

SEQUENCE LISTING

<110> BASF Plant Science GmbH
Wiig, Aaron

<120> COMPOSITIONS AND METHODS USING RNA INTERFERENCE Targeting MTHFR-LIKE
GENES
FOR CONTROL OF NEMATODES

<130> PF 58863

<160> 20

<170> PatentIn version 3.4

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<212> DNA

<213> Glycine max

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<222> (68)..(1096)

<220>

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tca aag ccc tct tct ctt gtt ttc cgc caa gtt ggt gtg ggt ccc acc 157

Ser Lys Pro Ser Ser Leu Val Phe Arg Gln Val Gly Val Gly Pro Thr
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tct ctc cga ttc tct tct tct cat gtt gcc tcc gtt gct gct atg gct 205

Ser Leu Arg Phe Ser Ser Ser His Val Ala Ser Val Ala Ala Met Ala
35 40 45

atg gat tct tct gct aag gtg att gat gga aaa tcc gtt gcc aag caa 253

Met Asp Ser Ser Ala Lys Val Ile Asp Gly Lys Ser Val Ala Lys Gln
50 55 60

atc aga gat gag ata acg gct gag gtt tcc agg atg aga gaa tcc att 301

Ile Arg Asp Glu Ile Thr Ala Glu Val Ser Arg Met Arg Glu Ser Ile
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ggt gtg att cct ggg ttg gct gta att ctt gtt ggg gat agg aaa gac 349

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80 85 90

tca gca act tat gtg cgt aac aag aag aag gct tgt gaa tct gtt gga 397

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gtt Val	ttg Leu	aac Asn	tat Tyr 130	att Ile	gca Ala	ggc Gly	tac Tyr 135	aat Asn	gat Asp	gat Asp	cct Pro	tca Ser	gtt Val 140	cat His	ggc Gly	493
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aat Asn 175	att Ile	ggt Gly	cgt Arg	ctt Leu	gct Ala 180	atg Met	cgt Arg	gga Gly	aga Arg	gaa Glu 185	cca Pro	ctg Leu	ttt Phe	gtt Val	cct Pro 190	637
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atc Ile	aaa Lys	gga Gly	aag Lys 210	agg Arg	gct Ala	gtt Val	gtg Val 215	att Ile	ggt Gly	cgg Arg	agc Ser	aat Asn	att Ile 220	gtt Val	gga Gly	733
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gaa Glu	gaa Glu	gcc Ala	ata Ile	aga Arg	att Ile	gcc Ala	tct Ser 310	gct Ala	gtt Val	aca Thr	cca Pro	gtt Val 315	cct Pro	gga Gly	gga Gly	1021
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335 340

