

0219 PCT - Sequence Listing_ST25
SEQUENCE LISTING

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<151> 2014-08-28
<150> EP 14004389.4
<151> 2014-12-23
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 <213> Hordeum vulgare

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 gtggcgctgc gggagatccg gaagtaccgc aagtcacca atatgctcat cccctttgcg 180
 cccttcgtcc gcctggtcag ggacatcgcc gacaacttga cgccattgtc gaacaagaag 240
 gagagcaagc cgacgccatg gactcctctc gcgctcctct cgttgcaaga gtctgcagag 300
 tatcacttgg tcgatctatt tggaaaggca aatctgtgtg ccattcattc gcaccgtgtt 360
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 <212> PRT
 <213> Hordeum vulgare

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 Cys Ser Lys Ser Glu Pro Gln Ser Gln Pro Lys Lys Lys Glu Lys Arg
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 Ala Tyr Arg Phe Arg Pro Gly Thr Val Ala Leu Arg Glu Ile Arg Lys
 35 40 45
 Tyr Arg Lys Ser Thr Asn Met Leu Ile Pro Phe Ala Pro Phe Val Arg
 50 55 60
 Leu Val Arg Asp Ile Ala Asp Asn Leu Thr Pro Leu Ser Asn Lys Lys
 65 70 75 80
 Glu Ser Lys Pro Thr Pro Trp Thr Pro Leu Ala Leu Leu Ser Leu Gln
 85 90 95
 Glu Ser Ala Glu Tyr His Leu Val Asp Leu Phe Gly Lys Ala Asn Leu
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 115 120 125
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 130 135

<210> 35
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 <213> Hordeum vulgare (Tilling Line 4528 Mutant)

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gtggcgctgc gggagatccg gaagtaccgc aagtccacca atatgctcat cccctttgcg 180
cccttcgtcc gcctggtcag ggacatcgcc gacaacttga cgccattgtc gaacaagaag 240
gagagcaagc cgacgccatg gactcctctc gcgttcctct cgttgcaaga gtctgcagag 300
tatcacttgg tcgatctatt tggaaggca aatctgtgtg ccattcattc gcaccgtgtt 360
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Ala Tyr Arg Phe Arg Pro Gly Thr Val Ala Leu Arg Glu Ile Arg Lys
35 40 45
Tyr Arg Lys Ser Thr Asn Met Leu Ile Pro Phe Ala Pro Phe Val Arg
50 55 60
Leu Val Arg Asp Ile Ala Asp Asn Leu Thr Pro Leu Ser Asn Lys Lys
65 70 75 80
Glu Ser Lys Pro Thr Pro Trp Thr Pro Leu Ala Phe Leu Ser Leu Gln
85 90 95
Glu Ser Ala Glu Tyr His Leu Val Asp Leu Phe Gly Lys Ala Asn Leu
100 105 110
Cys Ala Ile His Ser His Arg Val Thr Ile Met Leu Lys Asp Met Gln
115 120 125
Leu Ala Arg Arg Ile Gly Thr Arg Ser Leu Trp
130 135

<210> 37
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<212> DNA
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<400> 37
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ggggctaaga gatccagaca ggctatgcca cgaggctcac agaagaagtc ttatcgatac	240
aggccaggaa ccgttgctct aaaagagatt cgccatttcc agaagcagac aaaccttctt	300
attccggctg ccagtttcat aagagaagtg agaagtataa cccatatgtt ggccccctccc	360
caaatcaatc gttggacagc tgaagctctt gttgctcttc aagaggcggc agaagattac	420
ttggttggtt tgttctcaga ttcaatgctc tgtgctatcc atgcaagacg tgttactcta	480
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<400> 38

