr Leu Ala Phe Thr Gly Ser Tyr Ala
 145 150 155 160
 Asp Phe Glu Ser Arg Ala Lys Leu His Arg Glu Glu Val Asp Leu Gly
 165 170 175
 Val Val Ala Leu Asp Asn Tyr Val Tyr Thr Leu Glu Lys Ser Ser Gln
 180 185 190
 Pro Ala Asp Ile Ala Lys Pro Leu Val Gly Phe Ile Glu Met Val Pro
 195 200 205
 Glu Ala Ala Arg Phe Lys Tyr Ile Glu Lys Lys Ile Ser Thr Gln Ile
 210 215 220
 Ser Lys Thr Phe Arg Pro Arg Gly Asp Ile Ile Ser Leu Glu Asn Asn
 225 230 235 240
 Trp Gly Asp Leu Ser Tyr Gln Ile Gln Lys Ser Val Asp Asp Val Phe
 245 250 255
 Leu Lys Pro Val Gln Leu Gln Arg Glu Asn Tyr Thr Asn Ile Leu Val
 260 265 270
 Asn Asn Val Thr Gln Val Lys Gly Leu Met Gly Val Leu Leu Asn Ala
 275 280 285

Val Asn Tyr Lys Val Ser Met Glu Glu Ile Ile Phe Asn Asp Gln Lys
 290 295 300

Trp Leu Pro Trp Leu
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<400> 13

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Cys Trp Ser Cys Ile Ile Phe Gly Trp Ala Ser Ala Arg Glu Ile Val
 20 25 30

Cys Pro Phe Ser Ser Asn Gln Asn Tyr Lys Ala Gly Ser Thr Pro Thr
 35 40 45

Leu Thr Ile Thr Tyr Asp Ala Ala Ala Asp Lys Lys Asn Tyr Ala Gln
 50 55 60

Phe Ile Lys Asp Leu Arg Glu Ala Phe Gly Phe Ser Tyr Ser Ser His
 65 70 75 80

Glu Ile Pro Val Leu Arg Ala Thr Val Ala Pro Asn Gln Lys Phe Ile
 85 90 95

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

Asn Val Val Asn Ala Tyr Leu Val Gly Tyr Lys Val Gly Gly Thr Ser
 115 120 125

Tyr Phe Phe Asn Asp Pro Glu Ser Leu Ala Asp Ala Lys Thr Tyr Leu
 130 135 140

Phe Thr Asp Thr Lys Gln Gln Thr Leu Ser Phe Thr Gly Ser Tyr Ala
 145 150 155 160

Asp Phe Leu Ser Arg Ala Asn Val His Arg Glu Asp Val Asp Leu Gly
 165 170 175

Val Gln Ala Leu Asp Asn Tyr Ile Tyr Thr Leu Glu Lys Ser Ser Lys
 180 185 190

Pro Ala Asp Ile Ala Lys Pro Leu Val Gly Phe Ile Glu Met Val Pro
 195 200 205

Glu Ala Ala Arg Phe Lys Tyr Ile Glu Lys Lys Val Leu Ser Gln Ile
 210 215 220

Ser Lys Thr Leu Arg Pro Gly Gly Asp Ile Ile Ser Leu Glu Asn Asn
225 230 235 240

Trp Gly Asp Leu Ser Tyr Gln Ile Gln Lys Cys Val Asn Gly Val Phe
245 250 255

Leu Lys Pro Val Gln Leu Gln Arg Glu Asn Tyr Thr Asn Ile Leu Val
260 265 270

Asn Asn Val Thr Gln Val Ala Gly Val Met Gly Val Leu Leu Asn Ala
275 280 285

Val Asn Tyr Lys Val
290

<210> 14
<211> 293
<212> PRT
<213> Jatropha curcas

<400> 14

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Cys Trp Ser Cys Ile Ile Phe Gly Trp Ala Ser Ala Arg Glu Ile Val
20 25 30