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 35 40 45

Ser Ser Ala Lys Val Ile Asp Gly Lys Ser Val Ala Lys Gln Ile Arg
 50 55 60

Asp Glu Ile Thr Ala Glu Val Ser Arg Met Arg Glu Ser Ile Gly Val
 65 70 75 80

Ile Pro Gly Leu Ala Val Ile Leu Val Gly Asp Arg Lys Asp Ser Ala
 85 90 95

Thr Tyr Val Arg Asn Lys Lys Lys Ala Cys Glu Ser Val Gly Ile Asn
 100 105 110

Ser Leu Glu Ala Asn Leu Pro Glu Asp Ser Thr Glu Glu Glu Val Leu
 115 120 125

Asn Tyr Ile Ala Gly Tyr Asn Asp Asp Pro Ser Val His Gly Ile Leu
 130 135 140

Val Gln Leu Pro Leu Pro Ser His Met Asn Glu Gln Asn Ile Leu Asn
 145 150 155 160

Ala Val Arg Ile Glu Lys Asp Val Asp Gly Phe His Pro Leu Asn Ile
 165 170 175

Gly Arg Leu Ala Met Arg Gly Arg Glu Pro Leu Phe Val Pro Cys Thr

180	185	190
Pro Lys Gly Cys Ile Glu Leu Leu His Arg Tyr Asn Val Ser Ile Lys		
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Gly Lys Arg Ala Val Val Ile Gly Arg Ser Asn Ile Val Gly Met Pro		
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Ala Ala Leu Leu Leu Gln Arg Glu Asp Ala Thr Val Ser Ile Val His		
225	230	235
Ser Arg Thr Ser Asn Pro Glu Glu Ile Ile Arg Gln Ala Asp Ile Ile		
245	250	255
Ile Ala Ala Val Gly Gln Ala Asn Met Val Arg Gly Ser Trp Ile Lys		
260	265	270
Pro Gly Ala Val Ile Ile Asp Val Gly Ile Asn Pro Val Glu Asp Pro		
275	280	285
Asn Ser Pro Arg Gly Tyr Lys Leu Val Gly Asp Val Cys Tyr Glu Glu		
290	295	300
Ala Ile Arg Ile Ala Ser Ala Val Thr Pro Val Pro Gly Gly Val Gly		
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<212> DNA

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<213> Arabidopsis thaliana

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caaaaaatat taattttact ctgatgttta ccaaaaaagt taccaatcaa atatttaaga	300
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<212> PRT
<213> Medicago truncatula

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35 40 45

Ser Ile Ala Ala Ser Ala Thr Glu Ala Ser Ser Ala Lys Val Ile Asp
50 55 60

Gly Lys Thr Val Ala Lys Gln Ile Arg Asp Glu Ile Ala Val Glu Val
65 70 75 80

Ser Arg Met Arg Glu Ala Ala Gly Val Ile Pro Gly Leu Ala Val Ile
85 90 95

Leu Val Gly Asp Arg Lys Asp Ser Ala Thr Tyr Val Arg Asn Lys Lys
100 105 110

Lys Ala Cys Glu Thr Val Gly Ile Asn Ser Leu Glu Val Asn Leu Pro
115 120 125

Glu Asp Ser Thr Glu Glu Glu Val Leu Asn His Ile Ala Gly Tyr Asn
130 135 140

Asp Asp Pro Ser Val His Gly Ile Leu Val Gln Leu Pro Leu Pro Ser
 145 150 155 160

His Met Asn Glu Gln Asn Val Leu Asn Ala Val Arg Ile Glu Lys Asp
 165 170 175

Val Asp Gly Phe His Pro Leu Asn Ile Gly Arg Leu Ala Met Arg Gly
 180 185 190

Arg Glu Pro Leu Phe Val Pro Cys Thr Pro Lys Gly Cys Ile Glu Leu
 195 200 205

Leu His Arg Tyr Gly Val Ser Ile Lys Gly Lys Arg Ala Val Val Ile
 210 215 220

Gly Arg Ser Asn Ile Val Gly Met Pro Ala Ala Leu Leu Leu Gln Arg
 225 230 235 240

Glu Asp Ala Thr Val Ser Ile Val His Ser Arg Thr Thr Asn Pro Glu
 245 250 255

Glu Ile Ile Arg Gln Ala Asp Ile Ile Ile Ala Ala Val Gly Gln Pro
 260 265 270

Asn Met Val Lys Gly Ser Trp Ile Lys Pro Gly Ala Val Ile Ile Asp
 275 280 285

Val Gly Ile Asn Pro Val Asp Asp Pro Ser Ser Ser Arg Gly Tyr Lys
 290 295 300

Leu Val Gly Asp Val Cys Tyr Glu Glu Ala Val Lys Val Ala Ser Ala
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          20          25          30

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Arg Phe Leu Thr Ser Gln Ser Ala Pro Pro Ser Ser His Leu Val Ser
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Val Gly Asp Arg Lys Asp Ser Ala Thr Tyr Val Arg Asn Lys Lys Lys
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Ala Cys Glu Ser Val Gly Ile Asn Ser Leu Glu Val Asn Leu Pro Ala
115 120 125

Asp Thr Thr Glu Glu Gln Val Leu Asn Tyr Ile Ser Gly Tyr Asn Asp
130 135 140

Asp Pro Ser Val His Gly Ile Leu Val Gln Leu Pro Leu Pro Ser His
145 150 155 160

Met Asn Glu Gln Asn Val Leu Asn Ala Val Arg Ile Glu Lys Asp Val
165 170 175

Asp Gly Phe His Pro Leu Asn Ile Gly Arg Leu Ala Met Arg Gly Arg
180 185 190

Glu Pro Leu Phe Val Pro Cys Thr Pro Lys Gly Cys Ile Glu Leu Leu
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His Arg Tyr Gly Ile Ser Ile Lys Gly Lys Arg Ala Val Val Ile Gly
210 215 220

