

SEQUENCE LISTING

<110> University of Copenhagen

<120> PRODUCTION OF OXYGENATED DITERPENOID COMPOUNDS

<130> P6004PC00

<160> 81

<170> PatentIn version 3.5

<210> 1

<211> 533

<212> PRT

<213> Tripterygium wilfordii

<400> 1

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

Phe	Ala	Val	Leu	Leu	Leu	Phe	Ile	Cys	Leu	Arg	Ile	Leu	Thr	Asn	Val
			20					25					30		

Leu	Lys	Pro	Lys	Lys	Ser	Lys	Thr	Ser	Pro	Pro	Gln	Ala	Ser	Ala	Ala
			35				40					45			

Trp	Pro	Leu	Ile	Gly	His	Leu	Leu	His	Leu	Arg	Gly	Pro	Gln	Ala	Pro
			50			55					60				

His	Ile	Thr	Leu	Gly	Lys	Met	Ala	Asp	Lys	Tyr	Gly	Pro	Ile	Phe	Lys
65					70					75					80

Ile	Lys	Leu	Gly	Val	His	Pro	Thr	Leu	Val	Ile	Ser	Asp	Ser	Glu	Val
				85					90					95	

Ala	Lys	Glu	Cys	Leu	Thr	Thr	His	Asp	Ile	Ala	Leu	Ala	Gly	Arg	Pro
			100					105					110		

Ala	Thr	Val	Ala	Met	Glu	Ile	Met	Gly	Tyr	Asn	His	Ala	Met	Phe	Ala
			115				120					125			