Cys Pro Phe Ser Ser Asn Gln Asn Tyr Lys Ala Gly Ser Thr Pro Thr
35 40 45

Leu Thr Ile Thr Tyr Asp Ala Ala Ala Asp Lys Lys Asn Tyr Ala Asn
50 55 60

Phe Ile Arg Asp Leu Arg Glu Ala Phe Gly Phe Ser Tyr Ser Ser His
65 70 75 80

Glu Ile Pro Val Leu Arg Ala Thr Val Ala Ala Asn Gln Lys Phe Ile
85 90 95

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

Asn Val Val Asn Ala Tyr Leu Val Gly Tyr Lys Val Gly Gly Thr Ser
115 120 125

Tyr Phe Phe Asn Asp Pro Glu Ser Leu Ala Asp Ala Lys Thr Tyr Leu
130 135 140

Phe Thr Asp Thr Lys Gln Gln Thr Leu Ser Phe Thr Gly Ser Tyr Ala
145 150 155 160

Asp Phe Leu Ser Arg Ala Asn Val His Arg Glu Asp Val Asp Leu Gly
 165 170 175

Val Gln Ala Leu Asp Asn Tyr Ile Tyr Thr Leu Glu Lys Ser Ser Lys
 180 185 190

Pro Ala Asp Ile Ala Lys Pro Leu Val Gly Phe Ile Glu Met Val Pro
 195 200 205

Glu Ala Ala Arg Phe Glu Tyr Ile Glu Lys Lys Ile Ser Thr Gln Ile
 210 215 220

Ser Lys Thr Phe Arg Pro Arg Gly Asp Ile Ile Ser Leu Glu Asn Asn
 225 230 235 240

Trp Gly Asp Leu Ser Tyr Gln Ile Gln Lys Ser Val Asp Asp Val Phe
 245 250 255

Leu Lys Pro Val Gln Leu Gln Arg Glu Asn Tyr Thr Asn Ile Leu Val
 260 265 270

Asn Asn Val Thr Gln Val Lys Gly Leu Met Gly Val Leu Leu Asn Ala
 275 280 285

Val Lys Tyr Lys Val
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<210> 17
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<400> 17
 gctggtcca ctccaacttt aac 23

<210> 18
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<400> 18

cgggatccgg tacttcctat ttctttaacg 30

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<400> 19
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<400> 23
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<400> 26

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23

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<400> 28

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18

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19

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22

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<400> 33

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21

<210> 34
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<400> 34
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<400> 37
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<400> 39
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aggtacttcc tatttcttta acgatccgga atctttggct gatgcaaaaa catatctttt	360
cacagacaca aagcaacaaa cgctatcatt tactggtagc tatgcagatt ttctatctag	420
ggcaaacgta cacagagagg atgtggattt aggggtgcag gcattagata attacatata	480
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aatggttcca gaggcagcaa gattcaaata tattgagaaa aaagtattaa gtcaaattag	600
caaaaccttt aggccgggtg gtgacataat tagccttgag aacaactggg gagacctctc	660
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aaactatacc aatatacctag tgaacaatgt cacccaagta gcaggtgtca tgggagtctt 780
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 agtagtatta tattcggatg ggcacggct agggaaatag tttgtccatt ctcatcaaac 180
 caaaactaca aagctggttc ccctccaact ttaaccatta cttatgacgc tactactgat 240
 aagaaaaact acgcccagtt cattaaagat ctaagagaag catttggtt cagttattca 300
 agccatgaaa taccagtctt acgggccaca gttgctccaa atcagaaatt tattgtagcc 360
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 ttagtggtt ataaggtagg aggtacttcc tatttcttta acgatccgga atctttggct 480
 gatgcaaaaa catatctttt cacagacaca aagcaacaaa cgctatcatt tactggtagc 540
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 aaagtattaa gtcaaattag caaaccttt aggccgggtg gtgacataat tagccttgag 780
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 gtagcataaa taaaggacaa caaatattt attattgttg ctaatgctat atgctatttc 1080
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<210> 55
 <211> 1176
 <212> DNA
 <213> *Jatropha curcas*

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 agtagtatta tattcggatg ggcacggct agggaaatag tttgtccatt ctcatcaaac 180
 caaaactaca aagctggttc cactccaact ttagccatta cttatgacgc tactactgat 240
 aagaaaaact acgcccagtt cattgaagat ctaagagaag catttgactt cagttattta 300

agccataaaa taccagtctt acgggccacg gttgctgcaa atcagaaatt tattgtagcc	360
aaagtcataa attctgggga catagaagta tcagtaggat taaacgtcat taatgcatat	420
ctagtggctt ataaggtagg aagtaattcc tatttcttta acgattcgga atctttggct	480
gatgcaaaaa aaaatctttt cacagacaca aaccaacaaa cactagcatt tactggtagc	540
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gcattggata attacgtata tacacttgaa aaaagttctc agccagcaga cattgctaaa	660
cctctagtgt gttttatcga aatggttcca gaggcagcaa gattcaaata tattgagaaa	720
aaaatatcaa ctcaaattag caaaaccttt aggccgcgtg gtgacataat tagccttgag	780
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<210> 56
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aatagtttgt ccattctcat caaaccaaaa ctacaaagct ggttccactc caactttaac	180
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agaagcattt ggcttcagtt attcaagcca tgaaatacca gtcctacggg ccacggttgc	300
tgcaaatcag aaatttattg tagccaaagt cataaatgta gcgaatttag aagtatcatt	360
aggattaaac gtcgttaatg catatttagt ggcttataag gcaggaggta catcctattt	420
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caatgtatga atatgatgat gtattatata tgacaaataa agtttctact agttcttaat 1140