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<110> DSM IP Assets B.V.

<120> NOVEL LYSYL OXIDASES

<130> 25977WO

<160> 11

<170> PatentIn version 3.2

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<211> 817

<212> PRT

<213> *Aspergillus nidulans* ZGR

<400> 1

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Leu Val Gly Arg Ser Asn Gln His Ile Thr His Gln Ser Arg Pro Tyr
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Thr Asn Glu Tyr Ala Ser Pro Cys Gln Ile Thr Pro Pro Gln Glu Ile
65 70 75 80

Lys Ala Pro Lys Glu Asn Val Trp Tyr Gly Leu Thr Asp Asp Glu Thr
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Ala Asp Val Ala Lys Trp Leu Phe Gly Arg Pro Glu Leu Asn Leu Thr
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Thr Thr Glu Asn Ala Gly Glu Trp Asp Asn Thr Ile Ala Leu Ile Glu
115 120 125

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

Thr Thr Asp Pro Tyr Phe Ala Asp Ile Leu Val Gly Pro Leu Pro Val
 165 170 175

Ser Asn Ala Thr Thr Trp Glu Pro Leu Glu Phe Pro Tyr Thr Arg Lys
 180 185 190

Thr Gln Gly Gln Val Arg Asn Val Glu Pro Asp Gly Glu Thr Val Tyr
 195 200 205

Ser Glu Trp Leu Phe Lys Ile Ser Ala Ser Ile Ala Asp Ile Thr Leu
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Asp Leu Trp Asn Gly Thr Ala Leu Gly Leu Glu Asn Asp Thr Leu Asp
 225 230 235 240

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

Lys Leu Lys Pro Asn Val Asp Gly Ala Trp Ala His Thr Glu Gln Arg
 325 330 335

Gly Pro Val Pro Pro Gln Asp Arg Lys Gln Pro Pro Val Met Ile Ala
 340 345 350

Pro Asp Gly Ala Arg Tyr Ser Val Asp Ala Glu Arg Lys Tyr Val Thr
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Trp Met Asp Phe Ser Phe Tyr Ile Ala Phe Asn Arg Asp Thr Gly Leu
 370 375 380

Ser Leu Phe Asp Ile Lys Tyr Lys Gly Gln Arg Val Leu Tyr Glu Leu
 385 390 395 400

Gly Leu Gln Glu Ala Leu Ala His Tyr Ala Ala Asn Asp Pro Val Gln
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Ser Ser Val Ala Tyr Leu Asp Ser Tyr Tyr Gly Phe Gly Pro Tyr Ala
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Phe Glu Leu Leu Lys Gly Tyr Asp Cys Pro Ser Tyr Ala Ser Tyr Leu
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Asn Thr Ser Phe Tyr Lys Asp Glu Glu Thr His Thr His Val Asp Ser
 450 455 460

Leu Cys Leu Phe Glu Phe Asp Ala Asp Tyr Pro Met Ala Arg His Ser
 465 470 475 480

Thr Ser Glu Phe Val Ser Val Thr Lys Asn Val Tyr Phe Thr Leu Arg
 485 490 495

Ser Val Ser Thr Ile Gly Asn Tyr Asp Tyr Met Phe Ser Tyr Asn Phe
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His Met Asp Gly Thr Ile Gly Val Glu Val Arg Ala Ser Gly Tyr Ile
 515 520 525

Gln Ser Ala Tyr Tyr Ala Asn Asn Gln Asp Phe Gly Tyr Gln Ile His
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Asp Ser Leu Ser Gly Ser Met His Asp His Val Leu Asn Phe Lys Ala
 545 550 555 560