Phe Ser Pro Tyr Gly Pro Tyr Trp Arg His Met Arg Lys Leu Ala Thr
130 135 140

Val Glu Leu Leu Ser Ala Gln Arg Leu Glu Thr Phe Lys His Ile Arg
145 150 155 160

Glu Ser Glu Leu Lys Arg Ser Met Lys Glu Met Tyr Gln Ser Trp Val
165 170 175

His Asn Lys Ser Gly Ser Gly Asp Ser Asn His Val Thr Val Asp Met
180 185 190

Thr Arg Ile Leu Gly Asp Ile Ile Ala Asn Val Ile Tyr Arg Met Val
195 200 205

Val Gly Lys Val Tyr Ala Ser Lys Gly Glu Glu Asp Ala Arg Trp Lys
210 215 220

Gln Val Val Trp Glu Tyr Ile Lys Leu Leu Ser His Phe Gly Val Gly
225 230 235 240

Asp Ala Leu Pro Phe Leu Arg Trp Leu Asp Leu Gly Gly Val Glu Lys
245 250 255

Ser Met Lys Lys Ala Ala Lys Glu Leu Asp Ile Tyr Val Glu Glu Trp
260 265 270

Leu Glu Glu His Lys Lys Lys Arg Ser Glu Arg Lys Ser Asp Asn Gly
275 280 285

Ile Val Glu Glu Asp Phe Met Asp Val Met Leu Ser Val Phe Asp Asp
290 295 300

Asp Asp Gln Leu Glu Asn Phe Ala His His Ser Ala His Thr Ile Asn
305 310 315 320

Lys Ala Met Cys Leu Ala Ile Ile Leu Ala Ala Ser Asp Thr Thr Lys

325

330

335

Thr Thr Leu Thr Trp Ala Leu Ser Leu Leu Leu Asn His Pro Asp Val
 340 345 350

Met Lys Lys Val Gln Gln Glu Leu Ala Ala His Ile Gly Pro Asp Lys
 355 360 365

Pro Val Lys Glu Ser Asp Val Lys Ser Leu Val Tyr Leu Glu Ala Val
 370 375 380

Val Lys Glu Thr Leu Arg Leu Tyr Pro Pro Gly Pro Leu Gly Leu Pro
 385 390 395 400

His Glu Ser Met Glu Asp Cys Thr Val Ala Gly Tyr His Val Pro Ser
 405 410 415

Gly Thr Arg Ile Leu Tyr Asn Leu Trp Lys Ile Gln Gln Asp Pro Gln
 420 425 430

Val Trp Glu Asn Pro Ser Glu Phe Lys Pro Asp Arg Phe Leu Thr Thr
 435 440 445

His Lys Asp Val Asp Val Arg Gly Arg Asn Phe Glu Tyr Leu Pro Phe
 450 455 460

Gly Ser Gly Arg Arg Met Cys Pro Gly Met Ser Phe Ala Leu Gln Val
 465 470 475 480

Met Glu Val Ser Leu Ala Asn Met Leu His Gly Phe Asp Phe Ala Thr
 485 490 495

Pro Asn Gly Lys Pro Val Asp Met Thr Glu Val Asn Gly Leu Val Thr
 500 505 510

Asp Arg Ala Thr Pro Leu Glu Ala Leu Ile Thr Pro Arg Leu Pro Ala
 515 520 525

His Leu Tyr Met Gly
530

<210> 2
<211> 533
<212> PRT
<213> Tripterygium wilfordii

<400> 2

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

Phe Ala Val Leu Leu Leu Phe Ile Cys Leu Arg Ile Leu Thr Asn Val
20 25 30

Leu Lys Pro Lys Lys Ser Lys Thr Ser Pro Pro Gln Ala Ser Gly Ala
35 40 45

Trp Pro Leu Ile Gly His Leu Leu His Leu Arg Gly Pro Gln Ala Pro
50 55 60

His Ile Thr Leu Gly Lys Met Ala Asp Lys Tyr Gly Pro Ile Phe Lys
65 70 75 80

Ile Lys Leu Gly Val His Pro Thr Leu Val Ile Ser Asp Ser Glu Phe
85 90 95

Ala Lys Glu Cys Leu Thr Thr His Asp Ile Ala Leu Ala Gly Arg Pro
100 105 110

Ala Thr Val Ala Met Glu Ile Met Gly Tyr Asn His Ala Met Phe Ala
115 120 125

Phe Ser Pro Tyr Gly Pro Tyr Cys Arg His Met Arg Lys Leu Ala Thr
130 135 140

Val Glu Leu Leu Ser Ala Gln Arg Leu Glu Thr Phe Lys His Ile Arg
145 150 155 160

Glu Ser Glu Leu Lys Arg Ser Met Lys Glu Met Tyr Gln Ser Trp Val
165 170 175

His Asn Lys Ser Gly Ser Gly Asp Ser Asn His Val Thr Val Asp Met
180 185 190

Thr Arg Ile Leu Gly Asp Ile Ile Ala Asn Val Ile Tyr Arg Met Val
195 200 205

Val Gly Lys Val Tyr Ala Ser Lys Gly Glu Glu Asp Ala Arg Trp Lys
210 215 220

Gln Val Val Trp Glu Tyr Ile Lys Leu Leu Ser His Phe Gly Val Gly
225 230 235 240

Asp Ala Leu Pro Phe Leu Arg Trp Leu Asp Leu Gly Gly Val Glu Lys
245 250 255

Ser Met Lys Lys Ala Ala Lys Glu Leu Asp Ile Tyr Val Glu Glu Trp
260 265 270

Leu Glu Glu His Lys Lys Lys Arg Ser Glu Arg Lys Ser Asp Asn Gly
275 280 285

Ile Val Glu Glu Asp Phe Met Asp Val Met Leu Ser Val Phe Asp Asp
290 295 300

Asp Asp Gln Leu Glu Asn Phe Ala His His Ser Ala His Thr Ile Asn
305 310 315 320

Lys Ala Met Cys Leu Ala Ile Ile Leu Ala Ala Ser Asp Thr Thr Lys
325 330 335

Thr Thr Leu Thr Trp Ala Leu Ser Leu Leu Leu Asn His Pro Asp Val
340 345 350

Met Lys Lys Val Gln Gln Glu Leu Ala Ala His Ile Gly Pro Asp Lys
355 360 365

Pro Val Lys Glu Ser Asp Val Lys Ser Leu Val Tyr Leu Glu Ala Val
370 375 380

Val Lys Glu Thr Leu Arg Leu Tyr Pro Pro Gly Pro Leu Gly Leu Pro
385 390 395 400

His Glu Ser Met Glu Asp Cys Thr Val Ala Gly Tyr His Val Pro Ser
405 410 415

Gly Thr Arg Ile Leu Tyr Asn Leu Trp Lys Ile Gln Gln Asp Pro Gln
420 425 430

Val Trp Glu Asn Pro Ser Glu Phe Lys Pro Asp Arg Phe Leu Thr Thr
435 440 445

His Lys Asp Val Asp Val Arg Gly Arg Asn Phe Glu Tyr Leu Pro Phe
450 455 460

Gly Ser Gly Arg Arg Met Cys Pro Gly Met Ser Phe Ala Leu Gln Val
465 470 475 480

Met Glu Val Ser Leu Ala Asn Met Leu His Gly Phe Asp Phe Ala Thr
485 490 495

Pro Asn Gly Lys Pro Val Asp Met Thr Glu Val Asn Gly Leu Val Thr
500 505 510

Asp Arg Ala Thr Pro Leu Glu Ala Leu Ile Thr Pro Arg Leu Pro Ala
515 520 525

His Leu Tyr Met Gly
530

<210> 3

<211> 508

<212> PRT

<213> Tripterygium wilfordii

<400> 3

Met Asp Leu Leu Gln Phe Pro Ser Val Ser Ile Leu Leu Gly Phe Val
1 5 10 15

Phe Phe Met Phe Met Val Leu Lys Val Trp Lys Arg Phe Glu Ala Asn
20 25 30

Gly Ser Thr Ser Asn Leu Pro Pro Gly Pro Trp Lys Leu Pro Ile Ile
35 40 45

Gly Asn Leu His Gln Leu Gly Gly Ser Asp Pro Pro His Arg Ala Leu
50 55 60

Gly Glu Leu Ala Lys Lys Tyr Gly Pro Leu Met Phe Leu Gln Leu Gly
65 70 75 80

Glu Ile Gln Thr Leu Val Val Ser Ser Ala Glu Tyr Ala Glu Glu Val
85 90 95

Leu Lys Thr His Asp Thr Val Phe Ala Ser Arg Pro Gln Met His Ser
100 105 110

Leu Glu Ile Met Ser Tyr Asp Tyr Lys Asp Ile Thr Phe Ser Pro Ser
115 120 125

Asp Gly Ser Trp Arg Arg Arg Arg Lys Ile Cys Val Gln Glu Leu Leu
130 135 140

Ser Ala Lys Arg Val Gln Ser Phe Arg Ser Thr Arg Glu Lys Glu Leu
145 150 155 160

Ser Lys Leu Ile Gln Trp Ile Phe Ser Gln Ala Gly Thr Ser Ile Asn