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Thr	Pro	Thr	Arg	Arg	Gly	Gly	Glu	Gly	Gly	Asp	Asn	Thr	Gln	Gln	Thr	35	40	45	
Asn	Pro	Thr	Thr	Ser	Pro	Ala	Thr	Gly	Thr	Arg	Arg	Gly	Ala	Lys	Arg	50	55	60	
Ser	Arg	Gln	Ala	Met	Pro	Arg	Gly	Ser	Gln	Lys	Lys	Ser	Tyr	Arg	Tyr	65	70	75	80
Arg	Pro	Gly	Thr	Val	Ala	Leu	Lys	Glu	Ile	Arg	His	Phe	Gln	Lys	Gln	85	90	95	
Thr	Asn	Leu	Leu	Ile	Pro	Ala	Ala	Ser	Phe	Ile	Arg	Glu	Val	Arg	Ser	100	105	110	
Ile	Thr	His	Met	Leu	Ala	Pro	Pro	Gln	Ile	Asn	Arg	Trp	Thr	Ala	Glu	115	120	125	
Ala	Leu	Val	Ala	Leu	Gln	Glu	Ala	Ala	Glu	Asp	Tyr	Leu	Val	Gly	Leu	130	135	140	
Phe	Ser	Asp	Ser	Met	Leu	Cys	Ala	Ile	His	Ala	Arg	Arg	Val	Thr	Leu	145	150	155	160
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Pro Trp

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<212> DNA
<213> Arabidopsis thaliana

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ggggctaaga gatccagaca ggctatgcc aagaggctcac agaagaagtc ttatcgatac 240
aggccaggaa ccgttgctct aaaagagatt cgccatttcc agaagcagac aaaccttctt 300
attccggctg ccagtttcat aagagaagtg agaagtataa cccatatgtt ggccccctcc 360
caaatcaatc gttggacagc tgaagctatt gttgctcttc aagaggcggc agaagattac 420
ttggttggtt tggttctcaga ttcaatgctc tgtgctatcc atgcaagacg tggttactcta 480
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<212> PRT
<213> Arabidopsis thaliana

<400> 40

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Thr Pro Thr Arg Arg Gly Gly Glu Gly Gly Asp Asn Thr Gln Gln Thr
35 40 45
Asn Pro Thr Thr Ser Pro Ala Thr Gly Thr Arg Arg Gly Ala Lys Arg
50 55 60
Ser Arg Gln Ala Met Pro Arg Gly Ser Gln Lys Lys Ser Tyr Arg Tyr
65 70 75 80
Arg Pro Gly Thr Val Ala Leu Lys Glu Ile Arg His Phe Gln Lys Gln
85 90 95
Thr Asn Leu Leu Ile Pro Ala Ala Ser Phe Ile Arg Glu Val Arg Ser
100 105 110
Ile Thr His Met Leu Ala Pro Pro Gln Ile Asn Arg Trp Thr Ala Glu
115 120 125

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Ala Ile Val Ala Leu Gln Glu Ala Ala Glu Asp Tyr Leu Val Gly Leu
130 135 140

Phe Ser Asp Ser Met Leu Cys Ala Ile His Ala Arg Arg Val Thr Leu
145 150 155 160

Met Arg Lys Asp Phe Glu Leu Ala Arg Arg Leu Gly Gly Lys Gly Arg
165 170 175

Pro Trp

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<212> DNA
<213> Arabidopsis thaliana

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caaatcaatc gttggacagc tgaagcattt gttgctcttc aagaggcggc agaagattac 420
ttggttggtt tgttctcaga ttcaatgctc tgtgctatcc atgcaagacg tgttactcta 480
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35 40 45

Asn Pro Thr Thr Ser Pro Ala Thr Gly Thr Arg Arg Gly Ala Lys Arg
50 55 60

Ser Arg Gln Ala Met Pro Arg Gly Ser Gln Lys Lys Ser Tyr Arg Tyr
65 70 75 80

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

Thr Asn Leu Leu Ile Pro Ala Ala Ser Phe Ile Arg Glu Val Arg Ser
100 105 110

Ile Thr His Met Leu Ala Pro Pro Gln Ile Asn Arg Trp Thr Ala Glu
115 120 125

Ala Phe Val Ala Leu Gln Glu Ala Ala Glu Asp Tyr Leu Val Gly Leu
130 135 140

Phe Ser Asp Ser Met Leu Cys Ala Ile His Ala Arg Arg Val Thr Leu
145 150 155 160

Met Arg Lys Asp Phe Glu Leu Ala Arg Arg Leu Gly Gly Lys Gly Arg
165 170 175

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<212> DNA
<213> Beta vulgaris

