

## SEQUENCE LISTING

<110> Technische Universität Kaiserslautern

<120> Method of enhancing the seed yield and promoting the growth of plants

<130> TMT Transporter

<160> 4

<170> PatentIn version 3.3

<210> 1

<211> 1468

<212> PRT

<213> Arabidopsis thaliana

<400> 1

Met Lys Gly Ala Thr Leu Val Ala Leu Ala Ala Thr Ile Gly Asn Phe  
1 5 10 15

Leu Gln Gly Trp Asp Asn Ala Thr Ile Ala Gly Ala Met Val Tyr Ile  
20 25 30

Asn Lys Asp Leu Asn Leu Pro Thr Ser Val Gln Gly Leu Val Val Ala  
35 40 45

Met Ser Leu Ile Gly Ala Thr Val Ile Thr Thr Cys Ser Gly Pro Ile  
50 55 60

Ser Asp Trp Leu Gly Arg Arg Pro Met Leu Ile Leu Ser Ser Val Met  
65 70 75 80

Tyr Phe Val Cys Gly Leu Ile Met Leu Trp Ser Pro Asn Val Tyr Val  
85 90 95

Leu Cys Phe Ala Arg Leu Leu Asn Gly Phe Gly Ala Gly Leu Ala Val  
100 105 110

Thr Leu Val Pro Val Tyr Ile Ser Glu Thr Ala Pro Pro Glu Ile Arg  
115 120 125

Gly Gln Leu Asn Thr Leu Pro Gln Phe Leu Gly Ser Gly Gly Met Phe  
130 135 140

Leu Ser Tyr Cys Met Val Phe Thr Met Ser Leu Ser Asp Ser Pro Ser  
145 150 155 160

Trp Arg Ala Met Leu Gly Val Leu Ser Ile Pro Ser Leu Leu Tyr Leu  
165 170 175

Phe Leu Thr Val Phe Tyr Leu Pro Glu Ser Pro Arg Trp Leu Val Ser  
 180 185 190

Lys Gly Arg Met Asp Glu Ala Lys Arg Val Leu Gln Gln Leu Cys Gly  
 195 200 205

Arg Glu Asp Val Thr Asp Glu Met Ala Leu Leu Val Glu Gly Leu Asp  
 210 215 220

Ile Gly Gly Glu Lys Thr Met Glu Asp Leu Leu Val Thr Leu Glu Asp  
 225 230 235 240

His Glu Gly Asp Asp Thr Leu Glu Thr Val Asp Glu Asp Gly Gln Met  
 245 250 255

Arg Leu Tyr Gly Thr His Glu Asn Gln Ser Tyr Leu Ala Arg Pro Val  
 260 265 270

Pro Glu Gln Asn Ser Ser Leu Gly Leu Arg Ser Arg His Gly Ser Leu  
 275 280 285

Ala Asn Gln Ser Met Ile Leu Lys Asp Pro Leu Val Asn Leu Phe Gly  
 290 295 300

Ser Leu His Glu Lys Met Pro Glu Ala Gly Gly Asn Thr Arg Ser Gly  
 305 310 315 320

Ile Phe Pro His Phe Gly Ser Met Phe Ser Thr Thr Ala Asp Ala Pro  
 325 330 335

His Gly Lys Pro Ala His Trp Glu Lys Asp Ile Glu Ser His Tyr Asn  
 340 345 350

Lys Asp Asn Asp Asp Tyr Ala Thr Asp Asp Gly Ala Gly Asp Asp Asp  
 355 360 365

Asp Ser Asp Asn Asp Leu Arg Ser Pro Leu Met Ser Arg Gln Thr Thr  
 370 375 380

Ser Met Asp Lys Asp Met Ile Pro His Pro Thr Ser Gly Ser Thr Leu  
 385 390 395 400

Ser Met Arg Arg His Ser Thr Leu Met Gln Gly Asn Gly Glu Ser Ser  
 405 410 415

Met Gly Ile Gly Gly Gly Trp His Met Gly Tyr Arg Tyr Glu Asn Asp  
 420 425 430

Glu Tyr Lys Arg Tyr Tyr Leu Lys Glu Asp Gly Ala Glu Ser Arg Arg  
 435 440 445

Gly Ser Ile Ile Ser Ile Pro Gly Gly Pro Asp Gly Gly Gly Ser Tyr  
 450 455 460

Ile His Ala Ser Ala Leu Val Ser Arg Ser Val Leu Gly Pro Lys Ser  
 465 470 475 480

Val His Gly Ser Ala Met Val Pro Pro Glu Lys Ile Ala Ala Ser Gly  
 485 490 495

Pro Leu Trp Ser Ala Leu Leu Glu Pro Gly Val Lys Arg Ala Leu Val  
 500 505 510

Val Gly Val Gly Ile Gln Ile Leu Gln Gln Phe Ser Gly Ile Asn Gly  
 515 520 525

Val Leu Tyr Tyr Thr Pro Gln Ile Leu Glu Arg Ala Gly Val Asp Ile  
 530 535 540

Leu Leu Ser Ser Leu Gly Leu Ser Ser Ile Ser Ala Ser Phe Leu Ile  
 545 550 555 560

