

SEQUENCE LISTING

<110> Nanyang Technological University
 <120> P117907
 <130> ASX SPECIFIC LIGASES AND USES THEREOF
 <160> 88
 <170> PatentIn version 3.5
 <210> 1
 <211> 269
 <212> PRT
 <213> Artificial

<220>
 <223> core domain of VyPAL2

<400> 1

Asp Ser Ile Gly Thr Arg Trp Ala Val Leu Ile Ala Gly Ser Lys Gly
 1 5 10 15

Tyr His Asn Tyr Arg His Gln Ala Asp Val Cys His Met Tyr Gln Ile
 20 25 30

Leu Arg Lys Gly Gly Val Lys Asp Glu Asn Ile Ile Val Phe Met Tyr
 35 40 45

Asp Asp Ile Ala Tyr Asn Glu Ser Asn Pro Phe Pro Gly Ile Ile Ile
 50 55 60

Asn Lys Pro Gly Gly Glu Asn Val Tyr Lys Gly Val Pro Lys Asp Tyr
 65 70 75 80

Thr Gly Glu Asp Ile Asn Asn Val Asn Phe Leu Ala Ala Ile Leu Gly
 85 90 95

Asn Lys Ser Ala Ile Ile Gly Gly Ser Gly Lys Val Leu Asp Thr Ser
 100 105 110

Pro Asn Asp His Ile Phe Ile Tyr Tyr Ala Asp His Gly Ala Pro Gly
 115 120 125

Lys Ile Gly Met Pro Ser Lys Pro Tyr Leu Tyr Ala Asp Asp Leu Val
 130 135 140

Asp Thr Leu Lys Gln Lys Ala Ala Thr Gly Thr Tyr Lys Ser Met Val
 145 150 155 160

Phe Tyr Val Glu Ala Cys Asn Ala Gly Ser Met Phe Glu Gly Leu Leu
 165 170 175

Pro Glu Gly Thr Asn Ile Tyr Ala Met Ala Ala Ser Asn Ser Thr Glu
 180 185 190

Gly Ser Trp Ile Thr Tyr Cys Pro Gly Thr Pro Asp Phe Pro Pro Glu
 195 200 205

Phe Asp Val Cys Leu Gly Asp Leu Trp Ser Ile Thr Phe Leu Glu Asp
 210 215 220

Cys Asp Ala His Asn Leu Arg Thr Glu Thr Val His Gln Gln Phe Glu
 225 230 235 240

Leu Val Lys Lys Lys Ile Ala Tyr Ala Ser Thr Val Ser Gln Tyr Gly
 245 250 255

Asp Ile Pro Ile Ser Lys Asp Ser Leu Ser Val Tyr Met
 260 265

<210> 2
 <211> 332
 <212> PRT
 <213> Artificial

<220>
 <223> VyPAL2/1 chimeric protein

<400> 2

Met Gln Leu Phe Ala Ala Gly Val Ile Leu Phe Phe Leu Leu Ala Leu
 1 5 10 15

Ser Gly Thr Ile Ala Gly Gly Leu Asp Val Asp Ser Leu Gln Leu Pro
 20 25 30

Ser Glu Ala Ala Lys Phe Phe His Asn Asp Asn Ser Thr Asn Asp Asp
35 40 45

Asp Ser Ile Gly Thr Arg Trp Ala Val Leu Ile Ala Gly Ser Lys Gly
50 55 60

Tyr His Asn Tyr Arg His Gln Ala Asp Val Cys His Met Tyr Gln Ile
65 70 75 80

Leu Arg Lys Gly Gly Val Lys Asp Glu Asn Ile Ile Val Phe Met Tyr
85 90 95

Asp Asp Ile Ala Tyr Asn Glu Ser Asn Pro Phe Pro Gly Ile Ile Ile
100 105 110

Asn Lys Pro Gly Gly Glu Asn Val Tyr Lys Gly Val Pro Lys Asp Tyr
115 120 125

Thr Gly Glu Asp Ile Asn Asn Val Asn Phe Leu Ala Ala Ile Leu Gly
130 135 140

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

Pro Asn Asp His Ile Phe Ile Tyr Tyr Ala Asp His Gly Ala Pro Gly
165 170 175

Lys Ile Gly Met Pro Ser Lys Pro Tyr Leu Tyr Ala Asp Asp Leu Val
180 185 190

Asp Thr Leu Lys Gln Lys Ala Ala Thr Gly Thr Tyr Lys Ser Met Val
195 200 205

Phe Tyr Val Glu Ala Cys Asn Ala Gly Ser Met Phe Glu Gly Leu Leu
210 215 220

Pro Glu Gly Thr Asn Ile Tyr Ala Met Ala Ala Ser Asn Ser Thr Glu
225 230 235 240

Gly Ser Trp Ile Thr Tyr Cys Pro Gly Thr Pro Asp Phe Pro Pro Glu
245 250 255

Phe Asp Val Cys Leu Gly Asp Leu Trp Ser Ile Thr Phe Leu Glu Asp
260 265 270

Cys Asp Ala His Asn Leu Arg Thr Glu Thr Val His Gln Gln Phe Glu
275 280 285

Leu Val Lys Lys Lys Ile Ala Tyr Ala Ser Thr Val Ser Gln Tyr Gly
290 295 300

Asp Ile Pro Ile Ser Lys Asp Ser Leu Ser Val Tyr Met Gly Thr Asp
305 310 315 320

Pro Ala Asn Asp Asn Arg Thr Phe Val Asp Glu Asn
325 330

<210> 3
<211> 483
<212> PRT
<213> Artificial

<220>
<223> VyPAL2/1 chimeric protein proenzyme

<400> 3

Met Gln Leu Phe Ala Ala Gly Val Ile Leu Phe Phe Leu Leu Ala Leu
1 5 10 15

Ser Gly Thr Ile Ala Gly Gly Leu Asp Val Asp Ser Leu Gln Leu Pro
20 25 30

Ser Glu Ala Ala Lys Phe Phe His Asn Asp Asn Ser Thr Asn Asp Asp
35 40 45

Asp Ser Ile Gly Thr Arg Trp Ala Val Leu Ile Ala Gly Ser Lys Gly
50 55 60

Tyr His Asn Tyr Arg His Gln Ala Asp Val Cys His Met Tyr Gln Ile
65 70 75 80

Leu Arg Lys Gly Gly Val Lys Asp Glu Asn Ile Ile Val Phe Met Tyr
85 90 95

Asp Asp Ile Ala Tyr Asn Glu Ser Asn Pro Phe Pro Gly Ile Ile Ile
100 105 110

Asn Lys Pro Gly Gly Glu Asn Val Tyr Lys Gly Val Pro Lys Asp Tyr
115 120 125

Thr Gly Glu Asp Ile Asn Asn Val Asn Phe Leu Ala Ala Ile Leu Gly
130 135 140

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

Pro Asn Asp His Ile Phe Ile Tyr Tyr Ala Asp His Gly Ala Pro Gly
165 170 175

Lys Ile Gly Met Pro Ser Lys Pro Tyr Leu Tyr Ala Asp Asp Leu Val
180 185 190

Asp Thr Leu Lys Gln Lys Ala Ala Thr Gly Thr Tyr Lys Ser Met Val
195 200 205

Phe Tyr Val Glu Ala Cys Asn Ala Gly Ser Met Phe Glu Gly Leu Leu
210 215 220

Pro Glu Gly Thr Asn Ile Tyr Ala Met Ala Ala Ser Asn Ser Thr Glu
225 230 235 240

Gly Ser Trp Ile Thr Tyr Cys Pro Gly Thr Pro Asp Phe Pro Pro Glu
245 250 255

Phe Asp Val Cys Leu Gly Asp Leu Trp Ser Ile Thr Phe Leu Glu Asp
260 265 270

Cys Asp Ala His Asn Leu Arg Thr Glu Thr Val His Gln Gln Phe Glu
275 280 285

Leu Val Lys Lys Lys Ile Ala Tyr Ala Ser Thr Val Ser Gln Tyr Gly
 290 295 300

Asp Ile Pro Ile Ser Lys Asp Ser Leu Ser Val Tyr Met Gly Thr Asp
 305 310 315 320

Pro Ala Asn Asp Asn Arg Thr Phe Val Asp Glu Asn Ser Leu Arg Pro
 325 330 335

Pro Leu Lys Val Ile His Gln His Asp Ala Asp Leu Tyr His Ile Trp
 340 345 350

Cys Lys Tyr Asn Met Ala Pro Glu Gly Ser Ser Lys Lys Ile Glu Ala
 355 360 365

Gln Lys Gln Leu Leu Glu Leu Met Ser His Arg Ala His Val Asp Asn
 370 375 380

Ser Ile Thr Leu Ile Gly Lys Leu Leu Phe Gly Val Asn Lys Ala Ser
 385 390 395 400

Lys Val Leu Asn Thr Val Arg Pro Val Gly Gln Pro Leu Val Asp Asp
 405 410 415

Trp Gln Cys Leu Lys Ala Met Ile Arg Thr Phe Glu Thr His Cys Gly
 420 425 430

Ser Leu Ser Glu Tyr Gly Met Lys His Thr Leu Ser Phe Ala Asn Met
 435 440 445

Cys Asn Ala Gly Ile Gln Lys Glu Gln Leu Ala Glu Ala Ala Ala Gln
 450 455 460

Ala Cys Val Thr Phe Pro Ser Asn Pro Tyr Ser Ser Leu Ala Glu Gly
 465 470 475 480

Phe Ser Ala

<210> 4
 <211> 16
 <212> PRT
 <213> Artificial

<220>
 <223> Peptide substrate

<400> 4

Gly Ile Ser Thr Lys Ser Ile Pro Pro Ile Ser Tyr Arg Asn Ser Leu
 1 5 10 15

<210> 5
 <211> 484
 <212> PRT
 <213> Viola yedoensis

<400> 5

Met Gln Leu Phe Ala Ala Gly Val Ile Leu Phe Phe Leu Leu Ala Leu
 1 5 10 15

Ser Gly Thr Ile Ala Gly Gly Leu Asp Val Asp Ser Leu Gln Leu Pro
 20 25 30

Ser Glu Ala Ala Lys Phe Phe His Asn Asp Asn Ser Thr Asn Asp Asp
 35 40 45

Asp Ser Ile Gly Thr Arg Trp Ala Val Leu Ile Ala Gly Ser Lys Gly
 50 55 60

Tyr His Asn Tyr Arg His Gln Ala Asp Val Cys His Met Tyr Gln Ile
 65 70 75 80

Leu Arg Lys Gly Gly Val Lys Asp Glu Asn Ile Ile Val Phe Met Tyr
 85 90 95

Asp Asp Ile Ala Tyr Asn Glu Ser Asn Pro Phe Pro Gly Ile Ile Ile
 100 105 110

Asn Lys Pro Gly Gly Glu Asn Val Tyr Lys Gly Val Pro Lys Asp Tyr
 115 120 125

Thr Gly Glu Asp Ile Asn Asn Val Asn Phe Leu Ala Ala Ile Leu Gly
130 135 140

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

Pro Asn Asp His Ile Phe Ile Tyr Tyr Ala Asp His Gly Ala Pro Gly
165 170 175

Lys Ile Gly Met Pro Ser Lys Pro Tyr Leu Tyr Ala Asp Asp Leu Val
180 185 190

Asp Thr Leu Lys Gln Lys Ala Ala Ala Gly Thr Tyr Lys Ser Met Val
195 200 205

Phe Tyr Val Glu Ala Cys Asn Ala Gly Ser Met Phe Glu Gly Leu Leu
210 215 220

Pro Glu Gly Met Asn Ile Tyr Ala Met Thr Ala Ser Asn Ser Thr Glu
225 230 235 240

Gly Ser Leu Ile Ala Tyr Cys Ala Gly Val Thr Pro Gly Val Pro Leu
245 250 255

Glu Ile Val Thr Cys Leu Gly Asp Leu Trp Ser Ile Thr Phe Leu Glu
260 265 270

Asp Cys Asp Ala His Asn Leu Arg Thr Glu Thr Val His Gln Gln Phe
275 280 285

Glu Leu Val Lys Lys Lys Ile Ala Tyr Ala Ser Thr Val Ser Gln Tyr
290 295 300

Gly Asp Ile Pro Ile Ser Lys Asp Ser Leu Ser Val Tyr Met Gly Thr
305 310 315 320

Asp Pro Ala Asn Asp Asn Arg Thr Phe Val Asp Glu Asn Ser Leu Arg
325 330 335

Pro Pro Leu Lys Val Ile His Gln His Asp Ala Asp Leu Tyr His Ile

340

345

350

Trp Cys Lys Tyr Asn Met Ala Pro Glu Gly Ser Ser Lys Lys Ile Glu
 355 360 365

Ala Gln Lys Gln Leu Leu Glu Leu Met Ser His Arg Ala His Val Asp