Asp Phe Asp Ile Leu Gly Pro Asn Asn Thr Ile Glu Leu Val Ser Val
 565 570 575

Val Pro Val Thr Lys Gln Phe Ser Trp Ser Gly Asn Lys Thr Arg Asn
 580 585 590

Thr Met Gln Leu Gly Arg Ser Phe Ile His Ser Glu Asp Glu Ala Arg
 595 600 605

Leu Asn Trp Gly Phe Asn Gly Gln Thr Gln Leu His Val Val Asn Gln
 610 615 620

Asp Lys Pro Asn Lys Phe Gly Glu Pro Arg Gly Tyr Arg Ile Leu Pro
 625 630 635 640

Ser Ala Gly Thr Ala His Leu Thr Val Leu Asn Ser Ser Asn Leu Val
 645 650 655

His Ala Ala His Trp Ala Glu Tyr Asp Val Gln Val Thr Arg Gln His
 660 665 670

Asp Phe Glu Pro Thr Ser Ala His Pro Tyr Asn Ser Gln Asp Ile His
 675 680 685

Asn Pro Pro Val Asp Phe Ser Thr Phe Phe Asn Gly Glu Ser Leu Asn
 690 695 700

Gln Thr Asp Leu Val Val Trp Leu Asn Leu Gly Met His His Val Pro
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His Thr Gly Asp Leu Pro Asn Thr Val Phe Thr Thr Ala His Ser Gly
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Val Ala Phe Thr Pro Leu Asn Tyr Leu Pro Gly Asp Pro Ser Arg Glu
 740 745 750

Thr Val Asn Met Val Arg Val Asp Tyr Ser Asp Gly Ala Ala Thr Ala
 755 760 765

Val Arg Thr Phe Gly Gln Ser Asn Glu Thr Cys Ser Val Val Leu Gln
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Pro Val Glu Asn Glu Leu Trp Ser Tyr Gln Gly Asp Val Val Val Arg
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<211> 801
 <212> PRT
 <213> *Cryptococcus neoformans* ZGT

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 35 40 45

Ser Pro Thr Thr Ser Ala Pro Lys Asp Asn Ile Trp Asn Phe Leu Ser
 50 55 60

Asn Asp Glu Ala Ala Gly Ile Ile Ala Phe Leu His Ser Gln Thr Glu
 65 70 75 80

Leu Asn Leu Thr Ala Val Asn Asp Ala Gly Asp Trp Asp Asn Thr Ile
 85 90 95

Thr Val Val Asp Leu Leu Pro Pro Asn Lys Thr Glu Ala Leu Ser Tyr
 100 105 110

Met Asp Gly Asn Gly Thr Lys Pro Glu Arg Trp Gly Ile Ala Ser Leu
 115 120 125

Leu Cys Gly Ala Thr Glu Glu Pro Tyr Ala Gln Asp Leu Val Val Gly
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Pro Leu Pro Val Ser Glu Val Thr Ile Tyr Tyr Pro Tyr Thr Tyr Gly
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Thr His Ala Pro Asp Ala Lys Ile Arg Val Tyr Asp Met Asp Asp Asn
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Ser Glu Phe Leu Ser Asp Ile Ala Met Ser Met Lys Asp Ile Ile Ser
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Asp Ile Leu Asn Ala Thr Ile Asp Thr Ala Asp Asp Leu Ala Asp Thr
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Phe Asp Ile Trp Gly Ile Asp Pro Leu Trp His Gln Pro Asp Glu Asn
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Gly Asn Asp Arg Val Ile Tyr Trp Ala Gly Phe Trp Arg Tyr Pro Asp
 225 230 235 240

Ser Leu Gln Met Glu Asn Ser Thr Ile Asn Phe Asp Gly Glu Thr Leu
 245 250 255

Leu Pro Gln Gly Leu Tyr Ile Gln Thr Asp Ile Thr Gly Arg Asp Arg
 260 265 270

Ser Lys Trp Ala Leu Met Gly Ile Leu Tyr Gly Asp Asp Tyr Tyr Thr
 275 280 285

Ser Val Asp Glu Phe Arg Ala Ala Trp Arg Lys Pro Gly Phe Lys Lys
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Phe Thr Pro Asn Tyr Ser Gly Asp Trp Ile Gly Thr Asp Gln Thr Gly
 305 310 315 320

Asp Val Met Pro Phe Glu Thr Glu Ala Pro Pro Met Asn Val Gln Pro
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Gly Gly Gln Arg Phe Lys Val Asp Glu Asp Asn Lys Tyr Val Glu Trp
 340 345 350