Ser Gly Leu Thr Thr Leu Leu Met Leu Pro Ala Ile Val Val Ala Met  
 565 570 575

Arg Leu Met Asp Val Ser Gly Arg Arg Ser Leu Leu Leu Trp Thr Ile  
 580 585 590

Pro Val Leu Ile Val Ser Leu Val Val Leu Val Ile Ser Glu Leu Ile  
 595 600 605

His Ile Ser Lys Val Val Asn Ala Ala Leu Ser Thr Gly Cys Val Val  
 610 615 620

Leu Tyr Phe Cys Phe Phe Val Met Gly Tyr Gly Pro Ile Pro Asn Ile  
 625 630 635 640

Leu Cys Ser Glu Ile Phe Pro Thr Arg Val Arg Gly Leu Cys Ile Ala  
 645 650 655

Ile Cys Ala Met Val Phe Trp Ile Gly Asp Ile Ile Val Thr Tyr Ser  
 660 665 670

Leu Pro Val Leu Leu Ser Ser Ile Gly Leu Val Gly Val Phe Ser Ile

675

680

685

Tyr Ala Ala Val Cys Val Ile Ser Trp Ile Phe Val Tyr Met Lys Val  
 690 695 700

Pro Glu Thr Lys Gly Met Pro Leu Glu Val Ile Thr Asp Tyr Phe Ala  
 705 710 715 720

Phe Gly Ala Gln Ala Gln Ala Ser Ala Pro Ser Lys Asp Ile Met Lys  
 725 730 735

Gly Ala Thr Leu Val Ala Leu Ala Ala Thr Ile Gly Asn Phe Leu Gln  
 740 745 750

Gly Trp Asp Asn Ala Thr Ile Ala Gly Ala Met Val Tyr Ile Asn Lys  
 755 760 765

Asp Leu Asn Leu Pro Thr Ser Val Gln Gly Leu Val Val Ala Met Ser  
 770 775 780

Leu Ile Gly Ala Thr Val Ile Thr Thr Cys Ser Gly Pro Ile Ser Asp  
 785 790 795 800

Trp Leu Gly Arg Arg Pro Met Leu Ile Leu Ser Ser Val Met Tyr Phe  
 805 810 815

Val Cys Gly Leu Ile Met Leu Trp Ser Pro Asn Val Tyr Val Leu Cys  
 820 825 830

Phe Ala Arg Leu Leu Asn Gly Phe Gly Ala Gly Leu Ala Val Thr Leu  
 835 840 845

Val Pro Val Tyr Ile Ser Glu Thr Ala Pro Pro Glu Ile Arg Gly Gln  
 850 855 860

Leu Asn Thr Leu Pro Gln Phe Leu Gly Ser Gly Gly Met Phe Leu Ser  
 865 870 875 880

Tyr Cys Met Val Phe Thr Met Ser Leu Ser Asp Ser Pro Ser Trp Arg  
 885 890 895

Ala Met Leu Gly Val Leu Ser Ile Pro Ser Leu Leu Tyr Leu Phe Leu  
 900 905 910

Thr Val Phe Tyr Leu Pro Glu Ser Pro Arg Trp Leu Val Ser Lys Gly  
 915 920 925

Arg Met Asp Glu Ala Lys Arg Val Leu Gln Gln Leu Cys Gly Arg Glu  
 930 935 940

Asp Val Thr Asp Glu Met Ala Leu Leu Val Glu Gly Leu Asp Ile Gly  
 945 950 955 960

