

SEQUENCE LISTING

<110> INRA
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<120> PLANTS HAVING A MODULATED CONTENT IN SEED PROTEINS AND METHOD FOR PRODUCTION THEREOF

<130> GPL-B-0002 PCT1

<150> EP11290619
<151> 2011-12-30

<160> 36

<170> PatentIn version 3.5

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<212> DNA
<213> Triticum aestivum

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Ala Met Asn Arg Cys Pro Ser Glu Trp Cys Phe Gln Lys Phe Leu Glu
 35 40 45

Glu Ala Val Leu Asp Ser Pro Ala Ala Asp Pro Thr Pro Met Ala Gly
 50 55 60

Ala Ser Gly Gly Gly Ala Ala Gln Val Lys Gln Thr Ala Ala Ala Ala
 65 70 75 80

Ala Ser Gly Ala Val Val Asp Pro Val Glu Tyr Asn Ala Met Leu Lys
 85 90 95

Gln Lys Leu Glu Lys Asp Leu Ala Ala Val Ala Met Trp Arg Ala Ser
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Gly Ala Met Pro Pro Glu Arg Phe Ala Ala Asn Pro Ser Leu Pro Asn
 115 120 125

Ala Asp Val Gln His Ile Gly Thr Ile Asn Pro Ile Gly Gly Asn Val
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Val Pro Val Gln Asn Lys Leu Ala Gly Gly Ala Ser Gly Val Leu Gly
 145 150 155 160

Pro Gln Leu Val Gln Asn Ala Asp Ala Leu Val Lys Gln Ala Ala Ser
 165 170 175

Ser Ser Ser Arg Glu Gln Ser Glu Asp Asp Asp Met Glu Gly Glu Asp
 180 185 190

Glu Ile Thr Gly Asn Gly Ala Pro Thr Asp Gln Arg Leu Arg Arg Arg
 195 200 205

Lys Gln Ser Asn Arg Glu Ser Ala Arg Arg Ser Arg Ser Arg Lys Ala
 210 215 220

Ala His Leu Asn Glu Leu Glu Ala Gln Val Ser Gln Leu Arg Val Glu
 225 230 235 240

Asn Ser Ser Leu Leu Arg Arg Leu Ala Asp Val Asn Gln Lys Tyr Asn
 245 250 255

Gly Ala Ala Val Asp Asn Arg Val Leu Lys Ala Asp Val Glu Thr Leu
 260 265 270

Arg Ala Lys Val Lys Met Ala Glu Asp Ser Val Lys Arg Val Thr Gly
 275 280 285

Met Ser Ala Leu Phe Pro Ala Gly Ser Asp Met Ser Ser Leu Ser Met
 290 295 300

Pro Phe Thr Gly Ser Pro Ser Glu Ala Thr Ser Asp Ala Ala Val Pro
 305 310 315 320

Asp Asp Leu Ser Ala Tyr Phe Ser Thr Ser Glu Ala Gly Gly Asn Asn
 325 330 335

Gly Tyr Met Pro Glu Met Ala Ser Ser Ala Gln Glu Asp Asp Asn Phe
 340 345 350

Leu Asn Glu Ala Met Asp Thr Gly Lys Met Gly Arg Pro Asp Ser Leu
 355 360 365

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Pro Ala Ser Ser Gly Ser Thr Ser
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Glu	Gly	Ala	Met	Asn	Arg	Cys	Pro	Ser	Glu	Trp	Tyr	Phe	Gln	Lys	Phe
		35					40					45			

Leu	Glu	Glu	Ala	Val	Leu	Asp	Ser	Pro	Ala	Ala	Asp	Pro	Ala	Pro	Met
	50					55					60				

Ala	Gly	Ala	Ser	Gly	Ala	Gly	Ala	Ala	Gln	Val	Lys	Gln	Thr	Ala	Ala
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Ala	Ala	Ala	Ala	Ala	Ala	Pro	Ala	Ala	Thr	Gly	Ala	Val	Val	Asp	Pro
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Val	Glu	Tyr	Asn	Ala	Met	Leu	Lys	Gln	Lys	Leu	Glu	Lys	Asp	Leu	Ala
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Ala	Val	Ala	Met	Trp	Arg	Ala	Ser	Gly	Ala	Met	Pro	Pro	Glu	Arg	Phe
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Ala	Ala	Ser	Pro	Ser	Leu	Pro	Asn	Ala	Asp	Val	Gln	His	Ile	Gly	Thr
		130				135					140				

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

Ala	Leu	Val	Lys	Gln	Ala	Ala	Ser	Ser	Ser	Arg	Glu	Gln	Ser	Glu	
			180					185				190			

Asp Asp Asp Met Glu Gly Glu Asp Glu Ile Thr Gly Asn Gly Val Pro
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 Thr Asp Gln Arg Leu Arg Arg Arg Lys Gln Ser Asn Arg Glu Ser Ala
 210 215 220
 Arg Arg Ser Arg Ser Arg Lys Ala Ala His Leu Asn Glu Leu Glu Ala
 225 230 235 240
 Gln Val Ser Gln Leu Arg Val Glu Asn Ser Ser Leu Leu Arg Arg Leu
 245 250 255
 Ala Asp Val Asn Gln Lys Tyr Asn Gly Ala Ala Val Asp Asn Arg Val
 260 265 270
 Leu Lys Ala Asp Val Glu Thr Leu Arg Ala Lys Val Lys Met Ala Glu
 275 280 285
 Asp Ser Val Lys Arg Val Thr Gly Met Ser Ala Leu Phe Pro Ala Gly
 290 295 300
 Ser Asp Met Ser Ser Leu Ser Met Pro Phe Thr Gly Ser Pro Ser Glu
 305 310 315 320
 Ala Thr Ser Asp Ala Ala Val Pro Asp Asp Leu Ser Ala Tyr Phe Ser
 325 330 335
 Thr Ser Glu Ala Gly Gly Asn Asn Gly Tyr Met Pro Glu Met Ala Ser
 340 345 350
 Ser Ala Gln Glu Asp Asp Asn Phe Leu Asn Glu Ala Met Asp Thr Gly
 355 360 365
 Lys Met Gly Arg Pro Asp Ser Leu His Arg Val Ala Ser Leu Glu His
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 Leu Gln Gln Arg Met Cys Gly Gly Pro Ala Ser Ser Gly Ser Thr Ser
 385 390 395 400