Met Asp Phe Ser Phe Tyr Leu Thr Phe Thr Arg Asp Thr Gly Met Arg
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Leu Tyr Asp Val Lys Phe Lys Gly Glu Arg Ile Ile Tyr Glu Leu Gly
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Leu Gln Glu Ala Ile Ala His Tyr Ala Gly Asn Asp Pro Val Gln Ser
 385 390 395 400

Gly Thr Ala Tyr Leu Asp Thr Tyr Tyr Gly Phe Gly Pro Tyr Ala Phe
 405 410 415

Ser Gln Val Pro Gly Phe Asp Met Pro Leu Tyr Ala Tyr Cys Met Asn
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Thr Ser Phe His Ala Ala Glu Leu Ser Thr Ser His Arg Cys Gly Ile
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Ser Ile Phe Glu Ala Asp Gln Asn Tyr Pro Ile Gln Arg His Ser Asn
 450 455 460

Met Asn Tyr Val Ser Ala Thr Lys Asn Ile Ala Leu Thr Leu Arg Ser
 465 470 475 480

Ile Ser Thr Val Gly Asn Tyr Asp Tyr Asn Phe Asp Tyr Asn Phe Tyr
 485 490 495

Leu Asp Gly Thr Ile Glu Thr Val Val Arg Ala Ser Gly Tyr Ile Gln
 500 505 510

Ser Ala Phe Tyr Ala Asn Asn Thr Glu Tyr Gly Tyr Gln Ile His Asp
 515 520 525

Ser Leu Ser Gly Ser Met His Asp His Val Leu Asn Phe Lys Val Asp
 530 535 540

Phe Asp Ile Ala Gly Val Glu Asn Thr Leu Val Lys His Ile Val Glu
 545 550 555 560

Pro Lys Glu Ile Lys Tyr Lys Trp Asn Asn Leu Thr Arg Ser Thr Met
 565 570 575

His Leu Val Arg Lys Glu Ile Thr Asn Glu Asp Glu Gly Lys Met Asn
 580 585 590

Trp Ser His Asn Gly Gln Glu Gln Val Val Ile Val Asn Lys Asp Ala
 595 600 605

Pro Asn Lys Tyr Gly Glu Pro Lys Gly Tyr Lys Ile Met Pro Ser Arg
 610 615 620

Gly Gly Ser Gly Met His Leu Thr Ile Thr Asn Ser Ser Asn Leu Phe
 625 630 635 640

Asn Ser Gln Gly Phe Ala Thr His Gln Tyr Tyr Val Leu Lys Arg Lys
 645 650 655

Asp Ser Glu Leu Arg Ala Ser Asn Ala Trp Asn Asp Tyr Asp Thr Gln

660 665 670
 His Pro Met Ile Asp Phe Ser Lys Tyr Phe Asp Gly Glu Asp Ile Glu
 675 680 685
 Gln Glu Asp Ile Val Met Tyr Phe Asn Leu Gly Met His His Val Pro
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 His Thr Gly Asp Leu Pro Asn Thr Val Phe Ser Thr Ala Gln Ser Gly
 705 710 715 720
 Met Met Ile Leu Pro His Asn Tyr Leu Leu Ser Asp Pro Ser Arg Gln
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 Ala Thr Gln Gln Ile Arg Ile Asp Tyr Asn Val Asn Ser Thr Thr Asp
 740 745 750
 Val Tyr Ser Trp Ala Ser Gln Ala Ala Thr Gly Glu Leu Asp Phe Ser
 755 760 765
 Gln Ile Thr Trp Asp Pro Tyr Thr Tyr Asp Gly Asp Val Ser Val Arg
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 <212> PRT
 <213> Fusarium graminearum GLO1

<400> 3

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 Ser Asp Gly Pro Ala Ala Arg Tyr Asn Ser Leu Asn Arg His Lys Val
 35 40 45