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tcacgcagaa aactgatgc aactcctcaa aagaagaagg cttaccgccg taagccgggc 180
actgtggcac tctgggaaat acgcaaattt cagaagtcac tcaagccctt gattcctgct 240
gcgcttttca ttgaacagt gagagagatt actcaccagt ttgctcctta tgttggctgt 300
tggcaagctg aagctctgat ggcccttcaa gaggctgcag agaattttat tgtccgtttg 360
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Arg Ser Lys Ala Gln Lys Ser Pro Arg Ser Leu Gln Ser Pro Gln Ser
20 25 30

Pro Ser Ser Ser Ser Lys Arg Lys Ser Arg Arg Asn Thr Asp Ala Thr
35 40 45

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Pro Gln Lys Lys Lys Ala Tyr Arg Arg Lys Pro Gly Thr Val Ala Leu
50 55 60

Trp Glu Ile Arg Lys Phe Gln Lys Ser Phe Lys Pro Leu Ile Pro Ala
65 70 75 80

Ala Pro Phe Ile Arg Thr Val Arg Glu Ile Thr His Gln Phe Ala Pro
85 90 95

Tyr Val Gly Arg Trp Gln Ala Glu Ala Leu Met Ala Leu Gln Glu Ala
100 105 110

Ala Glu Asn Phe Ile Val Arg Leu Phe Glu Asp Gly Met Leu Cys Ala
115 120 125

Ile His Ala Lys Arg Val Thr Leu Met Lys Lys Asp Leu Glu Leu Ala
130 135 140

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145 150

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20 25 30

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Pro Ser Ser Ser Ser Lys Arg Lys Ser Arg Arg Asn Thr Asp Ala Thr
35 40 45

Pro Gln Lys Lys Lys Ala Tyr Arg Arg Lys Pro Gly Thr Val Ala Leu
50 55 60

Trp Glu Ile Arg Lys Phe Gln Lys Ser Phe Lys Pro Leu Ile Pro Ala
65 70 75 80

Ala Pro Phe Ile Arg Thr Val Arg Glu Ile Thr His Gln Phe Ala Pro
85 90 95

Tyr Val Gly Arg Trp Gln Ala Glu Ala Phe Met Ala Leu Gln Glu Ala
100 105 110

Ala Glu Asn Phe Ile Val Arg Leu Phe Glu Asp Gly Met Leu Cys Ala
115 120 125

Ile His Ala Lys Arg Val Thr Leu Met Lys Lys Asp Leu Glu Leu Ala
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Arg Arg Ile Gly Gly Arg Glu Arg Gly Trp
145 150

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tcacgcagaa acactgatgc aactcctcaa aagaagaagg cttaccgccg taagccgggc 180
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Arg Ser Lys Ala Gln Lys Ser Pro Arg Ser Leu Gln Ser Pro Gln Ser
20 25 30

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Pro Ser Ser Ser Ser Lys Arg Lys Ser Arg Arg Asn Thr Asp Ala Thr
35 40 45