165 170 175

Leu Thr Thr Lys Ile Tyr Ser Ser Thr Cys Thr Leu Ser Ser Arg Met

180

185

190

Ala Phe Ser Asp Glu Cys Lys Tyr Gln Glu Glu Phe Ile Ser Ile Leu
 195 200 205

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

Pro Ser Met Lys Phe Leu His Leu Ile Ser Gly Ala Ser Ser Lys Ile
 225 230 235 240

Glu Lys Leu His Lys Gln Leu Asp Arg Ile Val Gly Ser Ile Ile Asp
 245 250 255

Glu His Ile Asn Leu Asn Thr Arg Lys Ser Glu Gly Asn Glu Asp Leu
 260 265 270

Val Asp Val Leu Leu Lys Tyr His Glu Gln Gly Asp Ser Glu Phe Ser
 275 280 285

Leu Ser Met Glu Glu Ile Lys Ala Ile Ile Cys Asp Ile Tyr Leu Ala
 290 295 300

Gly Thr Glu Thr Ser Ser Thr Thr Val Asp Trp Thr Met Ala Glu Leu
 305 310 315 320

Ile Lys Asn Pro Arg Val Met Lys Lys Ala Gln Ala Glu Val Arg Gln
 325 330 335

Val Phe Asp Ser Arg Gly Ser Val Asp Glu Thr Gly Ile Pro Glu Leu
 340 345 350

Lys Tyr Leu Lys Leu Val Ile Lys Glu Thr Leu Arg Leu His Pro Pro
 355 360 365

Gly Pro Leu Leu Leu Pro Arg Glu Asn Ala Lys Ser Cys Glu Ile Asn
 370 375 380

Glu Tyr Val Ile Pro Ala Lys Thr Arg Val Met Val Asn Gly Trp Ala
385 390 395 400

Ile Gly Arg Asp Pro Lys Tyr Trp Pro Lys Glu Pro Glu Lys Phe Tyr
405 410 415

Pro Glu Arg Phe Ile Asp Asn Pro Ile Asp Tyr Lys Gly Thr Asn Phe
420 425 430

Glu Tyr Ile Pro Phe Gly Ala Gly Arg Arg Met Cys Pro Gly Met Ala
435 440 445

Phe Gly Leu Ala Asn Val Glu Leu Pro Leu Ser Gln Phe Leu Tyr Tyr
450 455 460

Phe Asp Trp Lys Leu Ala Asp Gly Met Val Pro Glu Asn Leu Asn Met
465 470 475 480

Ala Glu Ala Phe Ala Ala Thr Val Cys Arg Lys Asp Asp Leu Tyr Leu
485 490 495

Ile Pro Thr Pro Tyr Cys Pro Ser Pro Ala Phe Asn
500 505

<210> 4

<211> 499

<212> PRT

<213> Tripterygium wilfordii

<400> 4

Met Asp Leu Gln Leu Pro Ser Phe Pro Ile Leu Ser Ser Ile Ile Leu
1 5 10 15

Leu Ile Leu Val Val Leu Lys Ser Val Leu Arg Pro Ser Lys Leu Pro
20 25 30

Pro Gly Pro Trp Lys Leu Pro Leu Ile Gly Asn Leu His Gln Leu Ala
35 40 45

Gln Asp Leu Pro His Arg Ala Leu Gln Lys Leu Ala Lys Lys His Gly
50 55 60

Pro Leu Met His Leu His Phe Gly Glu Val Pro Thr Leu Val Val Thr
65 70 75 80

Ser Pro Glu Tyr Ala Lys Glu Val Met Lys Thr His Asp Ile Thr Phe
85 90 95

Ala Ser Arg Pro Leu Leu Asn Ala Met Lys Val Met Thr Tyr Asp His
100 105 110

Thr Asp Ile Ala Phe Ala Pro Tyr Gly Glu Tyr Trp Arg Gln Leu Arg
115 120 125

Lys Ile Cys Thr Ile Glu Leu Leu Ser Val Lys Arg Val Gln Ser Phe
130 135 140

Arg Pro Ile Arg Glu Gln Glu Thr Ser Asn Val Ile Glu Trp Ile Gly
145 150 155 160

Ser Asn Ala Gly Ser Ser Ile Asn Leu Thr Glu Arg Leu Tyr Thr Thr
165 170 175

Ile Tyr Ala Leu Val Ser Lys Val Ala Phe Gly Arg Thr Cys Gly Arg
180 185 190

Gly Glu His Glu Glu Phe Ile Glu Tyr Ser Lys Ala Ser Gln Asn Arg
195 200 205

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

His Trp Ile Met Gly Glu Gly Lys Lys Thr Glu Arg Leu His Lys Gln
225 230 235 240

Gly Asp Met Leu Leu Gly Asn Ile Ile Asn Gln His Val Lys Lys Pro
245 250 255

Val Thr Gly Lys Gly Asp Asp Glu His Glu Asp Leu Val Asp Val Leu
260 265 270

Leu Lys Phe His Glu Glu Gly Asp Phe Pro Leu Thr Ile Asn Asn Ile
275 280 285

Lys Ser Val Ile Gln Asp Ile Phe Val Ala Gly Gly Glu Thr Ser Ala
290 295 300

Thr Thr Ile Asp Trp Ala Met Arg Glu Met Met Lys Asn Pro Arg Val
305 310 315 320

Met Lys Lys Ala Gln Ala Glu Val Arg Gln Val Phe Asp Ser Arg Gly
325 330 335

Arg Val Asp Glu Thr Ala Val Pro Glu Leu Lys Tyr Leu Lys Leu Val
340 345 350

Leu Lys Glu Thr Leu Arg Leu His Pro Pro Leu Pro Phe Leu Leu Pro
355 360 365

Arg Ile Asn Trp Glu Arg Cys Glu Ile Asn Gly Tyr Glu Ile Ala Ala
370 375 380

Asn Thr Lys Val Ile Val Asn Ala Trp Ala Ile Gly Arg Asp Pro Asn
385 390 395 400

Tyr Trp Thr Glu Ala Glu Arg Phe Tyr Pro Glu Arg Phe Leu Glu Lys
405 410 415

Ser Ala Asp Tyr Lys Gly Thr Ser Phe Glu Tyr Thr Pro Phe Gly Ala
420 425 430

Gly Arg Arg Leu Cys Pro Gly Met Ser Phe Gly Leu Ala Asn Val Glu
435 440 445

Phe Pro Leu Ser Gln Leu Leu Tyr His Phe Asp Trp Asn Leu Thr Gly
450 455 460

Gly Met Lys Pro Glu Asp Leu Asn Met Ile Glu Ser Phe Asp Val Thr
465 470 475 480

Met Arg Ala Lys Asp Asp Leu His Leu Val Pro Thr Pro Tyr Arg Ser
485 490 495

Leu Ser Gly

<210> 5
<211> 530
<212> PRT
<213> Tripterygium wilfordii

<400> 5

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

Phe Ala Val Leu Leu Leu Tyr Leu Phe Leu Arg Ile Phe Thr Asn Val
20 25 30

Leu Lys Pro Lys Lys Ser Lys Thr Ser Pro Pro Gln Ala Gly Gly Ala
35 40 45

Trp Pro Leu Ile Gly His Leu His Leu Leu Ile Gly Pro Gln Ala Ser
50 55 60

Tyr Ile Thr Leu Ser Lys Met Ala Asp Lys Tyr Gly Pro Ile Phe Lys
65 70 75 80

Ile Lys Leu Gly Val His Pro Thr Leu Val Ile Ser Asn Ser Glu Val
85 90 95

Ala Lys Glu Cys Leu Thr Thr His Asp Lys Val Leu Ala Asn Arg Pro

100

105

110

Ala Thr Val Ala Met Glu Ile Met Gly Tyr Asn His Ala Met Phe Gly
 115 120 125

Trp Ser Pro Tyr Gly Pro Tyr Trp Arg Gln Leu Arg Lys Leu Val Thr
 130 135 140

Val Glu Leu Leu Ser Asn Gln Arg Leu Lys Thr Phe Lys His Ile Arg
 145 150 155 160

Glu Ser Glu Val Lys Asn Ser Leu Lys Glu Met Tyr Gln Ser Trp Val
 165 170 175

His Asn Lys Ser Gly Asp Ser Asn His Val Ser Val Asp Met Thr Arg
 180 185 190

Ile Phe Gly Asp Ile Thr Gly Asn Leu Ile Tyr Arg Ile Val Val Gly
 195 200 205

Lys Val Tyr Ala Arg Lys Gly Glu Gly Val Val Arg Trp Lys Gln Val
 210 215 220

Val Gly Asp Tyr Met Lys Leu Leu Thr His Phe Asn Val Gly Asp Ala
 225 230 235 240

Met Pro Phe Met Arg Trp Phe Asp Leu Gly Gly Leu Glu Lys Ala Met
 245 250 255

Lys Ile Thr Phe Lys Glu Leu Asp Gly Tyr Val Glu Glu Trp Leu Glu
 260 265 270