Glu Thr Ser Gln Cys Asp Ser Asn Lys Glu Val Gly Val Lys Ala Pro
 50 55 60

Trp Lys Asn Val Phe Gln Ser Leu Thr Asp Gln Glu Tyr Ala Asp Val
 65 70 75 80

Thr Ala Tyr Leu His Lys Gln Glu Glu Leu Asn Leu Thr Ala Ile Val
 85 90 95

Asn Ser Thr Ser Trp Asp Asn Val Ile Val Ser Met Asp Leu Leu Gln
 100 105 110

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

Pro Ala Arg Tyr Ala Arg Ala Thr Leu Gln Phe Asn Ser Gln Leu Gln
 130 135 140

Pro Tyr Ile Gln Glu Tyr Met Val Gly Pro Leu Pro Val Gln Glu Gly
 145 150 155 160

Ser Thr Arg Tyr Glu Glu Leu Asn Tyr Met Phe Ser Ser Gly Arg Gly
 165 170 175

Arg Ile Asn Val Tyr Asn Ala Asp Thr Glu Ala Ile Ala Glu Phe Asn
 180 185 190

Leu Ala Val Gly Thr Glu Ile Gln Asn Ile Thr Lys Gln Leu Leu Asn
 195 200 205

Gly Thr Ala Thr Gly Ala Lys Asp Asp Ser Leu Leu Ile Ala Gly Ser
 210 215 220

Asp Pro Leu Ile His Asn Asp Asp Arg Val Tyr Gln Trp Asn Glu Phe
 225 230 235 240

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

Ser Leu Gln Phe Lys Val Asp Ile Thr Gly Arg Asp Pro Ser Lys Trp
 260 265 270

Lys Val Val Gly Trp Tyr Tyr Asp Gly Ser Tyr Trp Ser Thr Thr Ala
 275 280 285

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

Leu Asp His Leu Gln Pro Pro Thr Ala Val Gln Pro Asp Gly Pro Arg
 325 330 335

Phe Arg Val Asp Arg Glu Glu Asn Tyr Ile Glu Trp Met Asp Phe Ser
 340 345 350

Phe Phe Ile Ser Asn His Lys Glu Thr Gly Leu Gln Leu His Asp Val
 355 360 365

Arg Tyr Arg Gly Glu Arg Ile Ile Tyr Glu Leu Gly Leu Gln Glu Ala
 370 375 380

Met Ala His Tyr Ala Ser Gln Asp Pro Leu His Ala Ser Ser Ala Tyr
 385 390 395 400

Leu Asp Thr Ser Tyr Gly Ile Gly Thr Ser Gln Trp Asn Leu Val Asp
 405 410 415

Gly Phe Asp Cys Pro Ser His Ser Thr Tyr Leu Asn Thr Ser Phe Tyr
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Ile Ser Glu Met Thr His Ile His Pro Asn Ser Leu Cys Leu Phe Glu
 435 440 445

His Asp Thr Gly Tyr Pro Ile Gln Arg His Leu Thr Gly Thr Tyr Val
 450 455 460

Ser Ala Thr Lys Asn Ile Val Phe Thr Val Arg Ser Val Ser Thr Val
 465 470 475 480

Gly Asn Tyr Asp Tyr Leu Phe Glu Tyr Thr Phe His Tyr Asp Gly Ser
 485 490 495

Ile Ser Val Thr Val Arg Ala Ser Gly Tyr Ile Gln Gly Ala Phe Trp

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Ser Met His Asp His Val Ile Asn Phe Lys Leu Asp Leu Asp Ile Lys		
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Gly Arg Lys Asn Ser Val Leu Lys Thr Glu Phe Val Pro Val Ser Val		
545	550	555
Val Tyr Pro Trp Ser Glu Gly Gln Ser Ile Asn Thr Met Lys Ala Asn		
565	570	575
Arg Ser Tyr Ile Ala Ser Glu Asp Glu Gly Lys Ile Thr Trp Ala Lys		
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Asn Gly Ala Ala Ala Tyr Ala Val Val Asn Lys Asp Ala Leu Asn Asp		
595	600	605
Phe Gly Glu Ala Pro Gly Tyr Ala Ile Ser Pro Asn Ser Gly Ser Thr		
610	615	620
Gly His Leu Thr Val Gln Ser Ser Thr Ala Leu Gly Gln Ser Ala Asn		
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Trp Ala Asn His Asn Ile Phe Ala Leu Gln Gln His Asp Thr Glu Pro		
645	650	655
Lys Ser Ala Tyr Ala Phe Asn Ser Tyr Asp Pro His His Pro Ala Val		
660	665	670
Asp Phe Asn Lys Phe Phe Asn Gly Glu Ser Leu Asp Gln Glu Asp Ile		
675	680	685
Val Leu Tyr Phe Asn Leu Gly Met His His Leu Pro Asn Thr Ala Asp		
690	695	700
Leu Pro Asn Thr Val Thr Thr Lys Ala Val Ser Ser Met Met Ile Ser		
705	710	715
Pro Gln Asn Tyr Phe Ser Gly Asp Ile Ser Arg Arg Thr Met His Gln		
725	730	735