Arg Ser Asn Ile Val Gly Met Pro Ala Ala Leu Leu Leu Gln Arg Glu
225 230 235 240

Asp Ala Thr Val Ser Val Val His Ser Arg Thr Ser Asn Pro Glu Glu
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Ile Thr Arg Gln Ala Asp Ile Ile Ile Ala Ala Val Gly Gln Pro Asn
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Met Val Arg Gly Ser Trp Ile Lys Pro Asp Ala Val Ile Ile Asp Val
275 280 285

Gly Ile Asn Pro Val Asp Asp Pro Ser Ser Ser Arg Gly Tyr Lys Leu
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Val Gly Asp Val Cys Tyr Glu Glu Ala Ile Lys Val Ala Ser Ala Ile
305 310 315 320

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325

330

335

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<212> DNA

<213> Arabidopsis thaliana

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atgccagctg ctcttttact gcagagggag gatgcaaccg ttagcattat ccattcaaga      780
accaagaacc ctgaagaaat cacaagagaa gctgatatta taatctcagc tgttgacag      840
ccaacatgg tcagaggaag ctggataaaa ccgggcgcag tcctcatcga tgttgggatt      900
aatcctgttg aggatccaag tgctgcgctg ggatatcgat tggttggaga catttgctac      960
gaggaggcta gcaaagttgc atcagccatc acacctgttc ctggcgggtgt aggaccaatg     1020
accatagcca tgcttctatc caacacttta acatcagcta agaggattca caacttccag     1080
tga                                                                    1083