 370 375 380

Asn Ser Ile Thr Leu Ile Gly Lys Leu Leu Phe Gly Val Asn Lys Ala
 385 390 395 400

Ser Lys Val Leu Asn Thr Val Arg Pro Val Gly Gln Pro Leu Val Asp
 405 410 415

Asp Trp Gln Cys Leu Lys Ala Met Ile Arg Thr Phe Glu Thr His Cys
 420 425 430

Gly Ser Leu Ser Glu Tyr Gly Met Lys His Thr Leu Ser Phe Ala Asn
 435 440 445

Met Cys Asn Ala Gly Ile Gln Lys Glu Gln Leu Ala Glu Ala Ala Ala
 450 455 460

Gln Ala Cys Val Thr Phe Pro Ser Asn Pro Tyr Ser Ser Leu Ala Glu
 465 470 475 480

Gly Phe Ser Ala

<210> 6

<211> 483

<212> PRT

<213> Viola yedoensis

<400> 6

Met Gln Leu Phe Ala Ala Gly Val Ile Leu Phe Phe Leu Leu Ala Leu
 1 5 10 15

Ser Gly Thr Ile Ala Gly Gly Leu Asp Val Asp Ser Leu Gln Leu Pro
 20 25 30

Ser Glu Ala Ala Lys Phe Phe His Asn Asp Asn Ser Thr Asn Asp Asp
35 40 45

Asp Ser Ile Gly Thr Arg Trp Ala Val Leu Ile Ala Gly Ser Lys Gly
50 55 60

Tyr His Asn Tyr Arg His Gln Ala Asp Val Cys His Met Tyr Gln Ile
65 70 75 80

Leu Arg Lys Gly Gly Val Lys Asp Glu Asn Ile Ile Val Phe Met Tyr
85 90 95

Asp Asp Ile Ala Tyr Asn Glu Ser Asn Pro Phe Pro Gly Ile Ile Ile
100 105 110

Asn Lys Pro Gly Gly Glu Asn Val Tyr Lys Gly Val Pro Lys Asp Tyr
115 120 125

Thr Gly Glu Asp Ile Asn Asn Val Asn Phe Leu Ala Ala Ile Leu Gly
130 135 140

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

Pro Asn Asp His Ile Phe Ile Tyr Tyr Ala Asp His Gly Ala Pro Gly
165 170 175

Lys Ile Gly Met Pro Ser Lys Pro Tyr Leu Tyr Ala Asp Asp Leu Val
180 185 190

Asp Thr Leu Lys Gln Lys Ala Ala Thr Gly Thr Tyr Lys Ser Met Val
195 200 205

Phe Tyr Val Glu Ala Cys Asn Ala Gly Ser Met Phe Glu Gly Leu Leu
210 215 220

Pro Glu Gly Thr Asn Ile Tyr Ala Met Ala Ala Ser Asn Ser Thr Glu
225 230 235 240

Gly Ser Trp Ile Thr Tyr Cys Pro Gly Thr Pro Asp Phe Pro Pro Glu
245 250 255

Phe Asp Val Cys Leu Gly Asp Leu Trp Ser Ile Thr Phe Leu Glu Asp
260 265 270

Cys Asp Ala His Asn Leu Arg Thr Glu Thr Val His Gln Gln Phe Glu
275 280 285

Leu Val Lys Lys Lys Ile Ala Tyr Ala Ser Thr Val Ser Gln Tyr Gly
290 295 300

Asp Ile Pro Ile Ser Lys Asp Ser Leu Ser Val Tyr Met Gly Thr Asp
305 310 315 320

Pro Ala Asn Asp Asn Arg Thr Phe Val Asp Glu Asn Ser Leu Arg Pro
325 330 335

Pro Leu Lys Val Ile His Gln His Asp Ala Asp Leu Tyr His Ile Trp
340 345 350

Cys Lys Tyr Asn Met Ala Pro Glu Gly Ser Ser Lys Lys Ile Glu Ala
355 360 365

Gln Lys Gln Leu Leu Glu Leu Met Ser His Arg Ala His Val Asp Asn
370 375 380

Ser Ile Thr Leu Ile Gly Lys Leu Leu Phe Gly Val Asn Lys Ala Ser
385 390 395 400

Lys Val Leu Asn Thr Val Arg Pro Val Gly Gln Pro Leu Val Asp Asp
405 410 415

Trp Gln Cys Leu Lys Ala Met Ile Arg Thr Phe Glu Thr His Cys Gly
420 425 430

Ser Leu Ser Glu Tyr Gly Met Lys His Thr Leu Ser Phe Ala Asn Met
435 440 445

Cys Asn Ala Gly Ile Gln Lys Glu Gln Leu Ala Glu Ala Ala Ala Gln

450

455

460

Ala Cys Val Thr Phe Pro Ser Asn Pro Tyr Ser Ser Leu Ala Glu Gly
 465 470 475 480

Phe Ser Ala

<210> 7

<211> 487

<212> PRT

<213> Viola yedoensis

<400> 7

Met Gln Leu Phe Ala Ala Gly Val Ile Leu Phe Phe Leu Leu Ala Leu
 1 5 10 15

Ser Gly Thr Ile Ala Gly Gly Leu Asp Val Asp Ser Leu Gln Leu Pro
 20 25 30

Ser Glu Ala Ala Lys Phe Phe His Asn Asp Asn Ser Thr Asn Asp Asp
 35 40 45

Asp Ser Ser Ala Gly Thr Lys Trp Ala Val Leu Ile Ala Gly Ser Lys
 50 55 60

Gly Tyr Gln Asn Tyr Arg His Gln Ala Asp Val Cys His Ala Tyr Gln
 65 70 75 80

Ile Leu Arg Arg Gly Gly Val Lys Asp Glu Asn Ile Ile Val Phe Met
 85 90 95

Tyr Asp Asp Ile Ala Tyr Asp Ile Arg Asn Pro Tyr Pro Gly Thr Ile
 100 105 110

Thr Asn Ser Pro Asp Lys Lys Asp Val Tyr Lys Gly Val Pro Lys Asp
 115 120 125

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

Gly Asn Lys Thr Ala Leu Thr Gly Gly Ser Gly Lys Val Leu Asp Thr
 145 150 155 160

Arg Pro Asn Asp His Ile Phe Ile Tyr Tyr Thr Asp His Gly Tyr Ala
 165 170 175

Gly Val Leu Gly Met Pro Thr Gln Pro Tyr Leu Tyr Ala Asn Asp Leu
 180 185 190

Ile Asp Thr Leu Lys Lys Lys His Ala Ser Gly Thr Tyr Glu Ser Leu
 195 200 205

Val Phe Tyr Val Glu Ala Cys Glu Ser Ala Ser Ile Phe Glu Gly Leu
 210 215 220

Leu Pro Asp Gly Leu Asn Ile Tyr Val Ser Thr Ala Ala Lys Ala Gly
 225 230 235 240

Glu Gly Ser Trp Val Val Tyr Cys Pro Thr Gln Gln Pro Pro Val Pro
 245 250 255

Ala Glu Tyr Gly Thr Cys Val Gly Asp Leu Tyr Ser Val Thr Trp Met
 260 265 270

Glu Asp Cys Asp Leu Tyr Asn Leu Arg Thr Gln Thr Leu His Gln Gln
 275 280 285

Tyr Glu Met Val Lys Lys Lys Ile Ala Tyr Ala Ser Thr Val Ser Gln
 290 295 300

Phe Gly Asp Leu Thr Ile Thr Lys Asp Ser Leu Phe Glu Tyr Met Gly
 305 310 315 320

Thr Asp Pro Ala Asn Glu Lys His His Tyr Glu Asp Gln Glu Asn Ser
 325 330 335

Leu Arg Pro His Val Asp Ala Val His Gln Arg Glu Ala Asp Leu Tyr
 340 345 350

His Phe Trp Asp Lys Tyr Gln Lys Ala Ser Glu Gly Ser Arg Asn Lys
 355 360 365

Val Ala Ala Arg Lys Gln Leu Val Glu Val Met Leu His Arg Met His
 370 375 380

Val Asp Asp Ser Ile Glu Ser Ile Ala Lys Leu Leu Phe Gly Ser Asp
 385 390 395 400

Ala Lys Ala Ser Glu Met Met Asn Thr Ile Arg Pro Pro Gly Gln Pro
 405 410 415

Leu Val Ser Asp Trp Asp Cys Leu Lys Thr Met Val Arg Thr Phe Glu
 420 425 430

Thr His Cys Gly Ser Leu Ser Glu Tyr Gly Met Lys Tyr Thr Arg Phe
 435 440 445

Leu Ala Asn Met Cys Asn Ala Gly Ile Arg Lys Glu Gln Leu Ala Glu
 450 455 460

Ala Ala Ala Gln Ala Cys Val Thr Phe Pro Ser Asn Ser Tyr Ser Ser
 465 470 475 480

Leu Ala Glu Gly Phe Ser Ala
 485

<210> 8
 <211> 488
 <212> PRT
 <213> Viola yedoensis

<400> 8

Met Lys Leu Leu Ala Ala Gly Val Ile Leu Val Ser Leu Leu Ala Leu
 1 5 10 15

Ser Gly Thr Val Ala Val Ala Val Ala Gly Gly Leu Asp Val Asp Pro
 20 25 30

Leu Arg Leu Pro Ser Glu Ala Ala Lys Phe Phe His Asn Asp Asn Ser
 35 40 45

Thr Asn Asp Asp Asp Ser Ile Gly Thr Thr Trp Ala Val Leu Ile Ala
50 55 60

Gly Ser Lys Gly Tyr His Asn Tyr Arg His Gln Ala Asp Val Cys His
65 70 75 80

Met Tyr Gln Ile Leu Arg Lys Gly Gly Val Lys Asp Glu Asn Ile Ile
85 90 95

Val Phe Met Tyr Asp Asp Ile Ala Tyr Asn Glu Ser Asn Pro Phe Pro
100 105 110

Gly Ile Ile Ile Asn Lys Pro Gly Gly Glu Asn Val Tyr Lys Gly Val
115 120 125

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

Ala Ile Leu Gly Asn Lys Ser Ala Ile Ile Gly Gly Ser Gly Lys Val
145 150 155 160

Leu Asp Thr Ser Pro Asn Asp His Ile Phe Ile Tyr Tyr Ala Asp His
165 170 175

Gly Ala Pro Gly Lys Ile Gly Met Pro Ser Lys Pro Tyr Leu Tyr Ala
180 185 190

Asp Asp Leu Val Asp Thr Leu Lys Gln Lys Ala Ala Ala Gly Thr Tyr
195 200 205

Lys Ser Met Val Phe Tyr Val Glu Ala Cys Asn Ala Gly Ser Met Phe
210 215 220

Glu Gly Leu Leu Pro Glu Gly Met Asn Ile Tyr Ala Met Thr Ala Ser
225 230 235 240

Asn Ser Thr Glu Gly Ser Leu Ile Ala Tyr Cys Ala Gly Val Thr Pro
245 250 255

Gly Val Pro Leu Glu Ile Val Thr Cys Leu Gly Asp Leu Trp Ser Ile
260 265 270

Thr Phe Leu Glu Asp Cys Asp Ala His Asn Leu Arg Thr Glu Thr Val
275 280 285

His Gln Gln Phe Glu Leu Val Lys Lys Lys Ile Ala Tyr Ala Ser Thr
290 295 300

Val Ser Gln Tyr Gly Asp Ile Pro Ile Ser Lys Asp Ser Leu Ser Val
305 310 315 320

Tyr Met Gly Thr Asp Pro Ala Asn Asp Asn Arg Thr Phe Val Asp Glu
325 330 335

Asn Ser Leu Arg Pro Pro Leu Lys Val Ile His Gln Arg Asp Ala Tyr
340 345 350

Leu Tyr His Leu Trp Tyr Lys Tyr Gln Asn Thr Pro Glu Gly Ser Ser
355 360 365

Lys Lys Ile Glu Ala Gln Lys Gln Leu Leu Glu Met Met Ser His Arg
370 375 380

Ala His Val Asp Asn Ser Ile Thr Leu Ile Gly Lys Leu Leu Phe Gly
385 390 395 400

Met Asp Lys Ala Ser Lys Met Leu Asn Ser Val Arg Pro Ala Gly Gln
405 410 415

Pro Leu Val Asp Asp Trp Gln Cys Leu Lys Thr Met Ile Arg Thr Phe
420 425 430

Glu Arg His Cys Gly Ser Leu Ser Glu Tyr Gly Met Lys His Thr Leu
435 440 445

Ser Phe Ala Asn Met Cys Asn Ala Gly Ile Arg Lys Glu Gln Leu Ala
450 455 460

Glu Ala Ala Ala Gln Ala Cys Val Thr Phe Pro Ser Asn Ser Tyr Ser
 465 470 475 480

Ser Leu Ala Glu Gly Phe Ser Ala