Gly Glu Lys Thr Met Glu Asp Leu Leu Val Thr Leu Glu Asp His Glu  
 965 970 975

Gly Asp Asp Thr Leu Glu Thr Val Asp Glu Asp Gly Gln Met Arg Leu  
 980 985 990

Tyr Gly Thr His Glu Asn Gln Ser Tyr Leu Ala Arg Pro Val Pro Glu  
 995 1000 1005

Gln Asn Ser Ser Leu Gly Leu Arg Ser Arg His Gly Ser Leu Ala  
 1010 1015 1020

Asn Gln Ser Met Ile Leu Lys Asp Pro Leu Val Asn Leu Phe Gly  
 1025 1030 1035

Ser Leu His Glu Lys Met Pro Glu Ala Gly Gly Asn Thr Arg Ser  
 1040 1045 1050

Gly Ile Phe Pro His Phe Gly Ser Met Phe Ser Thr Thr Ala Asp  
 1055 1060 1065

Ala Pro His Gly Lys Pro Ala His Trp Glu Lys Asp Ile Glu Ser  
 1070 1075 1080

His Tyr Asn Lys Asp Asn Asp Asp Tyr Ala Thr Asp Asp Gly Ala  
 1085 1090 1095

Gly Asp Asp Asp Asp Ser Asp Asn Asp Leu Arg Ser Pro Leu Met  
 1100 1105 1110

Ser Arg Gln Thr Thr Ser Met Asp Lys Asp Met Ile Pro His Pro  
 1115 1120 1125

Thr Ser Gly Ser Thr Leu Ser Met Arg Arg His Ser Thr Leu Met  
 1130 1135 1140

Gln Gly Asn Gly Glu Ser Ser Met Gly Ile Gly Gly Gly Trp His  
 1145 1150 1155

Met Gly Tyr Arg Tyr Glu Asn Asp Glu Tyr Lys Arg Tyr Tyr Leu  
 1160 1165 1170

Lys	Glu	Asp	Gly	Ala	Glu	Ser	Arg	Arg	Gly	Ser	Ile	Ile	Ser	Ile
1175						1180					1185			
Pro	Gly	Gly	Pro	Asp	Gly	Gly	Gly	Ser	Tyr	Ile	His	Ala	Ser	Ala
1190						1195					1200			
Leu	Val	Ser	Arg	Ser	Val	Leu	Gly	Pro	Lys	Ser	Val	His	Gly	Ser
1205						1210					1215			
Ala	Met	Val	Pro	Pro	Glu	Lys	Ile	Ala	Ala	Ser	Gly	Pro	Leu	Trp
1220						1225					1230			
Ser	Ala	Leu	Leu	Glu	Pro	Gly	Val	Lys	Arg	Ala	Leu	Val	Val	Gly
1235						1240					1245			
Val	Gly	Ile	Gln	Ile	Leu	Gln	Gln	Phe	Ser	Gly	Ile	Asn	Gly	Val
1250						1255					1260			
Leu	Tyr	Tyr	Thr	Pro	Gln	Ile	Leu	Glu	Arg	Ala	Gly	Val	Asp	Ile
1265						1270					1275			
Leu	Leu	Ser	Ser	Leu	Gly	Leu	Ser	Ser	Ile	Ser	Ala	Ser	Phe	Leu
1280						1285					1290			
Ile	Ser	Gly	Leu	Thr	Thr	Leu	Leu	Met	Leu	Pro	Ala	Ile	Val	Val
1295						1300					1305			
Ala	Met	Arg	Leu	Met	Asp	Val	Ser	Gly	Arg	Arg	Ser	Leu	Leu	Leu
1310						1315					1320			
Trp	Thr	Ile	Pro	Val	Leu	Ile	Val	Ser	Leu	Val	Val	Leu	Val	Ile
1325						1330					1335			
Ser	Glu	Leu	Ile	His	Ile	Ser	Lys	Val	Val	Asn	Ala	Ala	Leu	Ser
1340						1345					1350			
Thr	Gly	Cys	Val	Val	Leu	Tyr	Phe	Cys	Phe	Phe	Val	Met	Gly	Tyr
1355						1360					1365			
Gly	Pro	Ile	Pro	Asn	Ile	Leu	Cys	Ser	Glu	Ile	Phe	Pro	Thr	Arg
1370						1375					1380			
Val	Arg	Gly	Leu	Cys	Ile	Ala	Ile	Cys	Ala	Met	Val	Phe	Trp	Ile
1385						1390					1395			
Gly	Asp	Ile	Ile	Val	Thr	Tyr	Ser	Leu	Pro	Val	Leu	Leu	Ser	Ser
1400						1405					1410			