Val Arg Val Ser Phe Asp Asp Lys Ser Asn Val Thr Ala Val Asn Met
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Phe Gly Thr Lys Gln Pro Thr Cys Ala Phe Asp Met Ala Lys Ala Ala
 755 760 765

Pro Lys Leu Asp Thr Phe Val Gly Glu Leu Gln Ile Pro Lys Phe Pro
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 785 790 795

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<400> 4

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

Met Ala Asn His Leu Lys Arg Ala Ile Met Gly Asp Arg Arg Ala Val
 50 55 60

Glu Thr Pro Phe Cys Ser Glu Thr Leu Ala Thr Glu Ile Lys Ala Pro
 65 70 75 80

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

Val Glu Trp Leu Phe Ala Gln Ala Asp Leu Asn Leu Thr Val Thr Glu
 100 105 110

Glu Ala Gly Gly Trp Asp Asn Thr Ile Gln Leu Val Glu Ala Met Trp
 115 120 125

Pro Asn Lys Thr Asp Val Leu Ala Phe Val Asp Gly Asp Gly Pro Ala
 130 135 140

Pro Thr Lys Tyr Ala His Val Val Leu Asn Asn Arg Ala Thr Glu Thr
 145 150 155 160

Pro His Tyr Ala Asp Ile Ile Val Gly Pro Leu Pro Leu Asp Asn Ala
 165 170 175

Thr Ala Lys Trp Glu Pro Leu Glu Tyr Pro Tyr Thr Lys Gln Asn Gly
 180 185 190

Gly Lys Val Arg Asn Leu Asp Ala Asp Ser Asp Arg Leu Tyr Ser Glu
 195 200 205

Trp Leu Phe Lys Ile Gly Ala Ser Val Ala Asp Ile Thr Leu Asp Leu
 210 215 220

Trp Asn Gly Thr Ala Met Gly Leu Glu Asn Asp Thr Leu Ser Ile Trp
 225 230 235 240

Gly Ile Asp Pro Leu Trp Gln Asp Asp Gly Glu Ile Ile Arg Trp Asp
 245 250 255

Thr Phe Trp Asn Ile Pro Thr Gly Asp Phe Asp Asp Met Thr Leu Phe
 260 265 270

Pro Leu Gly Leu Tyr Phe Ser Ser Glu Val Ser Gly Arg Asp Pro Ser
 275 280 285

Lys Trp Glu Leu Arg Gly Trp Leu Tyr Asn Ser Val Phe Tyr Ala Thr
 290 295 300

Thr Glu Glu Phe Arg Ala Ala Tyr Trp Ser Glu Asp Phe Val Lys Asn
 305 310 315 320

Gly Pro Asn Val Asp Gly Asp Trp Ala Arg Thr Asp Lys Asn Gly Glu
 325 330 335

Thr Pro Glu Met Asp Lys Ala Gln Gly Pro Val Ile Val Ala Pro Ala
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Gly Ala Arg Phe Ala Val Asp His Lys Glu Lys Tyr Val Glu Trp Met