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 <212> DNA
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 gcggagggtga agcggaccgc cgctgcggtg gcgccggcgc cggcggcgac gggcgcggtg 300
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gtcgcatgt ggagggcctc tggtgccatg cctccagaac gttttgcagc tagtccgtca 420
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 aatgccgatg cccttgtaaa gcaagctgct agctcttctt cgcgggagca gtcagaagat 600
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 cggaggagga agcaatccaa tcgggaatcg gccaggcggt caagaagcag aaaggcagct 720
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 <213> Triticum aestivum

<400> 6

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Gln Pro Ser Pro Arg Pro Ala Gly Ala Ser Ala Ala Gly Pro Ala Ser
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Ser Gly Gly Gly Gly Ala Glu Gly Ala Met Asn Arg Cys Pro Ser Glu
35 40 45

Trp Tyr Phe Gln Lys Phe Leu Glu Glu Ala Val Leu Asp Ser Pro Ala
50 55 60

Ala Asp Pro Gly Pro Met Ala Gly Ala Ser Gly Gly Gly Val Gly Ala
65 70 75 80

Ala Glu Val Lys Arg Thr Ala Ala Ala Val Ala Pro Ala Pro Ala Ala
85 90 95

Thr Gly Ala Val Val Asp Pro Val Glu Tyr Asn Ala Met Leu Lys Gln
100 105 110

Lys Leu Glu Lys Asp Leu Ala Ala Val Ala Met Trp Arg Ala Ser Gly
115 120 125

Ala Met Pro Pro Glu Arg Phe Ala Ala Ser Pro Ser Leu Pro Asn Ala
 130 135 140
 Asp Val Gln His Ile Gly Thr Ile Asn Pro Ile Gly Gly Asn Val Val
 145 150 155 160
 Pro Val Gln Asn Lys Leu Ala Gly Gly Ala Ser Gly Val Ser Gly Pro
 165 170 175
 His Leu Val Gln Asn Ala Asp Ala Leu Val Lys Gln Ala Ala Ser Ser
 180 185 190
 Ser Ser Arg Glu Gln Ser Glu Asp Asp Asp Met Glu Gly Glu Asp Glu
 195 200 205
 Ile Thr Gly Asn Gly Pro Pro Thr Asp Gln Arg Leu Arg Arg Arg Lys
 210 215 220
 Gln Ser Asn Arg Glu Ser Ala Arg Arg Ser Arg Ser Arg Lys Ala Ala
 225 230 235 240
 His Leu Asn Glu Leu Glu Ala Gln Val Ser Gln Leu Arg Val Glu Asn
 245 250 255
 Ser Ser Leu Leu Arg Arg Leu Ala Asp Val Asn Gln Lys Tyr Asn Gly
 260 265 270
 Ala Ala Val Asp Asn Arg Val Leu Lys Ala Asp Val Glu Thr Leu Arg
 275 280 285
 Ala Lys Val Lys Met Ala Glu Asp Ser Val Lys Arg Val Thr Gly Met
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 Ser Ala Leu Phe Pro Ala Gly Ser Asp Met Ser Ser Leu Ser Met Pro
 305 310 315 320
 Phe Thr Gly Ser Pro Ser Glu Ala Thr Ser Asp Ala Ala Val Pro Asp
 325 330 335
 Asp Leu Ser Ala Tyr Phe Ser Thr Ser Glu Ala Gly Gly Asn Gly Tyr
 340 345 350
 Met Pro Glu Met Ala Ser Ser Ala Gln Glu Asp Asp Asn Phe Leu Asn
 355 360 365
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 370 375 380
 Val Ala Ser Leu Glu His Leu Gln Lys Arg Met Cys Gly Gly Pro Ala
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 Ser Ser Gly Ser Thr Ser
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 <211> 1176
 <212> DNA
 <213> Hordeum vulgare

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 <211> 391
 <212> PRT
 <213> Hordeum vulgare

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 Asn Arg Cys Pro Ser Glu Trp Tyr Phe Gln Lys Phe Leu Glu Glu Ala
 35 40 45
 Val Leu Asp Ser Pro Ala Ala Asp Pro Ser Pro Met Ser Gly Ala Ser
 50 55 60