Ile Gly Leu Val Gly Val Phe Ser Ile Tyr Ala Ala Val Cys Val  
 1415 1420 1425

Ile Ser Trp Ile Phe Val Tyr Met Lys Val Pro Glu Thr Lys Gly  
 1430 1435 1440

Met Pro Leu Glu Val Ile Thr Asp Tyr Phe Ala Phe Gly Ala Gln  
 1445 1450 1455

Ala Gln Ala Ser Ala Pro Ser Lys Asp Ile  
 1460 1465

<210> 2  
 <211> 2205  
 <212> DNA  
 <213> Arabidopsis thaliana

<400> 2  
 atgaaggagg cgactctcgt tgctctcgcc gccacaatcg gcaatttctt acaaggatgg 60  
 gacaatgcc a ccattgctgg agctatgggt tatatcaaca aagacttgaa tctaccaacc 120  
 tctgttcaag gtcttgctgt tgctatgtca ttgatcgggt caacggtcac cagcacttgc 180  
 tcaggaccga tatctgattg gctcggcaga cgcacctatc tcattttatc atcagttatg 240  
 tatttcgtct gcggtttgat aatgttggtg tctcccaatg tctatgttct gtgctttgct 300  
 aggtttctta atgggtttgg tgccgggctc gcggttacac ttgtccctgt ttacatttct 360  
 gaaaccgctc ctccggagat cagaggacag ttaaatactc tccctcagtt tcttggtctc 420  
 ggtggaatgt ttttgtcata ctgtatgggt ttactatgt ccctgagtga ctcccctagc 480  
 tggagagcca tgctcgggtg cctctcgatc ccttctcttc tttatttggt tctcacgggtg 540  
 ttttatttgc ccgagtctcc tcgttggtg gttagtaaag gaagaatgga cgaggctaag 600  
 cgagttcttc aacagttatg tggcagagaa gatgttaccg atgagatggc tttactagtt 660  
 gaaggactag atataggagg agaaaaaaca atggaagatc tcttagtaac tttggaggat 720  
 catgaaggtg atgatacact tgaaaccgtt gatgaggatg gacaaatgcg gctttatgga 780  
 acccagaga atcaatcgta ccttgctaga cctgtcccag aacaaaatag ctacttggg 840  
 ctacgtctc gccacggaag cttagcaaac caaagcatga tccttaaaga tccgctcgtc 900  
 aatctttttg gcagtctcca cgagaagatg ccagaagcag gcggaaacac tcggagtggg 960  
 attttccctc atttcggaag catgttcagt actactgccg atgcgcctca cggtaaaccg 1020  
 gctcattggg aaaaggacat agagagccat tacaacaaag acaatgatga ctatgcgact 1080  
 gatgatggtg cggaacaaaa acttatctcg gcagaagatt tgcgtagccc cttaatgtcg 1140  
 cgccagacca caagcatgga caaggatatg atcccacatc ctacaagtgg aagcacttta 1200

```

agcatgagac gacacagtac gcttatgcaa ggcaacggcg aaagtagcat gggaattggt 1260
ggtgggttggc atatgggata tagatacgaa aacgatgaat acaagaggta ttatcttaaa 1320
gaagatggag ctgaatctcg ccgtggctcg atcatctcta ttcccggagg tccggatggt 1380
ggaggcagct acattcacgc ttctgccctt gtaagcagat ctgttcttgg tcctaaatca 1440
gttcatggat ccgccatggt tccccggag aaaattgctg cctctggacc actctggtct 1500
gctcttcttg aacctggtgt taagcgtgcc ttggttggtg gtgtcggcat tcaaatactg 1560
cagcagtttt caggtatcaa tggagtcttc tactacactc ctcagattct cgaacgggct 1620
ggcgtagata ttcttctttc gagcctcgga ctaagttcca tctctgcgtc attcctcatc 1680
agcggtttaa caacattact catgctccca gccattgtcg ttgccatgag actcatggat 1740
gtatccggaa gaaggtcatt acttctctgg acaatcccag ttctcattgt ctcacttgtc 1800
gtccttgtca tcagcgagct catccacatc agcaaagtcg tgaacgcagc actctccaca 1860
ggttgtgtcg tgctctactt ctgcttcttc gtgatgggtt acggtcccat tccaaacatc 1920
ctctgttctg aaatcttccc aacaagagtc cgtggctctc gcacgccat atgtgctatg 1980
gtcttttga ttggagacat tattgtcacg tactcacttc ccgttctcct cagctcgatc 2040
ggactagttg gtgttttcag catttacgct gcggtttgcg ttatctcatg gatcttgcgt 2100
tacatgaaag tcccggagac taaaggcatg cctttggaag ttatcacaga ctactttgcc 2160
tttggagctc aagctcaagc ttctgctcct tctaaggata tataa 2205

```

```

<210> 3
<211> 5166
<212> DNA
<213> Arabidopsis thaliana

```

```

<400> 3
ctaaattgta agcgttaata ttttggttaa attcgcgtta aatttttgtt aaatcagctc 60
attttttaac caataggccg aaatcgga aatcccttat aaatcaaaag aatagaccga 120
gatagggttg agtgttggtc cagtttgga caagagtcca ctattaaaga acgtggactc 180
caacgtcaaa gggcgaaaaa ccgtctatca gggcgatggc cactacgtg aaccatcacc 240
ctaatcaagt tttttggggt cgagggtccg taaagcacta aatcggaacc ctaaaggag 300
ccccgattt agagcttgac ggggaaagcc ggcgaacgtg gcgagaaagg aagggaagaa 360
agcgaaagga gcgggcgcta gggcgctggc aagtgtagcg gtcacgctgc gcgtaaccac 420
cacaccgcc gcgcttaatg cgccgctaca gggcgctcc cattcgccat tcaggctgcg 480
caactgttgg gaagggcgat cgggtcgggc ctcttcgcta ttacgccagc tggcgaaagg 540
gggatgtgct gcaaggcgat taagttgggt aacgccaggg ttttcccagt cacgacgttg 600
taaaacgacg gccagtgagc gcgcgtaata cgactcacta tagggcgaat tgggtaccgg 660