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Asp	Trp	Ser	Phe	Tyr	Val	Gly	Phe	Asn	Arg	Asp	Thr	Gly	Pro	Gly	Leu	
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Leu	Val	Lys	Gly	Tyr	Asp	Cys	Pro	Ala	Tyr	Ala	Thr	Tyr	Met	Asn	Thr	
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Asp	Tyr	Val	Ser	Val	Thr	Lys	Asn	Thr	Tyr	Phe	Val	Ile	Arg	Ser	Ile	
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Ala	Thr	Ile	Gly	Asn	Tyr	Asp	Tyr	Gln	Gln	Ser	Phe	Ser	Phe	Phe	Met	
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Ala	Tyr	Phe	Ala	Gly	Asn	Glu	Asp	Tyr	Gly	Phe	Lys	Ile	His	Asp	Asn	
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Leu	Ser	Gly	Ser	Met	His	Asp	His	Val	Leu	Asn	Phe	Lys	Ala	Asp	Phe	
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Asp	Val	Leu	Gly	Thr	Asn	Asn	Ser	Ile	Glu	Leu	Met	Ser	Met	Val	Pro	
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Val	Ser	Arg	Ser	Tyr	Pro	Trp	Ser	Ala	Gly	Lys	Val	Arg	Asn	Thr	Met	
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Ala Leu Glu Arg Lys Phe Ile Glu Thr Glu Asp Glu Ser Arg Phe Asn
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Trp Gly Pro Asn Ser Ala Thr Gln Val Leu Ile Val Asn Glu Asn Glu
610 615 620

Arg Asn Lys His Gly Glu Met Arg Gly Tyr Arg Val Leu Pro Tyr Met
625 630 635 640

Gly Thr Ala His Leu Thr Val Gln Asn Ser Thr Asn Leu Gly Val Ala
645 650 655

Ala Gln Trp Ala Asn His Asp Val Gln Ile Thr Lys Tyr Lys Asp Ser
660 665 670

Glu Gln Lys Ala Tyr His Ala Phe Asn Thr Gln Asp Val His Asp Pro
675 680 685

Pro Val Asn Phe Asp Lys Tyr Phe Asp Gly Glu Ser Val Arg Asn Glu
690 695 700

Asp Ile Val Leu Trp Leu Asn Leu Gly Met His His Val Pro His Thr
705 710 715 720

Gly Asp Leu Pro Asn Thr Val Gln Thr Thr Ala His Ser Gly Ile Gln
725 730 735

Phe Met Pro Ser Asn Tyr Phe Asp Ile Asp Gln Ser Arg Arg Thr Val
740 745 750

Asn Gln Val Arg Ile Asn Tyr Phe Asn Gly Ser Ala Glu Val Glu Glu
755 760 765

Phe Gly Gln Phe Lys Val Gly Ser Ser Glu Gly Thr Cys Ser Thr Cys
770 775 780

Lys Leu Asn Tyr Thr Pro Leu Glu Pro Glu His Gln Gly Tyr Lys Gly
785 790 795 800

Asp Val Val Ile Arg Lys Phe Pro Phe Asp Pro Asn Asn Pro Phe Tyr
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Ala Thr Ser Gly Ile
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<400> 5

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35 40 45

Trp Gly Ser Leu Thr Lys Lys Glu Thr Ala Asp Val Leu Ala Phe Leu
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His Arg Asp Thr Thr Gly Phe Asn Leu Thr Val Ala Glu Asn Ala Thr
65 70 75 80

Ser Arg Asp Asn Lys Ile Met Ser Val Glu Leu Met Met Pro Asn Lys
85 90 95

Ser Asp Thr Leu Pro Phe Leu Ser Asp Lys Ala Gly Ser Pro Thr Arg
100 105 110

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

Thr Pro Phe Thr Phe Ala Asn Thr Lys Lys Gly Asp Gly Lys Ile Ala
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Val Val Asn Pro Asp Ala Glu Asp Tyr Gly Asn Phe Asn Leu Lys Ile
165 170 175