Glu His Lys Lys Lys Arg Ser Asn Ser Gly Gly His Gly Ile Val Glu
 275 280 285

Glu Asp Phe Met Asp Val Met Leu Ser Ile Phe Asp Asp Gly Gly Gln
 290 295 300

Gln Glu Tyr Cys Thr Asp Asn Ser Thr His Thr Thr Asn Lys Ala Met
305 310 315 320

Cys Met Ala Leu Ile Leu Gly Ala Ser Glu Thr Thr Lys Thr Thr Leu
325 330 335

Thr Trp Ser Leu Ser Leu Leu Leu Asn Asn Leu Asp Val Leu Lys Lys
340 345 350

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

Glu Ser Asp Val Asn Ser Leu Val Tyr Leu Asp Ala Val Ile Thr Glu
370 375 380

Thr Leu Arg Leu Tyr Pro Leu Gly Pro Leu Gly Leu Pro His Glu Ser
385 390 395 400

Ile Glu Asp Cys Thr Ile Ala Gly Tyr His Val Pro Ala Arg Thr Arg
405 410 415

Ile Leu Phe Asn Leu Trp Lys Ile His Gln Asp Pro Arg Val Trp Glu
420 425 430

Asn Pro Leu Glu Phe Lys Pro Glu Arg Phe Leu Lys Glu His Asn Asn
435 440 445

Ile Asp Val Arg Gly Gly His Phe Glu Leu Leu Pro Phe Gly Ser Gly
450 455 460

Arg Arg Met Cys Pro Gly Val Ser Phe Ala Leu Gln Val Leu Lys Leu
465 470 475 480

Thr Leu Ala Asn Met Leu His Gly Phe Asp Phe Ala Thr Pro Asn Asp
485 490 495

Glu Pro Val Asp Met Thr Glu Val Asn His Met Ala Thr Thr Arg Ala

500

505

510

Thr Pro Leu Glu Thr Leu Ile Ser Pro Arg Leu Pro Ser His Leu Tyr
 515 520 525

Met Gly
 530

<210> 6
 <211> 533
 <212> PRT
 <213> Tripterugium wilfordii

<400> 6

Met Glu Phe Leu Leu Ser Leu Pro Thr Asn Thr Ile Ala Thr Thr Ser
 1 5 10 15

Phe Ala Val Leu Leu Leu Tyr Leu Cys Leu Arg Ile Phe Thr Asn Val
 20 25 30

Leu Lys Pro Asn Lys Ser Lys Thr Ser Pro Pro Gln Ala Gly Gly Ala
 35 40 45

Trp Pro Leu Ile Gly His Leu His Leu Phe Arg Gly Pro Gln Pro Pro
 50 55 60

His Ile Thr Leu Gly Lys Met Ala Asp Lys His Gly Pro Ile Phe Lys
 65 70 75 80

Ile Lys Leu Gly Val Ser Pro Thr Leu Val Ile Ser Asp Ser Gln Ile
 85 90 95

Ala Lys Glu Cys Phe Thr Thr His Asp Lys Ile Leu Ala Gly Arg Pro
 100 105 110

Ala Tyr Val Ala Leu Glu Ile Met Gly Tyr Asn Asn Ala Met Phe Gly
 115 120 125

Phe Ser Pro Tyr Gly Pro Tyr Trp Arg Tyr Ile Arg Lys Leu Ala Thr
130 135 140

Ile Glu Leu Leu Ser Asn Lys Arg Leu Glu Thr Phe Lys His Ile Arg
145 150 155 160

Glu Ser Glu Val Lys Asn Ala Met Lys Glu Met Tyr Gln Ser Trp Val
165 170 175

Val His Asn Lys Ser Ala Ser Gly His Ser Asn His Val Ser Val Asp
180 185 190

Met Ser Lys Ile Leu Gly Asp Ile Ser Ser Asn Val Thr Tyr Arg Ala
195 200 205

Met Val Gly Lys Val Tyr Ala Ser Lys Gly Glu Glu Asp Val Arg Trp
210 215 220

Lys Gln Val Leu Ser Glu Tyr Met Lys Leu Leu Ser Asn Phe Ser Ser
225 230 235 240

Cys Asp Ala Leu Pro Phe Leu Arg Trp Phe Asp Phe Gly Gly Leu Glu
245 250 255

Lys Ser Met Lys Arg Thr Phe Lys Glu Leu Asp Asn Tyr Val Glu Glu
260 265 270

Trp Leu Gln Glu His Arg Lys Lys Arg Ser Ser Ser Gly Asp Gly Gly
275 280 285

Ile Val Val Glu Asp Phe Met Asp Val Met Leu Ser Ile Phe Asp Asn
290 295 300

Val Gly Glu His Glu Asn Phe Thr Asp Tyr Ser Pro His Thr Ile Asn
305 310 315 320

Lys Ala Thr Cys Met Ser Leu Leu Leu Gly Ala Ser Asp Thr Thr Lys
325 330 335

Ser Thr Met Ile Trp Ser Leu Ser Leu Leu Leu Asn His Pro Asp Val
340 345 350

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

Leu Val Asn Glu Ser Asp Val Lys Ser Phe Val Tyr Leu Asp Ala Val
370 375 380

Ile Lys Glu Thr Leu Arg Leu Tyr Ser Pro Gly Pro Leu Gly Leu Pro
385 390 395 400

His Glu Ala Met Glu Asp Cys Thr Val Ala Gly Tyr His Val Pro Ala
405 410 415

Gly Thr Gln Leu Leu Phe Asn Gln Trp Lys Met His Gln Asp Pro Asn
420 425 430

Val Trp Glu Asp Pro Ser Glu Phe Lys Pro Glu Arg Phe Leu Thr Thr
435 440 445

His Lys Asp Ile Asp Phe Arg Gly Arg His Phe Glu Tyr Leu Pro Phe
450 455 460

Ala Ser Gly Arg Arg Ile Cys Pro Gly Ile Ser Phe Ala His Gln Ile
465 470 475 480

Leu Met Leu Ser Leu Ala Asn Met Leu His Gly Phe Asp Phe Thr Thr
485 490 495

Pro Asn Gly Glu Pro Val Asp Met Ala Gln Val Ser Gly Gly Thr Leu
500 505 510

Ile Arg Ala Thr Pro Leu Glu Ala Leu Ile Ser Pro Arg Leu Pro Gly
515 520 525

His Val Tyr Met Gly
530

<210> 7
<211> 530
<212> PRT
<213> Tripterygium wilfordii

<400> 7

Met Glu Phe Leu Leu Ser Ile Pro Ala Asn Thr Ile Ala Thr Gln Ile
1 5 10 15

Phe Ala Leu Leu Leu Tyr Leu Cys Phe Arg Lys Phe Thr Asp Val
20 25 30

Leu Lys Pro Lys Gln Ser Lys Thr Ser Pro Pro Gln Val Gly Gly Ala
35 40 45

Trp Pro Leu Ile Gly His Leu His Arg Leu Arg Gly Pro Pro Ala Pro
50 55 60

His Ile Thr Leu Gly Lys Met Ala Asp Lys Tyr Gly Pro Ile Phe Lys
65 70 75 80

Ile Lys Leu Gly Leu His Pro Thr Leu Val Ile Ser Asn Ser Glu Ile
85 90 95

Ala Lys Glu Cys Leu Thr Thr His Asp Lys Val Leu Ala Gly Arg Pro
100 105 110

Ala Thr Val Ala Thr Glu Ile Met Ser Tyr Asn His Ala Met Phe Thr
115 120 125

Phe Ser Ser Tyr Gly Pro Tyr Trp Ser His Thr Arg Lys Leu Val Thr
130 135 140

Val Glu Leu Leu Ser Asn Lys Arg Leu Glu Thr Phe Lys His Ile Arg
145 150 155 160

Glu Ser Glu Val Lys Asn Ser Val Lys Glu Met Tyr Gln Ser Trp Val
165 170 175

His Asn Lys Thr Gly Asp Ser Asn Gln Val Leu Val Asp Met Thr Arg
180 185 190

Ile Phe Gly Asp Ile Ile Ala Asn Val Ile Tyr Arg Ile Val Val Gly
195 200 205

Lys Val Tyr Ala Ser Lys Gly Glu Gly His Val Arg Trp Lys Gln Val
210 215 220

Val Ser Glu Tyr Val Asn Leu Leu Ser His Phe Gly Val Gly Asp Ala
225 230 235 240

Leu Pro Phe Leu Arg Trp Leu Asp Leu Gly Gly Lys Glu Lys Ala Met
245 250 255

Lys Lys Thr Ala Lys Glu Leu Asp Asn Tyr Val Glu Glu Trp Leu Gln
260 265 270

Glu His Lys Lys Lys Arg Ser Ser Ala Gly Asp His Gly Ile Val Glu
275 280 285

Glu Asp Phe Met Asp Val Met Leu Ser Ile Phe Tyr Asp Asp Asp Gln
290 295 300

Glu Glu Ser Phe Ala Asp His Ser Ala His Thr Ile Asn Lys Ala Leu
305 310 315 320