 485

<210> 9
 <211> 487
 <212> PRT
 <213> *Viola yedoensis*

<400> 9

Met Lys Leu Leu Ala Ala Gly Val Ile Leu Val Ser Leu Leu Ala Leu
 1 5 10 15

Ser Gly Thr Val Ala Val Ala Val Ala Gly Gly Leu Asp Val Asp Pro
 20 25 30

Leu Arg Leu Pro Ser Glu Ala Ala Lys Phe Phe His Asn Asp Asn Ser
 35 40 45

Thr Asn Asp Asp Asp Ser Ile Gly Thr Thr Trp Ala Val Leu Ile Ala
 50 55 60

Gly Ser Lys Gly Tyr His Asn Tyr Arg His Gln Ala Asp Val Cys His
 65 70 75 80

Met Tyr Gln Ile Leu Arg Lys Gly Gly Val Lys Asp Glu Asn Ile Ile
 85 90 95

Val Phe Met Tyr Asp Asp Ile Ala Tyr Asn Glu Ser Asn Pro Phe Pro
 100 105 110

Gly Ile Ile Ile Asn Lys Pro Gly Gly Glu Asn Val Tyr Lys Gly Val
 115 120 125

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

Ala Ile Leu Gly Asn Lys Ser Ala Ile Ile Gly Gly Ser Gly Lys Val
 145 150 155 160

Leu Asp Thr Ser Pro Asn Asp His Ile Phe Ile Tyr Tyr Ala Asp His
165 170 175

Gly Ala Pro Gly Lys Ile Gly Met Pro Ser Lys Pro Tyr Leu Tyr Ala
180 185 190

Asp Asp Leu Val Asp Thr Leu Lys Gln Lys Ala Ala Thr Gly Thr Tyr
195 200 205

Lys Ser Met Val Phe Tyr Val Glu Ala Cys Asn Ala Gly Ser Met Phe
210 215 220

Glu Gly Leu Leu Pro Glu Gly Thr Asn Ile Tyr Ala Met Ala Ala Ser
225 230 235 240

Asn Ser Thr Glu Gly Ser Trp Ile Thr Tyr Cys Pro Gly Thr Pro Asp
245 250 255

Phe Pro Pro Glu Phe Asp Val Cys Leu Gly Asp Leu Trp Ser Ile Thr
260 265 270

Phe Leu Glu Asp Cys Asp Ala His Asn Leu Arg Thr Glu Thr Val His
275 280 285

Gln Gln Phe Glu Leu Val Lys Lys Lys Ile Ala Tyr Ala Ser Thr Val
290 295 300

Ser Gln Tyr Gly Asp Ile Pro Ile Ser Lys Asp Ser Leu Ser Val Tyr
305 310 315 320

Met Gly Thr Asp Pro Ala Asn Asp Asn Arg Thr Phe Val Asp Glu Asn
325 330 335

Ser Leu Arg Pro Pro Leu Lys Val Ile His Gln Arg Asp Ala Tyr Leu
340 345 350

Tyr His Leu Trp Tyr Lys Tyr Gln Asn Thr Pro Glu Gly Ser Ser Lys
355 360 365

Lys Ile Glu Ala Gln Lys Gln Leu Leu Glu Met Met Ser His Arg Ala
 370 375 380

His Val Asp Asn Ser Ile Thr Leu Ile Gly Lys Leu Leu Phe Gly Met
 385 390 395 400

Asp Lys Ala Ser Lys Met Leu Asn Ser Val Arg Pro Ala Gly Gln Pro
 405 410 415

Leu Val Asp Asp Trp Gln Cys Leu Lys Thr Met Ile Arg Thr Phe Glu
 420 425 430

Arg His Cys Gly Ser Leu Ser Glu Tyr Gly Met Lys His Thr Leu Ser
 435 440 445

Phe Ala Asn Met Cys Asn Ala Gly Ile Arg Lys Glu Gln Leu Ala Glu
 450 455 460

Ala Ala Ala Gln Ala Cys Val Thr Phe Pro Ser Asn Ser Tyr Ser Ser
 465 470 475 480

Leu Ala Glu Gly Phe Ser Ala
 485

<210> 10
 <211> 493
 <212> PRT
 <213> Viola yedoensis

<400> 10

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

Val Leu Cys Leu Phe Gly Ala Gln Ala Thr Arg Val Ser Arg Pro Phe
 20 25 30

Val Pro Gly Ile Leu Met Pro Thr Asp Arg Val Gly Thr Glu Pro Asp
 35 40 45

Gln Ala Asp Asp Val Asp Gly Asp Glu Ile Gly Thr Arg Trp Ala Val

50

55

60

Leu Val Ala Gly Ser Asn Gly Phe Gly Asn Tyr Arg His Gln Ala Asp
65 70 75 80

Val Cys His Ala Tyr Gln Leu Leu Arg Lys Gly Gly Leu Lys Glu Glu
85 90 95

Asn Ile Val Val Phe Met Tyr Asp Asp Ile Ala Thr Asn Gln Leu Asn
100 105 110

Pro Arg Pro Gly Ile Ile Ile Asn His Pro Gln Gly Glu Asp Val Tyr
115 120 125

His Gly Val Pro Lys Asp Tyr Thr Gly Ala Glu Val Asn Ala His Asn
130 135 140

Leu Tyr Ala Val Leu Leu Gly Asp Lys Ser Ala Val Lys Gly Gly Ser
145 150 155 160

Gly Lys Val Val Asn Ser Lys Pro Asp Asp Arg Ile Phe Val Tyr Tyr
165 170 175

Ser Asp His Gly Gly Pro Gly Val Leu Gly Met Pro Asn Leu Pro Tyr
180 185 190

Val Tyr Ala Met Asp Phe Ile Asp Thr Leu Lys Lys Lys His Ala Ala
195 200 205

Asn Ser Tyr Arg Glu Met Val Val Tyr Val Glu Ala Cys Glu Ser Gly
210 215 220

Ser Leu Phe Glu Gly Val Met Pro Lys Asp Leu Asn Ile Tyr Val Thr
225 230 235 240

Thr Ala Ser Asn Ala Gln Glu Asn Ser Trp Gly Thr Tyr Cys Pro Gly
245 250 255

Glu Gly Ala Pro Pro Glu Tyr Asn Thr Cys Leu Gly Asp Leu Tyr Ser
260 265 270

Val Ala Trp Met Glu Asp Ser Glu Ser His Asn Leu Lys Lys Glu Ala
275 280 285

Ile Lys Asp Gln Tyr Lys Thr Val Lys Ala Arg Thr Ser Asp Ser Ser
290 295 300

Thr Tyr His Ser Gly Ser His Val Met Glu Tyr Gly Asn Arg Ser Ile
305 310 315 320

Arg Ala Glu Lys Leu Tyr Leu Tyr Gln Gly Phe Asp Pro Ala Thr Val
325 330 335

Asn Phe Pro Pro Asn Asn Gly Leu Leu Lys Pro Met Glu Val Val Asn
340 345 350

Gln Arg Asp Ala Glu Leu Val Phe Met Trp Gln Met Tyr Lys Lys Ser
355 360 365

Glu Glu Gly Ser Glu Glu Lys Thr Glu Ile Leu Asn Leu Ile Lys Glu
370 375 380

Thr Met Arg His Arg Asn His Leu Asp Gly Ser Ile Lys Leu Ile Gly
385 390 395 400

Thr Leu Leu Phe Gly Pro Lys Glu Gly Ser Ser Val Leu Gln Ser Val
405 410 415

Arg Lys Pro Gly Ser Pro Leu Val Asp Asp Trp Lys Cys Leu Lys Ser
420 425 430

Met Val Arg Ser Phe Glu Arg His Cys Gly Ser Leu Thr Gln Tyr Gly
435 440 445

Met Lys His Met Arg Ala Phe Ala Asn Ile Cys Asn Ser Gly Ile Pro
450 455 460

Arg Ala Ser Met Glu Glu Ala Cys Gly Val Ala Cys Ser Gly His Asp
465 470 475 480

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

<210> 11
<211> 493
<212> PRT
<213> Viola yedoensis

<400> 11

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

Val Leu Cys Leu Phe Gly Ala Gln Ala Thr Arg Val Ser Arg Pro Phe
20 25 30

Val Pro Gly Ile Leu Met Pro Thr Asp Arg Val Gly Thr Glu Pro Asp
35 40 45

Gln Ala Asp Asp Val Asp Gly Asp Glu Ile Gly Thr Arg Trp Ala Val
50 55 60

Leu Val Ala Gly Ser Asn Gly Phe Gly Asn Tyr Arg His Gln Ala Asp
65 70 75 80

Val Cys His Ala Tyr Gln Leu Leu Arg Lys Gly Gly Leu Lys Glu Glu
85 90 95

Asn Ile Val Val Phe Met Tyr Asp Asp Ile Ala Thr Asn Gln Leu Asn
100 105 110

Pro Arg Pro Gly Ile Ile Ile Asn His Pro Gln Gly Glu Asp Val Tyr
115 120 125

His Gly Val Pro Lys Asp Tyr Thr Gly Ala Glu Val Asn Ala His Asn
130 135 140

Leu Tyr Ala Val Leu Leu Gly Asp Lys Ser Ala Val Lys Gly Gly Ser
145 150 155 160

Gly Lys Val Val Asn Ser Lys Pro Asp Asp Arg Ile Phe Val Tyr Tyr

165

170

175

Ser Asp His Gly Gly Pro Gly Val Leu Gly Met Pro Asn Leu Pro Tyr
 180 185 190

Val Tyr Ala Met Asp Phe Ile Asp Thr Leu Lys Lys Lys His Ala Ala
 195 200 205

Asn Ser Tyr Arg Glu Met Val Val Tyr Val Glu Ala Cys Glu Ser Gly
 210 215 220

Ser Asn Phe Glu Gly Val Met Pro Glu Asp Leu Asn Ile Tyr Val Thr
 225 230 235 240

Thr Ala Ser Asn Ala Gln Glu Asn Ser Trp Gly Thr Tyr Cys Pro Gly
 245 250 255

Glu Gly Ala Pro Pro Glu Tyr Asn Thr Cys Leu Gly Asp Leu Tyr Ser
 260 265 270

Val Ala Trp Met Glu Asp Ser Glu Ser His Asn Leu Lys Lys Glu Ala
 275 280 285

Ile Lys Asp Gln Tyr Lys Thr Val Lys Ala Arg Thr Ser Asp Ser Ser
 290 295 300

Thr Tyr His Ser Gly Ser His Val Met Glu Tyr Gly Asn Arg Ser Ile
 305 310 315 320

Arg Gly Glu Lys Leu Tyr Leu Tyr Gln Gly Phe Asp Pro Ala Thr Val
 325 330 335

Asn Phe Pro Pro Asn Asn Gly Leu Pro Lys Pro Met Glu Val Val Asn
 340 345 350

Gln Arg Asp Ala Glu Leu Val Phe Met Trp Gln Met Tyr Lys Lys Ser
 355 360 365

Lys Glu Gly Ser Glu Glu Lys Thr Glu Ile Leu Asn Gln Ile Lys Glu
 370 375 380

Thr Met Arg His Arg Asn His Leu Asp Gly Ser Ile Lys Leu Ile Gly
 385 390 395 400

Thr Leu Leu Phe Gly Pro Lys Lys Gly Ser Ser Ile Leu Gln Ser Val
 405 410 415

Arg Thr Pro Gly Ser Pro Leu Val Asp Asp Trp Lys Cys Leu Lys Ser
 420 425 430

Met Val Arg Ser Phe Glu Arg His Cys Gly Ser Leu Thr Gln Tyr Gly
 435 440 445

Met Lys His Met Arg Ala Phe Ala Asn Ile Cys Asn Tyr Gly Ile Ser
 450 455 460

Gln Ala Ser Met Glu Glu Ala Cys Gly Val Ala Cys Gly Gly His Asp
 465 470 475 480

Val Gly Glu Ser His Pro Phe Ile Arg Gly Tyr Ser Ala
 485 490

<210> 12
 <211> 499
 <212> PRT
 <213> Viola yedoensis

<400> 12

Met Thr Arg Val Ala Thr Gly Ala Ile Leu Leu Phe Met Val Ala Leu
 1 5 10 15

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

Leu Pro Thr Glu Val Ser Asn Phe Phe Arg Asn Asn Asn Asn Asn Lys
 35 40 45

Asn Lys Asn Asp Lys Asn Asp Asn Gly Val Asp Ser Thr Gly Thr Arg
 50 55 60

Trp Ala Val Leu Ile Ala Gly Ser Asn Gly Tyr Trp Asn Tyr Arg His