```



gccccccctc gaggtcgacg gtatcgataa gcttgattta tatatcotta gaaggagcag	720
aagcttgagc ttgagctcca aaggcaaagt agtctgtgat aacttccaaa ggcattgcctt	780
tagtctccgg gactttcatg taaacgaaga tccatgagat aacgcaaacc gcagcgtaaa	840
tgctgaaaac tccaactagt tcgatcgagc tgaggagaac gggaagtgag tacgtgacaa	900
taatgtctcc aatccaaaag accatagcac atatggcgat gcagagacca cggctctgctt	960
gttggaaga tttcagaaca gaggatgttt ggaatggacc gtaacccatc acgaagaagc	1020
agaagtagag cacgacacaa cctgtggaga gtgctgcgtt cacgactttg ctgatgtgga	1080
tgagctcgct gatgacaagg acgacaagtg agacaatgag aactgggatt gtccagagaa	1140
gtaatgacct tcttccggat acatccatga gtctcatggc aacgacaatg gctgggagca	1200
tgagtaatgt tgttaaaccg ctgatgagga atgacgcaga gatggaactt agtccgaggc	1260
tcgaaagaag aatatctacg ccagcccgtt cgagaatctg aggagtgtag tagagaactc	1320
cattgatacc tgaaaactgc tgcagtattt gaatgccgac accaacaacc aaggcacgct	1380
taacaccagg ttcaagaaga gcagaccaga gtgggtccaga ggcagcaatt ttctccgggg	1440
gaaccatggc ggatccatga actgatttag gaccaagaac agatctgctt acaagggcag	1500
aagcgtgaat gtagctgcct ccaccatccg gacctccggg aatagagatg atcgagccac	1560
ggcgagattc agctccatct tctttaagat aatacctctt gtattcatcg ttttcgtatc	1620
tatatcccat atgccaacca ccaccaattc ccatgctact ttcgccgttg ccttgcataa	1680
gcgtactgtg tcgtctcatg cttaaagtgc ttccacttgt aggatgtggg atcatatcct	1740
tgtccatgct tgtggtctgg cgcgacatta aggggctacg caaatcttct tccgagataa	1800
gtttttgttc cgcaccatca tcagtcgcat agtcatcatt gtctttgttg taatggctct	1860
ctatgtcctt ttcccaatga gccggtttac cgtgaggcgc atcggcagta gtactgaaca	1920
tgcttccgaa atgagggaaa atcccactcc gagtgtttcc gcctgcttct ggcattctct	1980
cgtggagact gccaaaaaga ttgacgagcg gatctttaag gatcatgctt tggtttgcta	2040
agcttccgtg gcgagagcgt agcccaagtg agctattttg ttctgggaca ggtctagcaa	2100
ggtagcattg attctcgtgg gttccataaa gccgtatttg tccatcctca tcaacggttt	2160
caagtgtatc atcaccttca tgatcctoca aagttactaa gagatcttcc attgtttttt	2220
ctctctctat atctagtcct tcaactagta aagccatctc atcggtaaca tcttctctgc	2280
caataactg ttgaagaact cgcttagcct cgtccattct tcctttacta accagccaac	2340
gaggagactc gggcaaataa aacaccgtga gaaacaaata aagaagagaa gggatcgaga	2400
ggacaccgag catggctctc cagctagggg agtcactcag ggacatagtg aaaaccatac	2460
agtatgacaa aaacattcca ccagagccaa gaaactgagg gagagtattt aactgtcctc	2520

tgatctccgg	aggagcgggt	tcagaaatgt	aaacagggac	aagtgtaacc	gcgagcccgg	2580
caccaaacc	attaagaagc	ctagcaaagc	acagaacata	gacattggga	gaccacaaca	2640
ttatcaaacc	gcagacgaaa	tacataactg	atgataaaat	gagcatgggg	cgtctgccga	2700
gccaatcaga	tatcgggtcct	gagcaagtcg	tgatgaccgt	tgcaccgatc	aatgacatag	2760
caacgacaag	accttgaaca	gaggttggta	gattcaagtc	tttgttgata	taaaccatag	2820
ctccagcaat	ggtggcattg	tcccatcctt	gtaagaaatt	gccgattgtg	gcggcgagag	2880
caacgagagt	cgctcccttc	atatogaatt	cctgcagccc	gggggatcca	ctagttctag	2940
agcggccgcc	accgcggtgg	agctccagct	tttgttccct	ttagtgaggg	ttaattgcgc	3000
gcttggcgta	atcatggtca	tagctgtttc	ctgtgtgaaa	ttgttatccg	ctcacaattc	3060
cacacaacat	acgagccgga	agcataaagt	gtaaagcctg	gggtgcctaa	tgagtgaagt	3120
aactcacatt	aattgcgttg	cgctcactgc	ccgctttcca	gtcgggaaac	ctgtcgtgcc	3180
agctgcatta	atgaatcggc	caacgcgcgg	ggagaggcgg	tttgcgattt	gggcgctctt	3240
ccgcttcctc	gctcactgac	tcgctgcgct	cggtcgttcg	gctgcggcga	gcggtatcag	3300
ctcactcaaa	ggcggtaata	cggttatcca	cagaatcagg	ggataacgca	ggaaagaaca	3360
tgtgagcaaa	aggccagcaa	aaggccagga	accgtaaaaa	ggccgcgttg	ctggcggttt	3420
tccataggct	ccgccccctt	gacgagcatc	acaaaaatcg	acgctcaagt	cagagggtggc	3480
gaaacccgac	aggactataa	agataaccagg	cgtttcccc	tggaagctcc	ctcgtgcgct	3540
ctcctgttcc	gaccctgccg	cttaccggat	acctgtccgc	ctttctccct	tcgggaagcg	3600
tggcgctttc	tcatagctca	cgctgtaggt	atctcagttc	ggtgtaggtc	gttcgctcca	3660
agctgggctg	tgtgcacgaa	ccccccgttc	agcccgaccg	ctgcgcctta	tccggtaact	3720
atcgtcttga	gtccaaccgc	gtaagacacg	acttatcgcc	actggcagca	gccactggta	3780
acaggattag	cagagcgagg	tatgtaggcg	gtgctacaga	gttcttgaag	tggtggccta	3840
actacggcta	cactagaagg	acagtatttg	gtatctgcgc	tctgctgaag	ccagttacct	3900
tcggaaaaag	agttggtagc	tcttgatccg	gcaaaacaa	caccgctggt	agcggtggtt	3960
tttttgtttg	caagcagcag	attacgcgca	gaaaaaaagg	atctcaagaa	gaccccttga	4020
tcttttctac	ggggtctgac	gctcagtggg	acgaaaactc	acgttaaggg	attttggtca	4080
tgagattatc	aaaaaggatc	ttcacctaga	tcctttttaa	ttaaaaatga	agttttaaat	4140
caatctaaag	tatatatgag	taaacttggt	ctgacagtta	ccaatgctta	atcagtgagg	4200
cacctatctc	agcgatctgt	ctatttcggt	catccatagt	tgctgactc	cccgtcgtgt	4260
agataactac	gatacgggag	ggcttaccat	ctggccccag	tgctgcaatg	ataccgcgag	4320
accacgctc	accggctcca	gatttatcag	caataaacca	gccagccgga	agggccgagc	4380
gcagaagtgg	tcctgcaact	ttatccgcct	ccatccagtc	tattaattgt	tgccgggaag	4440

