SEQUENCE LISTING

<110> Ubersax, Jeffrey A.
Amyris Biotechnologies, Inc.

<120> METHOD FOR GENERATING A GENETICALLY MODIFIED MICROBE

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<151> 2009-06-01

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Asn Pro Gln Ile Leu Phe Asn Glu Glu Phe Leu Asn Leu Glu Asn Ile
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Phe Gly Cys Val Thr Leu Ala Lys Ala Gln Phe Pro Leu Ser Asn Ile
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Leu Gly Lys Gln His Asp Ile Arg Gly Thr Leu Met Asp Gln Pro Lys
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Asn Gly His Gln Asn Tyr Ile Thr Lys Thr Gln Gly Val Val Ala Ile
                85   90   95
Lys Thr Met Met Thr Lys Leu His Thr Leu Gln Asp Tyr Thr Arg Val
            100   105   110
Arg Glu Ile Lys Phe Ile Leu Ala Ile Pro Ala Asn Asp His Leu Ile
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Gln Ile Phe Glu Val Phe Ile Asp Ser Glu Asn Tyr Gln Leu His Ile
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Ile Leu Ala Gly Leu Lys His Ile His Glu His Asn Phe Phe His Arg
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Asp Leu Lys Pro Glu Asn Ile Leu Ile Thr Pro Ser Thr Gln Tyr Phe
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<212> PRT
<213> Saccharomyces cerevisiae

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Val Gly Pro Pro Phe Glu Leu Val Arg Asp Tyr Cys Pro Val Val Glu
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Ser His Thr Gly Arg Thr Leu Asp Leu Arg Ile Ile Pro Arg Ile Asp
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Arg Gly Phe Asp His Ile Asp Glu Glu Trp Val Gly Tyr Lys Arg Asn
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Tyr Phe Thr Leu Val Ser Thr Phe Glu Thr Ala Asn Cys Asp Leu Asp
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Thr Phe Leu Lys Ser Ser Phe Asp Leu Leu Val Glu Asp Ser Ser Val
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Glu His Glu Asn Ile Phe Lys Val Gly Ser Leu Ala Phe Lys Lys Ile
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Met Glu Gln Asn Tyr Leu Arg Pro Glu Ile Gly Ser Arg Ser Glu Cys
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<213> Saccharomyces cerevisiae

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        35   40   45
Ile Lys His Phe Leu Ser Leu Ala Ala Asn Ser Leu Glu Gln His Gln
    50   55   60
Gln Pro Ile Ser Ile Val Phe Gln Asn Lys Lys Lys Lys Gly Asp Thr
65   70   75   80
Ser Ser Pro Asp Ile His Thr Thr Leu Asp Phe Pro Leu Asn Gly Pro
                85   90   95
His Leu Cys Thr His Gln Phe Lys Leu Lys Arg Cys Ala Ile Leu Leu
            100   105   110
Asn Leu Leu Lys Val Val Met Glu Lys Leu Pro Leu Gly Lys Asn Thr
        115   120   125
Thr Val Arg Asp Ile Phe Tyr Ser Asn Val Glu Leu Phe Gln Arg Gln
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Ala Asn Val Val Gln Trp Leu Asp Val Ile Arg Phe Asn Phe Lys Leu
145   150   155   160
Ser Pro Arg Lys Ser Leu Asn Ile Ile Pro Ala Gln Lys Gly Leu Val
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Tyr Ser Pro Phe Pro Ile Asp Ile Tyr Asp Asn Ile Leu Thr Cys Glu
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        195   200   205
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<213> Saccharomyces cerevisiae

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Phe	Arg	Lys	Lys	Arg	Glu	Arg	Glu	Lys	Arg	Asp	Gln	Ile	Tyr	Asn	Leu
			260					265					270		
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<212> DNA
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Ile Ile Glu Leu Glu Lys Pro Ser Thr Leu Ser Pro Leu Ser Arg Gly
        35                  40                  45
Lys Lys Trp Thr Glu Lys Leu Ala Arg Phe Gln Arg Ser Ser Ala Lys
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Gly Asn Leu Met Asn Thr Pro Ser Thr Val Ser Thr Asp Tyr Leu Pro
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Gln His Pro His Arg Thr Ser Ser Leu Pro Arg Pro Asn Ser Asn Leu
        115                 120                 125
Phe His Ala Ser Asn Ser Asn Leu Ser Arg Ala Asn Glu Pro Pro Arg
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Ala Glu Asn Leu Ser Asp Asn Ile Pro Pro Lys Val Ala Pro Phe Gly
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Tyr Pro Ile Gln Arg Thr Ser Ile Lys Lys Ser Phe Leu Asn Ala Ser
                165                 170                 175
Cys Thr Leu Cys Asp Glu Pro Ile Ser Asn Arg Arg Lys Gly Glu Lys
            180                 185                 190
Ile Ile Glu Leu Ala Cys Gly His Leu Ser His Gln Glu Cys Leu Ile
        195                 200                 205
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Phe Cys Thr Lys Cys Lys Lys Asp Thr Asn Lys Ala Val Gln Cys Ile
225                 230                 235                 240
Pro Glu Asn Asp Glu Leu Lys Asp Ile Leu Ile Ser Asp Phe Leu Ile
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His Lys Ile Pro Asp Ser Glu Leu Ser Ile Thr Pro Gln Ser Arg Phe
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Pro Pro Tyr Ser Pro Leu Leu Pro Pro Phe Gly Leu Ser Tyr Thr Pro
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Leu Thr Thr Ile Ser Ser Ile Leu Ser Leu Lys Arg Glu Lys Pro Asp
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Asn Leu Ala Ile Ile Leu Gln Ile Asp Phe Thr Lys Leu Lys Glu Glu
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Asp Ser Leu Ile Val Ile Tyr Asn Ser Leu Lys Ala Leu Thr Ile Lys
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Phe Ala Arg Leu Gln Phe Cys Phe Val Asp Arg Asn Asn Tyr Val Leu
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Asp Tyr Gly Ser Val Leu His Lys Ile Asp Ser Leu Asp Ser Ile Ser
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Asn Leu Lys Ser Lys Ser Ser Ser Thr Gln Phe Ser Pro Ile Trp Leu
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Lys Asn Thr Leu Tyr Pro Glu Asn Ile His Glu His Leu Gly Ile Val
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Lys Ile Lys Val Gly Tyr Leu Asn Val Asp Tyr Ser Asp Lys Ile Asp
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Glu Leu Val Glu Ala Ser Ser Trp Thr Phe Val Leu Glu Thr Leu Cys
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Tyr Ser Phe Gly Leu Ser Phe Asp Glu Asp Asp Asp Asp Asp Glu Glu
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Asp Asn Asp Asp Ser Thr Asp Asn Glu Leu Asp Asn Ser Ser Gly Leu
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Leu Ser Asp Ala Glu Ser Thr Thr Thr Ile His Ile Asp Ser Pro Phe
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Asp Asn Glu Asn Ala Thr Ala Asn Met Val Asn Asp Arg Asn Leu Leu
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Thr Glu Gly Glu His Ser Asn Ile Glu Asn Leu Glu Thr Val Ala Ser
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Ser Val Gln Pro Ala Leu Ile Pro Asn Ile Arg Phe Ser Leu His Ser
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Glu Glu Glu Gly Thr Asn Glu Asn Glu Asn Glu Asn Asp Met Pro Val
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        35                  40                  45
Leu His Ala Gln Ile Asn Lys Ala Lys His Lys Ile Gln Asp Ala Ser
    50                  55                  60
Leu Phe Gln Met Ala Asn Lys Val Thr Ser Leu Thr Lys Asn Lys Ile
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Ser Ser Thr Leu Val Ala Ser Ala Gly Leu Asn Asn Asn Cys Thr Ile
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Tyr Arg Val Ser Lys Glu Asn Arg Val Ala Gln Asn Val Ala Ser Ile
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            180                 185                 190
Ala His Ile Leu Thr Ala Ser Gly Asp Met Thr Cys Ala Leu Trp Asp
        195                 200                 205
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Val Leu Ala Leu Ala Ile Pro Glu Glu Pro Asn Ser Glu Asn Ser Ser
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Ile Asn Ala Leu Arg Phe Phe Lys Asp Gly Met Ser Ile Val Ala Gly
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Ser Asp Asn Gly Ala Ile Asn Met Tyr Asp Leu Arg Ser Asp Cys Ser
    290                 295                 300
Ile Ala Thr Phe Ser Leu Phe Arg Gly Tyr Glu Glu Arg Thr Pro Thr
305                 310                 315                 320
Pro Thr Tyr Met Ala Ala Asn Met Glu Tyr Asn Thr Ala Gln Ser Pro
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Gln Thr Leu Lys Ser Thr Ser Ser Ser Tyr Leu Asp Asn Gln Gly Val
            340                 345                 350
Val Ser Leu Asp Phe Ser Ala Ser Gly Arg Leu Met Tyr Ser Cys Tyr
        355                 360                 365
Thr Asp Ile Gly Cys Val Val Trp Asp Val Leu Lys Gly Glu Ile Val
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Gly Lys Leu Glu Gly His Gly Gly Arg Val Thr Gly Val Arg Ser Ser
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<210> 21
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<212> DNA
<213> Saccharomyces cerevisiae

<400> 21

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<211> 110
<212> PRT
<213> Saccharomyces cerevisiae

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Lys Arg Ile Asn Glu Leu Asn Asn Lys Leu Arg Lys Glu Leu Ser Arg
35 40 45
Glu Arg Ile Thr Ala Ser Asn Ala Cys Leu Thr Ile Ile Asn Tyr Thr
50 55 60
Ser Asn Thr Lys Asp Tyr Thr Leu Pro Glu Leu Trp Gly Tyr Pro Val
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Ala Gly Ser Asn His Phe Ile Glu Gly Leu Lys Asn Ala Gln Lys Asn
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<211> 4067
<212> DNA
<213> Saccharomyces cerevisiae

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<211> 688
<212> PRT
<213> Saccharomyces cerevisiae

<400> 24

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Val Glu Glu Ser Leu Arg Leu Ile Gly Asp Leu Lys Phe Phe Leu Ala
        35                  40                  45
Thr Ala Pro Val Asn Trp Gln Glu Asn Gln Ile Ile Arg Arg Tyr Tyr
    50                  55                  60
Leu Asn Ser Gly Gln Gly Phe Val Ser Cys Val Phe Trp Asn Asn Leu
65                  70                  75                  80
Tyr Tyr Ile Thr Gly Thr Asp Ile Val Lys Cys Cys Leu Tyr Arg Met
                85                  90                  95
Gln Lys Phe Gly Arg Glu Val Val Gln Lys Lys Lys Phe Glu Glu Gly
            100                 105                 110
Ile Phe Ser Asp Leu Arg Asn Leu Lys Cys Gly Ile Asp Ala Thr Leu
        115                 120                 125
Glu Gln Pro Lys Ser Glu Phe Leu Ser Phe Leu Phe Arg Asn Met Cys
    130                 135                 140
Leu Lys Thr Gln Lys Lys Gln Lys Val Phe Phe Trp Phe Ser Val Ala
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His Asp Lys Leu Phe Ala Asp Ala Leu Glu Arg Asp Leu Lys Arg Glu
                165                 170                 175
Ser Leu Asn Gln Pro Ser Thr Thr Lys Pro Val Asn Glu Pro Ala Leu
            180                 185                 190
Ser Phe Ser Tyr Asp Ser Ser Ser Asp Lys Pro Leu Tyr Asp Gln Leu
        195                 200                 205
Leu Gln His Leu Asp Ser Arg Arg Pro Ser Ser Thr Thr Lys Ser Asp
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Asn Ser Pro Pro Lys Leu Glu Ser Glu Asn Phe Lys Asp Asn Glu Leu
225                 230                 235                 240
Val Thr Val Thr Asn Gln Pro Leu Leu Gly Val Gly Leu Met Asp Asp
                245                 250                 255
Asp Ala Pro Glu Ser Pro Ser Gln Ile Asn Asp Phe Ile Pro Gln Lys
            260                 265                 270
Leu Ile Ile Glu Pro Asn Thr Leu Glu Leu Asn Gly Leu Thr Glu Glu
        275                 280                 285
Thr Pro His Asp Leu Pro Lys Asn Thr Ala Lys Gly Arg Asp Glu Glu
    290                 295                 300
Asp Phe Pro Leu Asp Tyr Phe Pro Val Ser Val Glu Tyr Pro Thr Glu
305                 310                 315                 320
Glu Asn Ala Phe Asp Pro Phe Pro Pro Gln Ala Phe Thr Pro Ala Ala
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Pro Ser Met Pro Ile Ser Tyr Asp Asn Val Asn Glu Arg Asp Ser Met
            340                 345                 350
Pro Val Asn Ser Leu Leu Asn Arg Tyr Pro Tyr Gln Leu Ser Val Ala
        355                 360                 365
Pro Thr Phe Pro Val Pro Pro Ser Ser Ser Arg Gln His Phe Met Thr
    370                 375                 380
Asn Arg Asp Phe Tyr Ser Ser Asn Asn Asn Lys Glu Lys Leu Val Ser
385                 390                 395                 400
Pro Ser Asp Pro Thr Ser Tyr Met Lys Tyr Asp Glu Pro Val Met Asp
                405                 410                 415
Phe Asp Glu Ser Arg Pro Asn Glu Asn Cys Thr Asn Ala Lys Ser His
            420                 425                 430
Asn Ser Gly Gln Gln Thr Lys Gln His Gln Leu Tyr Ser Asn Asn Phe
        435                 440                 445
Gln Gln Ser Tyr Pro Asn Gly Met Val Pro Gly Tyr Tyr Pro Lys Met
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Gly Ala Asp Asp Phe Phe Phe Pro Pro Glu Gly Cys Asp Asn Asn Met
                485                 490                 495
Leu Tyr Pro Gln Thr Ala Thr Ser Trp Asn Val Leu Pro Pro Gln Ala
            500                 505                 510
Met Gln Pro Ala Pro Thr Tyr Val Gly Arg Pro Tyr Thr Pro Asn Tyr
        515                 520                 525
Arg Ser Thr Pro Gly Ser Ala Met Phe Pro Tyr Met Gln Ser Ser Asn
    530                 535                 540
Ser Met Gln Trp Asn Thr Ala Val Ser Pro Tyr Ser Ser Arg Ala Pro
545                 550                 555                 560
Ser Thr Thr Ala Lys Asn Tyr Pro Pro Ser Thr Phe Tyr Ser Gln Asn
                565                 570                 575
Ile Asn Gln Tyr Pro Arg Arg Arg Thr Val Gly Met Lys Ser Ser Gln
            580                 585                 590
Gly Asn Val Pro Thr Gly Asn Lys Gln Ser Val Gly Lys Ser Ala Lys
        595                 600                 605
Ile Ser Lys Pro Leu His Ile Lys Thr Ser Ala Tyr Gln Lys Gln Tyr
    610                 615                 620
Lys Ile Asn Leu Glu Thr Lys Ala Arg Pro Ser Ala Gly Asp Glu Asp
625                 630                 635                 640
Ser Ala His Pro Asp Lys Asn Lys Glu Ile Ser Met Pro Thr Pro Asp
                645                 650                 655
Ser Asn Thr Leu Val Val Gln Ser Glu Glu Gly Gly Ala His Ser Leu
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Glu Val Asp Thr Asn Arg Arg Ser Asp Lys Asn Leu Pro Asp Ala Thr
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<210> 25
<211> 3548
<212> DNA
<213> Saccharomyces cerevisiae