65 70 75 80

Gln Ala Asp Val Cys His Ala Tyr Gln Ile Leu Lys Lys Gly Gly Leu
85 90 95

Lys Asp Glu Asn Ile Ile Val Phe Met Tyr Asp Asp Ile Ala Asn Asp
100 105 110

Ile Glu Asn Pro Arg Pro Gly Ile Ile Ile Asn Asn Pro Lys Gly Glu
115 120 125

Asp Val Tyr Lys Gly Val Pro Lys Asp Tyr Thr Gly Glu Gln Val Thr
130 135 140

Ala Gly Asn Phe Phe Asn Val Ile Leu Gly Asn Lys Thr Gly Leu Thr
145 150 155 160

Gly Gly Ser Gly Lys Val Val Asn Ser Gly Pro Asn Asp His Ile Phe
165 170 175

Ile Tyr Tyr Thr Asp His Gly Gly Pro Gly Ile Leu Gly Met Pro Thr
180 185 190

Ser Pro Tyr Ile Tyr Ala Asp Asp Leu Val Asp Val Leu Lys Lys Lys
195 200 205

His Ala Ser Gly Thr Tyr Lys Ser Leu Val Phe Tyr Val Glu Ala Cys
210 215 220

Glu Ser Gly Ser Ile Phe Glu Gly Ile Leu Pro Lys Gly Leu Asn Ile
225 230 235 240

Tyr Ala Thr Thr Ala Ser Asn Ala Val Glu Ser Ser Trp Gly Thr Tyr
245 250 255

Cys Pro Gly Glu Asn Pro Gly Pro Pro Glu Glu Tyr Asp Thr Cys Leu
260 265 270

Gly Asp Leu Tyr Ser Val Ala Trp Met Glu Asp Ser Asp Val His Asn

275

280

285

Leu Gln Thr Glu Thr Leu His Gln Gln Tyr Gln Leu Val Lys Asp Arg
 290 295 300

Thr Gly Lys Arg Asn Asn Gly Tyr Gly Ser His Val Met Gln Tyr Gly
 305 310 315 320

Asp Val Pro Leu Ser Lys Asp Ser Leu Phe Val Tyr Met Gly Thr Asn
 325 330 335

Pro Ala Asn Asp Asn Tyr Thr Phe Met Asp Asn Asn Ala Leu Arg Gln
 340 345 350

Pro Ser Lys Ala Val Asn Gln Arg Asp Ala Asp Leu Leu His Phe Trp
 355 360 365

His Lys Tyr Arg Lys Ala Pro Glu Gly Ser Pro Arg Lys Met Glu Ala
 370 375 380

Gln Lys Gln Phe Val Glu Met Met Ser His Arg Leu His Leu Asp Gln
 385 390 395 400

Ser Ile Lys Phe Ile Gly Arg Leu Leu Phe Gly Ile Asp Lys Ala Ser
 405 410 415

Glu Val Leu Ser Thr Val Arg Pro Ala Gly Gln Pro Leu Val Asp Asp
 420 425 430

Trp Asp Cys Leu Lys Thr Leu Val Arg Thr Phe Glu Thr His Cys Gly
 435 440 445

Ser Leu Ser Gln Tyr Gly Met Lys His Met Arg Ser Leu Ala Asn Leu
 450 455 460

Cys Asn Ala Gly Ile Arg Lys Glu Lys Met Ala Glu Ala Ser Val Gln
 465 470 475 480

Ala Cys Ala Thr Val Pro Ser Asn Pro Trp Ser Ser Leu Lys Lys Gly
 485 490 495

Phe Ser Ala

<210> 13
<211> 498
<212> PRT
<213> Viola yedoensis

<400> 13

Met Thr Arg Leu Ala Ser Gly Ala Ile Leu Leu Phe Leu Phe Ala Val
1 5 10 15

Ala Gly Ile Glu Ala Gly Arg Gln Asp Ile Asp Asp Val Leu Arg Leu
20 25 30

Pro Thr Glu Val Ser Asn Phe Phe Arg Asn Asn Asn Asn Asn Lys Asn
35 40 45

Asn Asn Asp Lys Asn Ala Asn Gly Asp Asp Ser Thr Gly Thr Arg Trp
50 55 60

Ala Val Leu Ile Ala Gly Ser Asn Gly Tyr Trp Asn Tyr Arg His Gln
65 70 75 80

Ala Asp Val Cys His Ala Tyr Gln Ile Leu Lys Lys Gly Gly Leu Lys
85 90 95

Asp Glu Asn Ile Ile Val Phe Met Tyr Asp Asp Ile Ala Asn Asp Ile
100 105 110

Glu Asn Pro Arg Pro Gly Ile Ile Ile Asn Asn Pro Lys Gly Glu Asp
115 120 125

Val Tyr Ile Gly Val Pro Lys Asp Tyr Thr Gly Glu Gln Val Thr Ala
130 135 140

Gly Asn Phe Tyr Asn Val Ile Leu Gly Asn Lys Thr Gly Leu Thr Gly
145 150 155 160

Gly Ser Gly Lys Val Val Asn Ser Gly Pro Asn Asp His Ile Phe Ile
165 170 175

Tyr Tyr Thr Asp His Gly Gly Pro Gly Ile Leu Gly Met Pro Thr Ser
180 185 190

Pro Tyr Ile Tyr Ala Asp Asp Leu Val Asp Val Leu Lys Lys Lys His
195 200 205

Ala Ser Gly Thr Tyr Lys Ser Leu Val Phe Tyr Val Glu Ala Cys Glu
210 215 220

Ser Gly Ser Ile Phe Glu Gly Ile Leu Pro Lys Gly Leu Asn Ile Tyr
225 230 235 240

Ala Thr Thr Ala Ser Asn Ala Val Glu Ser Ser Trp Gly Thr Tyr Cys
245 250 255

Pro Gly Glu His Pro Ser Pro Pro Gln Glu Tyr Asp Thr Cys Leu Gly
260 265 270

Asp Leu Tyr Ser Val Ala Trp Met Glu Asp Ser Asp Val His Asn Leu
275 280 285

Gln Thr Glu Thr Leu His Gln Gln Tyr Gln Leu Val Lys Asp Arg Thr
290 295 300

Gly Asn Gly Tyr Asn Gly Tyr Gly Ser His Val Met Gln Tyr Gly Asp
305 310 315 320

Val Pro Leu Ser Lys Asp Asn Leu Phe Glu Tyr Met Gly Thr Asn Pro
325 330 335

Ala Asn Asp Asn Tyr Thr Phe Met Asp Asp Asn Ala Leu Arg Gln Pro
340 345 350

Ser Lys Ala Val Asn Gln Arg Asp Ala Asp Leu Leu His Phe Trp His
355 360 365

Lys Tyr Arg Lys Ala Pro Glu Gly Ser Pro Arg Lys Met Glu Ala Gln

370

375

380

Lys Gln Phe Ile Glu Met Met Thr His Arg Leu His Leu Asp Gln Ser
 385 390 395 400

Ile Lys Phe Ile Gly Arg Leu Leu Phe Gly Ile Asp Lys Ala Ser Glu
 405 410 415

Val Leu Ser Thr Val Arg Pro Ala Gly Gln Pro Leu Val Asp Asp Trp
 420 425 430

Asn Cys Leu Lys Thr Leu Val Arg Thr Phe Glu Thr His Cys Gly Ser
 435 440 445

Leu Ser Gln Tyr Gly Met Lys His Met Arg Ser Leu Ala Asn Leu Cys
 450 455 460

Asn Ala Gly Ile Arg Lys Glu Lys Met Ala Glu Ala Ser Ala Gln Ala
 465 470 475 480

Cys Ala Thr Val Pro Ser Asn Pro Trp Ser Ser Leu Lys Lys Gly Phe
 485 490 495

Ser Ala

<210> 14

<211> 467

<212> PRT

<213> Viola canadensis

<400> 14

Met Ala Thr Leu Val Leu Leu Phe Leu Leu Ala Phe Ser Gly Phe Ala
 1 5 10 15

Ala Gly Gly Arg Asp Ile Thr Gly Asp Gly Phe Leu Arg Leu Pro Ser
 20 25 30

His Gly Asn Gly Asn Ser Gly Asp Val Asp Ser Lys Ala Gly Thr Lys
 35 40 45

Trp Ala Val Leu Ile Ala Gly Ser Lys Gly Tyr Gln Asn Tyr Arg His
50 55 60

Gln Ala Asp Val Cys His Ala Tyr Gln Ile Leu Arg Lys Gly Gly Val
65 70 75 80

Lys Asp Glu Asn Ile Ile Val Phe Met Tyr Asp Asp Ile Ala Tyr Asp
85 90 95

Ile Arg Asn Pro Tyr Pro Gly Thr Ile Ile Asn Ser Pro Asp Lys Lys
100 105 110

Asp Val Tyr Lys Gly Val Pro Lys Asp Tyr Thr Gly Glu Asp Val Asn
115 120 125

Val Gln Asn Phe Leu Ala Val Ile Leu Gly Asn Lys Thr Ala Leu Thr
130 135 140

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

Ile Tyr Tyr Thr Asp His Gly Tyr Pro Gly Val Leu Gly Met Pro Thr
165 170 175

Glu Pro Tyr Leu Tyr Ala Asn Asp Leu Ile Asp Thr Leu Lys Lys Lys
180 185 190

His Ala Leu Gly Thr Tyr Glu Gly Leu Val Phe Tyr Val Glu Ala Cys
195 200 205

Glu Ser Ala Ser Ile Phe Glu Gly Leu Leu Pro Asp Gly Leu Asn Ile
210 215 220

Tyr Val Ser Thr Ala Ala Lys Ala Gly Glu Gly Ser Trp Val Ala Tyr
225 230 235 240

Cys Pro Ser Gln Glu Pro Pro Val Pro Ala Glu Tyr Gly Thr Cys Val
245 250 255

Gly Asp Leu Tyr Ser Val Thr Trp Met Glu Asp Ser Asp Val Tyr Asn
260 265 270

Leu Arg Thr Gln Thr Leu His Gln Gln Tyr Glu Leu Val Lys Asn Lys
275 280 285

Ile Ala Tyr Ala Ser Thr Val Ser Gln Phe Gly Asp Phe Pro Ile Ser
290 295 300

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

Arg Gln Tyr Glu Asp Glu Glu Lys Ser Ser Ser Pro His Val Gly Ala
325 330 335

Val His Gln Arg Glu Ala Asp Leu His His Phe Trp Asp Lys Tyr Gln
340 345 350

Lys Ala Ser Glu Gly Ser Arg Asn Lys Val Asp Ala Arg Lys Gln Leu
355 360 365

Val Glu Val Met Leu His Arg Met His Val Asp Asp Ser Ile Glu Ser
370 375 380

Ile Ala Lys Leu Leu Phe Gly Ser Gly Ala Lys Ala Ser Glu Met Met
385 390 395 400

Asn Thr Ile Arg Pro Pro Gly Gln Pro Leu Val Ser Asp Trp Asp Cys
405 410 415

Leu Lys Thr Met Val Arg Thr Phe Glu Thr His Cys Gly Ser Leu Ser
420 425 430

Glu Tyr Gly Met Lys Tyr Thr Arg Phe Leu Ala Asn Ile Cys Asn Ser
435 440 445

Gly Ile Gln Lys Glu Lys Met Gly Glu Ala Ser Ala Gln Val Cys Leu
450 455 460

Asn Phe Pro

465

<210> 15
<211> 6
<212> PRT
<213> Artificial

<220>
<223> MLA motif

<400> 15

Lys Lys Ile Ala Tyr Ala
1 5

<210> 16
<211> 6
<212> PRT
<213> Artificial

<220>
<223> MLA motif

<400> 16

Asn Lys Ile Ala Tyr Ala
1 5

<210> 17
<211> 166
<212> PRT
<213> Artificial

<220>
<223> VyPAL1 cap sequence

<400> 17

Gly Thr Asp Pro Ala Asn Asp Asn Arg Thr Phe Val Asp Glu Asn Ser
1 5 10 15

Leu Arg Pro Pro Leu Lys Val Ile His Gln His Asp Ala Asp Leu Tyr
20 25 30

His Ile Trp Cys Lys Tyr Asn Met Ala Pro Glu Gly Ser Ser Lys Lys
35 40 45

Ile Glu Ala Gln Lys Gln Leu Leu Glu Leu Met Ser His Arg Ala His
50 55 60

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

Lys Ala Ser Lys Val Leu Asn Thr Val Arg Pro Val Gly Gln Pro Leu
85 90 95

Val Asp Asp Trp Gln Cys Leu Lys Ala Met Ile Arg Thr Phe Glu Thr
100 105 110

His Cys Gly Ser Leu Ser Glu Tyr Gly Met Lys His Thr Leu Ser Phe