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<210> 12

<211> 360

<212> PRT

<213> Arabidopsis thaliana

<400> 12

Met Ala Ser Met Met Phe Thr Asp Cys Ser Ser Thr Thr Thr Ser Arg
 1 5 10 15

Leu Ile His Leu Asn Arg Ser Ser Gly Thr Phe Leu Leu Arg Gln Cys
20 25 30

Val Gly Gln Leu Arg Leu Gln Thr Thr Ala Ser Gly Arg Gly Cys Cys
35 40 45

Ile Arg Ser Ser Ser Ser Pro Ile Ser Ser Ile Ser Ala Asp Thr Lys
50 55 60

Ser Glu Gly Gly Ala Ile Val Ile Asp Gly Lys Ala Val Ala Lys Lys
65 70 75 80

Ile Arg Asp Glu Ile Thr Ile Glu Val Ser Arg Met Lys Glu Ser Ile
85 90 95

Gly Val Ile Pro Gly Leu Ala Val Ile Leu Val Gly Asp Arg Lys Asp
100 105 110

Ser Ala Thr Tyr Val Arg Asn Lys Lys Lys Ala Cys Asp Ser Val Gly
115 120 125

Ile Lys Ser Phe Glu Val Arg Leu Ala Glu Asp Ser Ser Glu Glu Glu
130 135 140

Val Leu Lys Ser Val Ser Gly Phe Asn Asp Asp Pro Ser Val His Gly
145 150 155 160

Ile Leu Val Gln Leu Pro Leu Pro Ser His Met Asp Glu Gln Asn Ile
165 170 175

Leu Asn Ala Val Ser Ile Glu Lys Asp Val Asp Gly Phe His Pro Leu
180 185 190

Asn Ile Gly Arg Leu Ala Met Arg Gly Arg Glu Pro Leu Phe Val Pro
195 200 205

Cys Thr Pro Lys Gly Cys Ile Glu Leu Leu His Arg Tyr Asn Ile Glu
210 215 220

Ile Lys Gly Lys Arg Ala Val Val Ile Gly Arg Ser Asn Ile Val Gly
225 230 235 240

Met Pro Ala Ala Leu Leu Leu Gln Arg Glu Asp Ala Thr Val Ser Ile
245 250 255

Ile His Ser Arg Thr Lys Asn Pro Glu Glu Ile Thr Arg Glu Ala Asp
260 265 270

Ile Ile Ile Ser Ala Val Gly Gln Pro Asn Met Val Arg Gly Ser Trp
275 280 285

Ile Lys Pro Gly Ala Val Leu Ile Asp Val Gly Ile Asn Pro Val Glu
290 295 300

Asp Pro Ser Ala Ala Arg Gly Tyr Arg Leu Val Gly Asp Ile Cys Tyr
305 310 315 320

Glu Glu Ala Ser Lys Val Ala Ser Ala Ile Thr Pro Val Pro Gly Gly
325 330 335

Val Gly Pro Met Thr Ile Ala Met Leu Leu Ser Asn Thr Leu Thr Ser
340 345 350

Ala Lys Arg Ile His Asn Phe Gln
355 360

<210> 13
<211> 1116
<212> DNA
<213> Oryza sativa

<400> 13
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cgccgcgccc tctcgcgcgc gccgtgccgc ttccgcccg ccaccgtcgc cgcgccgccg 120
cggaggcccc tcgccatcgc cccccccag ctcccgcttc tcccgcgcgc gcgcggcatg 180
gcttcggcct cagccgcgcgc cgcgcgcgc gcctcctcta ccgactcaga tgcttggtgcc 240
aagattattg atgggaagtt ggtggcaaag cagataagag aggaaatcgc tgttgagatc 300
gccaatga aggatgcaat tggggttggt cctgggctgg cagtcacctc agttgggtca 360
aggaaggatt ctcaaacgta tgtgcgcaac aagaagaagg catgcgaagc ggttggtatc 420
aagtcatatg aggttaattt gccggaagac agctctgagg atgaggttct caagcacatc 480
gcaacattta acagtgatcc gtcggtgcat ggcaccttgg ttcagttgcc cctacctcat 540
catatgaatg atgagaacat tttgaatgct gttagtattg agaaggatgt tgatggattt 600
catccactga acattggacg acttgcaatg caaggtcggg atccgttctt tgttccatgc 660
accctaag gatgcatgga attactacac agatatggag ttgaaatcaa agggaagaga 720
gctgttgtaa ttgggcggag caatattgtg gggatgcctg ctgcattatt actgcaaaaa 780

gccaacgcaa ctgttagcat tgtacattca aataccaaga agcctgagga aataacaaga 840
caagcagata ttgttatcgc agctgttgga gttgctaadc tggtcagagg gagttggata 900
aagcctgggtg ctgctattat tgatgttggc atcaatccag ttgatgatcc agaaagccct 960
cgagggttatc ggctgggttg agatgtgtgc tacgaggagg cctccaagat tgcaggacta 1020
atcacgccag ttctgtgtgg tgcggggcca atgacaattg cgatgctttt gtcgaacaca 1080
cttgagtcag ctaaaaggat acacaaattc aaataa 1116