Gly Arg Gly Gln Ala Ala Cys Arg Pro Arg Gly Val Ala Gly Thr Ala
65 70 75 80

Thr Gly Pro Ala Val Asp Pro Val Glu Tyr Asn Ala Met Leu Lys Gln
85 90 95

Lys Leu Glu Lys Asp Leu Ala Ala Val Ala Met Trp Arg Ala Ser Gly
100 105 110

Ala Met Pro Pro Glu Arg Phe Ala Ala Ser Pro Ser Cys Pro Asn Ala
115 120 125

Asp Gly Gln His Ile Gly Thr Ile Asn Pro Ile Gly Gly Asn Val Val
130 135 140

Pro Leu Gln Asn Lys Leu Ala Gly Gly Ala Ser Gly Val Ser Gly Pro
145 150 155 160

His Leu Val Gln Asn Ala Asp Ala Leu Val Lys Gln Ala Ala Ser Ser
165 170 175

Ser Ser Arg Glu Gln Ser Glu Asp Asp Met Glu Gly Glu Asp Glu
180 185 190

Ile Thr Gly Asn Gly Val Pro Thr Asp Gln Arg Leu Arg Arg Arg Lys
195 200 205

Gln Ser Asn Arg Glu Ser Ala Arg Arg Ser Arg Ser Arg Lys Ala Ala
210 215 220

His Leu Asn Glu Leu Glu Ala Gln Val Ser Gln Leu Arg Val Glu Asn
225 230 235 240

Ser Ser Leu Leu Arg Arg Leu Ala Asp Val Asn Gln Lys Tyr Asn Gly
245 250 255

Ala Ala Val Asp Asn Arg Val Leu Lys Ala Asp Val Glu Thr Leu Arg
260 265 270

Ala Lys Val Lys Met Ala Glu Asp Ser Val Lys Arg Val Thr Gly Met
275 280 285

Ser Ala Leu Phe Pro Ala Gly Ser Asp Met Ser Ser Leu Ser Met Pro
290 295 300

Phe Thr Gly Ser Pro Ser Glu Ala Thr Ser Asp Ala Ala Phe Pro Asp
305 310 315 320

Asp Leu Ser Ala Tyr Phe Ser Thr Ser Glu Ala Gly Gly Asn Asn Gly
325 330 335

Tyr Met Pro Glu Met Ala Ser Ser Ala Gln Glu Asp Asp Asn Phe Leu
 340 345 350

Asn Glu Thr Met Asp Thr Ser Lys Met Gly Arg Pro Asp Ser Leu His
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Ala Ser Ser Gly Ser Thr Ser
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 <212> DNA
 <213> Oryza sativa

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 <211> 420
 <212> PRT

<213> Oryza sativa

<400> 10

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Gly Gly Val Ala Ser Gly Gly Gly Gly Gly Val Ala Gly Gly Gly Gly
35 40 45

Gly Gly Asn Ala Met Asn Arg Cys Pro Ser Glu Trp Tyr Phe Gln Lys
50 55 60

Phe Leu Glu Glu Ala Val Leu Asp Ser Pro Val Pro Asn Pro Ser Pro
65 70 75 80

Arg Ala Glu Ala Gly Gly Ile Arg Gly Ala Gly Gly Val Val Pro Val
85 90 95

Asp Val Lys Gln Pro Gln Leu Ser Ala Ala Ala Thr Thr Ser Ala Val
100 105 110

Val Asp Pro Val Glu Tyr Asn Ala Met Leu Lys Gln Lys Leu Glu Lys
115 120 125

Asp Leu Ala Ala Val Ala Met Trp Arg Ala Ser Gly Thr Val Pro Pro
130 135 140

Glu Arg Pro Gly Ala Gly Ser Ser Leu Leu Asn Ala Asp Val Ser His
145 150 155 160

Ile Gly Ala Pro Asn Ser Ile Gly Gly Asn Ala Thr Pro Val Gln Asn
165 170 175

Met Leu Ser Gly Pro Ser Gly Gly Ser Gly Ser Gln Leu Val Gln Asn
180 185 190

Val Asp Val Leu Val Lys Gln Pro Thr Ser Ser Ser Ser Arg Glu Gln
195 200 205

Ser Asp Asp Asp Asp Met Lys Gly Glu Ala Glu Thr Thr Gly Thr Ala
210 215 220

Arg Pro Ala Asp Gln Arg Leu Gln Arg Arg Lys Gln Ser Asn Arg Glu
225 230 235 240

Ser Ala Arg Arg Ser Arg Ser Arg Lys Ala Ala His Leu Asn Glu Leu
245 250 255

Glu Ala Gln Val Ser Gln Leu Arg Val Glu Asn Ser Ser Leu Leu Arg
260 265 270

Arg Leu Ala Asp Val Asn Gln Lys Tyr Asn Asp Ala Ala Val Asp Asn
275 280 285

Arg Val Leu Lys Ala Asp Val Glu Thr Leu Arg Ala Lys Lys Met Ala
290 295 300

Glu Asp Ser Val Lys Arg Val Thr Gly Met Asn Ala Leu Phe Pro Ala
305 310 315 320

Ala Ser Asp Met Ser Ser Leu Ser Met Pro Phe Asn Ser Ser Pro Ser
325 330 335

Glu Ala Thr Ser Asp Ala Ala Val Pro Ile Gln Asp Asp Pro Asn Asn
340 345 350

Tyr Phe Ala Thr Asn Asn Asp Ile Gly Gly Asn Asn Asn Tyr Met Pro
355 360 365

Asp Ile Pro Ser Ser Ala Gln Glu Asp Glu Asp Phe Val Asn Gly Ala
370 375 380

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<212> DNA
<213> Oryza sativa

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gtaaagcagc ccaccagctc ttcatcaagg gagcagtcag atgatgatga catggaggga 660

gaagctgaga ccactggaac tgcaagacct gctgatcaaa gattacaacg aaggaagcaa	720
tccaatcggg agtcagccag gcgctcaaga agcagaaagg cagctcactt gaatgagctg	780
gaggcacagg tatcgcaatt aagagtcgag aactcctcgc tgtaaggcg tcttgctgat	840
gttaaccaga agtacaatga tgctgctgtt gacaatagag tgctaaaagc agatgttgag	900
accttgagag caaaggtgaa gatggcagag gactcgggtga agcgggtgac aggcattgaac	960
gcgttggtttc ccgccgcttc tgatatgtca tccctcagca tgccattcaa cagctcccca	1020
tctgaagcaa cgtcagacgc tgctgttccc atccaagatg acccgaacaa ttacttcgct	1080
actaacaacg acatcggagg taacaacaac tacatgcccg acataccttc ttcggctcag	1140
gaggacgagg acttcgtcaa tggcgctctg gctgccggca agattggccg gacagcctcg	1200
ctgcagcggg tggcgagcct ggagcatctc cagaagagga tgtgcggtgg gccggcttcg	1260
tctgggtcga cgtcctga	1278