115 120 125

Ala Asn Met Cys Asn Ala Gly Ile Gln Lys Glu Gln Leu Ala Glu Ala
130 135 140

Ala Ala Gln Ala Cys Val Thr Phe Pro Ser Asn Pro Tyr Ser Ser Leu
145 150 155 160

Ala Glu Gly Phe Ser Ala
165

<210> 18
<211> 281
<212> PRT
<213> Artificial

<220>

<223> active fragment of Clitoria ternatea butelase-1

<400> 18

Val Glu Gly Thr Arg Trp Ala Val Leu Val Ala Gly Ser Lys Gly Tyr
1 5 10 15

Val Asn Tyr Arg His Gln Ala Asp Val Cys His Ala Tyr Gln Ile Leu
20 25 30

Lys Lys Gly Gly Leu Lys Asp Glu Asn Ile Ile Val Phe Met Tyr Asp
35 40 45

Asp Ile Ala Tyr Asn Glu Ser Asn Pro His Pro Gly Val Ile Ile Asn
50 55 60

His Pro Tyr Gly Ser Asp Val Tyr Lys Gly Val Pro Lys Asp Tyr Val
65 70 75 80

Gly Glu Asp Ile Asn Pro Pro Asn Phe Tyr Ala Val Leu Leu Ala Asn
85 90 95

Lys Ser Ala Leu Thr Gly Thr Gly Ser Gly Lys Val Leu Asp Ser Gly
100 105 110

Pro Asn Asp His Val Phe Ile Tyr Tyr Thr Asp His Gly Gly Ala Gly
115 120 125

Val Leu Gly Met Pro Ser Lys Pro Tyr Ile Ala Ala Ser Asp Leu Asn
130 135 140

Asp Val Leu Lys Lys Lys His Ala Ser Gly Thr Tyr Lys Ser Ile Val
145 150 155 160

Phe Tyr Val Glu Ser Cys Glu Ser Gly Ser Met Phe Asp Gly Leu Leu
165 170 175

Pro Glu Asp His Asn Ile Tyr Val Met Gly Ala Ser Asp Thr Gly Glu
180 185 190

Ser Ser Trp Val Thr Tyr Cys Pro Leu Gln His Pro Ser Pro Pro Pro
195 200 205

Glu Tyr Asp Val Cys Val Gly Asp Leu Phe Ser Val Ala Trp Leu Glu
210 215 220

Asp Cys Asp Val His Asn Leu Gln Thr Glu Thr Phe Gln Gln Gln Tyr
225 230 235 240

Glu Val Val Lys Asn Lys Thr Ile Val Ala Leu Ile Glu Asp Gly Thr
245 250 255

His Val Val Gln Tyr Gly Asp Val Gly Leu Ser Lys Gln Thr Leu Phe
260 265 270

Val Tyr Met Gly Thr Asp Pro Ala Asn
275 280

<210> 19
<211> 75
<212> PRT
<213> Artificial

<220>
<223> Modified Bacteriocin AS-48K

<400> 19

Val Val Glu Ala Gly Gly Trp Val Thr Thr Ile Val Ser Ile Leu Thr
1 5 10 15

Ala Val Gly Ser Gly Gly Leu Ser Leu Leu Ala Ala Ala Gly Arg Glu
20 25 30

Ser Ile Lys Ala Tyr Leu Lys Lys Glu Ile Lys Lys Lys Gly Lys Arg
35 40 45

Ala Val Ile Ala Trp Met Ala Lys Glu Phe Gly Ile Pro Ala Ala Val
50 55 60

Ala Gly Thr Val Leu Asn His Val Lys Lys Lys
65 70 75

<210> 20
<211> 31
<212> PRT
<213> Oldenlandia affinis

<400> 20

Gly Leu Pro Val Cys Gly Glu Thr Cys Val Gly Gly Thr Cys Asn Thr
1 5 10 15

Pro Gly Cys Thr Cys Ser Trp Pro Val Cys Thr Arg Asn Gly Leu
20 25 30

<210> 21
 <211> 16
 <212> PRT
 <213> Conus sp.

<400> 21

Gly	Val	Cys	Cys	Gly	Tyr	Lys	Leu	Cys	His	Pro	Cys	Ala	Gly	Asn	His
1				5					10					15	

<210> 22
 <211> 25
 <212> PRT
 <213> Artificial

<220>
 <223> Thanatin analog

<400> 22

Gly	Ile	Ser	Lys	Lys	Pro	Val	Pro	Ile	Ile	Tyr	Cys	Asn	Arg	Arg	Thr
1				5					10					15	

Gly	Lys	Cys	Gln	Arg	Met	Asn	His	Val
			20					25

<210> 23
 <211> 42
 <212> PRT
 <213> Homo sapiens

<400> 23

Ser	Ala	Asp	Ser	His	Glu	Lys	Arg	His	His	Gly	Tyr	Arg	Arg	Lys	Phe
1				5					10					15	

His	Glu	Lys	His	His	Ser	His	Arg	Glu	Phe	Pro	Phe	Tyr	Gly	Asp	Tyr
			20					25					30		

Gly	Ser	Asn	Tyr	Leu	Tyr	Asp	Asn	His	Val
		35					40		

<210> 24
 <211> 43
 <212> PRT
 <213> Homo sapiens

<400> 24

Gly Leu Pro Asp Ser His Glu Lys Arg His His Gly Tyr Arg Arg Lys
1 5 10 15

Phe His Glu Lys His His Ser His Arg Glu Phe Pro Phe Tyr Gly Asp
20 25 30

Tyr Gly Ser Asn Tyr Leu Tyr Asp Asn His Val
35 40

<210> 25

<211> 36

<212> PRT

<213> Homo sapiens

<400> 25

Gly Ala Asp Ser His Ala Lys Arg His His Gly Tyr Lys Arg Lys Phe
1 5 10 15

His Glu Lys His His Ser His Arg Gly Tyr Arg Ser Asn Tyr Leu Tyr
20 25 30

Asp Asn His Val
35

<210> 26

<211> 36

<212> PRT

<213> Homo sapiens

<400> 26

Gly Leu Asp Ser His Ala Lys Arg His His Gly Tyr Lys Arg Lys Phe
1 5 10 15

His Glu Lys His His Ser His Arg Gly Tyr Arg Ser Asn Tyr Leu Tyr
20 25 30

Asp Asn His Val
35

<210> 27

<211> 26
<212> PRT
<213> Artificial

<220>
<223> modified human neuromedin U

<400> 27

Arg Val Asp Glu Glu Phe Gln Ser Pro Phe Ala Ser Gln Ser Arg Gly
1 5 10 15

Tyr Phe Leu Phe Arg Pro Arg Asn His Val
20 25

<210> 28
<211> 33
<212> PRT
<213> Artificial

<220>
<223> modified human salusin alpha

<400> 28

Gly Ile Ser Gly Ala Leu Pro Pro Ala Pro Ala Ala Pro Arg Pro Ala
1 5 10 15

Leu Arg Ala Gln Arg Ala Gly Pro Ala Gly Pro Gly Ala Lys Asn His
20 25 30

Val

<210> 29
<211> 28
<212> PRT
<213> Artificial

<220>
<223> modified rat neuromedin U

<400> 29

Gly Ile Lys Tyr Lys Val Asn Glu Tyr Gln Gly Pro Val Ala Pro Ser
1 5 10 15

Gly Gly Phe Phe Leu Phe Arg Pro Arg Asn His Val
20 25

<210> 30
<211> 40
<212> PRT
<213> Artificial

<220>
<223> modified human apelin

<400> 30

Gly Leu Val Gln Pro Arg Gly Ser Arg Asn Gly Pro Gly Pro Trp Gln
1 5 10 15

Gly Gly Arg Arg Lys Phe Arg Arg Gln Arg Pro Arg Leu Ser His Lys
20 25 30

Gly Pro Met Pro Phe Asn His Val
35 40

<210> 31
<211> 32
<212> PRT
<213> Artificial

<220>
<223> modified human galanin

<400> 31

Gly Leu Thr Ser Gly Trp Thr Leu Asn Ser Ala Gly Tyr Leu Leu Gly
1 5 10 15

Pro His Ala Val Gly Asn His Arg Ser Phe Ser Asp Lys Asn His Val
20 25 30

<210> 32
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 32

Gly Leu Pro Pro Pro Ile Phe Asn His Val
1 5 10

<210> 33
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 33

Ser Leu Pro Pro Pro Ile Phe Asn His Val
1 5 10

<210> 34
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 34

His Leu Pro Pro Pro Ile Phe Asn His Val
1 5 10

<210> 35
<211> 10
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 35

Glu Ile Asn Ser Thr Glu Ile Asn His Val
1 5 10

<210> 36
<211> 9
<212> PRT
<213> Artificial

<220>

<223> Artificial peptide

<400> 36

Arg Val Thr Arg Pro Val Asn His Val
1 5

<210> 37

<211> 8

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide

<400> 37

Lys Ala Leu Val Ile Asn His Val
1 5

<210> 38

<211> 6

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide

<220>

<221> misc_feature

<222> (1)..(1)

<223> Xaa can be any naturally occurring amino acid

<400> 38

Xaa Ile Gly Gly Ile Arg
1 5

<210> 39

<211> 6

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide

<220>

<221> misc_feature

<222> (2)..(2)
<223> Xaa can be any naturally occurring amino acid

<400> 39

Leu Xaa Gly Gly Ile Arg
1 5

<210> 40
<211> 5
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 40

Tyr Arg Asn His Val
1 5

<210> 41
<211> 5
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 41

Gly Leu Pro Val Arg
1 5

<210> 42
<211> 5
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 42

Thr Arg Asn His Val
1 5

<210> 43
<211> 263

<212> PRT
<213> Artificial

<220>

<223> peptide construct GFP + NHV

<400> 43

Met His His His His His His Ser Ser Gly Val Asp Leu Gly Thr Glu
1 5 10 15

Asn Leu Tyr Phe Gln Ser Met Ser Lys Gly Glu Glu Leu Phe Thr Gly
20 25 30

Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
35 40 45

Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
50 55 60

Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
65 70 75 80

Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
85 90 95

Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
100 105 110

Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
115 120 125

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

Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
145 150 155 160

His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
165 170 175

Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn

180

185

190

Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
 195 200 205

Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
 210 215 220

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

Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp
 245 250 255

Glu Leu Tyr Lys Asn His Val
 260

<210> 44

<211> 5

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide with K at position 4 being biotinylated