<400> 25

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<210> 26
<211> 515
<212> PRT
<213> Saccharomyces cerevisiae

<400> 26

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            20                  25                  30
Thr Glu Thr His Gln Gly Gln Ser Arg Ile Glu Gly His Val Met Ser
        35                  40                  45
Asn Ile Asn Ala Ile Gln Asn Asn Ser Asn Leu Phe Leu Arg Arg Gly
    50                  55                  60
Ile Lys Lys Lys Leu Thr Leu Asp Ala Phe Gly Asp Asp Gln Ala Ile
65                  70                  75                  80
Ser Lys Pro Asn Thr Val Val Ile Gln Gln Pro Gln Asn Glu Pro Val
                85                  90                  95
Leu Val Leu Ser Ser Leu Ser Gln Ser Pro Cys Val Ser Ser Ser Ser
            100                 105                 110
Ser Leu Ser Thr Pro Cys Ile Ile Asp Ala Tyr Ser Asn Asn Phe Gly
        115                 120                 125
Leu Ser Pro Ser Ser Thr Asn Ser Thr Pro Ser Thr Ile Gln Gly Leu
    130                 135                 140
Ser Asn Ile Ala Thr Pro Val Glu Asn Glu His Ser Ile Ser Leu Pro
145                 150                 155                 160
Pro Leu Glu Glu Ser Leu Ser Pro Ala Ala Ala Asp Leu Lys Asp Thr
                165                 170                 175
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Glu Gln Asn Asn Ser Thr Ile Ile Asn Gln Leu Val Arg Glu Leu Ser
225                 230                 235                 240
Ile Val Lys Asn Val Lys Pro His Glu Asn Ile Ile Thr Phe Tyr Gly
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Ala Tyr Tyr Asn Gln His Ile Asn Asn Glu Ile Ile Ile Leu Met Glu
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Tyr Ser Asp Cys Gly Ser Leu Asp Lys Ile Leu Ser Val Tyr Lys Arg
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Phe Val Gln Arg Gly Thr Val Ser Ser Lys Lys Thr Trp Phe Asn Glu
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Val Leu Ile Asn Ser Lys Gly Gln Ile Lys Leu Cys Asp Phe Gly Val
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Ser Lys Lys Leu Ile Asn Ser Ile Ala Asp Thr Phe Val Gly Thr Ser
        355                 360                 365
Thr Tyr Met Ser Pro Glu Arg Ile Gln Gly Asn Val Tyr Ser Ile Lys
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Gly Asp Val Trp Ser Leu Gly Leu Met Ile Ile Glu Leu Val Thr Gly
385                 390                 395                 400
Glu Phe Pro Leu Gly Gly His Asn Asp Thr Pro Asp Gly Ile Leu Asp
                405                 410                 415
Leu Leu Gln Arg Ile Val Asn Glu Pro Ser Pro Arg Leu Pro Lys Asp
            420                 425                 430
Arg Ile Tyr Ser Lys Glu Met Thr Asp Phe Val Asn Arg Cys Cys Ile
        435                 440                 445
Lys Asn Glu Arg Glu Arg Ser Ser Ile His Glu Leu Leu His His Asp
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Leu Ile Met Lys Tyr Val Ser Pro Ser Lys Asp Asp Lys Phe Arg His
465                 470                 475                 480
Trp Cys Arg Lys Ile Lys Ser Lys Ile Lys Glu Asp Lys Arg Ile Lys
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<212> DNA
<213> Saccharomyces cerevisiae

<400> 27

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<212> PRT

<213> Saccharomyces cerevisiae

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Gly Cys Thr Gln Tyr Leu Asp Ser Phe Ile Gln Cys Asn Leu Val Thr
        35                  40                  45
Glu Glu Glu Ile Lys Tyr Leu Asp Lys Asp Ile Leu Ile Ala Leu Gly
    50                  55                  60
Val Asn Lys Ile Gly Asp Arg Leu Lys Ile Leu Arg Lys Ser Lys Ser
65                  70                  75                  80
Phe Gln Arg Asp Lys Arg Ile Glu Gln Val Asn Arg Leu Lys Asn Leu
                85                  90                  95
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Glu Leu Ile Pro Glu Lys His Cys Val Ile Phe Ile Leu Asn Asp Gly
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Ser Asn Gly Glu Val Thr Lys Met Val Gln Asp Tyr Asp Val Phe Val
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Val Thr Ile Cys His Ala Asn Asp Arg Val Glu Lys Asn Arg Leu Ile
        195                 200                 205
Phe Val Ser Lys Asp Gln Thr Pro Ser Asp Lys Ala Ile Ser Thr Ser
    210                 215                 220
Lys Lys Leu Tyr Leu Arg Thr Leu Ser Ala Leu Ser Gln Val Gly Pro
225                 230                 235                 240
Ser Ser Ser Asn Leu Leu Ala Gln Asn Lys Gly Ile Ser His Asn Asn
                245                 250                 255
Ala Glu Gly Lys Leu Arg Ile Asp Asn Thr Glu Lys Asp Arg Ile Arg
            260                 265                 270
Gln Ile Phe Asn Gln Arg Pro Pro Ser Glu Phe Ile Ser Thr Asn Leu
        275                 280                 285
Ala Gly Tyr Phe Pro His Thr Asp Met Lys Arg Leu Gln Lys Thr Met
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        355                 360                 365
Arg Pro Glu Asp Asn Asp Ala Ile Ser Asn Gln Leu Glu Leu Leu Ser
    370                 375                 380
Val Glu Ser Gly Glu Glu Glu Asp His Asp Phe Phe Gly Glu Asp Ser
385                 390                 395                 400
Asp Ile Val Ser Leu Pro Thr Lys Ile Ala Thr Pro Lys Asn Trp Leu
                405                 410                 415
Lys Gly Ala Cys Ile Gly Ser Gly Ser Phe Gly Ser Val Tyr Leu Gly
            420                 425                 430
Met Asn Ala His Thr Gly Glu Leu Met Ala Val Lys Gln Val Glu Ile
        435                 440                 445
Lys Asn Asn Asn Ile Gly Val Pro Thr Asp Asn Asn Lys Gln Ala Asn
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Ser Asp Glu Asn Asn Glu Gln Glu Glu Gln Gln Glu Lys Ile Glu Asp
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        515                 520                 525
Leu Asn Ile Phe Leu Glu Tyr Val Pro Gly Gly Ser Val Ser Ser Met
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Leu Asn Asn Tyr Gly Pro Phe Glu Glu Ser Leu Ile Thr Asn Phe Thr
545                 550                 555                 560
Arg Gln Ile Leu Ile Gly Val Ala Tyr Leu His Lys Lys Asn Ile Ile
                565                 570                 575
His Arg Asp Ile Lys Gly Ala Asn Ile Leu Ile Asp Ile Lys Gly Cys
            580                 585                 590
Val Lys Ile Thr Asp Phe Gly Ile Ser Lys Lys Leu Ser Pro Leu Asn
        595                 600                 605
Lys Lys Gln Asn Lys Arg Ala Ser Leu Gln Gly Ser Val Phe Trp Met
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Ser Pro Glu Val Val Lys Gln Thr Ala Thr Thr Ala Lys Ala Asp Ile
625                 630                 635                 640
Trp Ser Thr Gly Cys Val Val Ile Glu Met Phe Thr Gly Lys His Pro
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Phe Pro Asp Phe Ser Gln Met Gln Ala Ile Phe Lys Ile Gly Thr Asn
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Thr Thr Pro Glu Ile Pro Ser Trp Ala Thr Ser Glu Gly Lys Asn Phe
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<212> DNA
<213> Saccharomyces cerevisiae

<400> 29

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<210> 30
<211> 360
<212> PRT
<213> Saccharomyces cerevisiae

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

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Tyr Tyr Tyr Pro Leu Glu Ile Ala Phe Asp Val Glu Lys Ser Pro Pro
    290                 295                 300
Pro Ser Leu Gln Lys Leu Asn Ser Lys Glu Leu Glu Phe Leu Lys Lys
305                 310                 315                 320
Leu Asn Ser Lys Leu Ser Arg Tyr Ala Ala Ala Tyr Ser Phe Ser Ser
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<212> DNA
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<400> 31

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Leu Gly Lys Gln His Asp Ile Arg Gly Thr Leu Met Asp Gln Pro Lys
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Lys Thr Met Met Thr Lys Leu His Thr Leu Gln Asp Tyr Thr Arg Val
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Arg Glu Ile Lys Phe Ile Leu Ala Ile Pro Ala Asn Asp His Leu Ile
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Gln Ile Phe Glu Val Phe Ile Asp Ser Glu Asn Tyr Gln Leu His Ile
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Val Met Glu Cys Met Glu Gln Asn Leu Tyr Gln Met Met Lys His Arg
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Ile Leu Ala Gly Leu Lys His Ile His Glu His Asn Phe Phe His Arg
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Asp Leu Lys Pro Glu Asn Ile Leu Ile Thr Pro Ser Thr Gln Tyr Phe
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Cys Val Ala Val Glu Val Thr Val Phe Arg Ala Leu Phe Pro Gly Ala
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Pro Gly Gly Phe Trp Asp Asp Ala Ser Asn Leu Val His Lys Leu Asn
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Gly Asp Asn Val Leu Gly Asp Ala Ser Leu Gly Asp Ser Phe Asn Ser
        595                 600                 605
Met Pro Asp Phe Thr Pro Arg Asn Phe Leu Ile Pro Thr Leu Lys Lys
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35 40 45
Asp Lys Arg Lys Leu Lys Ile Ala Pro Arg Ser Thr Leu Gln Phe Lys
50 55 60
Val Gly Pro Pro Phe Glu Leu Val Arg Asp Tyr Cys Pro Val Val Glu
65 70 75 80
Ser His Thr Gly Arg Thr Leu Asp Leu Arg Ile Ile Pro Arg Ile Asp
85 90 95
Arg Gly Phe Asp His Ile Asp Glu Glu Trp Val Gly Tyr Lys Arg Asn
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Tyr Phe Thr Leu Val Ser Thr Phe Glu Thr Ala Asn Cys Asp Leu Asp
115 120 125
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130 135 140
Glu Ser Arg Leu Arg Val Gln Tyr Phe Ala Ile Lys Ile Lys Ala Lys
145 150 155 160
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Ser Pro Leu Pro Lys His Gln Ile Ile Arg Glu Ala Ser Asn Val Arg
195 200 205
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225 230 235 240
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245 250 255
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Lys Arg Lys Met Pro Ser Met Ala Gln Pro Leu Asn Glu Ser Cys Leu
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Ile Lys His Phe Leu Ser Leu Ala Ala Asn Ser Leu Glu Gln His Gln
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Ile Thr Gln Val Leu Ala Gln Asn Asn Glu Val His Asn Lys Ser Ile
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Gln Leu Leu Ser Leu Asn Gln Arg Asp Tyr Ser Leu Ala Lys Asn Leu
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Phe Arg Met Asp Asn Cys Ser Gly Ser Arg Arg Arg Asp Arg Leu His
    50   55   60
Val Lys Leu Lys Ser Leu Arg Asn Lys Ile His Lys Gln Leu His Pro
65   70   75   80
Asn Cys Arg Phe Asp Asp Ala Thr Lys Thr Ser Asp Asp Lys Cys Val
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Phe Arg Lys Lys Arg Glu Arg Glu Lys Arg Asp Gln Ile Tyr Asn Leu
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Asp Ser Asp Lys Asn Leu Ala Ile Asn Leu Ser Ser Glu Tyr Gly Arg
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        35   40   45
Gly Phe Asp Ile Ser Tyr Ser Glu Leu Cys Glu Lys Ser Pro Ser Pro
    50   55   60
Glu Arg Leu Ser Ser Pro Glu Phe Phe Asn Glu Leu Arg Asn Thr Gly
65   70   75   80
His Tyr Glu Ser Ile Ser Thr Thr Asn Glu Phe Ser Met Ser Ser Ile
                85   90   95
Ser Ser Ser Ser Glu Ser Gln Val Thr Arg Ser Gly Ser Ala Arg Ala
            100   105   110
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Thr Phe Glu Thr Thr Ser Ala Glu Ile Leu Glu Lys Asn Lys Ala Ile
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            180   185   190
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            260   265   270
Arg Asp Leu Val Thr Cys Val Ser Phe Cys Pro Tyr Asn Thr Tyr Phe