<210> 12
 <211> 425
 <212> PRT
 <213> Oryza sativa

<400> 12

Met Glu Arg Val Phe Ser Val Glu Glu Ile Ser Asp Pro Phe Trp Val
 1 5 10 15

Pro Pro Pro Pro Gln Ser Ala Ala Ala Gln Gln Gln Gly Gly
 20 25 30

Gly Gly Val Ala Ser Gly Gly Gly Gly Gly Val Ala Gly Gly Gly Gly
 35 40 45

Gly Gly Asn Ala Met Asn Arg Cys Pro Ser Glu Trp Tyr Phe Gln Lys
 50 55 60

Phe Leu Glu Glu Ala Val Leu Asp Ser Pro Val Pro Asn Pro Ser Pro
 65 70 75 80

Arg Ala Glu Ala Gly Gly Ile Arg Gly Ala Gly Gly Val Val Pro Val
 85 90 95

Asp Val Lys Gln Pro Gln Leu Ser Ala Ala Ala Ala Ala Ala Ala Thr
 100 105 110

Thr Ser Ala Val Val Asp Pro Val Glu Tyr Asn Ala Met Leu Lys Gln
 115 120 125

Lys Leu Glu Lys Asp Leu Ala Ala Val Ala Met Trp Arg Ala Ser Gly
 130 135 140

Thr Val Pro Pro Glu Arg Pro Gly Ala Gly Ser Ser Leu Leu Asn Ala
 145 150 155 160

Asp Val Ser His Ile Gly Ala Pro Asn Ser Ile Gly Gly Asn Ala Thr
 165 170 175
 Pro Val Gln Asn Met Leu Ser Gly Pro Ser Gly Gly Ser Gly Ser Gln
 180 185 190
 Leu Val Gln Asn Val Asp Val Leu Val Lys Gln Pro Thr Ser Ser Ser
 195 200 205
 Ser Arg Glu Gln Ser Asp Asp Asp Asp Met Glu Gly Glu Ala Glu Thr
 210 215 220
 Thr Gly Thr Ala Arg Pro Ala Asp Gln Arg Leu Gln Arg Arg Lys Gln
 225 230 235 240
 Ser Asn Arg Glu Ser Ala Arg Arg Ser Arg Ser Arg Lys Ala Ala His
 245 250 255
 Leu Asn Glu Leu Glu Ala Gln Val Ser Gln Leu Arg Val Glu Asn Ser
 260 265 270
 Ser Leu Leu Arg Arg Leu Ala Asp Val Asn Gln Lys Tyr Asn Asp Ala
 275 280 285
 Ala Val Asp Asn Arg Val Leu Lys Ala Asp Val Glu Thr Leu Arg Ala
 290 295 300
 Lys Val Lys Met Ala Glu Asp Ser Val Lys Arg Val Thr Gly Met Asn
 305 310 315 320
 Ala Leu Phe Pro Ala Ala Ser Asp Met Ser Ser Leu Ser Met Pro Phe
 325 330 335
 Asn Ser Ser Pro Ser Glu Ala Thr Ser Asp Ala Ala Val Pro Ile Gln
 340 345 350
 Asp Asp Pro Asn Asn Tyr Phe Ala Thr Asn Asn Asp Ile Gly Gly Asn
 355 360 365
 Asn Asn Tyr Met Pro Asp Ile Pro Ser Ser Ala Gln Glu Asp Glu Asp
 370 375 380
 Phe Val Asn Gly Ala Leu Ala Ala Gly Lys Ile Gly Arg Thr Ala Ser
 385 390 395 400
 Leu Gln Arg Val Ala Ser Leu Glu His Leu Gln Lys Arg Met Cys Gly
 405 410 415
 Gly Pro Ala Ser Ser Gly Ser Thr Ser
 420 425

<210> 13
 <211> 1218

<212> DNA
 <213> Sorghum bicolor

<400> 13
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 caatcagctg ccgccggcgc tgttgctgca ccagggtggag gaggaggagc tgtggacgcg 120
 gcgggcgcg tgaaccgggtg cccgtcggag tggattttcc agaagttcct ggaggaggcc 180
 gtgctcgaca gcccggggcc cgtccctggc gtcggtaggg gcagcgttgt agctggagct 240
 gaggcgccgg agagcaagcc gctggggccc gcggctgcct cgagttcggg tgttgaccct 300
 gtggagtaca acgcgatgct caagcagaag ctggagaagg acctcgctgc tgtcgccatg 360
 tggagggctt ctggtgcagc acctccagat cgttctgcag ttgcttcttc cttgccagt 420
 gttgatgttc cgcatgcagc tcctcttaaa cccatcggag gtactgaaag tctagttcaa 480
 aacaagctag ctggtgctcc aggtgtggga tcagggtccac atgtagtaca aactgccgat 540
 atccctatta agcaaaccac tagctcttcc tcacgagagc agtcagatga tgatgacatg 600
 gaaggagatg ctgagactac tggaaatgca aaccctgttc aacaaagact acagagaagg 660
 aagcaatcca accgagaatc agccaggcgt tcgagaagca gaaaggcagc tcacttgaat 720
 gaactggagg cacaggtagc acagttaaga gttgaaaact cttcgctgtt aaggcgactt 780
 gctgatgtta atcagaagtt caatgaggct gctgttgaca ataggggtgct aaaggcagat 840
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 atgaacgcgt tgttccctgc cgtgtctgat atgtcgctcc tcagcatgcc attcaatggc 960
 tccccactg actccacctc tgatgccgct gtcccatcc aagatgacct aacagttac 1020
 ttcgcaaadc caagtgaat cggaggcaac aatgggtaca tgccagatat agcttctcgc 1080
 gttcaagagg acgacaattt tgtcaatggg gctgctggca agatgggcag aacagcctcg 1140
 ctgcagcggg tggcaagcct ggagcacctc cagaagagga tgtgtggagg gccggcttca 1200
 tccgggtcga cctcctag 1218

<210> 14
 <211> 405
 <212> PRT
 <213> Sorghum bicolor

<400> 14
 Met Glu Arg Val Phe Ser Val Glu Glu Ile Pro Asn Pro Tyr Trp Ala
 1 5 10 15
 Pro Pro His Pro Gln Ser Ala Ala Ala Gly Ala Val Ala Ala Pro Gly
 20 25 30
 Gly Gly Gly Gly Ala Val Asp Ala Ala Gly Ala Met Asn Arg Cys Pro
 35 40 45
 Ser Glu Trp Tyr Phe Gln Lys Phe Leu Glu Glu Ala Val Leu Asp Ser
 50 55 60