ctagagtaag tagttcgcca gttaatagtt tgogcaacgt tgttgccatt gctacaggca 4500  
 tcgtgggtgtc acgctcgtcg tttgggtatgg cttcattcag ctccggttcc caacgatcaa 4560  
 ggcgagttac atgatccccc atgttgtgca aaaaagcggg tagctccttc ggtcctccga 4620  
 tcgttgtcag aagtaagttg gccgcagtgt tatcactcat ggttatggca gcactgcata 4680  
 attctcttac tgtcatgcca tccgtaagat gcttttctgt gactgggtgag tactcaacca 4740  
 agtcattctg agaatagtgt atgcggcgac cgagttgctc ttgcccggcg tcaatacggg 4800  
 ataataccgc gccacatagc agaactttaa aagtgtcat cattggaaaa cgttcttcgg 4860  
 ggcgaaaact ctcaaggatc ttaccgctgt tgagatccag ttcgatgtaa cccactcgtg 4920  
 caccctaactg atcttcagca tcttttactt tcaccagcgt ttctgggtga gcaaaaacag 4980  
 gaaggcaaaa tgccgcaaaa aagggaataa gggcgacacg gaaatgttga atactcatac 5040  
 tcttcctttt tcaatattat tgaagcattt atcagggtta ttgtctcatg agcggatata 5100  
 tatttgaatg tatttagaaa aataaacaaa taggggttcc gcgcacattt ccccgaaaag 5160  
 tgccac 5166

<210> 4  
 <211> 7242  
 <212> DNA  
 <213> *Arabidopsis thaliana*

<400> 4  
 tgaccaagtc agcttggcac tggccgtcgt tttacaacgt cgtgactggg aaaaccctgg 60  
 cgttacccaa cttaatcgcc ttgcagcaca tccccctttc gccagctggc gtaatagcga 120  
 agaggccccg accgatcgcc cttcccaaca gttgcgcagc ctgaatggcg aatgggaaat 180  
 tgtaaacggt aatattttgt taataftttg ttaaaattcg cgttaaattt ttgttaaatac 240  
 agctcatttt ttaaccaata ggccgaaatc ggcaaaatcc cttataaatc aaaagaatag 300  
 accgagatag ggttgagtgt tgttccagtt tggaacaaga gtccactatt aaagaacgtg 360  
 gactccaacg tcaaagggcg aaaaaccgtc tatcaggggcg atggcccact acgtgaacca 420  
 tcaccctaata caagtttttt ggggtcgagg tgccgtaaag cactaaatcg gaaccctaaa 480  
 gggatgcccc gatttagagc ttgacgggga aagccggcga acgtggcgag aaaggaaggg 540  
 aagaaagcga aaggagcggg cgctagggcg ctggcaagtg tagcggtcac gctgcgcgta 600  
 accaccacac ccgccgcgct taatgcgcg ctacagggcg cgtcaggtgg cacttttcgg 660  
 ggaaatgtgc gcggaacccc tatgtgttta tttttctaaa tacattcaaa tatgtatccg 720  
 ctcatgagac aataaccctg ataaatgctt caataatatt gaaaaaggaa gagtatgagt 780  
 attcaacatt tccgtgtcgc ccttattccc ttttttgcgg catthttgct tcctgttttt 840  
 gctcaccag aaacgctggg gaaagtaaaa gatgctgaag atcagttggg tgcacgagtg 900

