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<220>
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<220>
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 <223> His-Tag

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Lys Leu Leu Glu Ala Ala Arg Ala Gly Gln Asp Asp Glu Val Arg Ile
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Leu Met Ala Asn Gly Ala Asp Val Asn Ala Thr Asp Asn Asp Gly Tyr
 35 40 45

Thr Pro Leu His Leu Ala Ala Ser Asn Gly His Leu Glu Ile Val Glu
 50 55 60

Val Leu Leu Lys Asn Gly Ala Asp Val Asn Ala Ser Asp Leu Thr Gly
 65 70 75 80

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

Glu Val Leu Leu Lys His Gly Ala Asp Val Asn Ala Tyr Asp Asn Asp
 100 105 110

Gly His Thr Pro Leu His Leu Ala Ala Lys Tyr Gly His Leu Glu Ile

115

120

125

Val Glu Val Leu Leu Lys His Gly Ala Asp Val Asn Ala Gln Asp Lys
 130 135 140

Phe Gly Lys Thr Ala Phe Asp Ile Ser Ile Asp Asn Gly Asn Glu Asp
 145 150 155 160

Leu Ala Glu Ile Leu Gln
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 gctaagtatg gtcacctgga aatcggtgaa gttctgctga agcacgggtg tgacgttaac 420
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<210> 3
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 <223> His-tagged Ankyrin repeat protein + IPP

<220>
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 <222> (5)..(10)
 <223> His-Tag

<220>
 <221> PEPTIDE
 <222> (109)..(111)
 <223> IPP

<400> 3

Met Arg Gly Ser His His His His His His Gly Ser Asp Leu Gly Lys
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Lys Leu Leu Glu Ala Ala Arg Ala Gly Gln Asp Asp Glu Val Arg Ile
 20 25 30

Leu Met Ala Asn Gly Ala Asp Val Asn Ala Thr Asp Asn Asp Gly Tyr
 35 40 45

Thr Pro Leu His Leu Ala Ala Ser Asn Gly His Leu Glu Ile Val Glu
 50 55 60

Val Leu Leu Lys Asn Gly Ala Asp Val Asn Ala Ser Asp Leu Thr Gly
 65 70 75 80

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

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

Asp Asn Asp Gly His Thr Pro Leu His Leu Ala Ala Lys Tyr Gly His
 115 120 125

Leu Glu Ile Val Glu Val Leu Leu Lys His Gly Ala Asp Val Asn Ala
 130 135 140

Gln Asp Lys Phe Gly Lys Thr Ala Phe Asp Ile Ser Ile Asp Asn Gly
 145 150 155 160

Asn Glu Asp Leu Ala Glu Ile Leu Gln
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 <223> His-Tag encoding region

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 <223> Peptide IPP encoding region

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 aacgctactg acaatgatgg ttataactccg ctgcacctgg ctgctttctaa tggtcacctg 180
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 aagcacgggtg ctgacgttaa cgctatcccg ccgtatgaca atgatgggtca tactccgctg 360
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 aagaacgggtg ctgacgttaa cgcttctgac cttactggta ttactccgct gcacctgggt 240
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 <212> DNA
 <213> Artificial

<220>
 <223> Glucoamylase fragment

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aaccagacag	gatatgatct ctgggaagaa gtcaatggct cgtctttctt taagattgct 660
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<210> 7
<211> 689
<212> PRT
<213> Artificial

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<220>
<223> FLAG-tagged chimeric Glucoamylase-Ankyrin repeat protein
        containing IPP

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<220>
<221> DOMAIN
<222> (1)..(523)
<223> Glucoamylase fragment

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<220>
<221> DOMAIN
<222> (524)..(681)
<223> Ankyrin repeat protein comprising IPP

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<220>
<221> PEPTIDE
<222> (621)..(623)
<223> IPP

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<220>
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<222> (682)..(689)
<223> FLAG-Tag