Cys Leu Ser Leu Ile Leu Ala Ala Ser Asp Thr Thr Lys Thr Thr Leu
325 330 335

Thr Trp Val Leu Ser Leu Leu Leu Asn His Arg Asp Ile Leu Asn Lys
340 345 350

Val Gln Gln Glu Leu Ile Ala His Ile Gly Pro Glu Thr Pro Val Asn

355

360

365

Glu Ser Asp Ile Lys Ser Phe Val Tyr Leu Glu Ala Val Ile Lys Glu
370 375 380

Thr Leu Arg Leu Tyr Pro Pro Gly Pro Leu Gly Leu Pro His Glu Ser
385 390 395 400

Met Glu Asp Cys Thr Ile Ala Gly Tyr His Val Pro Ala Gly Thr Arg
405 410 415

Val Leu Phe Asn Gln Trp Lys Ile His His Asp Pro Gln Val Trp Glu
420 425 430

Asn Pro Ser Glu Phe Lys Pro Glu Arg Phe Leu Arg Thr His Lys Glu
435 440 445

Val Asp Val Arg Gly Arg His Phe Glu Leu Leu Pro Phe Gly Ser Gly
450 455 460

Arg Arg Met Cys Pro Gly Ile Ser Phe Ala Leu Gln Val Met Glu Leu
465 470 475 480

Ala Leu Ala Asn Met Leu His Gly Phe Asp Phe Ala Thr Pro Asn Gly
485 490 495

Glu Pro Val Asp Met Thr Glu Asp Asn Gly Phe Val Thr Leu Arg Ala
500 505 510

Thr Pro Leu Glu Ala Leu Ile Ser Pro Arg Leu Pro Gly His Val Tyr
515 520 525

Met Gly
530

<210> 8

<211> 134

<212> PRT

<213> Tripterygium wilfordii

<400> 8

Met Ala Ser Asp Arg Lys Ile Tyr Met Phe Lys Glu Val Glu Thr His
1 5 10 15

Asn Lys Thr Lys Asp Cys Trp Leu Ile Ile Ser Gly Lys Val Tyr Asp
20 25 30

Val Thr Pro Phe Met Glu Asp His Pro Gly Gly Asp Glu Val Leu Leu
35 40 45

Ser Ser Thr Gly Lys Asp Ala Thr Asn Asp Phe Glu Asp Val Gly His
50 55 60

Ser Asp Asn Ala Arg Asp Met Met Asp Gln Tyr Cys Ile Gly Glu Ile
65 70 75 80

Asp Gly Lys Thr Val Pro Glu Lys Arg Asn Tyr Ile Pro Ala Gln Thr
85 90 95

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

Gln Phe Leu Val Pro Leu Leu Ile Leu Gly Leu Ala Phe Ala Val Arg
115 120 125

His Phe Thr Lys Lys Glu
130

<210> 9

<211> 708

<212> PRT

<213> Tripterygium wilfordii

<400> 9

Met Gln Ser Ser Ser Asn Ser Met Lys Ala Ser Pro Leu Asp Leu Met
1 5 10 15

Ser Ala Ile Ile Lys Gly Lys Val Asp Pro Ser Asn Val Ser Ser Glu
20 25 30

Val Ser Gly Glu Val Thr Ser Ile Ile Phe Glu Asn Arg Glu Phe Val
35 40 45

Met Ile Leu Thr Thr Ser Ile Ala Val Leu Ile Gly Cys Val Val Val
50 55 60

Leu Ile Trp Arg Arg Ser Gly Ala Gln Lys Ser Lys Ala Leu Val Pro
65 70 75 80

Pro Lys Pro Leu Ala Val Lys Leu Pro Glu Pro Glu Val Asp Asp Gly
85 90 95

Lys Ser Lys Ile Thr Val Phe Tyr Gly Thr Gln Thr Gly Thr Ala Glu
100 105 110

Gly Phe Ala Lys Ala Leu Val Glu Glu Ala Lys Ala Arg Tyr Glu Lys
115 120 125

Ala Val Phe Lys Ile Val Asp Leu Asp Asp Tyr Ala Glu Asp Asp Asp
130 135 140

Glu Tyr Glu Glu Lys Leu Lys Lys Glu Lys Leu Ala Ile Phe Phe Leu
145 150 155 160

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

Lys Trp Phe Leu Glu Gly Lys Glu Arg Gly Glu Cys Phe Gln Asn Met
180 185 190

Lys Phe Ala Val Phe Gly Leu Gly Asn Arg Gln Tyr Glu His Phe Asn
195 200 205

Lys Val Ala Lys Glu Val Asp Gln Ile Leu Ser Glu Gln Gly Ala Thr

210

215

220

Arg Leu Val Pro Val Gly Leu Gly Asp Asp Asp Gln Cys Leu Glu Asp
 225 230 235 240

Asp Phe Thr Ala Trp Arg Glu Leu Val Trp Pro Glu Leu Asp Gln Leu
 245 250 255

Leu Arg Asp Lys Asp Gly Ala Thr Thr Val Ser Thr Pro Tyr Thr Ala
 260 265 270

Thr Ile Pro Glu Tyr Arg Val Lys Cys Tyr Asp Thr Ser Asp Ala Ser
 275 280 285

Val Glu Glu Lys Ser Trp Ser Asn Ala Asn Gly His Ala Val Val Asp
 290 295 300

Ala Gln His Pro Cys Arg Ser Asn Val Ala Val Lys Arg Glu Leu His
 305 310 315 320

Thr Pro Ala Ser Asp Arg Ser Cys Thr His Leu Glu Phe Asp Ile Ala
 325 330 335

Gly Thr Gly Leu Ser Tyr Glu Thr Gly Asp His Val Gly Val Tyr Cys
 340 345 350

Glu Asn Leu Thr Glu Thr Val Glu Glu Ala Val Arg Leu Leu Gly Leu
 355 360 365

Ser Pro Asp Thr Tyr Phe Ser Leu His Ser Asp Lys Glu Asp Gly Thr
 370 375 380

Pro Leu Ser Ala Ser Ser Leu Pro Pro Thr Phe Pro Pro Cys Ser Leu
 385 390 395 400

Lys Thr Ala Leu Ala Arg Tyr Ala Asp Leu Leu Asn Ser Pro Lys Lys
 405 410 415

Ser Ala Leu Leu Ala Leu Ala Ala His Ala Ser Asp Pro Thr Glu Ala
420 425 430

Asp Arg Leu Arg His Leu Ala Ser Pro Ala Gly Lys Asp Glu Tyr Ala
435 440 445

Gln Trp Val Ile Ala Ser Gln Arg Ser Leu Leu Glu Ile Met Ala Glu
450 455 460

Phe Pro Ser Ala Arg Pro Pro Leu Gly Val Phe Phe Ala Ala Val Ala
465 470 475 480

Pro Arg Leu Gln Pro Arg Tyr Tyr Ser Ile Ser Ser Ser Pro Arg Met
485 490 495

Ala Pro Ser Arg Ile His Val Thr Cys Ala Leu Val Tyr Glu Lys Thr
500 505 510

Pro Ala Gly Arg Ile His Lys Gly Val Cys Ser Thr Trp Met Lys Asn
515 520 525

Ala Val Pro Leu Glu Lys Ser His Glu Ser Cys Trp Ala Pro Ile Phe
530 535 540

Val Arg Gln Ser Asn Phe Lys Leu Pro Val Asp Thr Lys Val Pro Ile
545 550 555 560

Ile Met Ile Gly Pro Gly Thr Gly Phe Ala Pro Phe Arg Gly Phe Leu
565 570 575

Gln Glu Arg Leu Ala Leu Lys Glu Ser Gly Ala Glu Leu Gly Ser Ser
580 585 590

Ile Leu Phe Phe Gly Cys Arg Asn Arg Arg Leu Asp Tyr Ile Tyr Glu
595 600 605

Glu Glu Leu Asn Asn Phe Val Glu Ser Ala Ala Leu Ser Glu Leu Ile

610

615

620

Val Ala Phe Ser Arg Glu Gly Pro Thr Lys Glu Tyr Val Gln His Lys
 625 630 635 640

Met Met Glu Lys Ala Ser Asp Ile Trp Asn Met Ile Asn Gln Gly Ala
 645 650 655

Tyr Ile Tyr Val Cys Gly Asp Ala Lys Gly Met Ala Arg Asp Val His
 660 665 670

Arg Thr Leu His Thr Ile Val Gln Glu Gln Gly Ser Leu Asp Ser Ser
 675 680 685

Lys Ala Glu Ser Met Val Lys Asn Leu Gln Thr Ser Gly Arg Tyr Leu
 690 695 700

Arg Asp Val Trp
 705

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38

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29

<210> 12
<211> 34
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<220>
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<223> A, C, G or T