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Gln Thr Glu Ser Phe Lys Gly Ile Cys Cys Leu Glu Trp Phe Lys Pro
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Pro Ser Gly Ala Asn Ser Ile Leu Ala Asp Thr Ser Val Ala Leu Ser
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Asp Asn Glu Asn Ala Thr Ala Asn Met Val Asn Asp Arg Asn Leu Leu
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<212> DNA
<213> Saccharomyces cerevisiae

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<211> 423
<212> PRT
<213> Saccharomyces cerevisiae

<400> 48

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Leu His Ala Gln Ile Asn Lys Ala Lys His Lys Ile Gln Asp Ala Ser
    50                  55                  60
Leu Phe Gln Met Ala Asn Lys Val Thr Ser Leu Thr Lys Asn Lys Ile
65                  70                  75                  80
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Asp Phe Arg Trp Ser Arg Asp Ser Lys Arg Ile Leu Ser Ala Ser Gln
            100                 105                 110
Asp Gly Phe Met Leu Ile Trp Asp Ser Ala Ser Gly Leu Lys Gln Asn
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Ala Ile Pro Leu Asp Ser Gln Trp Val Leu Ser Cys Ala Ile Ser Pro
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Ser Asp Asn Gly Ala Ile Asn Met Tyr Asp Leu Arg Ser Asp Cys Ser
    290                 295                 300
Ile Ala Thr Phe Ser Leu Phe Arg Gly Tyr Glu Glu Arg Thr Pro Thr
305                 310                 315                 320
Pro Thr Tyr Met Ala Ala Asn Met Glu Tyr Asn Thr Ala Gln Ser Pro
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Gln Thr Leu Lys Ser Thr Ser Ser Ser Tyr Leu Asp Asn Gln Gly Val
            340                 345                 350
Val Ser Leu Asp Phe Ser Ala Ser Gly Arg Leu Met Tyr Ser Cys Tyr
        355                 360                 365
Thr Asp Ile Gly Cys Val Val Trp Asp Val Leu Lys Gly Glu Ile Val
    370                 375                 380
Gly Lys Leu Glu Gly His Gly Gly Arg Val Thr Gly Val Arg Ser Ser
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<211> 2333
<212> DNA
<213> Saccharomyces cerevisiae

<400> 49

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<211> 110
<212> PRT
<213> Saccharomyces cerevisiae

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Lys Arg Ile Asn Glu Leu Asn Asn Lys Leu Arg Lys Glu Leu Ser Arg
35 40 45
Glu Arg Ile Thr Ala Ser Asn Ala Cys Leu Thr Ile Ile Asn Tyr Thr
50 55 60
Ser Asn Thr Lys Asp Tyr Thr Leu Pro Glu Leu Trp Gly Tyr Pro Val
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<210> 51

<211> 4067
<212> DNA
<213> Saccharomyces cerevisiae

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<212> PRT
<213> Saccharomyces cerevisiae

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Thr Ala Pro Val Asn Trp Gln Glu Asn Gln Ile Ile Arg Arg Tyr Tyr
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Leu Asn Ser Gly Gln Gly Phe Val Ser Cys Val Phe Trp Asn Asn Leu
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Tyr Tyr Ile Thr Gly Thr Asp Ile Val Lys Cys Cys Leu Tyr Arg Met
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Gln Lys Phe Gly Arg Glu Val Val Gln Lys Lys Lys Phe Glu Glu Gly
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Ile Phe Ser Asp Leu Arg Asn Leu Lys Cys Gly Ile Asp Ala Thr Leu
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Glu Gln Pro Lys Ser Glu Phe Leu Ser Phe Leu Phe Arg Asn Met Cys
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His Asp Lys Leu Phe Ala Asp Ala Leu Glu Arg Asp Leu Lys Arg Glu
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Ser Leu Asn Gln Pro Ser Thr Thr Lys Pro Val Asn Glu Pro Ala Leu
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Ser Phe Ser Tyr Asp Ser Ser Ser Asp Lys Pro Leu Tyr Asp Gln Leu
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Leu Gln His Leu Asp Ser Arg Arg Pro Ser Ser Thr Thr Lys Ser Asp
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Leu Ile Ile Glu Pro Asn Thr Leu Glu Leu Asn Gly Leu Thr Glu Glu
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Asp Phe Pro Leu Asp Tyr Phe Pro Val Ser Val Glu Tyr Pro Thr Glu
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Ser Thr Thr Ala Lys Asn Tyr Pro Pro Ser Thr Phe Tyr Ser Gln Asn
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Lys Ile Asn Leu Glu Thr Lys Ala Arg Pro Ser Ala Gly Asp Glu Asp
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Ser Ala His Pro Asp Lys Asn Lys Glu Ile Ser Met Pro Thr Pro Asp
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<213> Saccharomyces cerevisiae

<400> 53

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<212> PRT
<213> Saccharomyces cerevisiae

<400> 54

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        35                  40                  45
Asn Ile Asn Ala Ile Gln Asn Asn Ser Asn Leu Phe Leu Arg Arg Gly
    50                  55                  60
Ile Lys Lys Lys Leu Thr Leu Asp Ala Phe Gly Asp Asp Gln Ala Ile
65                  70                  75                  80
Ser Lys Pro Asn Thr Val Val Ile Gln Gln Pro Gln Asn Glu Pro Val
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Ser Asn Ile Ala Thr Pro Val Glu Asn Glu His Ser Ile Ser Leu Pro
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Pro Leu Glu Glu Ser Leu Ser Pro Ala Ala Ala Asp Leu Lys Asp Thr
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180 185 190
Gln Leu Gly Lys Ile Gly Ala Gly Asn Ser Gly Thr Val Val Lys Ala
195 200 205
Leu His Val Pro Asp Ser Lys Ile Val Ala Lys Lys Thr Ile Pro Val
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Glu Gln Asn Asn Ser Thr Ile Ile Asn Gln Leu Val Arg Glu Leu Ser
225 230 235 240
Ile Val Lys Asn Val Lys Pro His Glu Asn Ile Ile Thr Phe Tyr Gly
245 250 255
Ala Tyr Tyr Asn Gln His Ile Asn Asn Glu Ile Ile Ile Leu Met Glu
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Tyr Ser Asp Cys Gly Ser Leu Asp Lys Ile Leu Ser Val Tyr Lys Arg
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Phe Val Gln Arg Gly Thr Val Ser Ser Lys Lys Thr Trp Phe Asn Glu
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Val Leu Ile Asn Ser Lys Gly Gln Ile Lys Leu Cys Asp Phe Gly Val
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Ser Lys Lys Leu Ile Asn Ser Ile Ala Asp Thr Phe Val Gly Thr Ser
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Thr Tyr Met Ser Pro Glu Arg Ile Gln Gly Asn Val Tyr Ser Ile Lys
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405 410 415
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Arg Ile Tyr Ser Lys Glu Met Thr Asp Phe Val Asn Arg Cys Cys Ile
435 440 445
Lys Asn Glu Arg Glu Arg Ser Ser Ile His Glu Leu Leu His His Asp
450 455 460
Leu Ile Met Lys Tyr Val Ser Pro Ser Lys Asp Asp Lys Phe Arg His
465 470 475 480
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<212> DNA
<213> Saccharomyces cerevisiae

<400> 55

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<400> 56

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Val	Glu	Ser	Gly	Glu	Glu	Glu	Asp	His	Asp	Phe	Phe	Gly	Glu	Asp	Ser

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Lys Gly Ala Cys Ile Gly Ser Gly Ser Phe Gly Ser Val Tyr Leu Gly
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Met Asn Ala His Thr Gly Glu Leu Met Ala Val Lys Gln Val Glu Ile
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Lys Asn Asn Asn Ile Gly Val Pro Thr Asp Asn Asn Lys Gln Ala Asn
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Ser Asp Glu Asn Asn Glu Gln Glu Glu Gln Gln Glu Lys Ile Glu Asp
465 470 475 480
Val Gly Ala Val Ser His Pro Lys Thr Asn Gln Asn Ile His Arg Lys
485 490 495
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Arg Gln Ile Leu Ile Gly Val Ala Tyr Leu His Lys Lys Asn Ile Ile
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His Arg Asp Ile Lys Gly Ala Asn Ile Leu Ile Asp Ile Lys Gly Cys
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Trp Ser Thr Gly Cys Val Val Ile Glu Met Phe Thr Gly Lys His Pro
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Phe Pro Asp Phe Ser Gln Met Gln Ala Ile Phe Lys Ile Gly Thr Asn
660 665 670
Thr Thr Pro Glu Ile Pro Ser Trp Ala Thr Ser Glu Gly Lys Asn Phe
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<213> Saccharomyces cerevisiae

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<211> 360
<212> PRT
<213> Saccharomyces cerevisiae

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Thr Ile Ser Pro Arg Ser Trp His Phe Glu Lys Ser Asp Lys Ile Ala
    50   55   60
Ser Ser Gln Leu Gln Asn Leu Val His Thr Gln Pro Ile His Leu Ile
65   70   75   80
Asn Pro Gln Ile Leu Phe Asn Glu Glu Phe Leu Asn Leu Glu Asn Ile
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Asp Ser Gln Pro Ile Ser Lys Glu Thr Lys Thr Thr Lys Asp Cys Thr
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Tyr Tyr Tyr Pro Leu Glu Ile Ala Phe Asp Val Glu Lys Ser Pro Pro
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<212> PRT
<213> Saccharomyces cerevisiae

<400> 60

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        35                  40                  45
Phe Gly Cys Val Thr Leu Ala Lys Ala Gln Phe Pro Leu Ser Asn Ile
    50                  55                  60
Leu Gly Lys Gln His Asp Ile Arg Gly Thr Leu Met Asp Gln Pro Lys
65                  70                  75                  80
Asn Gly His Gln Asn Tyr Ile Thr Lys Thr Gln Gly Val Val Ala Ile
                85                  90                  95
Lys Thr Met Met Thr Lys Leu His Thr Leu Gln Asp Tyr Thr Arg Val
            100                 105                 110
Arg Glu Ile Lys Phe Ile Leu Ala Ile Pro Ala Asn Asp His Leu Ile
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Gln Ile Phe Glu Val Phe Ile Asp Ser Glu Asn Tyr Gln Leu His Ile
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Glu Lys Glu Tyr Met Asn Gln Ile Gly Tyr Gln Asp Asn Tyr Val Ile
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<210> 62
<211> 627
<212> PRT
<213> Saccharomyces cerevisiae

<400> 62

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Val	Ile	Leu	Thr	Gln	Leu	Asn	Glu	Asp	Gly	Thr	Thr	Ser	Asn	Tyr	Phe
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Ser	His	Thr	Gly	Arg	Thr	Leu	Asp	Leu	Arg	Ile	Ile	Pro	Arg	Ile	Asp
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Tyr	Phe	Thr	Leu	Val	Ser	Thr	Phe	Glu	Thr	Ala	Asn	Cys	Asp	Leu	Asp
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Thr	Phe	Leu	Lys	Ser	Ser	Phe	Asp	Leu	Leu	Val	Glu	Asp	Ser	Ser	Val
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Ser	Pro	Leu	Pro	Lys	His	Gln	Ile	Ile	Arg	Glu	Ala	Ser	Asn	Val	Arg
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Ile	Thr	Val	Arg	Thr	Pro	Ser	Ser	Val	Asn	Ser	Ser	Gln	Asn	Ser	Thr
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Arg Val Glu Thr Leu Glu His Ile Gln Asn Lys Leu Gly Ala Leu Lys
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Gly Met Glu Gly Cys Leu Glu Lys Glu Asp Leu Val Tyr Ser Ser Ser
    450                 455                 460
Phe Ser Val Asn Met Lys Gln Ile Glu Leu Lys Pro Ala Arg Ser Phe
465                 470                 475                 480
Glu His Glu Asn Val Phe Lys Val Gly Ser Leu Ala Phe Lys Lys Ile
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Asn Glu Leu Pro His Glu Asn Tyr Asp Ile Thr Ile Glu Lys Lys Ser
            500                 505                 510
Met Glu Gln Asn Tyr Leu Arg Pro Glu Ile Gly Ser Arg Ser Glu Cys
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Lys Thr Ser Tyr Gly Asn Glu Leu Ser Leu Ser Asn Ile Ser Phe Ser
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Ile Leu Pro Asn Ser Ala Glu Asn Phe His Leu Glu Thr Ala Leu Phe
545                 550                 555                 560
Pro Ala Thr Glu Glu Asp Val Pro Arg Thr Phe Ser Arg Ile Leu Glu
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Thr Gly Ser Phe Gln Asn Tyr Tyr Gln Lys Met Asp Ala Glu Asn Ala
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Asp Arg Val Tyr Ser Lys Gly Val Lys Leu Ile Ala Ser Gly Thr Leu
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<210> 63
<211> 3197
<212> DNA
<213> Saccharomyces cerevisiae