Pro Gly Pro Val Pro Gly Val Gly Arg Gly Ser Val Val Ala Gly Ala
65 70 75 80

Glu Ala Pro Glu Ser Lys Pro Leu Gly Pro Ala Ala Ala Ser Ser Ser
85 90 95

Val Val Asp Pro Val Glu Tyr Asn Ala Met Leu Lys Gln Lys Leu Glu
100 105 110

Lys Asp Leu Ala Ala Val Ala Met Trp Arg Ala Ser Gly Ala Ala Pro
115 120 125

Pro Asp Arg Ser Ala Val Ala Ser Ser Leu Pro Ser Val Asp Val Pro
130 135 140

His Ala Ala Pro Leu Lys Pro Ile Gly Gly Thr Glu Ser Leu Val Gln
145 150 155 160

Asn Lys Leu Ala Gly Ala Pro Gly Val Gly Ser Gly Pro His Val Val
165 170 175

Gln Thr Ala Asp Ile Pro Ile Lys Gln Thr Thr Ser Ser Ser Ser Arg
180 185 190

Glu Gln Ser Asp Asp Asp Asp Met Glu Gly Asp Ala Glu Thr Thr Gly
195 200 205

Asn Ala Asn Pro Val Gln Gln Arg Leu Gln Arg Arg Lys Gln Ser Asn
210 215 220

Arg Glu Ser Ala Arg Arg Ser Arg Ser Arg Lys Ala Ala His Leu Asn
225 230 235 240

Glu Leu Glu Ala Gln Val Ala Gln Leu Arg Val Glu Asn Ser Ser Leu
245 250 255

Leu Arg Arg Leu Ala Asp Val Asn Gln Lys Phe Asn Glu Ala Ala Val
260 265 270

Asp Asn Arg Val Leu Lys Ala Asp Val Glu Thr Leu Arg Ala Lys Val
275 280 285

Lys Met Ala Glu Asp Ser Val Lys Arg Val Thr Gly Met Asn Ala Leu
290 295 300

Phe Pro Ala Val Ser Asp Met Ser Ser Leu Ser Met Pro Phe Asn Gly
305 310 315 320

Ser Pro Thr Asp Ser Thr Ser Asp Ala Ala Val Pro Ile Gln Asp Asp
325 330 335

Pro Asn Ser Tyr Phe Ala Asn Pro Ser Glu Ile Gly Gly Asn Asn Gly
340 345 350

Tyr Met Pro Asp Ile Ala Ser Ser Val Gln Glu Asp Asp Asn Phe Val
 355 360 365

Asn Gly Ala Ala Gly Lys Met Gly Arg Thr Ala Ser Leu Gln Arg Val
 370 375 380

Ala Ser Leu Glu His Leu Gln Lys Arg Met Cys Gly Gly Pro Ala Ser
 385 390 395 400

Ser Gly Ser Thr Ser
 405

<210> 15
 <211> 1218
 <212> DNA
 <213> Zea mays

<400> 15
 atggagcgcg tcttctccgt ggaggagatc cccaacccct actgggttcc gccgcaccct 60
 caatcggcgg ccgccggcgc tgttgctgca ccagcggggg aggcggcggg gctgatgaac 120
 cggtgcccgt cggaatggta cttccagaag ttcttgagg aggccgtgct cgacagcccg 180
 gttcccgtag ccggcgctcag taggggcagc gttggagctg gagttgaggc tgcggagagg 240
 aagacaccgg ggaccgcggc ggcggcggct gcctcgagct cggttggtga ccccgaggag 300
 tacaacgcga tcgtcaagca gaagctggag aaggacctcg ctgccgttgc cttgtggagg 360
 gcttctggtg cagcacctcc agataattct ccagctgggt catccttgcc aagtgtggat 420
 gttccacatg caggccctct taaacccatg ggagggtactg gaagtctagt tcaaaaacaag 480
 ctagctggtg ctccaggcgg gggatcaagt ccacatgtag tacaaaatgc cgatattcct 540
 gttaagcaaa ccactagctc ttcttcacgt gagcagtcag acgatgatga tatggaagga 600
 gatgctgaga ctactggaaa cggaaaccct gttcaacaaa gattacagag aagggaagca 660
 tccaaccgag aatcagccag gcgttcgaga agcagaaagg cagctcactt gaatgaactg 720
 gaggcacagg tagcacagtt aagagttgag aactcttcgc tgctaaggcg acttgctgac 780
 gttaatcaga agttcaatga ggctgctgtt gacaataggg tgctaaaggc agatgtcgaa 840
 accttaagag caaagggtgaa gatggcagag gactcagtga agcgggtaac tggcatgaac 900
 acattgttcc ctgccgtgtc tgatatgtcg tccctcagca tgccattcaa tggctcccca 960
 tccgactccg cctctgatgc cgccgtaccc atccaagatg acctgaacag ttacttcgcc 1020
 aatccaagcg agatcggagg cagcaacggt tacatgccag atatagcttc ctcggctcaa 1080
 gaggacgacg atttcgtcaa cggggctcag gtcgccggca agatgggcag cactgactcg 1140
 ctgcagcggg tggcgagcct ggagcacctc cagaagagga tgtgcggagg cccggcttca 1200
 tcgggggtcga cctcctag 1218