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34

<210> 13
<211> 32
<212> DNA
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<220>
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<223> A, C, G or T

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32

<210> 14

<211> 38
<212> DNA
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<223> A, C, G or T

<400> 14
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<210> 15
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<223> A, C, G or T

<400> 15
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<210> 16
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<223> A, C, G or T

<400> 16

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<210> 17
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32

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<223> A, C, G or T

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<210> 19
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<223> A, C, G or T

<400> 19
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33

<210> 20
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<223> A, C, G or T

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<210> 21
<211> 35
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<223> A, C, G or T

<400> 21
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<223> A, C, G or T

<400> 22
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<223> A, C, G or T

<400> 23
cacgcgancc cggggctgag gtttaat 27

<210> 24
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<223> A, C, G, or T

<400> 24
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<223> A, C, G or T

<400> 25

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<210> 26

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<223> A, C, G or T

<400> 26

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<223> A, C, G or T

<400> 27

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27

<210> 28
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<223> A, . C, G or T

<400> 28
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<400> 30
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<400> 31
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<223> A, C, G or T

<400> 32
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<210> 33
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 <223> A, C, G or T

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<223> A, C, G or T

<400> 36
ggcttaanat gggtaggagac ggaaagggtt

29

<210> 37
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32

<210> 38
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<223> Primer pLife_PGK-F

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<400> 38
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<400> 39
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27

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<223> A, C, G or T

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<210> 41
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<210> 42
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<223> A, C, G or T

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31

<210> 43
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<223> A, C, G or T

<400> 43
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27

<210> 44
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36

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38

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<400> 47
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42

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<223> A, C, G or T

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<223> n is a, c, g, or t

<400> 48
atcaacgggn aaaatgccga cttaacgaa gctgcac

37

<210> 49
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<212> DNA
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<220>
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<223> A, C, G or T

<220>
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<222> (8)..(8)
<223> n is a, c, g, or t

<400> 49
cgtgcganct acttcttccg caagtacagg agtc 34

<210> 50
<211> 27
<212> DNA
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<220>
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<400> 50
tctcaggat agcatgaggt cgctcat 27

<210> 51
<211> 28
<212> DNA
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<400> 51
cctgcaggac tagtgctgag gcattaat 28

<210> 52
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<220>
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<400> 52
gtttgtagtt ggcgggtggag 20

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<400> 53
gagacaagat ggggcaagac 20

<210> 54
<211> 20
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<400> 54
tgacgaatcg ttaggcacag 20

<210> 55
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<212> DNA
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ccgtgcaata ccaaaatcga g 21

<210> 56
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ctcacaaagg gacgaatcct 20

<210> 57
<211> 19
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<400> 57

gacggtacgt tgaccagag 19

<210> 58

<211> 23

<212> DNA

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<220>

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<210> 59

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<210> 60

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<210> 61

<211> 25

<212> DNA

<213> artificial

<220>

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<400> 61

ctcaatgatc aaaatcctga atgca 25

<210> 62
 <211> 20
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 <220>
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 <400> 62
 gcatgggtcac cgctatcagc 20

<210> 63
 <211> 19
 <212> DNA
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 <220>
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 <400> 63
 cgaagaaggc ctgcaattc 19

<210> 64
 <211> 19
 <212> DNA
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 <220>
 <223> primer YEA99_X1I-2_Genotyping_DW

 <400> 64
 ggccctgata aggttggtg 19

<210> 65
 <211> 20
 <212> DNA
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 <220>
 <223> Primer YEA100_XII-5_Genotyping_UP

 <400> 65
 ccaccgaagt tgatttgctt 20

<210> 66

<211> 20
<212> DNA
<213> Artificial

<220>
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<400> 66
gtgggagtaa gggatcctgt

20

<210> 67
<211> 786
<212> PRT
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<400> 67