<400> 63

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<210> 64
<211> 398
<212> PRT
<213> Saccharomyces cerevisiae

<400> 64
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Gly His Ser Asn Gly Thr Pro Cys Ser Asn Ala Asp Val Leu Ala His
        35   40   45
Ile Lys His Phe Leu Ser Leu Ala Ala Asn Ser Leu Glu Gln His Gln
    50   55   60
Gln Pro Ile Ser Ile Val Phe Gln Asn Lys Lys Lys Lys Gly Asp Thr
65   70   75   80
Ser Ser Pro Asp Ile His Thr Thr Leu Asp Phe Pro Leu Asn Gly Pro
                85   90   95
His Leu Cys Thr His Gln Phe Lys Leu Lys Arg Cys Ala Ile Leu Leu
            100   105   110
Asn Leu Leu Lys Val Val Met Glu Lys Leu Pro Leu Gly Lys Asn Thr
        115   120   125
Thr Val Arg Asp Ile Phe Tyr Ser Asn Val Glu Leu Phe Gln Arg Gln
    130   135   140
Ala Asn Val Val Gln Trp Leu Asp Val Ile Arg Phe Asn Phe Lys Leu
145   150   155   160
Ser Pro Arg Lys Ser Leu Asn Ile Ile Pro Ala Gln Lys Gly Leu Val

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                165                 170                 175
Tyr Ser Pro Phe Pro Ile Asp Ile Tyr Asp Asn Ile Leu Thr Cys Glu
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Asn Glu Pro Lys Met Gln Lys Gln Thr Ile Phe Pro Gly Lys Pro Cys
        195                 200                 205
Leu Ile Pro Phe Phe Gln Asp Asp Ala Val Ile Lys Leu Gly Thr Thr
    210                 215                 220
Ser Met Cys Asn Ile Val Ile Val Glu Lys Glu Ala Val Phe Thr Lys
225                 230                 235                 240
Leu Val Asn Asn Tyr His Lys Leu Ser Thr Asn Thr Met Leu Ile Thr
                245                 250                 255
Gly Lys Gly Phe Pro Asp Phe Leu Thr Arg Leu Phe Leu Lys Lys Leu
            260                 265                 270
Glu Gln Tyr Cys Ser Lys Leu Ile Ser Asp Cys Ser Ile Phe Thr Asp
        275                 280                 285
Ala Asp Pro Tyr Gly Ile Ser Ile Ala Leu Asn Tyr Thr His Ser Asn
    290                 295                 300
Glu Arg Asn Ala Tyr Ile Cys Thr Met Ala Asn Tyr Lys Gly Ile Arg
305                 310                 315                 320
Ile Thr Gln Val Leu Ala Gln Asn Asn Glu Val His Asn Lys Ser Ile
                325                 330                 335
Gln Leu Leu Ser Leu Asn Gln Arg Asp Tyr Ser Leu Ala Lys Asn Leu
            340                 345                 350
Ile Ala Ser Leu Thr Ala Asn Ser Trp Asp Ile Ala Thr Ser Pro Leu
        355                 360                 365
Lys Asn Val Ile Ile Glu Cys Gln Arg Glu Ile Phe Phe Gln Lys Lys
    370                 375                 380
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<210> 65
<211> 3194
<212> DNA
<213> Saccharomyces cerevisiae

<400> 65

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tacacaaaat tacttggcaa acacgttggt tgggaaaagc tttatacttg gcggtgtagt 720
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<210> 66
<211> 397
<212> PRT
<213> Saccharomyces cerevisiae

<400> 66

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            20                  25                  30
Leu Ile Ser Asn Ile Thr Gly Ser His Glu Thr Lys Tyr Leu Ser Pro
        35                  40                  45
Phe Arg Met Asp Asn Cys Ser Gly Ser Arg Arg Arg Asp Arg Leu His
    50                  55                  60
Val Lys Leu Lys Ser Leu Arg Asn Lys Ile His Lys Gln Leu His Pro
65                  70                  75                  80
Asn Cys Arg Phe Asp Asp Ala Thr Lys Thr Ser Asp Asp Lys Cys Val
                85                  90                  95
Ser Tyr Glu Val Pro Glu Arg Asp Gly Leu Ala Thr Ile Ser Leu Glu
            100                 105                 110
Glu Val Phe Pro Lys Ser Asn Arg Cys Gln Ile Pro Glu Glu Asn Leu
        115                 120                 125
Gly Glu Thr Asp Ser Val Ile His Arg Asp Leu Gly Asn Phe Ala Asn
    130                 135                 140
Glu Asn Asp Tyr Pro Gln Trp Arg Lys Val Glu Ser Gln Tyr Asn Leu
145                 150                 155                 160
Glu Asn Val Gln Pro Glu Glu Asp Glu Ile Val Asp Arg Leu Arg Ser
                165                 170                 175
Glu Ile Arg Ser Thr Lys Leu Lys Ser Val Lys Thr Thr Ser Arg Thr
            180                 185                 190
Leu Glu Lys Ala Ile Glu Ala Arg Cys Thr Gly Lys Arg Val Leu Gln
        195                 200                 205
Gln Leu Ser Cys Gln Ser Asn Gln Leu Thr Lys Ile Glu Ser Asn Cys
    210                 215                 220
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Leu Ala His Glu Asn Arg Ser Leu Leu Ala Leu Lys Ser Pro Asn Pro
                245                 250                 255
Phe Arg Lys Lys Arg Glu Arg Glu Lys Arg Asp Gln Ile Asn Asn Leu
            260                 265                 270
Lys Leu Lys His Arg His Leu Gln Gln Glu Thr Met Lys Arg Ala Gln
        275                 280                 285
Asp Ser Asp Lys Asn Leu Ala Ile Asn Leu Ser Ser Glu Tyr Gly Arg
    290                 295                 300
Tyr Gly Gln Gly Val Glu Arg Gln Arg Ile Leu Arg Asp Ala Gln Lys
305                 310                 315                 320
Tyr Gln Phe Glu Ala Asp Glu Glu Asp Asn Gln Met Glu Ile Asp Leu
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            340                 345                 350
Met Ala His Ala Phe Gly Arg Glu Phe Glu Ala Gln Asn Thr Arg Met
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Phe Asp Ile Glu Asn Asn Val Gln Gln Ala Asp Asn Ala Leu Gln Ala
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<210> 67
<211> 3875
<212> DNA
<213> Saccharomyces cerevisiae

<400> 67

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Gly Phe Asp Ile Ser Tyr Ser Glu Leu Cys Glu Lys Ser Pro Ser Pro
    50   55   60
Glu Arg Leu Ser Ser Pro Glu Phe Phe Asn Glu Leu Arg Asn Thr Gly
65   70   75   80
His Tyr Glu Ser Ile Ser Thr Thr Asn Glu Phe Ser Met Ser Ser Ile
                85   90   95
Ser Ser Ser Ser Glu Ser Gln Val Thr Arg Ser Gly Ser Ala Arg Ala
            100   105   110
Ser Arg Asn Asp Tyr Ser Lys Leu Thr Lys Glu Gln Lys Asp His Arg
        115   120   125
Lys Asn Ile Ala His Ser Leu Gly Phe Gln Leu Pro Asp Arg Val Phe
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Thr Phe Glu Thr Thr Ser Ala Glu Ile Leu Glu Lys Asn Lys Ala Ile
145   150   155   160
Lys Asn Cys Phe Gly Pro Gly Ser Cys Ala Glu Ile Arg Ser Thr Phe
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Asp Phe Ser Thr Leu Ser Pro Asp Val Ala Arg Tyr Tyr Ile Ala Asn
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Arg Asp Leu Val Thr Cys Val Ser Phe Cys Pro Tyr Asn Thr Tyr Phe
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Ile Val Gly Thr Lys Phe Gly Arg Ile Leu Leu Tyr Asp Gln Lys Glu
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Phe Phe His Ser Ser Asn Thr Asn Glu Lys Glu Pro Val Phe Val Phe
305                 310                 315                 320
Gln Thr Glu Ser Phe Lys Gly Ile Cys Cys Leu Glu Trp Phe Lys Pro
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Gly Glu Ile Cys Lys Phe Tyr Val Gly Glu Glu Asn Gly Asn Val Ser
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Arg Gln Lys Leu Glu Asp Glu Asn Leu Ile Gly Leu Lys Leu His Ser
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Tyr Pro Lys Leu Ser Lys Leu Leu Glu Val Arg Ser Pro Asn Pro Leu
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Arg Val Leu Ser Ala Val Ile Ser Pro Ser Ser Met Ala Ile Cys Val
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<400> 70

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Pro Phe Ser Val Asn Asp Ile Val Gln Asn Leu His Asn Lys Val Thr
        35                  40                  45
Lys Thr Thr Ala Thr Lys Ala Leu Glu Asn Leu Val Asn Glu Lys Arg
    50                  55                  60
Ile Val Ser Lys Thr Phe Gly Lys Ile Ile Ile Tyr Ser Cys Asn Glu
65                  70                  75                  80
Gln Asp Thr Ala Leu Pro Ser Asn Ile Asp Pro Ser Gln Phe Asp Phe
                85                  90                  95
Glu Thr Val Leu Gln Leu Arg Asn Asp Leu Ile Glu Leu Glu Arg Asp
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            100                 105                 110
Lys Ser Met Ala Lys Asp Ala Leu Asp Ser Val Thr Lys Glu Pro Glu
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Asn Glu Asp Leu Leu Thr Ile Ile Glu Asn Glu Glu Asn Glu Leu Lys
    130                 135                 140
Lys Ile Glu Ser Lys Leu Gln Ser Leu Gln Asp Asp Trp Asp Pro Ala
145                 150                 155                 160
Asn Asp Glu Ile Val Lys Arg Ile Met Ser Glu Asp Thr Leu Leu Gln
                165                 170                 175
Lys Glu Ile Thr Lys Arg Ser Lys Ile Cys Lys Asn Leu Ile Ala Thr
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<210> 71
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<212> DNA
<213> Saccharomyces cerevisiae

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<211> 609
<212> PRT
<213> Saccharomyces cerevisiae

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        35   40   45
Asn Ser Lys Ile Ser Lys Arg Lys Trp Met Lys Glu Phe Phe Lys Leu
    50   55   60
Ser Lys Ser Pro Ala Ser Lys Ser Asn Arg Ser Ile Gly Ser Met Lys
65   70   75   80
Ser Asn Gln Ser Leu Val Ser Met Lys Ser Ser Asp Asp Gly Asn Ser
                85   90   95
Tyr Lys Asn Asp Tyr Ser Ser Ile Cys Gly Asn Ser Leu Pro Ser Ala
            100   105   110
Gly Leu Ser Arg Ser Asn Ser Val Lys Glu Leu Lys Leu Asp Ser Thr
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Gly Ser Gln Arg Ser Lys Asn Asn Val Ala Met Leu Ala Arg Ser Ser
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Thr Thr Ser Gln Thr Thr Cys Ser Ser Ser Ser Ser Ser Ser Ser Tyr
145   150   155   160
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Cys Thr Leu Cys Asp Glu Pro Ile Ser Asn Arg Arg Lys Gly Glu Lys
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Gly	Lys	Leu	Glu	Gly	His	Gly	Gly	Arg	Val	Thr	Gly	Val	Arg	Ser	Ser
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<213> Saccharomyces cerevisiae

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<212> PRT
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35 40 45

Glu Arg Ile Thr Ala Ser Asn Ala Cys Leu Thr Ile Ile Asn Tyr Thr
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Ser Asn Thr Lys Asp Tyr Thr Leu Pro Glu Leu Trp Gly Tyr Pro Val
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<212> PRT
<213> Saccharomyces cerevisiae

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Thr Ala Pro Val Asn Trp Gln Glu Asn Gln Ile Ile Arg Arg Tyr Tyr
    50                  55                  60
Leu Asn Ser Gly Gln Gly Phe Val Ser Cys Val Phe Trp Asn Asn Leu
65                  70                  75                  80
Tyr Tyr Ile Thr Gly Thr Asp Ile Val Lys Cys Cys Leu Tyr Arg Met
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Gln Lys Phe Gly Arg Glu Val Val Gln Lys Lys Lys Phe Glu Glu Gly
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Ile Phe Ser Asp Leu Arg Asn Leu Lys Cys Gly Ile Asp Ala Thr Leu
        115                 120                 125
Glu Gln Pro Lys Ser Glu Phe Leu Ser Phe Leu Phe Arg Asn Met Cys
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Leu Lys Thr Gln Lys Lys Gln Lys Val Phe Phe Trp Phe Ser Val Ala
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His Asp Lys Leu Phe Ala Asp Ala Leu Glu Arg Asp Leu Lys Arg Glu
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Ser Leu Asn Gln Pro Ser Thr Thr Lys Pro Val Asn Glu Pro Ala Leu
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Ser Phe Ser Tyr Asp Ser Ser Ser Asp Lys Pro Leu Tyr Asp Gln Leu
        195                 200                 205
Leu Gln His Leu Asp Ser Arg Arg Pro Ser Ser Thr Thr Lys Ser Asp
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Asn Ser Pro Pro Lys Leu Glu Ser Glu Asn Phe Lys Asp Asn Glu Leu
225                 230                 235                 240
Val Thr Val Thr Asn Gln Pro Leu Leu Gly Val Gly Leu Met Asp Asp
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Ser Ala His Pro Asp Lys Asn Lys Glu Ile Ser Met Pro Thr Pro Asp
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<211> 3548
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<213> Saccharomyces cerevisiae