<400> 44

Gly Ile Gly Lys Arg
 1 5

<210> 45

<211> 129

<212> PRT

<213> Artificial

<220>

<223> human anti-ABL scFv fragment

<400> 45

Met His His His His His His Ser Ser Gly Val Asp Leu Gly Thr Glu
 1 5 10 15

Asn Leu Tyr Phe Gln Ser Met Gly Gly Ser Gly Ser Ser Val Ser Ser
 20 25 30

Val Pro Thr Lys Leu Glu Val Val Asp Ala Thr Pro Thr Ser Leu Lys
 35 40 45

Ile Ser Trp Asp Ala Tyr Tyr Ser Ser Trp Gln Asn Val Lys Tyr Tyr
 50 55 60

Arg Ile Thr Tyr Gly Glu Thr Gly Gly Asp Ser Pro Val Gln Glu Phe
 65 70 75 80

Thr Val Pro Gly Tyr Tyr Ser Thr Ala Thr Ile Ser Gly Leu Lys Pro
 85 90 95

Gly Val Asp Tyr Thr Ile Thr Val Tyr Ala Tyr Asp Thr Phe Phe Pro
 100 105 110

Gly Tyr Glu Pro Asn Ser Pro Ile Ser Ile Asn Tyr Arg Thr Asn His
 115 120 125

Val

<210> 46
 <211> 184
 <212> PRT
 <213> Artificial

<220>
 <223> darpin specific for ERK

<400> 46

Met His His His His His His Ser Ser Gly Val Asp Leu Gly Thr Glu
 1 5 10 15

Asn Leu Tyr Phe Gln Ser Met Gly Ser Asp Leu Gly Lys Lys Leu Leu
 20 25 30

Glu Ala Ala Arg Ala Gly Gln Asp Asp Glu Val Arg Ile Leu Met Ala
 35 40 45

Asn Gly Ala Asp Val Asn Ala His Asp Asp Gln Gly Ser Thr Pro Leu

50

55

60

His Leu Ala Ala Trp Ile Gly His Pro Glu Ile Val Glu Val Leu Leu
65 70 75 80

Lys His Gly Ala Asp Val Asn Ala Arg Asp Thr Asp Gly Trp Thr Pro
85 90 95

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

Leu Lys Tyr Gly Ala Asp Val Asn Ala Gln Asp Ala Tyr Gly Leu Thr
115 120 125

Pro Leu His Leu Ala Ala Asp Arg Gly His Leu Glu Ile Val Glu Val
130 135 140

Leu Leu Lys His Gly Ala Asp Val Asn Ala Gln Asp Lys Phe Gly Lys
145 150 155 160

Thr Ala Phe Asp Ile Ser Ile Asp Asn Gly Asn Glu Asp Leu Ala Glu
165 170 175

Ile Leu Gln Lys Leu Asn His Val
180

<210> 47

<211> 12

<212> PRT

<213> Artificial

<220>

<223> Synthetic peptide

<400> 47

Gly Leu Tyr Arg Arg Gly Arg Leu Tyr Arg Arg Asn
1 5 10

<210> 48

<211> 14

<212> PRT

<213> Artificial

<220>

<223> Synthetic peptide

<400> 48

Gly Ile Ser Thr Lys Ser Ile Pro Pro Ile Ser Tyr Arg Asn
1 5 10

<210> 49

<211> 187

<212> PRT

<213> Artificial

<220>

<223> Synthetic peptide 6xHis-TEV-GLGSG-DARPin9_26-GSGS-NGL

<400> 49

Gly His His His His His His Gly Thr Glu Asn Leu Tyr Phe Gln Gly
1 5 10 15

Leu Gly Ser Gly Ser Asp Leu Gly Lys Lys Leu Leu Glu Ala Ala Arg
20 25 30

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

Val Asn Ala Lys Asp Phe Tyr Gly Ile Thr Pro Leu His Leu Ala Ala
50 55 60

Ala Tyr Gly His Leu Glu Ile Val Glu Val Leu Leu Lys His Gly Ala
65 70 75 80

Asp Val Asn Ala His Asp Trp Asn Gly Trp Thr Pro Leu His Leu Ala
85 90 95

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

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

Ala Ala Ala His Gly His Leu Glu Ile Val Glu Val Leu Leu Lys Tyr

130

135

140

Gly Ala Asp Val Asn Ala Gln Asp Lys Phe Gly Lys Thr Pro Phe Asp
 145 150 155 160

Leu Ala Ile Asp Asn Gly Asn Glu Asp Ile Ala Glu Val Leu Gln Lys
 165 170 175

Ala Ala Lys Leu Gly Ser Gly Ser Asn Gly Leu
 180 185

<210> 50

<211> 8

<212> PRT

<213> Artificial

<220>

<223> Peptide inhibitor

<400> 50

Leu Lys Val Ile His Asn Ser Leu
 1 5

<210> 51

<211> 16

<212> PRT

<213> Artificial

<220>

<223> Peptide substrate

<400> 51

Lys Leu Gly Thr Ser Pro Gly Arg Leu Arg Tyr Ala Gly Asn Gly Leu
 1 5 10 15

<210> 52

<211> 16

<212> PRT

<213> Artificial

<220>

<223> GN14-HV

<400> 52

Gly Ile Ser Thr Lys Ser Ile Pro Pro Ile Ser Tyr Arg Asn His Val
 1 5 10 15

<210> 53
 <211> 18
 <212> PRT
 <213> Artificial

<220>
 <223> GN14-SLAN

<400> 53

Gly Ile Ser Thr Lys Ser Ile Pro Pro Ile Ser Tyr Arg Asn Ser Leu
 1 5 10 15

Ala Asn

<210> 54
 <211> 16
 <212> PRT
 <213> Artificial

<220>
 <223> SFTI analog

<400> 54

Gly Arg Cys Thr Lys Ser Ile Pro Pro Ile Cys Phe Pro Asn His Val
 1 5 10 15

<210> 55
 <211> 7
 <212> PRT
 <213> Artificial

<220>
 <223> RV7 peptide

<400> 55

Arg Leu Tyr Arg Asn His Val
 1 5

<210> 56
 <211> 6
 <212> PRT

<213> Artificial

<220>

<223> Peptide substrate

<400> 56

Arg Tyr Ala Asn Gly Ile
1 5

<210> 57

<211> 6

<212> PRT

<213> Artificial

<220>

<223> synthetic peptide, K labeled with FAM

<400> 57

Gly Leu Ala Lys Arg Gly
1 5

<210> 58

<211> 10

<212> PRT

<213> Artificial

<220>

<223> ligated peptide, K labeled with FAM

<400> 58

Arg Tyr Ala Asn Gly Leu Ala Lys Arg Gly
1 5 10

<210> 59

<211> 16

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide

<400> 59

Gly Ile Ser Thr Lys Ser Ile Pro Pro Ile Ser Tyr Arg Asn Ser Leu
1 5 10 15

<210> 60
<211> 18
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 60

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Leu
1				5					10					15	

Ala Asn

<210> 61
<211> 18
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 61

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Ile
1				5					10					15	

Gln Gln

<210> 62
<211> 17
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 62

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Ile
1				5					10					15	

Gln

<210> 63
<211> 16
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 63

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Ile
1				5					10					15	

<210> 64
<211> 18
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 64

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Leu
1				5					10					15	

Ala Met

<210> 65
<211> 17
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 65

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Leu
1				5					10					15	

Ala

<210> 66
<211> 18

<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 66

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Leu
1				5					10					15	

Asp Asn

<210> 67
<211> 18
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 67

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Leu
1				5					10					15	

Asp Ile

<210> 68
<211> 17
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 68

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Leu
1				5					10					15	

Asp

<210> 69

<211> 18
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 69

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Leu
1				5					10					15	

Ser Gly

<210> 70
<211> 17
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 70

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	Leu
1				5					10					15	

Ser

<210> 71
<211> 15
<212> PRT
<213> Artificial

<220>
<223> Artificial peptide

<400> 71

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	Ser	
1				5					10					15	

<210> 72
<211> 18
<212> PRT
<213> Artificial

<220>

<223> Artificial peptide

<400> 72

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	His	Val
1				5					10					15	

Ile Ala

<210> 73

<211> 17

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide

<400> 73

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	His	Val
1				5					10					15	

Ile

<210> 74

<211> 16

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide

<400> 74

Gly	Ile	Ser	Thr	Lys	Ser	Ile	Pro	Pro	Ile	Ser	Tyr	Arg	Asn	His	Val
1				5					10					15	

<210> 75

<211> 15

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide

<400> 75

Gly Ile Ser Thr Lys Ser Ile Pro Pro Ile Ser Tyr Arg Asn His
1 5 10 15

<210> 76

<211> 16

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide

<400> 76

Gly Ile Ser Thr Lys Ser Ile Pro Pro Ile Ser Tyr Arg Asp Gly Ile
1 5 10 15

<210> 77

<211> 16

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide

<400> 77

Gly Ile Ser Thr Lys Ser Ile Pro Pro Ile Ser Tyr Arg Asp Ser Leu
1 5 10 15

<210> 78

<211> 14

<212> PRT

<213> Artificial

<220>

<223> Artificial peptide

<220>

<221> misc_feature

<222> (13)..(13)

<223> Xaa can be any naturally occurring amino acid

<400> 78

Gly Leu Tyr Arg Arg Gly Arg Leu Tyr Arg Arg Asn Xaa Leu
1 5 10

<210> 79
 <211> 14
 <212> PRT
 <213> Artificial

<220>
 <223> Artificial peptide

<220>
 <221> misc_feature
 <222> (14)..(14)
 <223> Xaa can be any naturally occurring amino acid

<400> 79

Gly Leu Tyr Arg Arg Gly Arg Leu Tyr Arg Arg Asn Gly Xaa
 1 5 10

<210> 80
 <211> 488
 <212> PRT
 <213> Clitoria ternatea

<400> 80

Met Ala Val Asp His Cys Phe Leu Lys Lys Lys Thr Cys Tyr Tyr Gly
 1 5 10 15

Phe Val Leu Trp Ser Trp Met Leu Met Met Ser Leu His Ser Lys Ala
 20 25 30

Ala Arg Leu Asn Pro Gln Lys Glu Trp Asp Ser Val Ile Arg Leu Pro
 35 40 45

Thr Glu Pro Val Asp Ala Asp Thr Asp Glu Val Gly Thr Arg Trp Ala
 50 55 60

Val Leu Val Ala Gly Ser Asn Gly Tyr Glu Asn Tyr Arg His Gln Ala
 65 70 75 80

Asp Val Cys His Ala Tyr Gln Leu Leu Ile Lys Gly Gly Leu Lys Glu
 85 90 95

Glu Asn Ile Val Val Phe Met Tyr Asp Asp Ile Ala Trp His Glu Leu
100 105 110

Asn Pro Arg Pro Gly Val Ile Ile Asn Asn Pro Arg Gly Glu Asp Val
115 120 125

Tyr Ala Gly Val Pro Lys Asp Tyr Thr Gly Glu Asp Val Thr Ala Glu
130 135 140

Asn Leu Phe Ala Val Ile Leu Gly Asp Arg Ser Lys Val Lys Gly Gly
145 150 155 160

Ser Gly Lys Val Ile Asn Ser Lys Pro Glu Asp Arg Ile Phe Ile Phe
165 170 175

Tyr Ser Asp His Gly Gly Pro Gly Val Leu Gly Met Pro Asn Glu Gln
180 185 190

Ile Leu Tyr Ala Met Asp Phe Ile Asp Val Leu Lys Lys Lys His Ala
195 200 205

Ser Gly Gly Tyr Arg Glu Met Val Ile Tyr Val Glu Ala Cys Glu Ser
210 215 220

Gly Ser Leu Phe Glu Gly Ile Met Pro Lys Asp Leu Asn Val Phe Val
225 230 235 240

Thr Thr Ala Ser Asn Ala Gln Glu Asn Ser Trp Gly Thr Tyr Cys Pro
245 250 255

Gly Thr Glu Pro Ser Pro Pro Pro Glu Tyr Thr Thr Cys Leu Gly Asp
260 265 270

Leu Tyr Ser Val Ala Trp Met Glu Asp Ser Glu Ser His Asn Leu Arg
275 280 285

Arg Glu Thr Val Asn Gln Gln Tyr Arg Ser Val Lys Glu Arg Thr Ser
290 295 300

Asn Phe Lys Asp Tyr Ala Met Gly Ser His Val Met Gln Tyr Gly Asp

305		310		315		320									
Thr	Asn	Ile	Thr	Ala	Glu	Lys	Leu	Tyr	Leu	Phe	Gln	Gly	Phe	Asp	Pro
				325					330					335	
Ala	Thr	Val	Asn	Leu	Pro	Pro	His	Asn	Gly	Arg	Ile	Glu	Ala	Lys	Met
			340					345					350		
Glu	Val	Val	His	Gln	Arg	Asp	Ala	Glu	Leu	Leu	Phe	Met	Trp	Gln	Met
		355					360					365			
Tyr	Gln	Arg	Ser	Asn	His	Leu	Leu	Gly	Lys	Lys	Thr	His	Ile	Leu	Lys
	370					375					380				
Gln	Ile	Ala	Glu	Thr	Val	Lys	His	Arg	Asn	His	Leu	Asp	Gly	Ser	Val
385					390					395					400
Glu	Leu	Ile	Gly	Val	Leu	Leu	Tyr	Gly	Pro	Gly	Lys	Gly	Ser	Pro	Val
			405					410					415		
Leu	Gln	Ser	Val	Arg	Asp	Pro	Gly	Leu	Pro	Leu	Val	Asp	Asn	Trp	Ala
			420					425					430		
Cys	Leu	Lys	Ser	Met	Val	Arg	Val	Phe	Glu	Ser	His	Cys	Gly	Ser	Leu
		435					440					445			
Thr	Gln	Tyr	Gly	Met	Lys	His	Met	Arg	Ala	Phe	Ala	Asn	Ile	Cys	Asn
	450					455					460				
Ser	Gly	Val	Ser	Glu	Ser	Ser	Met	Glu	Glu	Ala	Cys	Met	Val	Ala	Cys
465					470					475					480
Gly	Gly	His	Asp	Ala	Gly	His	Leu								
				485											