Met Gly Ser Leu Ser Thr Met Asn Leu Asn His Ser Pro Met Ser Tyr
1 5 10 15

Ser Gly Ile Leu Pro Ser Ser Ser Ala Lys Ala Lys Leu Leu Leu Pro
20 25 30

Gly Cys Phe Ser Ile Ser Ala Trp Met Asn Asn Gly Lys Asn Leu Asn
35 40 45

Cys Gln Leu Thr His Lys Lys Ile Ser Lys Val Ala Glu Ile Arg Val
50 55 60

Ala Thr Val Asn Ala Pro Pro Val His Asp Gln Asp Asp Ser Thr Glu
65 70 75 80

Asn Gln Cys His Asp Ala Val Asn Asn Ile Glu Asp Pro Ile Glu Tyr
85 90 95

Ile Arg Thr Leu Leu Arg Thr Thr Gly Asp Gly Arg Ile Ser Val Ser
100 105 110

Pro Tyr Asp Thr Ala Trp Val Ala Leu Ile Lys Asp Leu Gln Gly Arg
115 120 125

Asp Ala Pro Glu Phe Pro Ser Ser Leu Glu Trp Ile Ile Gln Asn Gln
130 135 140

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

Arg Leu Val Asn Thr Ile Ala Cys Val Val Ala Leu Arg Ser Trp Asp
165 170 175

Val His Ala Glu Lys Val Glu Arg Gly Val Arg Tyr Ile Asn Glu Asn
180 185 190

Val Glu Lys Leu Arg Asp Gly Asn Glu Glu His Met Thr Cys Gly Phe
195 200 205

Glu Val Val Phe Pro Ala Leu Leu Gln Arg Ala Lys Ser Leu Gly Ile
210 215 220

Gln Asp Leu Pro Tyr Asp Ala Pro Val Ile Gln Glu Ile Tyr His Ser
225 230 235 240

Arg Glu Gln Lys Ser Lys Arg Ile Pro Leu Glu Met Met His Lys Val
245 250 255

Pro Thr Ser Leu Leu Phe Ser Leu Glu Gly Leu Glu Asn Leu Glu Trp
260 265 270

Asp Lys Leu Leu Lys Leu Gln Ser Ala Asp Gly Ser Phe Leu Thr Ser
275 280 285

Pro Ser Ser Thr Ala Phe Ala Phe Met Gln Thr Arg Asp Pro Lys Cys
290 295 300

Tyr Gln Phe Ile Lys Asn Thr Ile Gln Thr Phe Asn Gly Gly Ala Pro
305 310 315 320

His Thr Tyr Pro Val Asp Val Phe Gly Arg Leu Trp Ala Ile Asp Arg
325 330 335

Leu Gln Arg Leu Gly Ile Ser Arg Phe Phe Glu Ser Glu Ile Ala Asp
340 345 350

Cys Ile Ala His Ile His Arg Phe Trp Thr Glu Lys Gly Val Phe Ser
355 360 365

Gly Arg Glu Ser Glu Phe Cys Asp Ile Asp Asp Thr Ser Met Gly Val
370 375 380

Arg Leu Met Arg Met His Gly Tyr Asp Val Asp Pro Asn Val Leu Lys
385 390 395 400

Asn Phe Lys Lys Asp Asp Lys Phe Ser Cys Tyr Gly Gly Gln Met Ile
405 410 415

Glu Ser Pro Ser Pro Ile Tyr Asn Leu Tyr Arg Ala Ser Gln Leu Arg
420 425 430

Phe Pro Gly Glu Gln Ile Leu Glu Asp Ala Asn Lys Phe Ala Tyr Asp
435 440 445

Phe Leu Gln Glu Lys Leu Ala His Asn Gln Ile Leu Asp Lys Trp Val
450 455 460

Ile Ser Lys His Leu Pro Asp Glu Ile Lys Leu Gly Leu Glu Met Pro
465 470 475 480

Trp Tyr Ala Thr Leu Pro Arg Val Glu Ala Arg Tyr Tyr Ile Gln Tyr
485 490 495

Tyr Ala Gly Ser Gly Asp Val Trp Ile Gly Lys Thr Leu Tyr Arg Met
500 505 510

Pro Glu Ile Ser Asn Asp Thr Tyr His Glu Leu Ala Lys Thr Asp Phe
515 520 525

Lys Arg Cys Gln Ala Gln His Gln Phe Glu Trp Ile Tyr Met Gln Glu
530 535 540

Trp Tyr Glu Ser Cys Asn Met Glu Glu Phe Gly Ile Ser Arg Lys Glu
545 550 555 560

Leu Leu Val Ala Tyr Phe Leu Ala Thr Ala Ser Ile Phe Glu Leu Glu
565 570 575

Arg Ala Asn Glu Arg Ile Ala Trp Ala Lys Ser Gln Ile Ile Ser Thr
580 585 590

Ile Ile Ala Ser Phe Phe Asn Asn Gln Asn Thr Ser Pro Glu Asp Lys
595 600 605

Leu Ala Phe Leu Thr Asp Phe Lys Asn Gly Asn Ser Thr Asn Met Ala
610 615 620

Leu Val Thr Leu Thr Gln Phe Leu Glu Gly Phe Asp Arg Tyr Thr Ser
625 630 635 640

His Gln Leu Lys Asn Ala Trp Ser Val Trp Leu Arg Lys Leu Gln Gln
645 650 655

Gly Glu Gly Asn Gly Gly Ala Asp Ala Glu Leu Leu Val Asn Thr Leu
660 665 670

Asn Ile Cys Ala Gly His Ile Ala Phe Arg Glu Glu Ile Leu Ala His
675 680 685

Asn Asp Tyr Lys Thr Leu Ser Asn Leu Thr Ser Lys Ile Cys Arg Gln
690 695 700

Leu Ser Gln Ile Gln Asn Glu Lys Glu Leu Glu Thr Glu Gly Gln Lys
705 710 715 720

Thr Ser Ile Lys Asn Lys Glu Leu Glu Glu Asp Met Gln Arg Leu Val
725 730 735

Lys Leu Val Leu Glu Lys Ser Arg Val Gly Ile Asn Arg Asp Met Lys
740 745 750

Lys Thr Phe Leu Ala Val Val Lys Thr Tyr Tyr Tyr Lys Ala Tyr His
755 760 765

Ser Ala Gln Ala Ile Asp Asn His Met Phe Lys Val Leu Phe Glu Pro
770 775 780

Val Ala
785

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<212> PRT
<213> Plectranthus barbatus

<400> 68

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Arg Val Gln Thr Arg Thr Gly Ile Leu Pro Val His Gln Thr Pro Met
20 25 30