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<212> PRT
<213> Saccharomyces cerevisiae

<400> 82

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Thr Glu Thr His Gln Gly Gln Ser Arg Ile Glu Gly His Val Met Ser
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Ile Lys Lys Lys Leu Thr Leu Asp Ala Phe Gly Asp Asp Gln Ala Ile
65                  70                  75                  80
Ser Lys Pro Asn Thr Val Val Ile Gln Gln Pro Gln Asn Glu Pro Val
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Ser Leu Ser Thr Pro Cys Ile Ile Asp Ala Tyr Ser Asn Asn Phe Gly
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Ser Asn Ile Ala Thr Pro Val Glu Asn Glu His Ser Ile Ser Leu Pro
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Pro Leu Glu Glu Ser Leu Ser Pro Ala Ala Ala Asp Leu Lys Asp Thr
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            180                 185                 190
Gln Leu Gly Lys Ile Gly Ala Gly Asn Ser Gly Thr Val Val Lys Ala
        195                 200                 205
Leu His Val Pro Asp Ser Lys Ile Val Ala Lys Lys Thr Ile Pro Val
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Glu Gln Asn Asn Ser Thr Ile Ile Asn Gln Leu Val Arg Glu Leu Ser
225                 230                 235                 240
Ile Val Lys Asn Val Lys Pro His Glu Asn Ile Ile Thr Phe Tyr Gly
                245                 250                 255
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Tyr Ser Asp Cys Gly Ser Leu Asp Lys Ile Leu Ser Val Tyr Lys Arg
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Phe Val Gln Arg Gly Thr Val Ser Ser Lys Lys Thr Trp Phe Asn Glu
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Val Leu Ile Asn Ser Lys Gly Gln Ile Lys Leu Cys Asp Phe Gly Val
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Thr Tyr Met Ser Pro Glu Arg Ile Gln Gly Asn Val Tyr Ser Ile Lys
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            420                 425                 430
Arg Ile Tyr Ser Lys Glu Met Thr Asp Phe Val Asn Arg Cys Cys Ile
        435                 440                 445
Lys Asn Glu Arg Glu Arg Ser Ser Ile His Glu Leu Leu His His Asp
    450                 455                 460
Leu Ile Met Lys Tyr Val Ser Pro Ser Lys Asp Asp Lys Phe Arg His
465                 470                 475                 480
Trp Cys Arg Lys Ile Lys Ser Lys Ile Lys Glu Asp Lys Arg Ile Lys
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<212> PRT
<213> Saccharomyces cerevisiae

<400> 84

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            20                  25                  30
Gly Cys Thr Gln Tyr Leu Asp Ser Phe Ile Gln Cys Asn Leu Val Thr
        35                  40                  45
Glu Glu Glu Ile Lys Tyr Leu Asp Lys Asp Ile Leu Ile Ala Leu Gly
    50                  55                  60
Val Asn Lys Ile Gly Asp Arg Leu Lys Ile Leu Arg Lys Ser Lys Ser
65                  70                  75                  80
Phe Gln Arg Asp Lys Arg Ile Glu Gln Val Asn Arg Leu Lys Asn Leu
                85                  90                  95
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            100                 105                 110
Glu Leu Ile Pro Glu Lys His Cys Val Ile Phe Ile Leu Asn Asp Gly
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Ser Ala Lys Lys Val Asn Val Asn Gly Cys Phe Asn Ala Asp Ser Ile
    130                 135                 140
Lys Lys Arg Leu Ile Arg Arg Leu Pro His Glu Leu Leu Ala Thr Asn
145                 150                 155                 160
Ser Asn Gly Glu Val Thr Lys Met Val Gln Asp Tyr Asp Val Phe Val
                165                 170                 175
Leu Asp Tyr Thr Lys Asn Val Leu His Leu Leu Tyr Asp Val Glu Leu
            180                 185                 190
Val Thr Ile Cys His Ala Asn Asp Arg Val Glu Lys Asn Arg Leu Ile
        195                 200                 205
Phe Val Ser Lys Asp Gln Thr Pro Ser Asp Lys Ala Ile Ser Thr Ser
    210                 215                 220
Lys Lys Leu Tyr Leu Arg Thr Leu Ser Ala Leu Ser Gln Val Gly Pro
225                 230                 235                 240
Ser Ser Ser Asn Leu Leu Ala Gln Asn Lys Gly Ile Ser His Asn Asn
                245                 250                 255
Ala Glu Gly Lys Leu Arg Ile Asp Asn Thr Glu Lys Asp Arg Ile Arg
            260                 265                 270
Gln Ile Phe Asn Gln Arg Pro Pro Ser Glu Phe Ile Ser Thr Asn Leu
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Leu Ser Ser Lys Leu Asp Thr Thr Lys Ile Pro Lys Leu Ala His Lys
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370 375 380
Val Glu Ser Gly Glu Glu Glu Asp His Asp Phe Phe Gly Glu Asp Ser
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Asp Ile Val Ser Leu Pro Thr Lys Ile Ala Thr Pro Lys Asn Trp Leu
405 410 415
Lys Gly Ala Cys Ile Gly Ser Gly Ser Phe Gly Ser Val Tyr Leu Gly
420 425 430
Met Asn Ala His Thr Gly Glu Leu Met Ala Val Lys Gln Val Glu Ile
435 440 445
Lys Asn Asn Asn Ile Gly Val Ser Thr Asp Asn Asn Lys Gln Ala Asn
450 455 460
Ser Asp Glu Asn Asn Glu Gln Glu Glu Gln Gln Glu Lys Ile Glu Asp
465 470 475 480
Val Gly Ala Val Ser His Pro Lys Thr Asn Gln Asn Ile His Arg Lys
485 490 495
Met Val Asp Ala Leu Gln His Glu Met Asn Leu Leu Lys Glu Leu His
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His Glu Asn Ile Val Thr Tyr Tyr Gly Ala Ser Gln Glu Gly Gly Asn
515 520 525
Leu Asn Ile Phe Leu Glu Tyr Val Pro Gly Gly Ser Val Ser Ser Met
530 535 540
Leu Asn Asn Tyr Gly Pro Phe Glu Glu Ser Leu Ile Thr Asn Phe Thr
545 550 555 560
Arg Gln Ile Leu Ile Gly Val Ala Tyr Leu His Lys Lys Asn Ile Ile
565 570 575
His Arg Asp Ile Lys Gly Ala Asn Ile Leu Ile Asp Ile Lys Gly Cys
580 585 590
Val Lys Ile Thr Asp Phe Gly Ile Ser Lys Lys Leu Ser Pro Leu Asn
595 600 605
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610 615 620
Ser Pro Glu Val Val Lys Gln Ser Ala Thr Thr Ala Lys Ala Asp Ile
625 630 635 640
Trp Ser Thr Gly Cys Val Val Ile Glu Met Phe Thr Gly Lys His Pro
645 650 655
Phe Pro Asp Phe Ser Gln Met Gln Ala Ile Phe Lys Ile Gly Thr Asn
660 665 670
Thr Thr Pro Glu Ile Pro Ser Trp Ala Thr Ser Glu Gly Lys Asn Phe
675 680 685
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<211> 3083
<212> DNA
<213> Saccharomyces cerevisiae

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gcatgtctgc aaagggacta gaagaaagtt acaggattac ataagcaaaa aaccggaatt 180

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<211> 360
<212> PRT
<213> Saccharomyces cerevisiae

<400> 86

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Asp Thr Thr Thr Asp Gln Glu Asp Arg Pro Cys Phe Ser Phe Gly Ser
        35                  40                  45
Thr Ile Ser Pro Arg Ser Trp His Phe Glu Lys Ser Asp Lys Ile Ala
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Asp Ser Gln Pro Ile Ser Lys Glu Thr Lys Thr Thr Lys Asp Cys Thr
            100                 105                 110
Met Ala Thr Gly Pro Glu Arg Gly Lys Lys Ser Ser Glu Ser Thr Arg
        115                 120                 125
Ser Ser Ser Leu Ser Ser Leu Phe Ser Asn Asp Glu Ser Ala Ser Thr
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145                 150                 155                 160
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<210> 87
<211> 3938
<212> DNA
<213> Saccharomyces cerevisiae

<400> 87

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<212> PRT
<213> Saccharomyces cerevisiae

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Lys Thr Met Met Thr Lys Leu His Thr Leu Gln Asp Tyr Thr Arg Val
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Gly Asp Asn Val Leu Gly Asp Ala Ser Leu Gly Asp Ser Phe Asn Ser
        595                 600                 605
Met Pro Asp Phe Thr Pro Arg Asn Phe Leu Ile Pro Thr Leu Lys Lys
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<212> DNA
<213> Saccharomyces cerevisiae

<400> 89

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Val Gly Pro Pro Phe Glu Leu Val Arg Asp Tyr Cys Pro Val Val Glu
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Thr Phe Leu Lys Ser Ser Phe Asp Leu Leu Val Glu Asp Ser Ser Val
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Ser Pro Leu Pro Lys His Gln Ile Ile Arg Glu Ala Ser Asn Val Arg
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<210> 92
<211> 398
<212> PRT
<213> Saccharomyces cerevisiae

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Gly His Ser Asn Gly Thr Pro Cys Ser Asn Ala Asp Val Leu Ala His
        35   40   45
Ile Lys His Phe Leu Ser Leu Ala Ala Asn Ser Leu Glu Gln His Gln
    50   55   60
Gln Pro Ile Ser Ile Val Phe Gln Asn Lys Lys Lys Lys Gly Asp Thr
65   70   75   80

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His Leu Cys Thr His Gln Phe Lys Leu Lys Arg Cys Ala Ile Leu Leu
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Asn Leu Leu Lys Val Val Met Glu Lys Leu Pro Leu Gly Lys Asn Thr
        115                 120                 125
Thr Val Arg Asp Ile Phe Tyr Ser Asn Val Glu Leu Phe Gln Arg Gln
    130                 135                 140
Ala Asn Val Val Gln Trp Leu Asp Val Ile Arg Phe Asn Phe Lys Leu
145                 150                 155                 160
Ser Pro Arg Lys Ser Leu Asn Ile Ile Pro Ala Gln Lys Gly Leu Val
                165                 170                 175
Tyr Ser Pro Phe Pro Ile Asp Ile Tyr Asp Asn Ile Leu Thr Cys Glu
            180                 185                 190
Asn Glu Pro Lys Met Gln Lys Gln Thr Ile Phe Pro Gly Lys Pro Cys
        195                 200                 205
Leu Ile Pro Phe Phe Gln Asp Asp Ala Val Ile Lys Leu Gly Thr Thr
    210                 215                 220
Ser Met Cys Asn Ile Val Ile Val Glu Lys Glu Ala Val Phe Thr Lys
225                 230                 235                 240
Leu Val Asn Asn Tyr His Lys Leu Ser Thr Asn Thr Met Leu Ile Thr
                245                 250                 255
Gly Lys Gly Phe Pro Asp Phe Leu Thr Arg Leu Phe Leu Lys Lys Leu
            260                 265                 270
Glu Gln Tyr Cys Ser Lys Leu Ile Ser Asp Cys Ser Ile Phe Thr Asp
        275                 280                 285
Ala Asp Pro Tyr Gly Ile Ser Ile Ala Leu Asn Tyr Thr His Ser Asn
    290                 295                 300
Glu Arg Asn Ala Tyr Ile Cys Thr Met Ala Asn Tyr Lys Gly Ile Arg
305                 310                 315                 320
Ile Thr Gln Val Leu Ala Gln Asn Asn Glu Val His Asn Lys Ser Ile
                325                 330                 335
Gln Leu Leu Ser Leu Asn Gln Arg Asp Tyr Ser Leu Ala Lys Asn Leu
            340                 345                 350
Ile Ala Ser Leu Thr Ala Asn Ser Trp Asp Ile Ala Thr Ser Pro Leu
        355                 360                 365
Lys Asn Val Val Ile Glu Cys Gln Arg Glu Ile Phe Phe Gln Lys Lys
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<212> DNA
<213> Saccharomyces cerevisiae

<400> 93

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<211> 397
<212> PRT
<213> Saccharomyces cerevisiae