<210> 81
 <211> 474
 <212> PRT
 <213> Oldenlandia affinis
 <400> 81

Met Val Arg Tyr Leu Ala Gly Ala Val Leu Leu Leu Val Val Leu Ser
 1 5 10 15

Val Ala Ala Ala Val Ser Gly Ala Arg Asp Gly Asp Tyr Leu His Leu
 20 25 30

Pro Ser Glu Val Ser Arg Phe Phe Arg Pro Gln Glu Thr Asn Asp Asp
 35 40 45

His Gly Glu Asp Ser Val Gly Thr Arg Trp Ala Val Leu Ile Ala Gly
 50 55 60

Ser Lys Gly Tyr Ala Asn Tyr Arg His Gln Ala Gly Val Cys His Ala
 65 70 75 80

Tyr Gln Ile Leu Lys Arg Gly Gly Leu Lys Asp Glu Asn Ile Val Val
 85 90 95

Phe Met Tyr Asp Asp Ile Ala Tyr Asn Glu Ser Asn Pro Arg Pro Gly
 100 105 110

Val Ile Ile Asn Ser Pro His Gly Ser Asp Val Tyr Ala Gly Val Pro
 115 120 125

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

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

Asp Ser Gly Pro Asn Asp His Ile Phe Ile Tyr Tyr Thr Asp His Gly
 165 170 175

Ala Ala Gly Val Ile Gly Met Pro Ser Lys Pro Tyr Leu Tyr Ala Asp
 180 185 190

Glu Leu Asn Asp Ala Leu Lys Lys Lys His Ala Ser Gly Thr Tyr Lys
 195 200 205

Ser Leu Val Phe Tyr Leu Glu Ala Cys Glu Ser Gly Ser Met Phe Glu
210 215 220

Gly Ile Leu Pro Glu Asp Leu Asn Ile Tyr Ala Leu Thr Ser Thr Asn
225 230 235 240

Thr Thr Glu Ser Ser Trp Cys Tyr Tyr Cys Pro Ala Gln Glu Asn Pro
245 250 255

Pro Pro Pro Glu Tyr Asn Val Cys Leu Gly Asp Leu Phe Ser Val Ala
260 265 270

Trp Leu Glu Asp Ser Asp Val Gln Asn Ser Trp Tyr Glu Thr Leu Asn
275 280 285

Gln Gln Tyr His His Val Asp Lys Arg Ile Ser His Ala Ser His Ala
290 295 300

Thr Gln Tyr Gly Asn Leu Lys Leu Gly Glu Glu Gly Leu Phe Val Tyr
305 310 315 320

Met Gly Ser Asn Pro Ala Asn Asp Asn Tyr Thr Ser Leu Asp Gly Asn
325 330 335

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

Leu His Leu Trp Glu Lys Phe Arg Lys Ala Pro Glu Gly Ser Ala Arg
355 360 365

Lys Glu Glu Ala Gln Thr Gln Ile Phe Lys Ala Met Ser His Arg Val
370 375 380

His Ile Asp Ser Ser Ile Lys Leu Ile Gly Lys Leu Leu Phe Gly Ile
385 390 395 400

Glu Lys Cys Thr Glu Ile Leu Asn Ala Val Arg Pro Ala Gly Gln Pro
405 410 415

Leu Val Asp Asp Trp Ala Cys Leu Arg Ser Leu Val Gly Thr Phe Glu

420

425

430

Thr His Cys Gly Ser Leu Ser Glu Tyr Gly Met Arg His Thr Arg Thr
 435 440 445

Ile Ala Asn Ile Cys Asn Ala Gly Ile Ser Glu Glu Gln Met Ala Glu
 450 455 460

Ala Ala Ser Gln Ala Cys Ala Ser Ile Pro
 465 470

<210> 82

<211> 488

<212> PRT

<213> Oldenlandia affinis

<400> 82

Met Val Arg Tyr Pro Ala Gly Ala Val Leu Leu Leu Val Val Leu Ser
 1 5 10 15

Val Val Ala Val Asp Gly Ala Arg Asp Gly Tyr Leu Lys Leu Pro Ser
 20 25 30

Glu Val Ser Asp Phe Phe Arg Pro Arg Asn Thr Asn Asp Gly Asp Asp
 35 40 45

Ser Val Gly Thr Arg Trp Ala Val Leu Leu Ala Gly Ser Asn Gly Tyr
 50 55 60

Trp Asn Tyr Arg His Gln Ala Asp Leu Cys His Ala Tyr Gln Ile Leu
 65 70 75 80

Lys Arg Gly Gly Leu Lys Asp Glu Asn Ile Val Val Phe Met Tyr Asp
 85 90 95

Asp Ile Ala Tyr Asn Glu Glu Asn Pro Arg Pro Gly Val Ile Ile Asn
 100 105 110

Ser Pro His Gly Ser Asp Val Tyr Ala Gly Val Pro Lys Asp Tyr Thr
 115 120 125

Gly Asp Gln Val Asn Ala Lys Asn Phe Leu Ala Ala Ile Leu Gly Asn
130 135 140

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

Asn Asp His Ile Phe Ile Tyr Tyr Thr Asp His Gly Gly Pro Gly Val
165 170 175

Leu Gly Met Pro Val Gly Pro Tyr Ile Tyr Ala Asp Asp Leu Ile Asp
180 185 190

Thr Leu Lys Lys Lys His Ala Ser Gly Thr Tyr Lys Ser Leu Val Phe
195 200 205

Tyr Leu Glu Ala Cys Glu Ser Gly Ser Met Phe Glu Gly Leu Leu Pro
210 215 220

Glu Gly Leu Asn Ile Tyr Ala Thr Thr Ala Ser Asn Ala Glu Glu Ser
225 230 235 240

Ser Trp Gly Thr Tyr Cys Pro Gly Glu Tyr Pro Ser Pro Pro Pro Glu
245 250 255

Tyr Asp Thr Cys Leu Gly Asp Leu Tyr Ser Val Ala Trp Met Glu Asp
260 265 270

Ser Glu Val His Asn Leu Arg Ser Glu Thr Leu Lys Gln Gln Tyr His
275 280 285

Leu Val Lys Ala Arg Thr Ser Asn Gly Asn Ser Ala Tyr Gly Ser His
290 295 300

Val Met Gln Tyr Gly Asp Leu Lys Leu Ser Val Asp Asn Leu Phe Leu
305 310 315 320

Tyr Met Gly Thr Asn Pro Ala Asn Asp Asn Tyr Thr Phe Val Asp Asp
325 330 335

Asn Ala Leu Arg Pro Ser Ser Lys Ala Val Asn Gln Arg Asp Ala Asp
340 345 350

Leu Leu His Phe Trp Asp Lys Phe Arg Lys Ala Pro Glu Gly Ser Ala
355 360 365

Arg Lys Glu Glu Ala Arg Lys Gln Val Phe Glu Ala Met Ser His Arg
370 375 380

Met His Ile Asp Asn Ser Ile Lys Leu Val Gly Lys Leu Leu Phe Gly
385 390 395 400

Ile Glu Arg Gly Ala Glu Ile Leu Asp Ala Val Arg Pro Ala Gly Gln
405 410 415

Pro Leu Ala Asp Asp Trp Thr Cys Leu Lys Ser Leu Val Arg Thr Phe
420 425 430

Glu Thr His Cys Gly Ser Leu Ser Gln Tyr Gly Met Lys His Met Arg
435 440 445

Thr Ile Ala Asn Ile Cys Asn Ala Gly Ile Thr Lys Glu Gln Met Ala
450 455 460

Glu Ala Ser Ala Gln Ala Cys Ser Ser Val Pro Ser Asn Pro Trp Ser
465 470 475 480

Ser Leu His Lys Gly Phe Ser Ala
485

<210> 83
<211> 481
<212> PRT
<213> Hybanthus enneaspermus

<400> 83

Met Lys Leu Leu Val Pro Gly Val Leu Leu Leu Phe Leu Leu Ala Leu
1 5 10 15

Ser Gly Ile Ala Ala Gly Arg Pro Asp Asp Phe Leu Arg Leu Pro Ser
20 25 30

Glu Ala Ala Lys Ser Phe Leu His Asn Asp Asp Asp Ser Val Gly Thr
35 40 45

Arg Trp Ala Val Leu Ile Ala Gly Ser Lys Gly Trp Gln Asn Tyr Arg
50 55 60

His Gln Ala Asp Val Cys His Ala Tyr Gln Ile Leu Lys Lys Gly Gly
65 70 75 80

Leu Lys Asp Glu Asn Ile Ile Val Phe Met Tyr Asp Asp Ile Ala Tyr
85 90 95

Asn Glu Ser Asn Pro Arg Pro Gly Ile Val Ile Asn Lys Pro Lys Gly
100 105 110

Glu Asp Val Tyr Lys Gly Val Pro Lys Asp Tyr Thr Gly Glu Asn Val
115 120 125

Asn Ala Val Asn Phe Leu Ala Val Leu Leu Ala Asn Arg Ser Ala Leu
130 135 140

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

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

Ser Lys Pro Tyr Leu Val Ala Lys Asp Leu Val Asp Thr Leu Lys Lys
180 185 190

Lys His Ala Ala Gly Thr Tyr Lys Ser Met Val Phe Tyr Ile Glu Ser
195 200 205

Cys Glu Ser Gly Ser Met Phe Asp Gly Leu Leu Pro Glu Asp Ala Asn
210 215 220

Ile Tyr Gly Met Thr Ala Thr Asn Ser Thr Glu Gly Ser Trp Val Thr
225 230 235 240

Tyr Cys Pro Gly Gln Thr Asp Asp Tyr Pro Glu Asp Asp Glu Tyr Asp
245 250 255

Val Cys Phe Gly Asp Leu Trp Ser Val Ala Trp Leu Glu Asp Cys Asp
260 265 270

Ala His Asn Leu Arg Thr Glu Thr Leu Asp Gln Gln Tyr Glu Val Val
275 280 285

Lys Lys Lys Ile Glu Tyr Ala His Ile Pro Ala Gln Tyr Gly Asn Val
290 295 300

Ser Leu Ala Lys Asp Ser Leu Phe Val Tyr Met Gly Thr Asp Pro Ala
305 310 315 320

Asn Asp Asn Lys Thr Phe Val Glu Glu Asn Thr Leu Arg Arg Pro Leu
325 330 335

Lys Ala Val His Ser Arg Asp Ala Asp Leu Leu His Phe Trp His Lys
340 345 350

Tyr His Lys Ala Pro Glu Gly Thr Ser Arg Lys Ile Asp Ala Gln Lys
355 360 365

Gln Leu Val Glu Val Leu Ser His Arg Thr His Val Asp Asn Ser Ile
370 375 380

Lys Leu Val Gly Glu Leu Leu Phe Gly Val Gly Lys Ala Ser Glu Val
385 390 395 400

Leu Asn Thr Ile Arg Pro Ala Gly Gln Pro Leu Val Asp Asp Trp Asp
405 410 415

Cys Leu Lys Thr Met Val Arg Thr Phe Glu Thr His Cys Gly Ser Leu
420 425 430

Ser Glu Tyr Gly Met Lys His Met Arg Ser Phe Ala Asn Met Cys Asn
435 440 445

Ala Gly Val Gln Lys Glu Gln Met Ala Val Ala Ala Gly Gln Ala Cys
 450 455 460

Val Thr Phe Pro Ser Asn Pro Trp Ser Ser Leu Asp Glu Gly Phe Ser
 465 470 475 480

Val

<210> 84
 <211> 478
 <212> PRT
 <213> Petunia x hybrida

<400> 84

Met Ile Ser His Val Ala Gly Ile Leu Ile Leu Val Gly Phe Ser Ile
 1 5 10 15

Leu Gly Ala Gly Glu Gly Arg Asn Val Leu Lys Leu Pro Ser Glu Ala
 20 25 30

Ser Arg Phe Phe Lys Lys Gly Glu Asp Asp Asp Ser Val Gly Thr Arg
 35 40 45

Trp Ala Val Leu Leu Ala Gly Ser Asn Ser Tyr Trp Asn Tyr Arg His
 50 55 60

Gln Ala Asp Val Cys His Ala Tyr Gln Leu Leu Arg Lys Gly Gly Leu
 65 70 75 80

Lys Asp Glu Asn Ile Val Val Leu Met Tyr Asp Asp Ile Ala Tyr Asn
 85 90 95

Glu Glu Asn Pro Arg Lys Gly Val Ile Ile Asn Asn Pro Ala Gly Glu
 100 105 110

Asp Val Tyr Lys Gly Val Pro Lys Asp Tyr Thr Gly Asp Asp Val Asn
 115 120 125

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

Gly Gly Ser Gly Lys Val Val Asp Ser Gly Pro Asn Asp His Ile Phe
 145 150 155 160

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

Lys Pro Tyr Leu Tyr Ala Ser Asp Leu Ile Gly Ala Leu Lys Lys Lys
 180 185 190

His Ala Ser Gly Thr Tyr Lys Ser Leu Val Leu Tyr Val Glu Ala Cys
 195 200 205

Glu Ala Gly Ser Ile Phe Glu Gly Leu Leu Pro Glu Gly Leu Asn Val
 210 215 220

Tyr Ala Thr Thr Ala Ser Asp Ala Val Glu Gly Ser Trp Val Thr Tyr
 225 230 235 240

Cys Pro Gly Gln Asn Pro Ser Pro Pro Pro Glu Tyr Thr Thr Cys Leu
 245 250 255

Gly Asp Leu Tyr Ser Val Ser Trp Met Glu Asp Ser Glu Lys His Asn
 260 265 270

Leu Gln Thr Glu Ser Leu Arg Gln Gln Tyr His Leu Val Lys Glu Lys
 275 280 285

Ile Ala Tyr Ala Ser His Val Met Gln Tyr Gly Asp Leu Lys Leu Ser
 290 295 300

Met Asp Ser Leu Ser Met Tyr Met Gly Thr Asp Pro Ala Asn Asp Asn
 305 310 315 320

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

Asn Gln Arg Asp Ala Asp Leu Leu His Phe Ser Asp Lys Phe Leu Lys
 340 345 350

Ala Pro Glu Gly Ser Ala Arg Lys Val Glu Ala Gln Lys Gln Phe Ala
 355 360 365

Glu Ala Met Ser His Arg Leu His Leu Asp Asn Ser Met Ala Leu Val
 370 375 380

Gly Lys Leu Leu Phe Gly Ile Lys Lys Gly Pro Glu Val Leu Lys Arg
 385 390 395 400