<210> 14
<211> 371
<212> PRT
<213> Oryza sativa

<400> 14

Met Ala Ser Ser Ile Leu Ser Asp Cys Ser Ser Ser Ala Thr Ser Arg
1 5 10 15

Leu Leu Pro Leu Arg Arg Ala Leu Leu Ala Pro Pro Cys Arg Phe Arg
20 25 30

Pro Ala Thr Val Ala Ala Pro Pro Arg Arg Pro Leu Ala Ile Ala Ala
35 40 45

Pro Gln Leu Pro Leu Leu Pro Arg Ala Arg Gly Met Ala Ser Ala Ser
50 55 60

Ala Ala Ala Ala Ala Ala Ala Ser Ser Thr Asp Ser Asp Ala Cys Ala
65 70 75 80

Lys Ile Ile Asp Gly Lys Leu Val Ala Lys Gln Ile Arg Glu Glu Ile
85 90 95

Ala Val Glu Ile Ala Lys Met Lys Asp Ala Ile Gly Val Val Pro Gly
100 105 110

Leu Ala Val Ile Leu Val Gly Ser Arg Lys Asp Ser Gln Thr Tyr Val
115 120 125

Arg Asn Lys Lys Lys Ala Cys Glu Ala Val Gly Ile Lys Ser Tyr Glu
130 135 140

Val Asn Leu Pro Glu Asp Ser Ser Glu Asp Glu Val Leu Lys His Ile
145 150 155 160

Ala Thr Phe Asn Ser Asp Pro Ser Val His Gly Ile Leu Val Gln Leu

165	170	175
Pro Leu Pro His His Met Asn Asp Glu Asn Ile Leu Asn Ala Val Ser		
180	185	190
Ile Glu Lys Asp Val Asp Gly Phe His Pro Leu Asn Ile Gly Arg Leu		
195	200	205
Ala Met Gln Gly Arg Asp Pro Phe Phe Val Pro Cys Thr Pro Lys Gly		
210	215	220
Cys Met Glu Leu Leu His Arg Tyr Gly Val Glu Ile Lys Gly Lys Arg		
225	230	235
Ala Val Val Ile Gly Arg Ser Asn Ile Val Gly Met Pro Ala Ala Leu		
245	250	255
Leu Leu Gln Lys Ala Asn Ala Thr Val Ser Ile Val His Ser Asn Thr		
260	265	270
Lys Lys Pro Glu Glu Ile Thr Arg Gln Ala Asp Ile Val Ile Ala Ala		
275	280	285
Val Gly Val Ala Asn Leu Val Arg Gly Ser Trp Ile Lys Pro Gly Ala		
290	295	300
Ala Ile Ile Asp Val Gly Ile Asn Pro Val Asp Asp Pro Glu Ser Pro		
305	310	315
Arg Gly Tyr Arg Leu Val Gly Asp Val Cys Tyr Glu Glu Ala Ser Lys		
325	330	335
Ile Ala Gly Leu Ile Thr Pro Val Pro Gly Gly Val Gly Pro Met Thr		
340	345	350
Ile Ala Met Leu Leu Ser Asn Thr Leu Glu Ser Ala Lys Arg Ile His		
355	360	365
Lys Phe Lys		
370		

<210> 15
 <211> 1107
 <212> DNA
 <213> Lycopersicon esculentum

 <400> 15


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atggcgatcat ctccgataac aatgatgaag atgaagttaa acaactgctc accgccgtca      60
accgccgcag ccgcagctcg gtttttacca cttcttgggc cccaccaaat tcgcttccgt    120
tcctctgtgg ctccccttta caacccatct ttcccagaa ccatcatcac tcgtccaacg    180
ttttcctcct cctccatcat caccgctgcg atggctaata aggcatgtgt aaaagtgatt    240
gatgggaaaa aagttgcaaa agatgttaga gatgaaataa atgctgaaat aactaggatg    300
aaagattcga ttggtgttgt tcctggcctt gcagttatac ttgttgggga taggaaggat    360
tctgcaactt atgttcgcaa caagaaaaaa gcttgtgaaa ctgctgggat caaatcctat    420
gaagtgtgtt tgcttgagaa ctcaacagag gaagaagttc tcaagtatat ttcagacttc    480
aatgatgatc ctatggttca tggaattctt gttcagctac cattgccttc gcatatggat    540
gaggagaaaa tcctacatgc tgtttgcatt gagaaggatg tggatggatt ccaccacta    600
aatattggcc agcttgcatg gcgaggtaga gagcccttat ttatcccctg tacacaaaa    660
ggatgcattg agcttcttca tcggtacaat gtggaaatta aggggaaaaa agcggttgtc    720
attggcagga gcaatatagt tggaatgcct gctgccctgc tgctgcagag ggaagatgcc    780
accgtcagca tagttcattc cagaaccact aaccagagg agatcacaag agaagcagat    840
atcataatcg ctgctgtagg gaaaccaa atgggttagag gtagctggat caagcctggg    900
gcagtaatta ttgatgtcgg gattaatcct gtggaggatg ctacaaatcc tcgaggctat    960
cgactagtgt gagatgtttg ttatgaggag gccatcaagg ttgcttcagc tattactcct   1020
gttcctggag gagttgggcc catgactata gcaatgcttc tctccaatac tttgttatca   1080
gcaaaacgaa ttaataactt caagtga                                     1107

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<210> 16
<211> 368
<212> PRT
<213> Lycopersicon esculentum