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<400> 7

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Leu Ala Asn Val Ile Ser Lys Arg Ala Thr Leu Asp Ser Trp Leu Ser
          20           25           30

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Asn Glu Ala Thr Val Ala Arg Thr Ala Ile Leu Asn Asn Ile Gly Ala
 35 40 45

Asp Gly Ala Trp Val Ser Gly Ala Asp Ser Gly Ile Val Val Ala Ser
 50 55 60

Pro Ser Thr Asp Asn Pro Asp Tyr Phe Tyr Thr Trp Thr Arg Asp Ser
 65 70 75 80

Gly Leu Val Leu Lys Thr Leu Val Asp Leu Phe Arg Asn Gly Asp Thr
 85 90 95

Ser Leu Leu Ser Thr Ile Glu Asn Tyr Ile Ser Ala Gln Ala Ile Val
 100 105 110

Gln Gly Ile Ser Asn Pro Ser Gly Asp Leu Ser Ser Gly Ala Gly Leu
 115 120 125

Gly Glu Pro Lys Phe Asn Val Asp Glu Thr Ala Tyr Thr Gly Ser Trp
 130 135 140

Gly Arg Pro Gln Arg Asp Gly Pro Ala Leu Arg Ala Thr Ala Met Ile
 145 150 155 160

Gly Phe Gly Gln Trp Leu Leu Asp Asn Gly Tyr Thr Ser Thr Ala Thr
 165 170 175

Asp Ile Val Trp Pro Leu Val Arg Asn Asp Leu Ser Tyr Val Ala Gln
 180 185 190

Tyr Trp Asn Gln Thr Gly Tyr Asp Leu Trp Glu Glu Val Asn Gly Ser
 195 200 205

Ser Phe Phe Thr Ile Ala Val Gln His Arg Ala Leu Val Glu Gly Ser
 210 215 220

Ala Phe Ala Thr Ala Val Gly Ser Ser Cys Ser Trp Cys Asp Ser Gln
 225 230 235 240

Ala Pro Glu Ile Leu Cys Tyr Leu Gln Ser Phe Trp Thr Gly Ser Phe
 245 250 255

Ile Leu Ala Asn Phe Asp Ser Ser Arg Ser Gly Lys Asp Ala Asn Thr

260	265	270
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Ser Thr Phe Gln Pro Cys Ser Pro Arg Ala Leu Ala Asn His Lys Glu		
290	295	300
Val Val Asp Ser Phe Arg Ser Ile Tyr Thr Leu Asn Asp Gly Leu Ser		
305	310	315
Asp Ser Glu Ala Val Ala Val Gly Arg Tyr Pro Glu Asp Thr Tyr Tyr		
325	330	335
Asn Gly Asn Pro Trp Phe Leu Cys Thr Leu Ala Ala Ala Glu Gln Leu		
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Tyr Asp Ala Leu Tyr Gln Trp Asp Lys Gln Gly Ser Leu Glu Val Thr		
355	360	365
Asp Val Ser Leu Asp Phe Phe Lys Ala Leu Tyr Ser Asp Ala Ala Thr		
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Gly Thr Tyr Ser Ser Ser Ser Ser Thr Tyr Ser Ser Ile Val Asp Ala		
385	390	395
Val Lys Thr Phe Ala Asp Gly Phe Val Ser Ile Val Glu Thr His Ala		
405	410	415
Ala Ser Asn Gly Ser Met Ser Glu Gln Tyr Asp Lys Ser Asp Gly Glu		
420	425	430
Gln Leu Ser Ala Arg Asp Leu Thr Trp Ser Tyr Ala Ala Leu Leu Thr		
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Ala Asn Asn Arg Arg Asn Ser Val Val Pro Ala Ser Trp Gly Glu Thr		
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Ser Ala Ser Ser Val Pro Gly Thr Cys Ala Ala Thr Ser Ala Ile Gly		
465	470	475
Thr Tyr Ser Ser Val Thr Val Thr Ser Trp Pro Ser Ile Val Ala Thr		
485	490	495