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

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    130                 135                 140
Glu Asn Asp Tyr Pro Gln Trp Arg Lys Val Glu Ser Gln Tyr Asn Leu
145                 150                 155                 160
Glu Asn Val Gln Pro Glu Glu Asp Glu Ile Val Asp Arg Leu Arg Ser
                165                 170                 175
Glu Ile Arg Ser Thr Lys Leu Lys Ser Val Lys Thr Thr Ser Arg Thr
            180                 185                 190
Leu Glu Lys Ala Ile Glu Ala Arg Cys Thr Gly Lys Arg Val Leu Gln
        195                 200                 205
Gln Leu Ser Cys Gln Ser Asn Gln Leu Thr Lys Ile Glu Ser Asn Cys
    210                 215                 220
Asp Met Leu Lys Ile Gln Ser Asn Val Ala Asp Arg Lys Ile Asp Glu
225                 230                 235                 240
Leu Ala His Glu Asn Arg Ser Leu Leu Ala Leu Lys Ser Pro Asn Pro
                245                 250                 255
Phe Arg Lys Lys Arg Glu Arg Glu Lys Arg Asp Gln Ile Asn Asn Leu
            260                 265                 270
Lys Leu Lys His Arg His Leu Gln Gln Glu Thr Met Lys Arg Ala Gln
        275                 280                 285
Asp Ser Asp Lys Asn Leu Ala Ile Asn Leu Ser Ser Glu Tyr Gly Arg
    290                 295                 300
Tyr Gly Gln Gly Val Glu Arg Gln Arg Ile Leu Arg Asp Ala Gln Lys
305                 310                 315                 320
Tyr Gln Phe Glu Ala Asp Glu Glu Asp Asn Gln Met Glu Ile Asp Leu
                325                 330                 335
Tyr Gly Asn Leu Glu Gln Ile Lys Ala Val Ser Gly Asp Leu Lys Ile
            340                 345                 350
Met Ala His Ala Phe Gly Arg Glu Phe Glu Ala Gln Asn Thr Arg Met
        355                 360                 365
Phe Asp Ile Glu Asn Asn Val Gln Gln Ala Asp Asn Ala Leu Gln Ala
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Lys Arg Tyr Arg Leu Glu Lys Val Ile Gly Lys Arg Trp
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<211> 3875
<212> DNA
<213> Saccharomyces cerevisiae

<400> 95

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<210> 96
<211> 593
<212> PRT
<213> Saccharomyces cerevisiae

<400> 96

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Pro Lys Ser Val Ser Arg Asn Ala Tyr Lys Ser Ile Pro Met Leu Asn
        35                  40                  45
Gly Phe Asp Ile Ser Tyr Ser Glu Leu Cys Glu Lys Ser Pro Ser Pro
    50                  55                  60
Glu Arg Leu Ser Ser Pro Glu Phe Phe Asn Glu Leu Arg Asn Thr Gly
65                  70                  75                  80
His Tyr Glu Ser Ile Ser Thr Thr Asn Glu Phe Ser Met Ser Ser Ile
                85                  90                  95
Ser Ser Ser Ser Glu Ser Gln Val Thr Arg Ser Gly Ser Ala Arg Ala
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Ser Arg Asn Asp Tyr Ser Lys Leu Thr Lys Glu Gln Lys Asp His Arg
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Lys Asn Ile Ala His Ser Leu Gly Phe Gln Leu Pro Asp Arg Val Phe
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145 150 155 160
Lys Asn Cys Phe Gly Pro Gly Ser Cys Ala Glu Ile Arg Ser Thr Phe
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Asp Phe Ser Thr Leu Ser Pro Asp Val Ala Arg Tyr Tyr Ile Ala Asn
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Ser Asn Ala Arg Ser Ala Ser Pro Gln Arg Gln Ile Gln Arg Pro Ala
195 200 205
Lys Arg Val Lys Ser His Ile Pro Tyr Arg Val Leu Asp Ala Pro Cys
210 215 220
Leu Arg Asn Asp Phe Tyr Ser Asn Leu Ile Ser Trp Ser Arg Thr Thr
225 230 235 240
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245 250 255
Lys Glu Gly Ala Val Ser Ile Leu Asp His Gln Tyr Leu Ser Glu Lys
260 265 270
Arg Asp Leu Val Thr Cys Val Ser Phe Cys Pro Tyr Asn Thr Tyr Phe
275 280 285
Ile Val Gly Thr Lys Phe Gly Arg Ile Leu Leu Tyr Asp Gln Lys Glu
290 295 300
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305 310 315 320
Gln Thr Glu Ser Phe Lys Gly Ile Cys Cys Leu Glu Trp Phe Lys Pro
325 330 335
Gly Glu Ile Cys Lys Phe Tyr Val Gly Glu Glu Asn Gly Asn Val Ser
340 345 350
Leu Phe Glu Ile Lys Ser Leu His Phe Pro Ile Lys Asn Trp Ser Lys
355 360 365
Arg Gln Lys Leu Glu Asp Glu Asn Leu Ile Gly Leu Lys Leu His Ser
370 375 380
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His Ala Asn Leu Leu Ala Val Gly Gly Asn Asp Asn Ser Cys Ser Leu
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435 440 445
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485 490 495
Phe Gly Phe Gly Asp Thr Lys Asn Pro Val Leu Ile Thr Leu Tyr Ser
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Tyr Pro Lys Leu Ser Lys Leu Leu Glu Val Arg Ser Pro Asn Pro Leu
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Arg Val Leu Ser Ala Val Ile Ser Pro Ser Ser Met Ala Ile Cys Val
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Ala Thr Asn Asp Glu Thr Ile Arg Phe Tyr Glu Leu Trp Asn Asp Lys
545 550 555 560
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Arg

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<211> 2727
<212> DNA
<213> Saccharomyces cerevisiae

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Lys Glu Ile Thr Lys Arg Ser Lys Ile Cys Lys Asn Leu Ile Ala Thr
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    50                  55                  60
Ser Lys Ser Pro Ala Ser Lys Ser Asn Arg Ser Ile Gly Ser Met Lys
65                  70                  75                  80
Ser Asn Gln Ser Leu Ile Ser Met Lys Ser Ser Asp Asp Gly Asn Ser
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Tyr Lys Asn Asp Tyr Ser Ser Ile Cys Gly Asn Ser Leu Pro Ser Ala
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Thr Ser Pro Phe Val Asn Glu Asp Leu His Phe Asp Pro Asn Gly Glu
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Gln Leu Val Lys Lys Asn Ser Ser Ala Arg Arg Thr Lys Ile Thr Asp
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            180   185   190
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        195   200   205
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    210   215   220
Phe Cys Thr Lys Cys Lys Lys Asp Thr Asn Lys Ala Val Gln Cys Ile
225   230   235   240
Pro Glu Asn Asp Glu Leu Lys Asp Ile Leu Ile Ser Asp Phe Leu Ile
                245   250   255
His Lys Ile Pro Asp Ser Glu Leu Ser Ile Thr Pro Gln Ser Arg Phe
            260   265   270
Pro Pro Tyr Ser Pro Leu Leu Pro Pro Phe Gly Leu Ser Tyr Thr Pro
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290 295 300

Leu Ile Leu Ala Ala Pro Pro Lys Glu Arg Asn Gln Ile Pro Gln Lys
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Lys Ser Asn Tyr Thr Phe Leu His Ser Leu Leu Gly His Arg Arg Ile
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Pro Ser Gly Ala Asn Ser Ile Leu Ala Asp Thr Ser Val Ala Leu Ser
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355 360 365
Asp Glu Thr Lys Ile Thr Leu Pro Leu Leu Arg Ser Tyr Phe Ile Gln
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385 390 395 400
Gly Asp Tyr Gly Leu Leu Arg Leu Val Asp Lys Leu Met Ile Ser Lys
405 410 415
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420 425 430
Phe Val Ile Ala Glu Val Asp Asn Asp Val Asp Val Leu Glu Thr Arg
435 440 445
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450 455 460
Thr Leu Glu Ala Ser Val Leu Lys Cys Thr Leu Asn Lys Gln His Cys
465 470 475 480
Ala Asp Leu Ser Asp Leu Tyr Ile Val Gln Asn Ile Asn Ser Asp Glu
485 490 495
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565 570 575
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625 630 635 640
Phe Ala Arg Leu Gln Phe Cys Phe Val Asp Arg Asn Asn Tyr Val Leu
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Lys Asn Thr Leu Tyr Pro Glu Asn Ile His Glu His Leu Gly Ile Val
690 695 700
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705 710 715 720
Asp Tyr Arg Cys Phe Thr Ser Phe Gly Arg Arg Arg Pro Asn Glu Leu
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755 760 765
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785 790 795 800

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Thr Glu Gly Glu His Ser Asn Ile Glu Asn Leu Glu Thr Val Ala Ser
835 840 845
Ser Val Gln Pro Ala Leu Ile Pro Asn Ile Arg Phe Ser Leu His Ser
850 855 860
Glu Glu Glu Gly Thr Asn Glu Asn Glu Asn Glu Asn Asp Met Pro Val
865 870 875 880
Leu Leu Leu Ser Asp Met Asp Lys Gly Ile Asp Gly Ile Thr Arg Arg
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Ser Ser Phe Ser Ser Leu Ile Glu Ser Gly Asn Asn Asn Cys Pro Leu
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His Met Asp Tyr Ile
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<211> 3272
<212> DNA
<213> Saccharomyces cerevisiae

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<211> 423
<212> PRT
<213> Saccharomyces cerevisiae

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Asp Glu Ile Gln Asn Lys Ile Glu Ala Ala Arg Gln Glu Ser Lys Gln
        35                  40                  45
Leu His Ala Gln Ile Asn Lys Ala Lys His Lys Ile Gln Asp Ala Ser
    50                  55                  60
Leu Phe Gln Met Ala Asn Lys Val Thr Ser Leu Thr Lys Asn Lys Ile
65                  70                  75                  80
Asn Leu Lys Pro Asn Ile Val Leu Lys Gly His Asn Asn Lys Ile Ser
                85                  90                  95
Asp Phe Arg Trp Ser Arg Asp Ser Lys Arg Ile Leu Ser Ala Ser Gln
            100                 105                 110
Asp Gly Phe Met Leu Ile Trp Asp Ser Ala Ser Gly Leu Lys Gln Asn
        115                 120                 125
Ala Ile Pro Leu Asp Ser Gln Trp Val Leu Ser Cys Ala Ile Ser Pro
    130                 135                 140
Ser Ser Thr Leu Val Ala Ser Ala Gly Leu Asn Asn Asn Cys Thr Ile
145                 150                 155                 160
Tyr Arg Val Ser Lys Glu Asn Arg Val Ala Gln Asn Val Ala Ser Ile
                165                 170                 175
Phe Lys Gly His Thr Cys Tyr Ile Ser Asp Ile Glu Phe Thr Asp Asn
            180                 185                 190
Ala His Ile Leu Thr Ala Ser Gly Asp Met Thr Cys Ala Leu Trp Asp
        195                 200                 205
Ile Pro Lys Ala Lys Arg Val Arg Glu Tyr Ser Asp His Leu Gly Asp
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225                 230                 235                 240
Asn Thr Phe Ala Ser Cys Gly Ser Asp Gly Tyr Thr Tyr Ile Trp Asp
                245                 250                 255
Ser Arg Ser Pro Ser Ala Val Gln Ser Phe Tyr Val Asn Asp Ser Asp
            260                 265                 270
Ile Asn Ala Leu Arg Phe Phe Lys Asp Gly Met Ser Ile Val Ala Gly
        275                 280                 285
Ser Asp Asn Gly Ala Ile Asn Met Tyr Asp Leu Arg Ser Asp Cys Ser
    290                 295                 300
Ile Ala Thr Phe Ser Leu Phe Arg Gly Tyr Glu Glu Arg Thr Pro Thr
305                 310                 315                 320
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Pro Thr Tyr Met Ala Ala Asn Met Glu Tyr Asn Thr Ala Gln Ser Pro
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            340                 345                 350
Val Ser Leu Asp Phe Ser Ala Ser Gly Arg Leu Met Tyr Ser Cys Tyr
        355                 360                 365
Thr Asp Ile Gly Cys Val Val Trp Asp Val Leu Lys Gly Glu Ile Val
    370                 375                 380
Gly Lys Leu Glu Gly His Gly Gly Arg Val Thr Gly Val Arg Ser Ser
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<210> 105
<211> 2333
<212> DNA
<213> Saccharomyces cerevisiae

<400> 105

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<210> 106

<211> 110
<212> PRT
<213> Saccharomyces cerevisiae

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            20   25   30
Lys Arg Ile Asn Glu Leu Asn Asn Lys Leu Arg Lys Glu Leu Ser Arg
        35   40   45
Glu Arg Ile Thr Ala Ser Asn Ala Cys Leu Thr Ile Ile Asn Tyr Thr
    50   55   60
Ser Asn Thr Lys Asp Tyr Thr Leu Pro Glu Leu Trp Gly Tyr Pro Val
65   70   75   80
Ala Gly Ser Asn His Phe Ile Glu Gly Leu Lys Asn Ala Gln Lys Asn
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<210> 107
<211> 4067
<212> DNA
<213> Saccharomyces cerevisiae

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<210> 108
<211> 688
<212> PRT
<213> Saccharomyces cerevisiae

<400> 108

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Ala Gly Tyr Phe Pro His Thr Asp Met Lys Arg Leu Gln Lys Thr Met
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Lys Gly Ala Cys Ile Gly Ser Gly Ser Phe Gly Ser Val Tyr Leu Gly
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Met Asn Ala His Thr Gly Glu Leu Met Ala Val Lys Gln Val Glu Ile
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Val Gly Ala Val Ser His Pro Lys Thr Asn Gln Asn Ile His Arg Lys
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<213> Saccharomyces cerevisiae