Pro Gln Lys Lys Lys Ala Tyr Arg Arg Lys Pro Gly Thr Val Ala Leu
50 55 60

Trp Glu Ile Arg Lys Phe Gln Lys Ser Phe Lys Pro Leu Ile Pro Ala
65 70 75 80

Ala Pro Phe Ile Arg Thr Val Arg Glu Ile Thr His Gln Phe Ala Pro
85 90 95

Tyr Val Gly Arg Trp Gln Ala Glu Ala Ile Met Ala Leu Gln Glu Ala
100 105 110

Ala Glu Asn Phe Ile Val Arg Leu Phe Glu Asp Gly Met Leu Cys Ala
115 120 125

Ile His Ala Lys Arg Val Thr Leu Met Lys Lys Asp Leu Glu Leu Ala
130 135 140

Arg Arg Ile Gly Gly Arg Glu Arg Gly Trp
145 150

<210> 49
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<213> Brassica napus

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<210> 52
 <211> 180
 <212> PRT
 <213> Brassica napus

<400> 52

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			20					25					30		

Ala	Thr	Pro	Thr	Arg	Arg	Glu	Gly	Ser	Gln	Gly	Glu	Ala	Gln	Gln	Thr
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35

40

45

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Arg Thr Lys Gln Ala Met Pro Lys Ser Ser Asn Lys Lys Lys Thr Phe
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Arg Tyr Lys Pro Gly Thr Val Ala Leu Arg Glu Ile Arg His Phe Gln
 85 90 95

Lys Thr Thr Lys Leu Leu Ile Pro Ala Ala Ser Phe Ile Arg Glu Val
 100 105 110

Arg Ser Val Thr Gln Ile Phe Ala Pro Pro Asp Val Thr Arg Trp Thr
 115 120 125

Ala Glu Ala Leu Met Ala Ile Gln Glu Ala Ala Glu Asp Phe Leu Ile
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Gly Leu Phe Ser Asp Ala Met Leu Cys Ala Ile His Ala Arg Arg Val
 145 150 155 160

Thr Leu Met Arg Lys Asp Phe Glu Leu Ala Arg Arg Leu Gly Gly Lys
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Gly Arg Pro Leu
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 <213> Sorghum bicolor

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 <211> 471
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sorghum bicolor - cDNA coding for CENH3

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<210> 55
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 <212> PRT

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<213> Sorghum bicolor

<400> 55

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Lys Lys Lys Leu Gln Phe Glu Arg Ala Gly Gly Ala Ser Thr Ser Ala
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35 40 45

Val Ala Arg Gly Arg Val Glu Lys Lys His Arg Trp Arg Ala Gly Thr
50 55 60

Val Ala Leu Arg Glu Ile Arg Lys Tyr Gln Lys Ser Thr Glu Pro Leu
65 70 75 80

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

Ile Thr Asp Trp Arg Ile Gly Arg Tyr Thr Pro Glu Ala Leu Leu Ala
100 105 110

Leu Gln Glu Ala Ala Glu Phe His Leu Ile Glu Leu Phe Glu Val Ala
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Asn Leu Cys Ala Ile His Ala Lys Arg Val Thr Val Met Gln Lys Asp
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Ile Gln Leu Ala Arg Arg Ile Gly Gly Arg Arg Trp Ser
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<210> 56

<211> 5834

<212> DNA

<213> Zea mays

<220>

<221> Intron

<222> (1820)..(1917)

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<221> Intron

<222> (1944)..(2035)

<220>

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<220>

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<222> (2356)..(2446)

<220>

<221> Intron

0219 PCT - Sequence Listing_ST25

<222> (2525)..(4530)

<220>

<221> Intron

<222> (4607)..(5346)

<400> 56

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gtggaattga gtag	5834

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 <212> DNA
 <213> Artificial Sequence

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 <223> Zea mays - cDNA coding for CENH3

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 cggccaggga ctgtagcgct gcgggagatc aggaagtacc agaagtccac tgaaccgctc 240
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 ttgatagaac tgtttgaaat ggcgaatctg tgtgccatcc atgccaagcg tgtcacaatc 420
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<400> 58

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Lys Lys Lys Leu Gln Phe Glu Arg Ser Gly Gly Ala Ser Thr Ser Ala
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Thr Pro Glu Arg Ala Ala Gly Thr Gly Gly Arg Ala Ala Ser Gly Gly
 35 40 45