<210> 16
 <211> 405
 <212> PRT

<213> Zea mays

<400> 16

Met Glu Arg Val Phe Ser Val Glu Glu Ile Pro Asn Pro Tyr Trp Val
1 5 10 15

Pro Pro His Pro Gln Ser Ala Ala Ala Gly Ala Val Ala Ala Pro Ala
20 25 30

Gly Glu Ala Ala Gly Leu Met Asn Arg Cys Pro Ser Glu Trp Tyr Phe
35 40 45

Gln Lys Phe Leu Glu Glu Ala Val Leu Asp Ser Pro Val Pro Val Ala
50 55 60

Gly Val Ser Arg Gly Ser Val Gly Ala Gly Val Glu Ala Ala Glu Arg
65 70 75 80

Lys Thr Pro Gly Thr Ala Ala Ala Ala Ala Ala Ser Ser Ser Val Val
85 90 95

Asp Pro Val Glu Tyr Asn Ala Ile Val Lys Gln Lys Leu Glu Lys Asp
100 105 110

Leu Ala Ala Val Ala Leu Trp Arg Ala Ser Gly Ala Ala Pro Pro Asp
115 120 125

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

Gly Pro Leu Lys Pro Met Gly Gly Thr Gly Ser Leu Val Gln Asn Lys
145 150 155 160

Leu Ala Gly Ala Pro Gly Gly Gly Ser Ser Pro His Val Val Gln Asn
165 170 175

Ala Asp Ile Pro Val Lys Gln Thr Thr Ser Ser Ser Ser Arg Glu Gln
180 185 190

Ser Asp Asp Asp Asp Met Glu Gly Asp Ala Glu Thr Thr Gly Asn Gly
195 200 205

Asn Pro Val Gln Gln Arg Leu Gln Arg Arg Lys Gln Ser Asn Arg Glu
210 215 220

Ser Ala Arg Arg Ser Arg Ser Arg Lys Ala Ala His Leu Asn Glu Leu
225 230 235 240

Glu Ala Gln Val Ala Gln Leu Arg Val Glu Asn Ser Ser Leu Leu Arg
245 250 255

Arg Leu Ala Asp Val Asn Gln Lys Phe Asn Glu Ala Ala Val Asp Asn
260 265 270

Arg Val Leu Lys Ala Asp Val Glu Thr Leu Arg Ala Lys Val Lys Met
 275 280 285

Ala Glu Asp Ser Val Lys Arg Val Thr Gly Met Asn Thr Leu Phe Pro
 290 295 300

Ala Val Ser Asp Met Ser Ser Leu Ser Met Pro Phe Asn Gly Ser Pro
 305 310 315 320

Ser Asp Ser Ala Ser Asp Ala Ala Val Pro Ile Gln Asp Asp Leu Asn
 325 330 335

Ser Tyr Phe Ala Asn Pro Ser Glu Ile Gly Gly Ser Asn Gly Tyr Met
 340 345 350

Pro Asp Ile Ala Ser Ser Ala Gln Glu Asp Asp Asp Phe Val Asn Gly
 355 360 365

Ala Gln Val Ala Gly Lys Met Gly Ser Thr Asp Ser Leu Gln Arg Val
 370 375 380

Ala Ser Leu Glu His Leu Gln Lys Arg Met Cys Gly Gly Pro Ala Ser
 385 390 395 400

Ser Gly Ser Thr Ser
 405

<210> 17
 <211> 1218
 <212> DNA
 <213> Zea mays

<400> 17
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 caatcggcgg cggccggcgc tggtgctgca ccagcggggg aggcggcggg gctgatgaac 120
 cggtgcccgt cggaatggta cttccagaag ttcttgagg aggccgtgct cgacagcccc 180
 gttccccgtag ccggcgccag taggggcagc gttggagctg gagttgaggc tgcggagagc 240
 aagacaccgg gggccgcggc gcgcgcggct gcctcgagct cggttgttga ccccgaggag 300
 tacaacgcga tgctcaagca gaagctggag aaggacctg ctgccgttgc cttgtggagg 360
 gcttctggtg cagcacctcc agatcattct ccagctgggt cttccttgcc aagtgtggat 420
 gtccacacg caggccctct taaacccatc ggaggtagt gaagtctagt tcaaaacaag 480
 ctacttggtg ctccaggcgg gggatcaagt ccacatgtac tacaaaatgc cgatatccct 540
 gttaagcaaa ccactagctc ttcctcacgt gagcagtcag acgatgatga catggaagga 600
 gatgctgaga ctagtggaaa tggaaaccct gttcaacaca gattacagag aaggaagcaa 660
 tccaaccgag aatcagccag gcgttcgaga agcagaaagg cagctcactt gaatgaactg 720
 gaggcacagg tatcacagt aagagttgag aactcttcgc tcctaaggcg acttgctgac 780

gttaatcaga agttcaatga ggctgctgtt gacaataggg tgcttaaggc agatgttgaa 840
 accttaagag caaagggtgaa gatggcagag gactcagtga agcgggtaac tggcatgaac 900
 acattgttcc ctgccgtgtc tgatatgtcg tccctcagca tgccattcaa tggctcccca 960
 tctgactccg cctctgatgc cgccgtaccc atccaagatg acctgaacag ttacttcgcc 1020
 aatccaagcg agatcggagg cagcaacggg tacatgccag atatagcttc ctcggttcaa 1080
 gaggacgacg atttcgtcaa cggggctcag gtcgccggca agatggggcag cactgactcg 1140
 ctgcagcggg tggcgagcct ggagcacctc cagaagagga tgtgcggagg cccggcttca 1200
 tcgggggtcga cctcctag 1218