Met Lys Glu Ala Glu Asp Val Thr Lys Leu Leu Trp Asn Leu Thr Val

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Asp Asp Gly Leu Gln Ile Pro Leu Ala Phe Ala Ala Pro Ile Asn Val		
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Thr Asp Gly Lys Val Ile Met Trp Gln Gly Phe Asn Ala Pro Val Thr		
210	215	220
Ser Ile Tyr Asp Thr Ile Ser Leu Leu Pro Leu Gly Leu Tyr Leu Arg		
225	230	235
Thr Asp Ile Thr Gly Arg Asp Pro Ser Gln Trp Lys Val Thr Gly Trp		
	245	250
Val Tyr Gly Asn Glu Phe Tyr Lys Asp Leu Asp Gly Leu Arg Ala Ala		
	260	265
Val Ala Lys Pro Asp Phe Lys Pro Leu Gly Met Asn Leu Asp Gln Pro		
	275	280
Trp Ala His Thr Asn Lys His Gly Asp Asp Leu Pro Leu Asp Asp Glu		
	290	295
Ala Pro Pro Ala Asn Val Gln Ser Gly Lys Ser Arg Phe Ala Val Asp		
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Glu Asp Glu Ser Tyr Val Thr Trp Met Asp Phe Ser Phe Tyr Thr Ser		
	325	330
Ile Thr Arg Asp Asn Gly Leu Arg Leu Tyr Asp Val Lys Tyr Lys Gly		
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Lys Arg Ile Leu Tyr Glu Leu Gly Leu Asp Glu Ala Ile Ala His Tyr		
	355	360
Ala Gly Ile Asp Pro Val Gln Ser Gly Ile Cys Tyr Phe Asp Ser Met		
	370	375
Ser Gly Phe Gly Pro Ala Met Ile Ser Leu Val Lys Gly Tyr Asp Cys		
385	390	395
Pro Ala Tyr Ser His Tyr Ser Asn Val Thr Gln Thr Thr Gly Glu Thr		
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Thr Phe Thr Gln Lys Asp Ala Leu Cys Met Phe Glu Ile Asp Lys Gly
 420 425 430

Phe Pro Ile Gln Arg His Ser Trp Ala Gly His Thr Thr Val Thr Lys
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Asn Ile Ala Phe Asn Ile Arg Ala Ile Tyr Thr Ile Gly Asn Tyr Asp
 450 455 460

Tyr Met Met Thr Tyr Gln Phe His Leu Asp Gly Ser Ile Glu Ile Asp
 465 470 475 480

Val Arg Ala Ser Gly Tyr Ile Ser Ser Ala Phe Tyr Ala Glu Asn Glu
 485 490 495

Asp Tyr Gly Phe Lys Ile His Asp Ser Leu Ser Gly Ser Leu His Asp
 500 505 510

His Val Ile Thr Phe Lys Ala Asp Phe Asp Ile Leu Gly Glu Lys Asn
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Ser Leu Gln Lys Ile Asp Ile Lys Pro Ser Thr Glu Lys Tyr Lys Trp
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Ser Asp Gln Thr Arg Asn Thr Met Lys Ala Val Lys Ser Phe Ile Asp
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Asn Glu Asp Asp Ala Lys Ile Asn Trp Ser Pro Asn Gly Ala Thr Met
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Tyr Ala Val Val Asn Lys Asp Glu Lys Asn Pro Tyr Gly Glu Ser Pro
 580 585 590

Gly Tyr Arg Val Ala Pro Ala Ser Gly Val Ala Tyr Leu Thr Val Gln
 595 600 605

Asp Ser Ser Val Met Gln Asn Ala Gly His His Thr Thr His His Leu
 610 615 620

Tyr Ala Thr Arg Gln Lys Asp Asn Glu Leu Tyr Ala Val Gly Ala Tyr
 625 630 635 640

Asn Ser Leu Thr Pro Glu Asp Pro Gln Val Asp Phe Asn Glu Tyr Phe
645 650 655

Asn Ser Glu Ser Leu Asp Gln Glu Asp Ile Val Leu Trp Phe Asn Leu
660 665 670

Gly Met His His Met Pro His Thr Gly Asp Leu Pro Asn Thr Val Phe
675 680 685

Ser Thr Ala His Ser Ala Met Leu Ile Glu Pro Phe Asn Tyr Leu Met
690 695 700

Gly Asp Pro Ser Gln Ala Ser Ser Gln Gln Val Leu Ile Lys Thr Lys
705 710 715 720

Lys Asp Gly Lys Pro Glu Ile Val Thr Tyr Gly Ala Lys Asn Ala Thr
725 730 735

Cys Ala Ile Asp Met Ala Gln Leu Asn Pro Asp Leu Ser Asn Tyr Ser
740 745 750

Asn Ser Ile Ser Val Leu Lys Tyr Pro Phe Asp Gly Ser Lys Pro Asp
755 760 765

Arg Leu
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gaaaccgctg acgtggccaa gtggccttttc ggccgtcccg agcttaacct caccaccacc 360
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