Gly Gly Thr Thr Thr Thr Ala Thr Pro Thr Gly Ser Gly Ser Val Thr
500 505 510

Ser Thr Ser Lys Thr Thr Ala Thr Ala Ser Lys Ser Asp Leu Gly Lys
515 520 525

Lys Leu Leu Glu Ala Ala Arg Ala Gly Gln Asp Asp Glu Val Arg Ile
530 535 540

Leu Met Ala Asn Gly Ala Asp Val Asn Ala Thr Asp Asn Asp Gly Tyr
545 550 555 560

Thr Pro Leu His Leu Ala Ala Ser Asn Gly His Leu Glu Ile Val Glu
565 570 575

Val Leu Leu Lys Asn Gly Ala Asp Val Asn Ala Ser Asp Leu Thr Gly
580 585 590

Ile Thr Pro Leu His Leu Ala Ala Ala Thr Gly His Leu Glu Ile Val
595 600 605

Glu Val Leu Leu Lys His Gly Ala Asp Val Asn Ala Ile Pro Pro Tyr
610 615 620

Asp Asn Asp Gly His Thr Pro Leu His Leu Ala Ala Lys Tyr Gly His
625 630 635 640

Leu Glu Ile Val Glu Val Leu Leu Lys His Gly Ala Asp Val Asn Ala
645 650 655

Gln Asp Lys Phe Gly Lys Thr Ala Phe Asp Ile Ser Ile Asp Asn Gly
660 665 670

Asn Glu Asp Leu Ala Glu Ile Leu Gln Asp Tyr Lys Asp Asp Asp Asp
675 680 685

Lys

<210> 8
<211> 2070
<212> DNA

<213> Artificial

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<223> DNA encoding FLAG-tagged chimeric Glucoamylase-Ankyrin repeat protein containing IPP

<220>

<221> misc_feature

<222> (1)..(1569)

<223> Region encoding glucoamylase fragment

<220>

<221> misc_feature

<222> (1570)..(2043)

<223> Region encoding Ankyrin repeat protein comprising IPP

<220>

<221> misc_feature

<222> (1861)..(1869)

<223> Fragment encoding peptide IPP

<220>

<221> misc_feature

<222> (2044)..(2067)

<223> Fragment encoding FLAG-Tag

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<213> Artificial

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<210> 11
<211> 689
<212> PRT
<213> Artificial

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<223> FLAG-tagged designed chimeric ankyrin repeat protein containing
IPP

<220>

<221> Domain
<222> (1)..(523)
<223> Glucoamylase fragment

<220>

<221> Domain
<222> (524)..(681)
<223> Ankyrin fragment

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<221> Peptide
<222> (621)..(623)
<223> IPP

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<221> SITE
<222> (682)..(689)
<223> FLAG-Tag

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Leu Ala Asn Val Ile Ser Lys Arg Ala Thr Leu Asp Ser Trp Leu Ser
20 25 30