<210> 18
 <211> 405
 <212> PRT
 <213> Zea mays
 <400> 18

Met Glu Arg Val Phe Ser Val Glu Glu Ile Pro Asn Pro Tyr Trp Val
 1 5 10 15

Pro Pro His Pro Gln Ser Ala Ala Ala Gly Ala Val Ala Ala Pro Ala
 20 25 30

Gly Glu Ala Ala Gly Leu Met Asn Arg Cys Pro Ser Glu Trp Tyr Phe
 35 40 45

Gln Lys Phe Leu Glu Glu Ala Val Leu Asp Ser Pro Val Pro Val Ala
 50 55 60

Gly Ala Ser Arg Gly Ser Val Gly Ala Gly Val Glu Ala Ala Glu Ser
 65 70 75 80

Lys Thr Pro Gly Ala Ala Ala Arg Ala Ala Ala Ser Ser Ser Val Val
 85 90 95

Asp Pro Val Glu Tyr Asn Ala Met Leu Lys Gln Lys Leu Glu Lys Asp
 100 105 110

Leu Ala Ala Val Ala Leu Trp Arg Ala Ser Gly Ala Ala Pro Pro Asp
 115 120 125

His Ser Pro Ala Gly Ser Ser Leu Pro Ser Val Asp Val Pro His Ala
 130 135 140

Gly Pro Leu Lys Pro Ile Gly Gly Thr Gly Ser Leu Val Gln Asn Lys
 145 150 155 160

Leu Leu Gly Ala Pro Gly Gly Gly Ser Ser Pro His Val Leu Gln Asn
 165 170 175

Ala Asp Ile Pro Val Lys Gln Thr Thr Ser Ser Ser Ser Arg Glu Gln
 180 185 190

Ser Asp Asp Asp Asp Met Glu Gly Asp Ala Glu Thr Ser Gly Asn Gly
195 200 205

Asn Pro Val Gln His Arg Leu Gln Arg Arg Lys Gln Ser Asn Arg Glu
210 215 220

Ser Ala Arg Arg Ser Arg Ser Arg Lys Ala Ala His Leu Asn Glu Leu
225 230 235 240

Glu Ala Gln Val Ser Gln Leu Arg Val Glu Asn Ser Ser Leu Leu Arg
245 250 255

Arg Leu Ala Asp Val Asn Gln Lys Phe Asn Glu Ala Ala Val Asp Asn
260 265 270

Arg Val Leu Lys Ala Asp Val Glu Thr Leu Arg Ala Lys Val Lys Met
275 280 285

Ala Glu Asp Ser Val Lys Arg Val Thr Gly Met Asn Thr Leu Phe Pro
290 295 300

Ala Val Ser Asp Met Ser Ser Leu Ser Met Pro Phe Asn Gly Ser Pro
305 310 315 320

Ser Asp Ser Ala Ser Asp Ala Ala Val Pro Ile Gln Asp Asp Leu Asn
325 330 335

Ser Tyr Phe Ala Asn Pro Ser Glu Ile Gly Gly Ser Asn Gly Tyr Met
340 345 350

Pro Asp Ile Ala Ser Ser Val Gln Glu Asp Asp Asp Phe Val Asn Gly
355 360 365

Ala Gln Val Ala Gly Lys Met Gly Ser Thr Asp Ser Leu Gln Arg Val
370 375 380

Ala Ser Leu Glu His Leu Gln Lys Arg Met Cys Gly Gly Pro Ala Ser
385 390 395 400

Ser Gly Ser Thr Ser
405

<210> 19
<211> 1689
<212> DNA
<213> Zea mays

<400> 19
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tttcagatca aatcctctc ctctcctcc tccccctccc cctctccgag gattctgccc 120
agcagcgcgc gatccgctcg atccggaatg gagcgcgtct tctccatgga ggagatcccc 180

aacccctact	gggccccgcc	gcaccctcaa	ccggcgggccg	gcggcgctgt	tgctgcacca	240
ggtggagtag	gaggagcggg	ggacgaggcg	ggcgcgatga	accggtgccc	atctgagtgg	300
tacttcgaga	agttccttga	ggaggccgtg	ctcgacagtc	cgggtcccgt	cgccggcgtg	360
ggtagaagca	gcggacaagc	tggagttgag	gcggcgggaga	gcaagccgct	gggcgccgcg	420
gcgccggcgt	ccgtctcgag	ctcggtcgtt	gaccccgctc	agtacaacgc	gatgctcaag	480
cagaagctgg	agaaggacct	cgctgccatc	gctatgtgga	gggcttctgg	tgcagcacct	540
ccagatcttt	ctgcgactgc	tgttcccttg	ccaagtgtcg	gtgttccgca	tgcagctcct	600
cttaaaccgc	tcggaggtac	tgaaagtcta	gttcaaaaca	tgctagctgg	tgctccagta	660
gggggggtcag	gtccacatat	agtacaaatt	gctgatatcc	ctgttaagca	aaccactagc	720
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aatggaaacc	ctgttcaaca	aagacaacag	agaaggaagc	aatccaatcg	ggaatcagcc	840
aggcgttcga	gaagcagaaa	ggcggctcac	ttgaatgaac	tggaggcaca	ggtagcacag	900
ttaagagtcg	aaaactcttc	gctgctaagg	cggcttgctg	atgttaacca	gaagttcaat	960
gaagctgctg	ttgacaatag	ggtgctaaag	gcagacgtcg	aaaccttaag	agcaaagggtg	1020
aagatggcag	aggactcggg	gaagcgggta	acaggcatga	acgcattgta	ccctgccgtg	1080
tcggatatgt	cttccctcag	catgccattc	aatggctccc	cttctgactc	cgctctgat	1140
agcaccgtcc	cgggtacaaga	tgacctgaac	agttacttcg	ccaacccaag	cgaaatcgga	1200
ggcaacaacg	gttacatgcc	agatatagcc	tcctcggttc	aacaggacga	caattttgtc	1260
aacgggtatc	aggctgctgg	caagatgggc	agaacagact	cgctgcagcg	ggtggcaagc	1320
ctggagcacc	tccagaaaag	aatgtgcgga	ggccccgctt	catccggctc	gacctcctag	1380
gtttcatatg	aaaaagtccc	tggtgcctaa	cggcaagaat	gctaaattaa	caatttcaac	1440
atgctttgta	ctggacattg	ataatcctgc	gatgcgcatt	agtgcgttat	gacttgtggg	1500
tcaattgcta	tttggcgtgt	gctggctcgt	cactgtagtg	agctgaacaa	gttccagttt	1560
ctatcgaaga	gcaacctctc	cttttcgcta	gtgacttatg	aatggtcgat	ggtttattag	1620
caacattgtg	tctttcgcaa	gttcagtaat	gaatggtcga	ccagggatga	aaataaataa	1680
cttataaag						1689

<210> 20
 <211> 410
 <212> PRT
 <213> Zea mays

<400> 20

Met	Glu	Arg	Val	Phe	Ser	Met	Glu	Glu	Ile	Pro	Asn	Pro	Tyr	Trp	Ala
1				5					10					15	