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<400> 16

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Met Ala Ser Ser Pro Ile Thr Met Met Lys Met Lys Leu Asn Asn Cys
1           5           10           15

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Ser Pro Pro Ser Thr Ala Ala Ala Ala Arg Phe Leu Pro Leu Leu
          20           25           30

```

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Gly Pro His Gln Ile Arg Phe Arg Ser Ser Val Ala Pro Leu Tyr Asn
          35           40           45

```

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Pro Ser Phe Pro Arg Thr Ile Ile Thr Arg Pro Thr Phe Ser Ser Ser
          50           55           60

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Ser Ile Ile Thr Ala Ala Met Ala Asn Glu Ala Leu Val Lys Val Ile
65 70 75 80

Asp Gly Lys Lys Val Ala Lys Asp Val Arg Asp Glu Ile Asn Ala Glu
85 90 95

Ile Thr Arg Met Lys Asp Ser Ile Gly Val Val Pro Gly Leu Ala Val
100 105 110

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

Lys Lys Ala Cys Glu Thr Ala Gly Ile Lys Ser Tyr Glu Val Cys Leu
130 135 140

Pro Glu Asn Ser Thr Glu Glu Glu Val Leu Lys Tyr Ile Ser Asp Phe
145 150 155 160

Asn Asp Asp Pro Met Val His Gly Ile Leu Val Gln Leu Pro Leu Pro
165 170 175

Ser His Met Asp Glu Glu Lys Ile Leu His Ala Val Cys Ile Glu Lys
180 185 190

Asp Val Asp Gly Phe His Pro Leu Asn Ile Gly Gln Leu Ala Met Arg
195 200 205

Gly Arg Glu Pro Leu Phe Ile Pro Cys Thr Pro Lys Gly Cys Ile Glu
210 215 220

Leu Leu His Arg Tyr Asn Val Glu Ile Lys Gly Lys Lys Ala Val Val
225 230 235 240

Ile Gly Arg Ser Asn Ile Val Gly Met Pro Ala Ala Leu Leu Leu Gln
245 250 255

Arg Glu Asp Ala Thr Val Ser Ile Val His Ser Arg Thr Thr Asn Pro
260 265 270

Glu Glu Ile Thr Arg Glu Ala Asp Ile Ile Ile Ala Ala Val Gly Lys
275 280 285

Pro Asn Met Val Arg Gly Ser Trp Ile Lys Pro Gly Ala Val Ile Ile
290 295 300

Asp Val Gly Ile Asn Pro Val Glu Asp Ala Thr Asn Pro Arg Gly Tyr
 305 310 315 320

Arg Leu Val Gly Asp Val Cys Tyr Glu Glu Ala Ile Lys Val Ala Ser
 325 330 335

Ala Ile Thr Pro Val Pro Gly Gly Val Gly Pro Met Thr Ile Ala Met
 340 345 350

Leu Leu Ser Asn Thr Leu Leu Ser Ala Lys Arg Ile Asn Asn Phe Lys
 355 360 365

<210> 17
 <211> 1089
 <212> DNA
 <213> Gossypium hirsutum

<400> 17
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 acccgtttca gtaatggtct cgtttccctt cgccggtttg tgggtccact tcatgttttc 120
 tcaaataccc ctacccttcc tcgagccctc tctctccacg ctccacgttc ttctcgtttc 180
 attactgctt caatggctgc tgagccatcc gctaaggatga tcgatgggaa atcagtggca 240
 aagcaaataa gagaagaaat aagtgtgaa gtaacaaaac tgaaggaagc aattggagtt 300
 gttcctggat tagccgttat tctagtgtgg gataggaagg actctgctac ttatgtgcgg 360
 aacaagaaaa aagcttgtga atctgtaggg attaactcct ttgaagtaaa ttacctgat 420
 gatgcttctg agcaagaagt tctcaagtat atctcggact tcaatggtga tccttcgggt 480
 catggcatcc ttgttcaatt gcctctacct tctcatatga atgagcagaa cattttaaat 540
 gctgttacga ttgagaaaga tgtggatggc ttccacccat tgaacattgg tcatcttgcc 600
 atgcgaggta gcgaaccctt gttcgttcca tgtactccta aaggatgcat agagctattg 660
 catagatatg gtgttgatat taaaggaaaag agggctgttg tcattgggtcg gagtaatatt 720
 gttggaatgc ctgcagctct gttactgcaa agggaagatg ctactgtaac tattgtccat 780
 tctagaacca agaatcctga ggaaattaca agacaggcag atatcataat atctgctgtg 840
 gggcagccaa atatggtgag aggtagctgg ataaagccag gtgctgttat tattgatgtt 900
 ggaataaatc cagttgagga tgcaactagt cctcgaggat atcggttagt tggagatgtt 960
 tgttatgacg aggccctgcaa gattgctgca gccgttactc cagttccagg ggggtgtcgg 1020
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 ttcaattga 1089