Asn Glu Ala Thr Val Ala Arg Thr Ala Ile Leu Asn Asn Ile Gly Ala
35 40 45

Asp Gly Ala Trp Val Ser Gly Ala Asp Ser Gly Ile Val Val Ala Ser
50 55 60

Pro Ser Thr Asp Asn Pro Asp Tyr Phe Tyr Thr Trp Thr Arg Asp Ser
 65 70 75 80

Gly Leu Val Leu Lys Thr Leu Val Asp Leu Phe Arg Asn Gly Asp Thr
 85 90 95

Ser Leu Leu Ser Thr Ile Glu Asn Tyr Ile Ser Ala Gln Ala Ile Val
 100 105 110

Gln Gly Ile Ser Asn Pro Ser Gly Asp Leu Ser Ser Gly Ala Gly Leu
 115 120 125

Gly Glu Pro Lys Phe Asn Val Asp Glu Thr Ala Tyr Thr Gly Ser Trp
 130 135 140

Gly Arg Pro Gln Arg Asp Gly Pro Ala Leu Arg Ala Thr Ala Met Ile
 145 150 155 160

Gly Phe Gly Gln Trp Leu Leu Asp Asn Gly Tyr Thr Ser Thr Ala Thr
 165 170 175

Asp Ile Val Trp Pro Leu Val Arg Asn Asp Leu Ser Tyr Val Ala Gln
 180 185 190

Tyr Trp Asn Gln Thr Gly Tyr Asp Leu Trp Glu Glu Val Asn Gly Ser
 195 200 205

Ser Phe Phe Thr Ile Ala Val Gln His Arg Ala Leu Val Glu Gly Ser
 210 215 220

Ala Phe Ala Thr Ala Val Gly Ser Ser Cys Ser Trp Cys Asp Ser Gln
 225 230 235 240

Ala Pro Glu Ile Leu Cys Tyr Leu Gln Ser Phe Trp Thr Gly Ser Phe
 245 250 255

Ile Leu Ala Asn Phe Asp Ser Ser Arg Ser Gly Lys Asp Ala Asn Thr
 260 265 270

Leu Leu Gly Ser Ile His Thr Phe Asp Pro Glu Ala Ala Cys Asp Asp
 275 280 285

Ser Thr Phe Gln Pro Cys Ser Pro Arg Ala Leu Ala Asn His Lys Glu

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Gly 500	Gly 500	Thr 500	Thr 500	Thr 500	Thr 500	Ala 500	Thr 505	Pro 505	Thr 505	Gly 505	Ser 505	Gly 510	Ser 510	Val 510	Thr 510
Ser 515	Thr 515	Ser 515	Lys 515	Thr 515	Thr 515	Ala 515	Thr 520	Ala 520	Ser 520	Lys 520	Ser 520	Asp 525	Leu 525	Gly 525	Glu 525

Lys Leu Leu Glu Ala Ala Arg Ala Gly Gln Asp Asp Glu Val Arg Ala
530 535 540

Leu Met Ala Asn Gly Ala Asp Val Asn Ala Arg Asp Ser Asp Gly Arg
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Thr Pro Leu His Leu Ala Ala Glu Asn Gly His Leu Glu Ile Val Glu
565 570 575

Leu Leu Leu Lys His Gly Ala Asp Pro Asn Ala Arg Asp Ser Ser Gly
580 585 590

Glu Thr Pro Leu His Leu Ala Ala Glu Asn Gly His Leu Glu Ile Val
595 600 605

Lys Leu Leu Leu Glu His Gly Ala Asp Val Asn Ala Ile Pro Pro Lys
610 615 620

Asp Asn Glu Gly Arg Thr Pro Leu His Leu Ala Ala Glu Asn Gly His
625 630 635 640

Leu Glu Ile Val Glu Leu Leu Leu Lys His Gly Ala Asp Pro Asn Ala
645 650 655

Arg Asp Lys Phe Gly Lys Thr Ala Phe Asp Glu Ser Arg Asp Asn Gly
660 665 670

Asn Glu Asp Leu Ala Lys Ile Leu Gln Asp Tyr Lys Asp Asp Asp Asp
675 680 685

Lys

<210> 12

<211> 2070

<212> DNA

<213> Artificial

<220>

<223> DNA encoding FLAG-tagged designed chimeric ankyrin repeat protein
containing IPP

<220>

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<221> misc_feature
<222> (1)..(1569)
<223> Region encoding Glucoamylase fragment

<220>
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<222> (1570)..(2043)
<223> Region encoding Ankyrin repeat protein comprising IPP