Pro	Pro	His	Pro	Gln	Pro	Ala	Ala	Gly	Gly	Ala	Val	Ala	Ala	Pro	Gly
			20					25					30		

Gly	Val	Gly	Gly	Ala	Gly	Asp	Glu	Ala	Gly	Ala	Met	Asn	Arg	Cys	Pro
		35					40					45			

Ser Glu Trp Tyr Phe Glu Lys Phe Leu Glu Glu Ala Val Leu Asp Ser
 50 55 60
 Pro Gly Pro Val Ala Gly Val Gly Arg Ser Ser Gly Gln Ala Gly Val
 65 70 75 80
 Glu Ala Ala Glu Ser Lys Pro Leu Gly Ala Ala Ala Pro Ala Ser Val
 85 90 95
 Ser Ser Ser Val Val Asp Pro Val Glu Tyr Asn Ala Met Leu Lys Gln
 100 105 110
 Lys Leu Glu Lys Asp Leu Ala Ala Ile Ala Met Trp Arg Ala Ser Gly
 115 120 125
 Ala Ala Pro Pro Asp Leu Ser Ala Thr Ala Ala Ser Leu Pro Ser Val
 130 135 140
 Gly Val Pro His Ala Ala Pro Leu Lys Pro Val Gly Gly Thr Glu Ser
 145 150 155 160
 Leu Val Gln Asn Met Leu Ala Gly Ala Pro Val Gly Gly Ser Gly Pro
 165 170 175
 His Ile Val Gln Ile Ala Asp Ile Pro Val Lys Gln Thr Thr Ser Ser
 180 185 190
 Ser Ser Arg Glu Gln Ser Asp Asp Asp Asp Met Glu Gly Asp Ala Glu
 195 200 205
 Thr Asn Gly Asn Gly Asn Pro Val Gln Gln Arg Gln Gln Arg Arg Lys
 210 215 220
 Gln Ser Asn Arg Glu Ser Ala Arg Arg Ser Arg Ser Arg Lys Ala Ala
 225 230 235 240
 His Leu Asn Glu Leu Glu Ala Gln Val Ala Gln Leu Arg Val Glu Asn
 245 250 255
 Ser Ser Leu Leu Arg Arg Leu Ala Asp Val Asn Gln Lys Phe Asn Glu
 260 265 270
 Ala Ala Val Asp Asn Arg Val Leu Lys Ala Asp Val Glu Thr Leu Arg
 275 280 285
 Ala Lys Val Lys Met Ala Glu Asp Ser Val Lys Arg Val Thr Gly Met
 290 295 300
 Asn Ala Leu Tyr Pro Ala Val Ser Asp Met Ser Ser Leu Ser Met Pro
 305 310 315 320

Phe Asn Gly Ser Pro Ser Asp Ser Ala Ser Asp Ser Thr Val Pro Val
 325 330 335

Gln Asp Asp Leu Asn Ser Tyr Phe Ala Asn Pro Ser Glu Ile Gly Gly
 340 345 350

Asn Asn Gly Tyr Met Pro Asp Ile Ala Ser Ser Val Gln Gln Asp Asp
 355 360 365

Asn Phe Val Asn Gly Tyr Gln Ala Ala Gly Lys Met Gly Arg Thr Asp
 370 375 380

Ser Leu Gln Arg Val Ala Ser Leu Glu His Leu Gln Lys Arg Met Cys
 385 390 395 400

Gly Gly Pro Ala Ser Ser Gly Ser Thr Ser
 405 410

<210> 21
 <211> 640
 <212> DNA
 <213> Secale cereale

<400> 21
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 tgttaaaagc agatgttgaa accttaagag caaagggtgaa gatggccgag gactcgggtga 180
 agcgggtgac aggcgtgagc gctctgttcc ctgcaggctc tgacatgtca tccctcagca 240
 tgcccttcac cggtcccca tcagaagcca catccgacgc ggctgtccca gacgacctta 300
 gtgcttactt ctccacaagc gaggccggag gcaacaacgg atacatgcct gagatggctt 360
 cctcggcaca agaggatgac aatttcctca acgaggccat ggataccggc aagatgggca 420
 gacctgactc gctgcatcgt gtggcgagcc tggagcacct ccagcagagg atgtgcggtg 480
 gaccggcttc atccggatcg acctcgtagg agcagccagc ttcttcgaga caggaagtcc 540
 caagaagtga ttattgggca gacacatatc ttgggtggtg atgttgataa tcctatgcta 600
 tttgttcttt ggctgtgacc tctagtgtcc tcgttgctat 640

<210> 22
 <211> 168
 <212> PRT
 <213> Secale cereale

<400> 22
 Ala His Leu Asn Glu Leu Glu Ala Gln Val Ser Gln Leu Arg Val Glu
 1 5 10 15

Asn Ser Ser Leu Leu Arg Arg Leu Ala Asp Val Asn Gln Lys Tyr Asn
 20 25 30

Gly Ala Ala Val Asp Asn Arg Val Leu Lys Ala Asp Val Glu Thr Leu
 35 40 45

Arg Ala Lys Val Lys Met Ala Glu Asp Ser Val Lys Arg Val Thr Gly
 50 55 60
 Val Ser Ala Leu Phe Pro Ala Gly Ser Asp Met Ser Ser Leu Ser Met
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 Pro Phe Thr Gly Ser Pro Ser Glu Ala Thr Ser Asp Ala Ala Val Pro
 85 90 95
 Asp Asp Leu Ser Ala Tyr Phe Ser Thr Ser Glu Ala Gly Gly Asn Asn
 100 105 110
 Gly Tyr Met Pro Glu Met Ala Ser Ser Ala Gln Glu Asp Asp Asn Phe
 115 120 125
 Leu Asn Glu Ala Met Asp Thr Gly Lys Met Gly Arg Pro Asp Ser Leu
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sargaygasr ayttystcaa ygrsdmymwg ghycyrgca agatkggcmg vmchgmytcg	1200
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Pge

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