<210> 18
<211> 362
<212> PRT
<213> *Gossypium hirsutum*

<400> 18

Met Val Ser Met Ile Phe Asn Asp Pro Ser Ser Ala Ala Ala Phe His
1 5 10 15

Arg Leu Ser Phe Thr Arg Phe Ser Asn Gly Leu Val Ser Leu Arg Arg
20 25 30

Phe Val Gly Pro Leu His Val Phe Ser Asn Thr Pro Thr Leu Pro Arg
35 40 45

Ala Leu Ser Leu His Ala Pro Arg Ser Ser Arg Phe Ile Thr Ala Ser
50 55 60

Met Ala Ala Glu Pro Ser Ala Lys Val Ile Asp Gly Lys Ser Val Ala
65 70 75 80

Lys Gln Ile Arg Glu Glu Ile Ser Ala Glu Val Thr Lys Leu Lys Glu
85 90 95

Ala Ile Gly Val Val Pro Gly Leu Ala Val Ile Leu Val Gly Asp Arg
100 105 110

Lys Asp Ser Ala Thr Tyr Val Arg Asn Lys Lys Lys Ala Cys Glu Ser
115 120 125

Val Gly Ile Asn Ser Phe Glu Val Asn Leu Pro Asp Asp Ala Ser Glu
130 135 140

Gln Glu Val Leu Lys Tyr Ile Ser Asp Phe Asn Gly Asp Pro Ser Val
145 150 155 160

His Gly Ile Leu Val Gln Leu Pro Leu Pro Ser His Met Asn Glu Gln
165 170 175

Asn Ile Leu Asn Ala Val Thr Ile Glu Lys Asp Val Asp Gly Phe His
180 185 190

Pro Leu Asn Ile Gly His Leu Ala Met Arg Gly Ser Glu Pro Leu Phe
195 200 205

Val Pro Cys Thr Pro Lys Gly Cys Ile Glu Leu Leu His Arg Tyr Gly
210 215 220

Val Asp Ile Lys Gly Lys Arg Ala Val Val Ile Gly Arg Ser Asn Ile
 225 230 235 240

Val Gly Met Pro Ala Ala Leu Leu Leu Gln Arg Glu Asp Ala Thr Val
 245 250 255

Thr Ile Val His Ser Arg Thr Lys Asn Pro Glu Glu Ile Thr Arg Gln
 260 265 270

Ala Asp Ile Ile Ile Ser Ala Val Gly Gln Pro Asn Met Val Arg Gly
 275 280 285

Ser Trp Ile Lys Pro Gly Ala Val Ile Ile Asp Val Gly Ile Asn Pro
 290 295 300

Val Glu Asp Ala Thr Ser Pro Arg Gly Tyr Arg Leu Val Gly Asp Val
 305 310 315 320

Cys Tyr Asp Glu Ala Cys Lys Ile Ala Ala Ala Val Thr Pro Val Pro
 325 330 335

Gly Gly Val Gly Pro Met Thr Ile Ala Met Leu Leu Ser Asn Thr Val
 340 345 350

Ser Ser Ala Lys Arg Ala Tyr Asn Phe Asn
 355 360

<210> 19
 <211> 894
 <212> DNA
 <213> Pinus taeda

<400> 19
 atggcgaaga tcatcgatgg gaaagcaatt gcccagtcta ttcacaacga gatcgcccaa 60
 gatgtcactg atctctccaa gaaatatggc aagggtgcctg gtttggtctgt tgtcattgtg 120
 ggcgagagga aagattccca gacttatgta cgcatgaaga ggaaagcatg tgcagagggt 180
 ggcataaagt cctttaatgt agacttacgg ggagacgtta cggaagagaa tcttctggac 240
 acagttcttg acctgaacgc tgatcctgaa gtacatggca tcttggtcca gcttcacta 300