<220>
<221> misc_feature
<222> (1861)..(1869)
<223> Fragment encoding IPP

<220>
<221> misc_feature
<222> (2044)..(2067)
<223> Fragment encoding FLAG-Tag

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gatctgtcca gcggcgctgg tctcggtgaa cccaagttca atgtcgatga gactgcctac      420
actggttctt ggggacggcc gcagcgagat ggtccggctc tgagagcaac tgctatgac      480
ggcttcgggc aatggctgct tgacaatggc tacaccagca ccgcaacgga cattgtttgg      540
cccctcgtaa ggaacgacct gtcgtatgtg gctcaatact ggaaccagac aggatatgat      600
ctctgggaag aagtcaatgg ctctgtcttc ttacgattg ctgtgcaaca ccgcgccctt      660
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gatcctgagg ccgcatgcga cgactccacc ttccagccct gctccccgcg cgcgctcgcc      900
aaccacaagg aggttgtaga ctctttccgc tcaatctata ccctcaacga tgggtctcagt      960
gacagcgagg ctgttgcggt gggtcggtac cctgaggaca cgtactacaa cggcaacccg     1020
tggttcctgt gcaccttggc tgccgcagag cagttgtacg atgctctata ccagtgggac     1080
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```

```

<210> 13
<211> 701
<212> PRT
<213> Artificial

```

```

<220>
<223> FLAG-tagged designed chimeric ankyrin repeat protein containing
      IPP, KexB site and His-tag

```

```

<220>
<221> DOMAIN
<222> (1)..(524)
<223> Glucoamylase fragment including Kex site

```

```

<220>
<221> DOMAIN
<222> (525)..(693)
<223> Ankyrin fragment comprising IPP and His-tag

```

```

<220>
<221> SITE
<222> (529)..(534)

```

<223> His-Tag

<220>

<221> PEPTIDE

<222> (633)..(635)

<223> IPP

<220>

<221> SITE

<222> (694)..(701)

<223> FLAG-Tag

<400> 13

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Asn Glu Ala Thr Val Ala Arg Thr Ala Ile Leu Asn Asn Ile Gly Ala
35 40 45