ggttacatcg aactggatct caacagcggg aagatccttg agagttttcg cccgaagaa	960
cgttttccaa tgatgagcac ttttaaagtt ctgctatgtg gcgcggtatt atcccgatt	1020
gacgccgggc aagagcaact cggtcgccgc atacactatt ctcagaatga cttgggtgag	1080
tactcaccag tcacagaaaa gcatcttacg gatggcatga cagtaagaga attatgcagt	1140
gctgccataa ccatgagtga taacactgcg gccaaacttac ttctgacaac gatcggagga	1200
ccgaaggagc taaccgcttt tttgcacaac atgggggatc atgtaactcg ccttgatcgt	1260
tggaaccgg agctgaatga agccatacca aacgacgagc gtgacaccac gatgcctgta	1320
gcaatggcaa caacgttgcg caaactatta actggcgaaac tacttactct agcttcccg	1380
caacaattaa tagactggat ggaggcggat aaagttgcag gaccacttct gcgctcgcc	1440
cttcggctg gctggtttat tgctgataaa tctggagccg gtgagcgtgg gtctcgcggt	1500
atcattgcag cactggggcc agatggtaag cctcccgta tcgtagttat ctacacgacg	1560
gggagtcagg caactatgga tgaacgaaat agacagatcg ctgagatagg tgcctcactg	1620
attaagcatt ggtaactgtc agaccaagtt tactcatata tacttttagat tgatttaaaa	1680
cttcattttt aatttaaaag gatctagggtg aagatccttt ttgataatct catgaccaa	1740
atcccttaac gtgagttttc gttccactga gcgtcagacc ccgtagaaaa gatcaaagga	1800
tcttcttgag atcctttttt tctgcgcgta atctgctgct tgcaaacaaa aaaaccaccg	1860
ctaccagcgg tggtttggtt gccggatcaa gagctaccaa ctctttttcc gaaggtaact	1920
ggcttcagca gagcgcagat accaaatact gtccctctag tgtagccgta gttaggccac	1980
cacttcaaga actctgtagc accgcctaca tacctcgctc tgctaatacct gttaccagt	2040
gctgctgcca gtggcgataa gtcgtgtctt accgggttg actcaagacg atagttaccg	2100
gataaggcgc agcggtcggg ctgaacgggg gggtcgtgca cacagcccag cttggagcga	2160
acgacctaca ccgaactgag atacctacag cgtgagctat gagaaagcgc cacgcttccc	2220
gaagggagaa aggcggacag gtatccggta agcggcaggg tcggaacagg agagcgcacg	2280
aggagcttc cagggggaaa cgcttggtat ctttatagtc ctgtcgggtt tcgccacctc	2340
tgacttgagc gtcgattttt gtgatgctcg tcaggggggc ggagcctatg gaaaaacgcc	2400
agcaacgcgg cctttttacg gttcctggcc ttttgctggc cttttgctca catgttcttt	2460
cctgcgttat cccctgattc tgtggataac cgtattaccg cctttgagtg agctgatacc	2520
gctcgccgca gccgaacgac cgagcgcagc gagtcagtga gcgaggaagc ggaagagcgc	2580
ccaatacgca aaccgcctct cccgcgcgt tggccgattc attaatgcag ctggcacgac	2640
aggtttcccg actggaaagc gggcagtgag cgcaacgcaa ttaatgtgag ttagctcact	2700
cattaggcac ccaggtttt acactttatg cttccggctc gtatgttggtg tggaattgtg	2760

agcggataac aatttcacac aggaaacagc tatgaccatg attacgaatt tggccaagtc	2820
ggcctctaatacgcact atagggagct cgtcgagcgg ccgctcgacg aattaattcc	2880
aatcccacaa aaatctgagc ttaacagcac agttgtctct ctcagagcag aatcgggtat	2940
tcaacaccct catatcaact actacgttgt gtataacggc ccacatgccg gtatatacga	3000
tgactgggggt tgtacaaagg cggcaacaaa cggcggtccc ggagttgcac acaagaaatt	3060
tgccactatt acagaggcaa gagcagcagc tgacgcgtac acaacaagtc agcaaacaga	3120
cagggtgaac ttcattccca aaggagaagc tcaactcaag cccaagagct ttgctaaggc	3180
cctaacaagc ccaccaaagc aaaaagccca ctggctcacg ctaggaacca aaaggcccag	3240
cagtgatcca gccccaaaag agatctctt tgccccggag attacaatgg acgatttctt	3300
ctatctttac gatctaggaa ggaagttoga aggtgaaggc gacgacacta tgttcaccac	3360
tgataatgag aagggttagc tcttcaattt cagaaagaat gctgaccac agatgggttag	3420
agaggcctac gcagcaggc tcatcaagac gatctacccg agtaacaatc tccaggagat	3480
caaatacctt cccaagaagg ttaaagatgc agtcaaaaga ttcaggacta attgcatcaa	3540
gaacacagag aaagacatat ttctcaagat cagaagtact attccagtat ggacgattca	3600
aggcttgctt cataaaccac ggcaagtaat agagattgga gtctctaaaa aggtagttcc	3660
tactgaatct aaggccatgc atggagtcta agattcaaat cgaggatcta acagaactcg	3720
ccgtgaagac tggcgaacag ttcatacaga gtctttttacg actcaatgac aagaagaaaa	3780
tcttcgtcaa catggtggag cacgacactc tgggtctactc caaaaatgtc aaagatacag	3840
tctcagaaga ccaaagggct attgagactt ttcaacaaag gataatttcg ggaaacctcc	3900
tgggattcca ttgcccagct atctgtcact tcatcgaaag gacagtagaa aaggaagggtg	3960
gtcctacaa atgccatcat tgcgataaag gaaaggctat cattcaagat ctctctgccg	4020
acagtgggtcc caaagatgga cccccacca cgaggagcat cgtggaaaaa gaagacgttc	4080
caaccacgtc ttcaaagcaa gtggattgat gtgacatctc cactgacgta agggatgacg	4140
cacaatccca ctatccttcg caagaccctt cctctatata aggaagttca tttcatttgg	4200
agaggacacg ctcgaggaat togatatgaa gggagcgact ctcgttgctc tcgccgccac	4260
aatcggcaat ttcttacaag gatgggacaa tgccaccatt gctggagcta tggtttatat	4320
caacaaagac ttgaatctac caacctctgt tcaaggctct gtcgttgcta tgtcattgat	4380
cgggtgaacg gtcatacga cttgtctcagg accgatattc gattggctcg gcagacgccc	4440
catgtctatt ttatcatcag ttatgtatct cgtctgcggc ttgataatgt tgtgggtctcc	4500
caatgtctat gttctgtgct ttgctaggct tcttaatggg tttggtgccg ggctcgcggc	4560
tacacttgtc cctgtttaca tttctgaaac cgctcctccg gagatcagag gacagttaaa	4620
tactctccct cagtttcttg gctctgggtg aatgtttttg tcatactgta tggttttcac	4680