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<211> 360

<212> PRT
<213> Saccharomyces cerevisiae

<400> 114

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Thr Ile Ser Pro Arg Ser Trp His Phe Glu Lys Ser Asp Lys Ile Ala
    50                  55                  60
Ser Ser Gln Leu Gln Asn Leu Val His Thr Gln Pro Ile His Leu Ile
65                  70                  75                  80
Asn Pro Gln Ile Leu Phe Asn Glu Glu Phe Leu Asn Leu Glu Asn Ile
                85                  90                  95
Asp Ser Gln Pro Ile Ser Lys Glu Thr Lys Thr Thr Lys Asp Cys Thr
            100                 105                 110
Met Ala Thr Gly Pro Glu Arg Gly Lys Lys Ser Ser Glu Ser Thr Arg
        115                 120                 125
Ser Ser Ser Leu Ser Ser Leu Phe Ser Asn Asp Glu Ser Ala Ser Thr
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Asn Gly Asp Asp Ile Asp Ile Ser Asp Thr Ile Lys Tyr Glu Thr Asn
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Thr Tyr Ser Lys Pro Thr Asn Ile His Glu Ser Ile Asn Ser Lys Asn
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225                 230                 235                 240
Asn Ile His Ser Phe Asn Asn Arg His Tyr Ser Asn His Lys Ser Thr
                245                 250                 255
Asn Cys Asn Tyr Tyr Asn Asn Thr Ser Asn Asn Asn Asn Ala Ser Asp
            260                 265                 270
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Tyr Tyr Tyr Pro Leu Glu Ile Ala Phe Asp Val Glu Lys Ser Pro Pro
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Pro Ser Leu Gln Lys Leu Asn Ser Lys Glu Leu Glu Phe Leu Lys Lys
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<400> 115

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<211> 645
<212> PRT
<213> Saccharomyces cerevisiae

<400> 116

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        35                  40                  45
Phe Gly Cys Val Thr Leu Ala Lys Ala Gln Phe Pro Leu Ser Asn Ile
    50                  55                  60
Leu Gly Lys Gln His Asp Ile Arg Gly Thr Leu Met Asp Gln Pro Lys
65                  70                  75                  80
Asn Gly His Gln Asn Tyr Ile Thr Lys Thr Gln Gly Val Val Ala Ile
                85                  90                  95
Lys Thr Met Met Thr Lys Leu His Thr Leu Gln Asp Tyr Thr Arg Val
            100                 105                 110
Arg Glu Ile Lys Phe Ile Leu Ala Ile Pro Ala Asn Asp His Leu Ile
        115                 120                 125
Gln Ile Phe Glu Val Phe Ile Asp Ser Glu Asn Tyr Gln Leu His Ile
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Val Met Glu Cys Met Glu Gln Asn Leu Tyr Gln Met Met Lys His Arg
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Arg Arg Arg Val Phe Ser Ile Pro Ser Leu Lys Ser Ile Leu Ser Gln
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Ile Leu Ala Gly Leu Lys His Ile His Glu His Asn Phe Phe His Arg
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Asp Leu Lys Pro Glu Asn Ile Leu Ile Thr Pro Ser Thr Gln Tyr Phe
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Glu Lys Glu Tyr Met Asn Gln Ile Gly Tyr Gln Asp Asn Tyr Val Ile
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Lys Leu Ala Asp Phe Gly Leu Ala Arg His Val Glu Asn Lys Asn Pro
225                 230                 235                 240
Tyr Thr Ala Tyr Val Ser Thr Arg Trp Tyr Arg Ser Pro Glu Ile Leu
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Leu Arg Ser Gly Tyr Tyr Ser Lys Pro Leu Asp Ile Trp Ala Phe Gly
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Cys Val Ala Val Glu Val Thr Val Phe Arg Ala Leu Phe Pro Gly Ala
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Asn Glu Ile Asp Gln Ile Trp Lys Ile Leu Glu Val Leu Gly Thr Pro
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Ile Lys Arg Ser Asp Phe Val Asn Thr Asn His Ile Thr Ala Pro Pro
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Pro Gly Gly Phe Trp Asp Asp Ala Ser Asn Leu Val His Lys Leu Asn
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Asp Glu Glu Val Leu Asp His Ser Leu Ser Asn Ile Arg Gln Leu Thr
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Tyr Val Asn Asn Ser Asn Tyr Thr His Thr Asp Arg Ser His His Arg
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Gly Asp Asn Val Leu Gly Asp Ala Ser Leu Gly Asp Ser Phe Asn Ser
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<210> 117
<211> 3884
<212> DNA
<213> Saccharomyces cerevisiae

<400> 117

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<210> 118
<211> 627
<212> PRT
<213> Saccharomyces cerevisiae

<400> 118

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            20                  25                  30
Val Ile Leu Thr Gln Leu Asn Glu Asp Gly Thr Thr Ser Asn Tyr Phe
        35                  40                  45
Asp Lys Arg Lys Leu Lys Ile Ala Pro Arg Ser Thr Leu Gln Phe Lys
    50                  55                  60
Val Gly Pro Pro Phe Glu Leu Val Arg Asp Tyr Cys Pro Val Val Glu
65                  70                  75                  80
Ser His Thr Gly Arg Thr Leu Asp Leu Arg Ile Ile Pro Arg Ile Asp
                85                  90                  95
Arg Gly Phe Asp His Ile Asp Glu Glu Trp Val Gly Tyr Lys Arg Asn
            100                 105                 110
Tyr Phe Thr Leu Val Ser Thr Phe Glu Thr Ala Asn Cys Asp Leu Asp
        115                 120                 125
Thr Phe Leu Lys Ser Ser Phe Asp Leu Leu Val Glu Asp Ser Ser Val
    130                 135                 140
Glu Ser Arg Leu Arg Val Gln Tyr Phe Ala Ile Lys Ile Lys Ala Lys
145                 150                 155                 160
Asn Asp Asp Asp Asp Thr Glu Ile Asn Leu Val Gln His Thr Ala Lys
                165                 170                 175
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Arg Asp Lys Gly Pro Gln Phe Cys Pro Ser Val Cys Pro Leu Val Pro
            180                 185                 190
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    210                 215                 220
Asp His Val Asn Tyr Glu Glu Tyr Gly Val Asp Ser Leu Leu Phe Ser
225                 230                 235                 240
Tyr Pro Glu Asp Ser Ile Gln Lys Val Ala Arg Tyr Glu Arg Val Gln
                245                 250                 255
Phe Ala Ser Ser Ile Ser Val Lys Lys Pro Ser Gln Gln Asn Lys His
            260                 265                 270
Phe Ser Leu His Val Ile Leu Gly Ala Val Val Asp Pro Asp Thr Phe
        275                 280                 285
His Gly Glu Asn Pro Gly Ile Pro Tyr Asp Glu Leu Ala Leu Lys Asn
    290                 295                 300
Gly Ser Lys Gly Met Phe Val Tyr Leu Gln Glu Met Lys Thr Pro Pro
305                 310                 315                 320
Leu Ile Ile Arg Gly Arg Ser Pro Ser Asn Tyr Ala Ser Ser Gln Arg
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Ile Thr Val Arg Thr Pro Ser Ser Val Asn Ser Ser Gln Asn Ser Thr
            340                 345                 350
Lys Arg Lys Met Pro Ser Met Ala Gln Pro Leu Asn Glu Ser Cys Leu
        355                 360                 365
Asn Ala Arg Pro Ser Lys Arg Arg Ser Lys Val Ala Leu Gly Ala Pro
    370                 375                 380
Asn Ser Gly Ala Ser Ile Ser Pro Ile Lys Ser Arg Gln Ser Thr Pro
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Met Glu Ala Ser Lys Glu Asn Glu Asp Pro Phe Phe Arg Pro Asn Lys
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Arg Val Glu Thr Leu Glu His Ile Gln Asn Lys Leu Gly Ala Leu Lys
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Asn Gln Cys Pro Asp Ser Ser Leu Lys Tyr Pro Ser Ser Ser Ser Arg
        435                 440                 445
Gly Met Glu Gly Cys Leu Glu Lys Glu Asp Leu Val Tyr Ser Ser Ser
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Phe Ser Val Asn Met Lys Gln Ile Glu Leu Lys Pro Ala Arg Ser Phe
465                 470                 475                 480
Glu His Glu Asn Ile Phe Lys Val Gly Ser Leu Ala Phe Lys Lys Ile
                485                 490                 495
Asn Glu Leu Pro His Glu Asn Tyr Asp Ile Thr Ile Glu Lys Lys Ser
            500                 505                 510
Met Glu Gln Asn Tyr Leu Arg Pro Glu Ile Gly Ser Arg Ser Glu Cys
        515                 520                 525
Lys Thr Ser Tyr Gly Asn Glu Leu Ser Leu Ser Asn Ile Ser Phe Ser
    530                 535                 540
Ile Leu Pro Asn Ser Ala Glu Asn Phe His Leu Glu Thr Ala Leu Phe
545                 550                 555                 560
Pro Ala Thr Glu Glu Asp Val Pro Arg Thr Phe Ser Arg Ile Leu Glu
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Thr Gly Ser Phe Gln Asn Tyr Tyr Gln Lys Met Asp Ala Glu Asn Ala
            580                 585                 590
Asp Arg Val Tyr Ser Lys Gly Val Lys Leu Ile Ala Ser Gly Thr Leu
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625
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<210> 119
<211> 3197
<212> DNA

<213> Saccharomyces cerevisiae

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tcaaaccagc aatggttaaa gggttgctat ttcgattctg atactttcaa gagtaaatta 660
aagttcttgg aagagaagtt tcctcatgac aaataacttc atttttcag catagttatg 720
tgattcttta tatttattta ttttctctct gtgtagtgac aatttttttt taatgtttca 780
tgttaaatat atttatatta agaagccgtc agtttccttt ttgtttcatt gaaatcaata 840
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tactttattt agtgattata ttcaactaaa tattattcaa ataacctcac atatttgtct 960
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<210> 120
<211> 398
<212> PRT
<213> Saccharomyces cerevisiae

<400> 120
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            20   25   30
Gly His Ser Asn Gly Thr Pro Cys Ser Asn Ala Asp Val Leu Ala His
        35   40   45
Ile Lys His Phe Leu Ser Leu Ala Ala Asn Ser Leu Glu Gln His Gln
    50   55   60
Gln Pro Ile Ser Ile Val Phe Gln Asn Lys Lys Arg Lys Gly Asp Thr
65   70   75   80
Ser Ser Pro Asp Ile His Thr Thr Leu Asp Phe Pro Leu Asn Gly Pro
                85   90   95
His Leu Cys Thr His Gln Phe Lys Leu Lys Arg Cys Ala Ile Leu Leu
            100   105   110
Asn Leu Leu Lys Val Val Met Glu Lys Leu Pro Leu Gly Lys Asn Thr
        115   120   125
Thr Val Arg Asp Ile Phe Tyr Ser Asn Val Glu Leu Phe Gln Arg Gln
    130   135   140
Ala Asn Val Val Gln Trp Leu Asp Val Ile Arg Phe Asn Phe Lys Leu
145   150   155   160
Ser Pro Arg Lys Ser Leu Asn Ile Ile Pro Ala Gln Lys Gly Leu Val
                165   170   175
Tyr Ser Pro Phe Pro Ile Asp Ile Tyr Asp Asn Ile Leu Thr Cys Ala
            180   185   190
Asn Glu Pro Lys Met Gln Lys Gln Thr Ile Phe Pro Gly Lys Pro Cys
        195   200   205
Leu Ile Pro Phe Phe Gln Asp Asp Ala Val Ile Lys Leu Gly Thr Thr
    210   215   220
Ser Met Cys Asn Ile Val Ile Val Glu Lys Glu Ala Val Phe Thr Lys
225   230   235   240
Leu Val Asn Asn Tyr His Lys Leu Ser Thr Asn Thr Met Leu Ile Thr
                245   250   255
Gly Lys Gly Phe Pro Asp Phe Leu Thr Arg Leu Phe Leu Lys Lys Leu
            260   265   270
Glu Gln Tyr Cys Ser Asn Leu Ile Ser Asp Cys Ser Ile Phe Thr Asp
        275   280   285
Ala Asp Pro Tyr Gly Ile Ser Ile Ala Leu Asn Tyr Thr His Ser Asn
    290   295   300
Glu Arg Asn Ala Tyr Ile Cys Thr Met Ala Asn Tyr Lys Gly Ile Arg
305   310   315   320
Ile Thr Gln Val Leu Ala Gln Asn Asn Glu Val His Asn Lys Ser Ile
                325   330   335
Gln Leu Leu Ser Leu Asn Gln Arg Asp Tyr Ser Leu Ala Lys Asn Leu
            340   345   350
Ile Ala Ser Leu Thr Ala Asn Ser Trp Asp Ile Ala Thr Ser Pro Leu
        355   360   365
Lys Asn Val Ile Ile Glu Cys Gln Arg Glu Ile Phe Phe Gln Lys Lys
    370   375   380
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<210> 121
<211> 3194
<212> DNA
<213> Saccharomyces cerevisiae

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aaggtctaga tttgctaaga cgatgaggcg gagcccgaaa caaacaagcc aaaaaccgga 180
atttcgcgct tggtgtgctt tcgcatcttt tcgtgtggtg aatgcacctg gtgcacgctg 240

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<210> 122
<211> 397
<212> PRT
<213> Saccharomyces cerevisiae