Asp Ser Val Lys Lys Thr Lys Pro Arg His Arg Trp Arg Pro Gly Thr
 50 55 60

Val Ala Leu Arg Glu Ile Arg Lys Tyr Gln Lys Ser Thr Glu Pro Leu
 65 70 75 80

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

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

Leu Gln Glu Ala Ala Glu Phe His Leu Ile Glu Leu Phe Glu Met Ala
 115 120 125

Asn Leu Cys Ala Ile His Ala Lys Arg Val Thr Ile Met Gln Lys Asp
 130 135 140

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0219 PCT - Sequence Listing_ST25

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0219 PCT - Sequence Listing_ST25

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0219 PCT - Sequence Listing_ST25

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<400> 61

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Pro Ser Ser Ser Ser Lys Arg Lys Ser Arg Arg Asn Thr Asp Ala Thr
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Pro Gln Lys Lys Lys Ala Tyr Arg Arg Lys Pro Gly Thr Val Ala Leu
50 55 60

Trp Glu Ile Arg Lys Phe Gln Lys Ser Phe Lys Pro Leu Ile Pro Ala
65 70 75 80

Ala Pro Phe Ile Arg Thr Val Arg Glu Ile Thr His Gln Phe Ala Pro
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Tyr Val Gly Arg Trp Gln Ala Glu Ala Leu Met Ala Leu Gln Glu Ala
100 105 110

Ala Glu Asn Phe Ile Val Arg Leu Phe Glu Asp Gly Met Leu Cys Ala
115 120 125

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 <212> DNA
 <213> Brassica napus

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 <212> PRT
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Arg Thr Lys Gln Ala Met Pro Lys Ser Ser Asn Lys Lys Lys Thr Phe	65	70	75	80
Arg Tyr Lys Pro Gly Thr Val Ala Leu Arg Glu Ile Arg His Phe Gln	85	90	95	
Lys Thr Thr Lys Leu Leu Ile Pro Ala Ala Ser Phe Ile Arg Glu Val	100	105	110	
Arg Ser Val Thr Gln Ile Phe Ala Ser Pro Asp Val Thr Arg Trp Thr	115	120	125	
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0219 PCT - Sequence Listing_ST25

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Arg Tyr Lys Pro Gly Thr Val Ala Leu Arg Glu Ile Arg His Phe Gln
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Ala Thr Pro Thr Arg Arg Glu Gly Ser Gln Gly Glu Ala Gln Gln Thr
35 40 45

Thr Pro Thr Thr Thr Pro Pro Ala Gly Arg Lys Lys Gly Gly Thr Lys
50 55 60

Arg Thr Lys Gln Ala Met Pro Lys Ser Ser Asn Lys Lys Lys Thr Phe
65 70 75 80

Arg Tyr Lys Pro Gly Thr Val Ala Leu Arg Glu Ile Arg His Phe Gln
85 90 95

Lys Thr Thr Lys Leu Leu Ile Pro Ala Ala Ser Phe Ile Arg Glu Val
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Arg Ser Val Thr Gln Ile Phe Ala Pro Pro Asp Val Thr Arg Trp Thr
Seite 41

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Gly Arg Pro Leu
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<400> 73

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Ala Thr Pro Thr Arg Arg Glu Gly Ser Gln Gly Glu Ala Gln Gln Thr
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Arg Tyr Lys Pro Gly Thr Val Ala Leu Arg Glu Ile Arg His Phe Gln
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Lys Thr Thr Lys Leu Leu Ile Pro Ala Ala Ser Phe Ile Arg Glu Val
100 105 110

Arg Ser Val Thr Gln Ile Phe Ala Pro Pro Asp Val Thr Arg Trp Thr
115 120 125

Ala Glu Ala Leu Met Ala Ile Gln Glu Thr Ala Glu Asp Phe Leu Ile
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Gly Leu Phe Ser Asp Ala Met Leu Cys Ala Ile His Ala Arg Arg Val
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<213> Brassica napus