Val Arg Ser Asp Gly Gln Leu Leu Val Asp Asp Trp Ala Cys Leu Lys
 405 410 415

Ser Phe Val Arg Thr Phe Glu Thr His Cys Gly Ser Leu Ser Gln Tyr
 420 425 430

Gly Met Lys His Met Arg Ser Phe Ala Asn Ile Cys Asn Ala Gly Ile
 435 440 445

Lys Val Glu Gln Met Val Glu Ala Ser Ser Gln Ala Cys Pro Ser Val
 450 455 460

Pro Ser Asn Thr Trp Ser Ser Leu His Arg Gly Phe Ser Ala
 465 470 475

<210> 85
 <211> 475
 <212> PRT
 <213> Cannavalia ensiformis

<400> 85

Met Val Met Met Leu Val Met Leu Ser Leu His Gly Thr Ala Ala Arg
 1 5 10 15

Leu Asn Arg Arg Glu Trp Asp Ser Val Ile Gln Leu Pro Thr Glu Pro
 20 25 30

Val Asp Asp Glu Val Gly Thr Arg Trp Ala Val Leu Val Ala Gly Ser
 35 40 45

Asn Gly Tyr Gly Asn Tyr Arg His Gln Ala Asp Val Cys His Ala Tyr

50

55

60

Gln Leu Leu Ile Lys Gly Gly Val Lys Glu Glu Asn Ile Val Val Phe
65 70 75 80

Met Tyr Asp Asp Ile Ala Tyr Asn Ala Met Asn Pro Arg Pro Gly Val
85 90 95

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

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

Leu Gly Asp Lys Ser Lys Val Lys Gly Gly Ser Gly Lys Val Ile Asn
130 135 140

Ser Asn Pro Glu Asp Arg Ile Phe Ile Phe Tyr Ser Asp His Gly Gly
145 150 155 160

Pro Gly Val Leu Gly Met Pro Asn Ala Pro Phe Val Tyr Ala Met Asp
165 170 175

Phe Ile Asp Val Leu Lys Lys Lys His Ala Ser Gly Gly Tyr Lys Glu
180 185 190

Met Val Ile Tyr Ile Glu Ala Cys Glu Ser Gly Ser Ile Phe Glu Gly
195 200 205

Ile Met Pro Lys Asp Leu Asn Ile Tyr Val Thr Thr Ala Ser Asn Ala
210 215 220

Gln Glu Asn Ser Phe Gly Thr Tyr Cys Pro Gly Met Asn Pro Pro Pro
225 230 235 240

Pro Glu Glu Tyr Val Thr Cys Leu Gly Asp Leu Tyr Ser Val Ser Trp
245 250 255

Met Glu Asp Ser Glu Thr His Asn Leu Lys Arg Glu Thr Val Gln Gln
260 265 270

Gln Tyr Gln Ser Val Arg Lys Arg Thr Ser Asn Ser Asn Ser Tyr Arg
 275 280 285

Phe Gly Ser His Val Met Gln Tyr Gly Asp Thr Asn Ile Thr Ala Glu
 290 295 300

Lys Leu Tyr Leu Tyr His Gly Phe Asp Pro Ala Thr Val Asn Phe Pro
 305 310 315 320

Pro His Asn Gly Asn Leu Glu Ala Lys Met Glu Val Val Asn Gln Arg
 325 330 335

Asp Ala Glu Leu Leu Phe Met Trp Gln Met Tyr Gln Arg Ser Asn His
 340 345 350

Gln Pro Glu Lys Lys Thr His Ile Leu Glu Gln Ile Thr Glu Thr Val
 355 360 365

Lys His Arg Asn His Leu Asp Gly Ser Val Glu Leu Ile Gly Val Leu
 370 375 380

Leu Tyr Gly Pro Gly Lys Ser Ser Ser Val Leu His Ser Val Arg Ala
 385 390 395 400

Pro Gly Leu Pro Leu Val Asp Asp Trp Thr Cys Leu Lys Ser Met Val
 405 410 415

Arg Val Phe Glu Thr His Cys Gly Ser Leu Thr Gln Tyr Gly Met Lys
 420 425 430

His Met Arg Ala Phe Gly Asn Val Cys Asn Ser Gly Val Ser Lys Ala
 435 440 445

Ser Met Glu Glu Ala Cys Lys Ala Ala Cys Gly Gly Tyr Asp Ala Gly
 450 455 460

Leu Leu Tyr Pro Ser Asn Thr Gly Tyr Ser Ala
 465 470 475

<210> 86
 <211> 491
 <212> PRT
 <213> Helianthus annuus

<400> 86

Met Val Ser Arg Ile Ile Cys Phe Thr Leu Val Leu Val Thr Val Val
 1 5 10 15

Ala Leu Ser Tyr Gly Ala Ala Gly Arg Glu Ser Ser Gly Gly Gln Lys
 20 25 30

Trp Arg Trp Gly Trp Asp Pro Leu Ile Arg Ser Pro Val Asp Ala Glu
 35 40 45

Gln Glu Val Asp Glu Gln Met Thr Asn Gly Thr Lys Trp Ala Val Leu
 50 55 60

Val Ala Gly Ser Lys Gly Tyr Gly Asn Tyr Arg His Gln Ala Asp Val
 65 70 75 80

Cys His Ala Tyr Gln Val Leu Lys Lys Gly Gly Leu Lys Asp Glu Asn
 85 90 95

Ile Val Val Phe Met Tyr Asp Asp Ile Ala Lys Ser Glu Met Asn Pro
 100 105 110

Arg Pro Gly Ile Ile Ile Asn Ser Pro Lys Gly Glu Asp Val Tyr Ala
 115 120 125

Gly Val Pro Lys Asp Tyr Thr Gly Lys Asn Val Thr Val Asp Asn Leu
 130 135 140

Ser Ala Val Leu Leu Gly Asp Arg Ser Ala Val Lys Gly Gly Ser Gly
 145 150 155 160

Lys Val Val Asp Ser Lys Pro Glu Asp Arg Ile Phe Leu Phe Tyr Ser
 165 170 175

Asp His Gly Gly Pro Gly Val Leu Gly Met Pro Asn Glu Pro His Leu

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

Leu Leu Phe Gly Pro Gln Asn Gly Arg Ser Thr Leu His Ser Ala Arg
405 410 415

Ala Pro Gly Leu Pro Leu Val Asp Asp Trp Glu Cys Phe Lys Ser Thr
420 425 430

Ala Arg Leu Phe Glu Lys His Cys Gly Leu Leu Thr Gln Tyr Gly Met
435 440 445

Lys His Met Arg Ala Phe Ala Asn Ile Cys Asn Ser Ser Val Glu Lys
450 455 460

Ser Lys Val Glu Glu Val Phe Ile Ala Thr Cys Gly Gly Lys Asn Ile
465 470 475 480

Gly Pro Tyr Gly Thr Phe Gly Ala Tyr Ser Val
485 490

<210> 87

<211> 494

<212> PRT

<213> Arabidopsis thaliana

<400> 87

Met Ala Thr Thr Met Thr Arg Val Ser Val Gly Val Val Leu Phe Val
1 5 10 15

Leu Leu Val Ser Leu Val Ala Val Ser Ala Ala Arg Ser Gly Pro Asp
20 25 30

Asp Val Ile Lys Leu Pro Ser Gln Ala Ser Arg Phe Phe Arg Pro Ala
35 40 45

Glu Asn Asp Asp Asp Ser Asn Ser Gly Thr Arg Trp Ala Val Leu Val
50 55 60

Ala Gly Ser Ser Gly Tyr Trp Asn Tyr Arg His Gln Ala Asp Ile Cys
65 70 75 80

His Ala Tyr Gln Leu Leu Arg Lys Gly Gly Leu Lys Glu Glu Asn Ile
85 90 95

Val Val Phe Met Tyr Asp Asp Ile Ala Asn Asn Tyr Glu Asn Pro Arg
100 105 110

Pro Gly Thr Ile Ile Asn Ser Pro His Gly Lys Asp Val Tyr Gln Gly
115 120 125

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

Ala Val Ile Leu Gly Asp Lys Thr Ala Val Lys Gly Gly Ser Gly Lys
145 150 155 160

Val Val Asp Ser Gly Pro Asn Asp His Ile Phe Ile Phe Tyr Ser Asp
165 170 175

His Gly Gly Pro Gly Val Leu Gly Met Pro Thr Ser Pro Tyr Leu Tyr
180 185 190

Ala Asn Asp Leu Asn Asp Val Leu Lys Lys Lys His Ala Leu Gly Thr
195 200 205

Tyr Lys Ser Leu Val Phe Tyr Leu Glu Ala Cys Glu Ser Gly Ser Ile
210 215 220

Phe Glu Gly Leu Leu Pro Glu Gly Leu Asn Ile Tyr Ala Thr Thr Ala
225 230 235 240

Ser Asn Ala Glu Glu Ser Ser Trp Gly Thr Tyr Cys Pro Gly Glu Glu
245 250 255

Pro Ser Pro Pro Pro Glu Tyr Glu Thr Cys Leu Gly Asp Leu Tyr Ser
260 265 270

Val Ala Trp Met Glu Asp Ser Gly Met His Asn Leu Gln Thr Glu Thr
275 280 285

Leu His Gln Gln Tyr Glu Leu Val Lys Arg Arg Thr Ala Pro Val Gly

290

295

300

Tyr Ser Tyr Gly Ser His Val Met Gln Tyr Gly Asp Val Gly Ile Ser
 305 310 315 320

Lys Asp Asn Leu Asp Leu Tyr Met Gly Thr Asn Pro Ala Asn Asp Asn
 325 330 335

Phe Thr Phe Ala Asp Ala Asn Ser Leu Lys Pro Pro Ser Arg Val Thr
 340 345 350

Asn Gln Arg Asp Ala Asp Leu Val His Phe Trp Glu Lys Tyr Arg Lys
 355 360 365

Ala Pro Glu Gly Ser Ala Arg Lys Thr Glu Ala Gln Lys Gln Val Leu
 370 375 380

Glu Ala Met Ser His Arg Leu His Ile Asp Asn Ser Val Ile Leu Val
 385 390 395 400

Gly Lys Ile Leu Phe Gly Ile Ser Arg Gly Pro Glu Val Leu Asn Lys
 405 410 415

Val Arg Ser Ala Gly Gln Pro Leu Val Asp Asp Trp Asn Cys Leu Lys
 420 425 430

Asn Gln Val Arg Ala Phe Glu Arg His Cys Gly Ser Leu Ser Gln Tyr
 435 440 445

Gly Ile Lys His Met Arg Ser Phe Ala Asn Ile Cys Asn Ala Gly Ile
 450 455 460

Gln Met Glu Gln Met Glu Glu Ala Ala Ser Gln Ala Cys Thr Thr Leu
 465 470 475 480

Pro Thr Gly Pro Trp Ser Ser Leu Asn Arg Gly Phe Ser Ala
 485 490

<210> 88

<211> 482

<212> PRT
<213> Clitoria ternatea

<400> 88

Met Lys Asn Pro Leu Ala Ile Leu Phe Leu Ile Ala Thr Val Val Ala
1 5 10 15

Val Val Ser Gly Ile Arg Asp Asp Phe Leu Arg Leu Pro Ser Gln Ala
20 25 30

Ser Lys Phe Phe Gln Ala Asp Asp Asn Val Glu Gly Thr Arg Trp Ala
35 40 45

Val Leu Val Ala Gly Ser Lys Gly Tyr Val Asn Tyr Arg His Gln Ala
50 55 60

Asp Val Cys His Ala Tyr Gln Ile Leu Lys Lys Gly Gly Leu Lys Asp
65 70 75 80

Glu Asn Ile Ile Val Phe Met Tyr Asp Asp Ile Ala Tyr Asn Glu Ser
85 90 95

Asn Pro His Pro Gly Val Ile Ile Asn His Pro Tyr Gly Ser Asp Val
100 105 110

Tyr Lys Gly Val Pro Lys Asp Tyr Val Gly Glu Asp Ile Asn Pro Pro
115 120 125

Asn Phe Tyr Ala Val Leu Leu Ala Asn Lys Ser Ala Leu Thr Gly Thr
130 135 140

Gly Ser Gly Lys Val Leu Asp Ser Gly Pro Asn Asp His Val Phe Ile
145 150 155 160

Tyr Tyr Thr Asp His Gly Gly Ala Gly Val Leu Gly Met Pro Ser Lys
165 170 175

Pro Tyr Ile Ala Ala Ser Asp Leu Asn Asp Val Leu Lys Lys Lys His
180 185 190

Ala Ser Gly Thr Tyr Lys Ser Ile Val Phe Tyr Val Glu Ser Cys Glu
195 200 205

Ser Gly Ser Met Phe Asp Gly Leu Leu Pro Glu Asp His Asn Ile Tyr
210 215 220

Val Met Gly Ala Ser Asp Thr Gly Glu Ser Ser Trp Val Thr Tyr Cys
225 230 235 240

Pro Leu Gln His Pro Ser Pro Pro Pro Glu Tyr Asp Val Cys Val Gly
245 250 255

Asp Leu Phe Ser Val Ala Trp Leu Glu Asp Cys Asp Val His Asn Leu
260 265 270

Gln Thr Glu Thr Phe Gln Gln Gln Tyr Glu Val Val Lys Asn Lys Thr
275 280 285

Ile Val Ala Leu Ile Glu Asp Gly Thr His Val Val Gln Tyr Gly Asp
290 295 300

Val Gly Leu Ser Lys Gln Thr Leu Phe Val Tyr Met Gly Thr Asp Pro
305 310 315 320

Ala Asn Asp Asn Asn Thr Phe Thr Asp Lys Asn Ser Leu Gly Thr Pro
325 330 335

Arg Lys Ala Val Ser Gln Arg Asp Ala Asp Leu Ile His Tyr Trp Glu
340 345 350

Lys Tyr Arg Arg Ala Pro Glu Gly Ser Ser Arg Lys Ala Glu Ala Lys
355 360 365

Lys Gln Leu Arg Glu Val Met Ala His Arg Met His Ile Asp Asn Ser
370 375 380

Val Lys His Ile Gly Lys Leu Leu Phe Gly Ile Glu Lys Gly His Lys
385 390 395 400

Met Leu Asn Asn Val Arg Pro Ala Gly Leu Pro Val Val Asp Asp Trp

405

410

415

Asp Cys Phe Lys Thr Leu Ile Arg Thr Phe Glu Thr His Cys Gly Ser
 420 425 430

Leu Ser Glu Tyr Gly Met Lys His Met Arg Ser Phe Ala Asn Leu Cys
 435 440 445

Asn Ala Gly Ile Arg Lys Glu Gln Met Ala Glu Ala Ser Ala Gln Ala
 450 455 460

Cys Val Ser Ile Pro Asp Asn Pro Trp Ser Ser Leu His Ala Gly Phe
 465 470 475 480

Ser Val