<400> 122

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            20                  25                  30
Leu Ile Ser Asn Ile Thr Gly Ser His Glu Thr Lys Tyr Leu Ser Pro
        35                  40                  45
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Phe Arg Met Asp Asn Cys Ser Gly Ser Arg Arg Arg Asp Arg Leu His
    50                  55                  60
Val Lys Leu Lys Ser Leu Arg Asn Lys Ile His Lys Gln Leu His Pro
65                  70                  75                  80
Asn Cys Arg Phe Asp Asp Ala Thr Lys Thr Ser Asp Asp Lys Cys Val
                85                  90                  95
Ser Tyr Glu Val Pro Glu Arg Asp Gly Leu Ala Thr Ile Ser Leu Glu
            100                 105                 110
Glu Val Phe Pro Lys Ser Asn Arg Cys Gln Ile Pro Glu Glu Asn Leu
        115                 120                 125
Gly Glu Thr Asp Ser Val Ile His Arg Asp Leu Gly Asn Phe Ala Asn
    130                 135                 140
Glu Asn Asp Tyr Pro Gln Trp Arg Lys Val Glu Ser Gln Tyr Asn Leu
145                 150                 155                 160
Glu Asn Val Gln Pro Glu Glu Asp Glu Ile Val Asp Arg Leu Arg Ser
                165                 170                 175
Glu Ile Arg Ser Thr Lys Leu Lys Ser Val Lys Thr Thr Ser Arg Thr
            180                 185                 190
Leu Glu Lys Ala Ile Glu Ala Arg Cys Thr Gly Lys Arg Val Leu Gln
        195                 200                 205
Gln Leu Ser Cys Gln Ser Asn Gln Leu Thr Lys Ile Glu Ser Asn Cys
    210                 215                 220
Asp Met Leu Lys Ile Gln Ser Asn Val Ala Asp Arg Lys Ile Asp Glu
225                 230                 235                 240
Leu Ala His Glu Asn Arg Ser Leu Leu Ala Leu Lys Ser Pro Asn Pro
                245                 250                 255
Phe Arg Lys Lys Arg Glu Arg Glu Lys Arg Asp Gln Ile Asn Asn Leu
            260                 265                 270
Lys Leu Lys His Arg His Leu Gln Gln Glu Thr Met Lys Arg Ala Gln
        275                 280                 285
Asp Ser Asp Lys Asn Leu Ala Ile Asn Leu Ser Ser Glu Tyr Gly Arg
    290                 295                 300
Tyr Gly Gln Gly Val Glu Arg Gln Arg Ile Leu Arg Asp Ala Gln Lys
305                 310                 315                 320
Tyr Gln Phe Glu Ala Asp Glu Glu Asp Asn Gln Met Glu Ile Asp Leu
                325                 330                 335
Tyr Gly Asn Leu Glu Gln Ile Lys Ala Val Ser Gly Asp Leu Lys Ile
            340                 345                 350
Met Ala His Ala Phe Gly Arg Glu Phe Glu Ala Gln Asn Thr Arg Met
        355                 360                 365
Phe Asp Ile Glu Asn Asn Val Gln Gln Ala Asp Asn Ala Leu Gln Ala
    370                 375                 380
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<210> 123
<211> 3875
<212> DNA
<213> Saccharomyces cerevisiae

<400> 123

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cacaaagttc catgctcgct tctcaaattc agttagacaa gaagagccca acttttcgat 180
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Gly Phe Asp Ile Ser Tyr Ser Glu Leu Cys Glu Lys Ser Pro Ser Pro
    50                  55                  60
Glu Arg Leu Ser Ser Pro Glu Phe Phe Asn Glu Leu Arg Asn Thr Gly
65                  70                  75                  80
His Tyr Glu Ser Ile Ser Thr Thr Asn Glu Phe Ser Met Ser Ser Ile
                85                  90                  95
Ser Ser Ser Ser Glu Ser Gln Val Thr Arg Ser Gly Ser Ala Arg Ala
            100                 105                 110
Ser Arg Asn Asp Tyr Ser Lys Leu Thr Lys Glu Gln Lys Asp His Arg
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Lys Asn Ile Ala His Ser Leu Gly Phe Gln Leu Pro Asp Arg Val Phe
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Thr Phe Glu Thr Thr Ser Ala Glu Ile Leu Glu Lys Asn Lys Ala Ile
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            180                 185                 190
Ser Asn Ala Arg Ser Ala Ser Pro Gln Arg Gln Ile Gln Arg Pro Ala
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Lys Arg Val Lys Ser His Ile Pro Tyr Arg Val Leu Asp Ala Pro Cys
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Leu Arg Asn Asp Phe Tyr Ser Asn Leu Ile Ser Trp Ser Arg Thr Thr
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Asn Asn Val Leu Val Gly Leu Gly Cys Ser Val Tyr Ile Trp Ser Glu
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Arg Asp Leu Val Thr Cys Val Ser Phe Cys Pro Tyr Asn Thr Tyr Phe
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Ile Val Gly Thr Lys Phe Gly Arg Ile Leu Leu Tyr Asp Gln Lys Glu
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Phe Phe His Ser Ser Asn Thr Asn Glu Lys Glu Pro Val Phe Val Phe
305                 310                 315                 320
Gln Thr Glu Ser Phe Lys Gly Ile Cys Cys Leu Glu Trp Phe Lys Pro
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Gly Glu Ile Cys Lys Phe Tyr Val Gly Glu Glu Asn Gly Asn Val Ser
            340                 345                 350
Leu Phe Glu Ile Lys Ser Leu His Phe Pro Ile Lys Asn Trp Ser Lys
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Arg Gln Lys Leu Glu Asp Glu Asn Leu Ile Gly Leu Lys Leu His Ser
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His Ala Asn Leu Leu Ala Val Gly Gly Asn Asp Asn Ser Cys Ser Leu
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Trp Asp Ile Ser Asp Leu Asp Lys Pro Ile Lys Lys Phe Val Leu Pro
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His Lys Ala Ala Val Lys Ala Ile Ala Phe Cys Pro Trp Ser Lys Ser
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Phe Gly Phe Gly Asp Thr Lys Asn Pro Val Leu Ile Thr Leu Tyr Ser
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<212> DNA
<213> Saccharomyces cerevisiae

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<213> Saccharomyces cerevisiae

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Pro Phe Ser Val Asn Asp Ile Val Gln Asn Leu His Asn Lys Val Thr
        35   40   45
Lys Thr Thr Ala Thr Lys Ala Leu Glu Asn Leu Val Asn Glu Lys Arg
    50   55   60
Ile Val Ser Lys Thr Phe Gly Lys Ile Ile Ile Tyr Ser Cys Asn Glu
65   70   75   80
Gln Asp Thr Ala Leu Pro Ser Asn Ile Asp Pro Ser Gln Phe Asp Phe
                85   90   95
Glu Thr Val Leu Gln Leu Arg Asn Asp Leu Ile Glu Leu Glu Arg Asp
            100   105   110
Lys Ser Met Ala Lys Asp Ala Leu Asp Ser Val Thr Lys Glu Pro Glu
        115   120   125
Asn Glu Asp Leu Leu Thr Ile Ile Glu Asn Glu Glu Asn Glu Leu Lys
    130   135   140
Lys Ile Glu Ser Lys Leu Gln Ser Leu Gln Asp Asp Trp Asp Pro Ala
145   150   155   160
Asn Asp Glu Ile Val Lys Arg Ile Met Ser Glu Asp Thr Leu Leu Gln
                165   170   175
Lys Glu Ile Thr Lys Arg Ser Lys Ile Cys Lys Asn Leu Ile Ala Thr
            180   185   190
Ile Lys Asp Ser Val Cys Pro Lys Asn Met Asn Glu Phe Leu Val Cys
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<212> DNA
<213> Saccharomyces cerevisiae

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<211> 609
<212> PRT
<213> Saccharomyces cerevisiae

<400> 128

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Glu Gln Asp Thr Asp Thr His Lys Asp Gly Asp Thr Ser Gly Leu Glu
        35                  40                  45
Asn Ser Lys Ile Ser Lys Arg Lys Trp Met Lys Glu Phe Phe Lys Leu
    50                  55                  60
Ser Lys Ser Pro Ala Ser Lys Ser Asn Arg Ser Ile Gly Ser Met Lys
65                  70                  75                  80
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Ser Asn Gln Ser Leu Val Ser Met Lys Ser Ser Asp Asp Gly Asn Ser
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Tyr Lys Asn Asp Tyr Ser Ser Ile Cys Gly Asn Ser Leu Pro Ser Ala
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Gly Leu Ser Arg Ser Asn Ser Val Lys Glu Leu Lys Leu Asp Ser Thr
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Gly Ser Gln Arg Ser Lys Asn Asn Val Ala Met Leu Ala Arg Ser Ser
    130                 135                 140
Thr Thr Ser Gln Thr Thr Cys Ser Ser Ser Ser Ser Ser Ser Ser Tyr
145                 150                 155                 160
Asn Ser Ile Lys Gly Asn Glu Asn Asp Ile Leu Leu Gln Asn Asn Asn
                165                 170                 175
His Phe Arg His Asn Lys Glu Ile Pro Gln Ser Lys Gly Ser Ser Asn
            180                 185                 190
Ile Asn Thr Ala Ser Ile Met Ser Gln Tyr Asn Val Asp Thr Gln Ala
        195                 200                 205
Thr Ala Ile Met Ser Asp Met Gln Lys Gln Tyr Asp Ser Gln Gln Met
    210                 215                 220
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225                 230                 235                 240
Val Ser His Val Ile Lys Ala Ile Phe Lys Glu Ile Gly Tyr Lys Tyr
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Gln Leu Val Lys Lys Asn Ser Ser Ala Arg Arg Thr Lys Ile Thr Asp
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305                 310                 315                 320
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            340                 345                 350
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Lys Lys Arg Phe Ser Pro Ser Pro Ile Ser Ser Ser Thr Phe Ser Phe
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                165   170   175
Cys Thr Leu Cys Asp Glu Pro Ile Ser Asn Arg Arg Lys Gly Glu Lys
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Ile Ile Glu Leu Ala Cys Gly His Leu Ser His Gln Glu Cys Leu Ile
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His Lys Ile Pro Asp Ser Glu Leu Ser Ile Thr Pro Gln Ser Arg Phe
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Val Glu Arg Gln Thr Ile Tyr Ser Gln Ala Pro Ser Leu Asn Pro Asn
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Phe Ala Arg Leu Gln Phe Cys Phe Val Asp Arg Asn Asn Tyr Val Leu
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Leu His Ala Gln Ile Asn Lys Ala Lys His Lys Ile Gln Asp Ala Ser
    50   55   60
Leu Phe Gln Met Ala Asn Lys Val Thr Ser Leu Thr Lys Asn Lys Ile
65   70   75   80
Asn Leu Lys Pro Asn Ile Val Leu Lys Gly His Asn Asn Lys Ile Ser
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Ala Ile Pro Leu Asp Ser Gln Trp Val Leu Ser Cys Ala Ile Ser Pro
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260 265 270
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325 330 335
Gln Thr Leu Lys Ser Thr Ser Ser Ser Tyr Leu Asp Asn Gln Gly Val
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355 360 365
Thr Asp Ile Gly Cys Val Val Trp Asp Val Leu Lys Gly Glu Ile Val
370 375 380
Gly Lys Leu Glu Gly His Gly Gly Arg Val Thr Gly Val Arg Ser Ser
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<212> PRT
<213> Saccharomyces cerevisiae

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35 40 45
Glu Arg Ile Thr Ala Ser Asn Ala Cys Leu Thr Ile Ile Asn Tyr Thr
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Ser Asn Thr Lys Asp Tyr Thr Leu Pro Glu Leu Trp Gly Tyr Pro Val
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<212> DNA
<213> Saccharomyces cerevisiae

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<210> 136
<211> 688
<212> PRT
<213> Saccharomyces cerevisiae

<400> 136

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Thr Ala Pro Val Asn Trp Gln Glu Asn Gln Ile Ile Arg Arg Tyr Tyr
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Leu Asn Ser Gly Gln Gly Phe Val Ser Cys Val Phe Trp Asn Asn Leu
65                  70                  75                  80
Tyr Tyr Ile Thr Gly Thr Asp Ile Val Lys Cys Cys Leu Tyr Arg Met
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His Asp Lys Leu Phe Ala Asp Ala Leu Glu Arg Asp Leu Lys Arg Glu
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Ser Leu Asn Gln Pro Ser Thr Thr Lys Pro Val Asn Glu Pro Ala Leu
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Ser Phe Ser Tyr Asp Ser Ser Ser Asp Lys Pro Leu Tyr Asp Gln Leu
        195                 200                 205
Leu Gln His Leu Asp Ser Arg Arg Pro Ser Ser Thr Thr Lys Ser Asp
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Asn Ser Pro Pro Lys Leu Glu Ser Glu Asn Phe Lys Asp Asn Glu Leu
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Thr Pro His Asp Leu Pro Lys Asn Thr Ala Lys Gly Arg Asp Glu Glu
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Asp Phe Pro Leu Asp Tyr Phe Pro Val Ser Val Glu Tyr Pro Thr Glu
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465                 470                 475                 480
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Arg Ser Thr Pro Gly Ser Ala Met Phe Pro Tyr Met Gln Ser Ser Asn
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545                 550                 555                 560
Ser Thr Thr Ala Lys Asn Tyr Pro Pro Ser Thr Phe Tyr Ser Gln Asn
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Gly Asn Val Pro Thr Gly Asn Lys Gln Ser Val Gly Lys Ser Ala Lys
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Ser Ala His Pro Asp Lys Asn Lys Glu Ile Ser Met Pro Thr Pro Asp
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<211> 3548
<212> DNA
<213> Saccharomyces cerevisiae

<400> 137

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<210> 138
<211> 515
<212> PRT
<213> Saccharomyces cerevisiae

<400> 138

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