<400> 76

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Arg Thr Lys Gln Ala Met Pro Lys Ser Ser Asn Lys Lys Lys Thr Phe
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Lys Thr Thr Lys Leu Leu Ile Pro Ala Ala Ser Phe Ile Arg Glu Val
100 105 110

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 <211> 540
 <212> DNA
 <213> Brassica napus

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0219 PCT - Sequence Listing_ST25

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<210> 79
 <211> 180
 <212> PRT
 <213> Brassica napus

<400> 79

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Ala	Glu	Ala	Leu	Met	Ala	Ile	Gln	Glu	Ala	Ala	Glu	Asp	Phe	Leu	Ile	130	135	140	
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<211> 5834
<212> DNA
<213> Zea mays

<400> 80
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<211> 157
<212> PRT
<213> Zea mays

<400> 82
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35 40 45
Asp Ser Val Lys Lys Thr Lys Pro Arg His Arg Trp Arg Pro Gly Thr
50 55 60
Val Ala Leu Arg Glu Ile Arg Lys Tyr Gln Lys Ser Thr Glu Pro Leu
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100 105 110
Leu Gln Glu Ala Ala Glu Phe His Leu Ile Glu Leu Phe Glu Met Ala
115 120 125
Asn Leu Cys Ala Ile His Ala Lys Arg Val Thr Ile Met Gln Lys Asp
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145

150

155

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<211> 5834
<212> DNA
<213> Zea mays

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<211> 471
<212> DNA
<213> Zea mays

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<210> 85
<211> 113
<212> PRT
<213> Zea mays

<400> 85
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35 40 45
Asp Ser Val Lys Lys Thr Lys Pro Arg His Arg Trp Arg Pro Gly Thr
50 55 60
Val Ala Leu Arg Glu Ile Arg Lys Tyr Gln Lys Ser Thr Glu Pro Leu
65 70 75 80
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Leu

<210> 86
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<212> DNA
<213> Sorghum bicolor

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 <211> 471
 <212> DNA
 <213> Sorghum bicolor

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<210> 88
 <211> 157
 <212> PRT
 <213> Sorghum bicolor

<400> 88

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 35 40 45
 Val Ala Arg Gly Arg Val Glu Lys Lys His Arg Trp Arg Ala Gly Thr
 50 55 60
 Val Ala Leu Arg Glu Ile Arg Lys Tyr Gln Lys Ser Thr Glu Pro Leu
 65 70 75 80
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 85 90 95
 Ile Thr Asp Trp Arg Ile Gly Arg Tyr Thr Pro Glu Ala Leu Leu Ala
 100 105 110
 Leu Gln Glu Ala Ala Glu Phe His Leu Ile Glu Leu Phe Glu Val Ala
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 <212> DNA
 <213> Beta vulgaris

<400> 89
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Pro Gln Lys Lys Lys Ala Tyr Arg Arg Lys Pro Gly Thr Val Ala Leu
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Trp Glu Ile Arg Lys Phe Gln Lys Ser Phe Lys Pro Leu Ile Pro Ala
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Ala Pro Phe Ile Arg Thr Val Arg Glu Ile Thr His Gln Phe Ala Pro
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Tyr Val Gly Arg Trp Gln Ala Glu Ala Leu Met Ala Pro Gln Glu Ala
100 105 110
Ala Glu Asn Phe Ile Val Arg Leu Phe Glu Asp Gly Met Leu Cys Ala
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Pro Gln Lys Lys Lys Ala Tyr Arg Arg Lys Pro Gly Thr Val Ala Leu
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Trp Glu Ile Arg Lys Phe Gln Lys Ser Phe Lys Pro Leu Ile Pro Ala
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Ile His Ala Lys Arg Val Thr Leu Met Lys Lys Asp Leu Glu Leu Ala
 130 135 140

Arg Arg Ile Gly Gly Arg Glu Arg Gly Trp
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