tatgtccctg agtgactccc ctagctggag agccatgctc ggtgtccctct cgatccccttc	4740
tcttctttat ttgtttctca cgggtgttta tttgcccagag tctcctcggt ggctgggttag	4800
taaaggaaga atggacgagg ctaagcgagt tcttcaacag ttatgtggca gagaagatgt	4860
taccgatgag atggctttac tagttgaagg actagatata ggaggagaaa aaacaatgga	4920
agatctctta gtaacttttg aggatcatga aggtgatgat acacttgaaa ccgttgatga	4980
ggatggacaa atacggcttt atggaaccca cgagaatcaa tcgtaccttg ctagacctgt	5040
cccagaacaa aatagctcac ttgggctacg ctctcgccac ggaagcttag caaaccaaag	5100
catgatcctt aaagatccgc tcgtcaatct ttttggcagt ctccacgaga agatgccaga	5160
agcaggcgga aacactcgga gtgggatttt ccctcatttc ggaagcatgt tcagtactac	5220
tgccgatgcg cctcacggta aaccggctca ttgggaaaag gacatagaga gccattacaa	5280
caaagacaat gatgactatg cgactgatga tgggtgcggaa caaaaactta tctcggaaga	5340
agatttgctg agccccctaa tgtcgcgcca gaccacaagc atggacaagg atatgatccc	5400
acatcctaca agtggaaagca ctttaagcat gagacgacac agtacgctta tgcaaggcaa	5460
cggcgaaagt agcatgggaa ttggtggttg ttggcatatg ggatatagat acgaaaacga	5520
tgaatacaag aggtattatc ttaaagaaga tggagctgaa tctcgccgtg gctcgatcat	5580
ctctattccc ggaggtccgg atggtggagg cagctacatt cacgcttctg cccttgtaag	5640
cagatctggt cttggtccta aatcagttca tggatccgcc atggttcccc cggagaaaat	5700
tgtgcctct ggaccactct ggtctgctct tcttgaacct ggtgttaagc gtgccttggt	5760
tgttggtgtc ggcattcaaa tactgcagca gttttcaggt atcaatggag ttctctacta	5820
cactcctcag attctogaac gggctggcgt agatattctt ctttcgagcc tcggactaag	5880
ttccatctct gcgtcattcc tcatcagcgg tttacaaca ttactcatgc tcccagccat	5940
tgtcgttgcc atgagactca tggatgtatc cggagaagg tcattacttc tctggacaat	6000
cccagttctc attgtctcac ttgtcgtcct tgtcatcagc gagctcatcc acatcagcaa	6060
agtcgtgaac gcagcactct ccacagggtg tgtcgtgctc tacttctgct tcttcgtgat	6120
gggttacggt ccattccaaa catcctctgt tctgaaatct tccaacaag cagaccgtgg	6180
tctctgcac gccatatgtg ctatggtctt ttggattgga gacattattg tcacgtactc	6240
acttcccgtt ctctcagct cgatcgaact agttggagtt ttcagcattt acgctgcggt	6300
ttgcgttatc tcatggatct tcgtttacat gaaagtcccg gagactaaag gcatgccttt	6360
ggaagttatc acagactact ttgccttttg agctcaagct caagcttctg ctcttctaa	6420
ggatatataa atcaagctta togataagct tggatcctct agagtccctgc tttaatgaga	6480
tatgcgagac gcctatgatc gcatgatatt tgctttcaat tctgttggtc acgttgtaaa	6540

aaacctgagc atgtgtagct cagatcctta ccgccggttt cggttcattc taatgaatat	6600
atcacccggt actatcgat ttttatgaat aatattctcc gttcaattta ctgattgtac	6660
cctactactt atatgtacaa tattaaaatg aaaacaatat attgtgctga ataggtttat	6720
agcgacatct atgatagagc gccacaataa caaacaattg cgttttatta ttacaaatcc	6780
aattttaaaa aaagcggcag aaccggtcaa acctaaaaga ctgattacat aaatcttatt	6840
caaatttcaa aaggccccag gggctagtat ctacgacaca ccgagcggcg aactaataac	6900
gttcaactgaa gggaaactcg gttccccgcc ggcgcgcgatg ggtgagattc cttgaagttg	6960
agtattggcc gtccgctcta ccgaaagtta cgggcaccat tcaaccgggt ccagcacggc	7020
ggccgggtaa ccgacttgct gccccgagaa ttatgcagca tttttttggt gtatgtgggc	7080
cccaaataaa gtgcaggtca aaccttgaca gtgacgacaa atcgttgggc ggggtccagg	7140
cgaattttgc gacaacatgt cgaggctcag caggacctgc aggcattgcaa gctagcttac	7200
tagtgatgca tattctatag tgtcacctaa atctgcggcc gc	7242