Asp Gly Ala Trp Val Ser Gly Ala Asp Ser Gly Ile Val Val Ala Ser
50 55 60

Pro Ser Thr Asp Asn Pro Asp Tyr Phe Tyr Thr Trp Thr Arg Asp Ser
65 70 75 80

Gly Leu Val Leu Lys Thr Leu Val Asp Leu Phe Arg Asn Gly Asp Thr
85 90 95

Ser Leu Leu Ser Thr Ile Glu Asn Tyr Ile Ser Ala Gln Ala Ile Val
100 105 110

Gln Gly Ile Ser Asn Pro Ser Gly Asp Leu Ser Ser Gly Ala Gly Leu
115 120 125

Gly Glu Pro Lys Phe Asn Val Asp Glu Thr Ala Tyr Thr Gly Ser Trp
130 135 140

Gly Arg Pro Gln Arg Asp Gly Pro Ala Leu Arg Ala Thr Ala Met Ile
145 150 155 160

Gly Phe Gly Gln Trp Leu Leu Asp Asn Gly Tyr Thr Ser Thr Ala Thr
165 170 175

Asp Ile Val Trp Pro Leu Val Arg Asn Asp Leu Ser Tyr Val Ala Gln
 180 185 190

Tyr Trp Asn Gln Thr Gly Tyr Asp Leu Trp Glu Glu Val Asn Gly Ser
 195 200 205

Ser Phe Phe Thr Ile Ala Val Gln His Arg Ala Leu Val Glu Gly Ser
 210 215 220

Ala Phe Ala Thr Ala Val Gly Ser Ser Cys Ser Trp Cys Asp Ser Gln
 225 230 235 240

Ala Pro Glu Ile Leu Cys Tyr Leu Gln Ser Phe Trp Thr Gly Ser Phe
 245 250 255

Ile Leu Ala Asn Phe Asp Ser Ser Arg Ser Gly Lys Asp Ala Asn Thr
 260 265 270

Leu Leu Gly Ser Ile His Thr Phe Asp Pro Glu Ala Ala Cys Asp Asp
 275 280 285

Ser Thr Phe Gln Pro Cys Ser Pro Arg Ala Leu Ala Asn His Lys Glu
 290 295 300

Val Val Asp Ser Phe Arg Ser Ile Tyr Thr Leu Asn Asp Gly Leu Ser
 305 310 315 320

Asp Ser Glu Ala Val Ala Val Gly Arg Tyr Pro Glu Asp Thr Tyr Tyr
 325 330 335

Asn Gly Asn Pro Trp Phe Leu Cys Thr Leu Ala Ala Ala Glu Gln Leu
 340 345 350

Tyr Asp Ala Leu Tyr Gln Trp Asp Lys Gln Gly Ser Leu Glu Val Thr
 355 360 365

Asp Val Ser Leu Asp Phe Phe Lys Ala Leu Tyr Ser Asp Ala Ala Thr
 370 375 380

Gly Thr Tyr Ser Ser Ser Ser Ser Thr Tyr Ser Ser Ile Val Asp Ala
 385 390 395 400

Val Lys Thr Phe Ala Asp Gly Phe Val Ser Ile Val Glu Thr His Ala
 405 410 415

Ala Ser Asn Gly Ser Met Ser Glu Gln Tyr Asp Lys Ser Asp Gly Glu
 420 425 430

Gln Leu Ser Ala Arg Asp Leu Thr Trp Ser Tyr Ala Ala Leu Leu Thr
 435 440 445

Ala Asn Asn Arg Arg Asn Ser Val Val Pro Ala Ser Trp Gly Glu Thr
 450 455 460

Ser Ala Ser Ser Val Pro Gly Thr Cys Ala Ala Thr Ser Ala Ile Gly
 465 470 475 480

Thr Tyr Ser Ser Val Thr Val Thr Ser Trp Pro Ser Ile Val Ala Thr
 485 490 495

Gly Gly Thr Thr Thr Thr Ala Thr Pro Thr Gly Ser Gly Ser Val Thr
 500 505 510

Ser Thr Ser Lys Thr Thr Ala Thr Ala Ser Lys Arg Met Arg Gly Ser
 515 520 525

His His His His His His Gly Ser Asp Leu Gly Glu Lys Leu Leu Glu
 530 535 540

Ala Ala Arg Ala Gly Gln Asp Asp Glu Val Arg Ala Leu Met Ala Asn
 545 550 555 560

Gly Ala Asp Val Asn Ala Arg Asp Ser Asp Gly Arg Thr Pro Leu His
 565 570 575

Leu Ala Ala Glu Asn Gly His Leu Glu Ile Val Glu Leu Leu Leu Lys
 580 585 590

His Gly Ala Asp Pro Asn Ala Arg Asp Ser Ser Gly Glu Thr Pro Leu
 595 600 605

His Leu Ala Ala Glu Asn Gly His Leu Glu Ile Val Lys Leu Leu Leu
 610 615 620

Glu His Gly Ala Asp Val Asn Ala Ile Pro Pro Lys Asp Asn Glu Gly

625 630 635 640
 Arg Thr Pro Leu His Leu Ala Ala Glu Asn Gly His Leu Glu Ile Val
 645 650 655
 Glu Leu Leu Leu Lys His Gly Ala Asp Pro Asn Ala Arg Asp Lys Phe
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<210> 14
 <211> 2106
 <212> DNA
 <213> Artificial

<220>
 <223> Designed chimeric ankyrin repeat protein containing IPP, KexB
 site and His-tag N.A.

<220>
 <221> misc_feature
 <222> (1)..(1572)
 <223> Region encoding glucoamylase fragment and Kex site

<220>
 <221> misc_feature
 <222> (1573)..(2079)
 <223> Region encoding Ankyrin repeat protein comprising IPP and His-tag

<220>
 <221> misc_feature
 <222> (1585)..(1602)
 <223> Region encoding His-tag

<220>
 <221> misc_feature
 <222> (1897)..(1995)
 <223> Fragment encoding peptide IPP

<220>
 <221> misc_feature
 <222> (2080)..(2103)
 <223> Fragment encoding FLAG-Tag

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