 ccacgacaca tcaatgaaga gaagatactg agtgcaataa gcatagaaaa ggatgtagat 360
 ggggtttcatc ctctcaacat tggcaaactt gcaatgaagg gaagggaacc tctatttgtt 420
 ccatgtacgc caaaggggtg catagaactc ttacaaagga gtgggggtctc catatcaa 480
 aaaagagcag ttgtggttgg aaggagtaac atagtaggat tgccagttgc attgctgcta 540

atcaaattag atgcaactgt gacaatgggtg cattctaaaa ctccagatcc aaaaagtata 600
 ataagtgagg cggatatcat catagctgct gcaggacaag caaacatgat caaagcagat 660
 tggatcaagc caggtgctgc tgttattgat gtcgggacaa atgcagtcga tgatccgagc 720
 agaaagtcag gctacagatt agtgggagat gttgcttttg gggaatgcaa ggatgttgct 780
 ggatggatca ctccagtacc aggtggagtt ggaccaatga ctattgcaat gcttctcaga 840
 aatacaacag atggtgcgaa gcgagcctgt gaagaagctt ccaaagttga ataa 894

<210> 20
 <211> 296
 <212> PRT
 <213> Pinus taeda

<400> 20

Met Ala Lys Ile Ile Asp Gly Lys Ala Ile Ala Gln Ser Ile His Asn
 1 5 10 15

Glu Ile Ala Gln Asp Val Thr Asp Leu Ser Lys Lys Tyr Gly Lys Val
 20 25 30

Pro Gly Leu Ala Val Val Ile Val Gly Glu Arg Lys Asp Ser Gln Thr
 35 40 45

Tyr Val Arg Met Lys Arg Lys Ala Cys Ala Glu Val Gly Ile Lys Ser
 50 55 60

Phe Asn Val Asp Leu Pro Gly Asp Val Thr Glu Glu Asn Leu Leu Asp
 65 70 75 80

Thr Val Leu Asp Leu Asn Ala Asp Pro Glu Val His Gly Ile Leu Val
 85 90 95

Gln Leu Pro Leu Pro Arg His Ile Asn Glu Glu Lys Ile Leu Ser Ala
 100 105 110

Ile Ser Ile Glu Lys Asp Val Asp Gly Phe His Pro Leu Asn Ile Gly
 115 120 125

Lys Leu Ala Met Lys Gly Arg Glu Pro Leu Phe Val Pro Cys Thr Pro
 130 135 140

Lys Gly Cys Ile Glu Leu Leu Gln Arg Ser Gly Val Ser Ile Ser Asn
 145 150 155 160

Lys Arg Ala Val Val Val Gly Arg Ser Asn Ile Val Gly Leu Pro Val
165 170 175

Ala Leu Leu Leu Ile Lys Leu Asp Ala Thr Val Thr Met Val His Ser
180 185 190

Lys Thr Pro Asp Pro Lys Ser Ile Ile Ser Glu Ala Asp Ile Ile Ile
195 200 205

Ala Ala Ala Gly Gln Ala Asn Met Ile Lys Ala Asp Trp Ile Lys Pro
210 215 220

Gly Ala Ala Val Ile Asp Val Gly Thr Asn Ala Val Asp Asp Pro Ser
225 230 235 240

Arg Lys Ser Gly Tyr Arg Leu Val Gly Asp Val Ala Phe Gly Glu Cys
245 250 255

Asp Val Ala Gly Trp Ile Thr Pro Val Pro Gly Gly Val Gly Pro Met
260 265 270

Thr Ile Ala Met Leu Leu Arg Asn Thr Thr Asp Gly Ala Lys Arg Ala
275 280 285

Cys Glu Glu Ala Ser Lys Val Glu
290 295