Ile Thr Ser Lys Ser Ser Ala Ala Val Lys Cys Ser Leu Thr Thr Pro
35 40 45

Thr Asp Leu Met Gly Lys Ile Lys Glu Val Phe Asn Arg Glu Val Asp
50 55 60

Thr Ser Pro Ala Ala Met Thr Thr His Ser Thr Asp Ile Pro Ser Asn
65 70 75 80

Leu Cys Ile Ile Asp Thr Leu Gln Arg Leu Gly Ile Asp Gln Tyr Phe
85 90 95

Gln Ser Glu Ile Asp Ala Val Leu His Asp Thr Tyr Arg Leu Trp Gln

100

105

110

Leu Lys Lys Lys Asp Ile Phe Ser Asp Ile Thr Thr His Ala Met Ala
 115 120 125

Phe Arg Leu Leu Arg Val Lys Gly Tyr Glu Val Ala Ser Asp Glu Leu
 130 135 140

Ala Pro Tyr Ala Asp Gln Glu Arg Ile Asn Leu Gln Thr Ile Asp Val
 145 150 155 160

Pro Thr Val Val Glu Leu Tyr Arg Ala Ala Gln Glu Arg Leu Thr Glu
 165 170 175

Glu Asp Ser Thr Leu Glu Lys Leu Tyr Val Trp Thr Ser Ala Phe Leu
 180 185 190

Lys Gln Gln Leu Leu Thr Asp Ala Ile Pro Asp Lys Lys Leu His Lys
 195 200 205

Gln Val Glu Tyr Tyr Leu Lys Asn Tyr His Gly Ile Leu Asp Arg Met
 210 215 220

Gly Val Arg Arg Asn Leu Asp Leu Tyr Asp Ile Ser His Tyr Lys Ser
 225 230 235 240

Leu Lys Ala Ala His Arg Phe Tyr Asn Leu Ser Asn Glu Asp Ile Leu
 245 250 255

Ala Phe Ala Arg Gln Asp Phe Asn Ile Ser Gln Ala Gln His Gln Lys
 260 265 270

Glu Leu Gln Gln Leu Gln Arg Trp Tyr Ala Asp Cys Arg Leu Asp Thr
 275 280 285

Leu Lys Phe Gly Arg Asp Val Val Arg Ile Gly Asn Phe Leu Thr Ser
 290 295 300

Ala Met Ile Gly Asp Pro Glu Leu Ser Asp Leu Arg Leu Ala Phe Ala
305 310 315 320

Lys His Ile Val Leu Val Thr Arg Ile Asp Asp Phe Phe Asp His Gly
325 330 335

Gly Pro Lys Glu Glu Ser Tyr Glu Ile Leu Glu Leu Val Lys Glu Trp
340 345 350

Lys Glu Lys Pro Ala Gly Glu Tyr Val Ser Glu Glu Val Glu Ile Leu
355 360 365

Phe Thr Ala Val Tyr Asn Thr Val Asn Glu Leu Ala Glu Met Ala His
370 375 380

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

Glu Ile Leu Ser Val Phe Arg Ile Glu Leu Asp Thr Trp Thr Asn Asp
405 410 415

Thr Ala Leu Thr Leu Glu Glu Tyr Leu Ser Gln Ser Trp Val Ser Ile
420 425 430

Gly Cys Arg Ile Cys Ile Leu Ile Ser Met Gln Phe Gln Gly Val Lys
435 440 445

Leu Ser Asp Glu Met Leu Gln Ser Glu Glu Cys Thr Asp Leu Cys Arg
450 455 460

Tyr Val Ser Met Val Asp Arg Leu Leu Asn Asp Val Gln Thr Phe Glu
465 470 475 480

Lys Glu Arg Lys Glu Asn Thr Gly Asn Ser Val Ser Leu Leu Gln Ala
485 490 495

Ala His Lys Asp Glu Arg Val Ile Asn Glu Glu Glu Ala Cys Ile Lys

500

505

510

Val Lys Glu Leu Ala Glu Tyr Asn Arg Arg Lys Leu Met Gln Ile Val
 515 520 525

Tyr Lys Thr Gly Thr Ile Phe Pro Arg Lys Cys Lys Asp Leu Phe Leu
 530 535 540

Lys Ala Cys Arg Ile Gly Cys Tyr Leu Tyr Ser Ser Gly Asp Glu Phe
 545 550 555 560

Thr Ser Pro Gln Gln Met Met Glu Asp Met Lys Ser Leu Val Tyr Glu
 565 570 575

Pro Leu Pro Ile Ser Pro Pro Glu Ala Asn Asn Ala Ser Gly Glu Lys
 580 585 590

Met Ser Cys Val Ser Asn
 595

<210> 69
 <211> 807
 <212> PRT
 <213> Tripterygium wilfordii

<400> 69

Met His Ser Leu Leu Met Lys Lys Val Ile Met Tyr Ser Ser Gln Thr
 1 5 10 15

Thr His Val Phe Pro Ser Pro Leu His Cys Thr Ile Pro Lys Ser Ser
 20 25 30

Ser Phe Phe Leu Asp Ala Pro Val Ala Arg Leu His Cys Leu Ser Gly
 35 40 45

His Gly Ala Lys Lys Lys Arg Leu His Phe Asp Ile Gln Gln Gly Arg
 50 55 60

Asn Ala Val Ser Lys Thr His Thr Pro Asp Asp Leu Tyr Ala Lys Gln
65 70 75 80

Glu Tyr Ser Val Pro Glu Ile Val Lys Asp Asp Asp Lys Glu Glu Glu
85 90 95

Val Val Lys Ile Lys Glu His Val Asp Ile Ile Lys Ser Met Leu Ser
100 105 110

Ser Met Glu Asp Gly Glu Ile Ser Ile Ser Ala Tyr Asp Thr Ala Trp
115 120 125

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

Ser Ser Leu Leu Trp Ile Ala Glu Asn Gln Leu Pro Asp Gly Ser Trp
145 150 155 160

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

Ala Cys Val Val Ala Leu Lys Ser Trp Asn Val His Pro Asp Lys Cys
180 185 190

Glu Arg Gly Ile Ser Phe Leu Lys Glu Asn Ile Ser Met Leu Glu Lys
195 200 205

Asp Asp Ser Glu His Met Leu Val Gly Phe Glu Phe Gly Phe Pro Val
210 215 220

Leu Leu Asp Met Ala Arg Arg Leu Gly Ile Asp Val Pro Asp Asp Ser
225 230 235 240

Pro Phe Leu Gln Glu Ile Tyr Val Gln Arg Asp Leu Lys Leu Lys Arg
245 250 255

Ile Pro Lys Asp Ile Leu His Asn Val Pro Thr Thr Leu Leu His Ser
260 265 270

Leu Glu Ala Ile Pro Asp Leu Asp Trp Thr Lys Leu Leu Lys Leu Gln
275 280 285

Cys Gln Asp Gly Ser Leu Leu Phe Ser Pro Ser Ser Thr Ala Met Ala
290 295 300

Phe Ile Asn Thr Lys Asp Glu Asn Cys Leu Arg Tyr Leu Asn Tyr Val
305 310 315 320

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

Phe Glu His Asn Trp Ala Val Asp Arg Leu Gln Arg Leu Gly Ile Ser
340 345 350

Arg Phe Phe Gln Pro Glu Ile Arg Glu Cys Met Ser Tyr Val Tyr Arg
355 360 365

Tyr Trp Thr Lys Asp Gly Ile Phe Cys Thr Arg Asn Ser Arg Val His
370 375 380

Asp Val Asp Asp Thr Ala Met Gly Phe Arg Leu Leu Arg Leu His Gly
385 390 395 400

Tyr Glu Val His Pro Asp Ala Phe Arg Gln Phe Lys Lys Gly Cys Glu
405 410 415

Phe Ile Cys Tyr Glu Gly Gln Ser His Pro Thr Val Thr Val Met Tyr
420 425 430

Asn Leu Tyr Arg Ala Ser Gln Leu Met Phe Pro Glu Glu Lys Ile Leu
435 440 445

Asp Glu Ala Lys Gln Phe Thr Glu Lys Phe Leu Gly Glu Lys Arg Ser
450 455 460

Ala Asn Lys Leu Leu Asp Lys Trp Ile Ile Thr Lys Asp Leu Pro Gly
465 470 475 480

Glu Val Gly Phe Ala Leu Asp Val Pro Trp Tyr Ala Ser Leu Pro Arg
485 490 495

Val Glu Ala Arg Phe Phe Ile Gln His Tyr Gly Gly Glu Asp Asp Val
500 505 510

Trp Leu Asp Lys Ala Leu Tyr Arg Met Pro Tyr Val Asn Asn Asn Val
515 520 525

Tyr Leu Glu Leu Ala Lys Leu Asp Tyr Asn Tyr Cys Gln Ala Leu His
530 535 540

Arg Thr Glu Trp Gly Arg Ile Gln Lys Trp Tyr Glu Glu Cys Lys Pro
545 550 555 560

Arg Asp Phe Gly Ile Ser Arg Glu Cys Leu Leu Arg Ala Tyr Phe Met
565 570 575

Ala Ala Ala Ser Ile Phe Glu Pro Glu Arg Ser Met Glu Arg Leu Ala
580 585 590

Trp Ala Lys Thr Ala Ile Leu Leu Glu Ile Ile Val Ser Tyr Phe Ser
595 600 605

Glu Val Gly Asn Ser Thr Glu Gln Arg Ile Ala Phe Thr Thr Glu Phe
610 615 620

Ser Ile Arg Ala Ser Pro Met Gly Gly Tyr Ile Asn Gly Arg Lys Leu
625 630 635 640

Asp Lys Ile Gly Thr Thr Gln Glu Leu Ile Gln Met Leu Leu Ala Thr
645 650 655

Ile Asp Gln Phe Ser Gln Asp Ala Phe Ala Ala Tyr Gly His Asp Ile
660 665 670

Thr Arg His Leu His Asn Ser Trp Lys Met Trp Leu Leu Lys Trp Gln
675 680 685

Glu Glu Gly Asp Arg Trp Leu Gly Glu Ala Glu Leu Leu Ile Gln Thr
690 695 700

Ile Asn Leu Met Ala Asp His Lys Ile Ala Glu Lys Leu Phe Met Gly
705 710 715 720

His Thr Asn Tyr Glu Gln Leu Phe Ser Leu Thr Asn Lys Val Cys Tyr
725 730 735

Ser Leu Gly His His Glu Leu Gln Asn Asn Arg Glu Leu Glu His Asp
740 745 750

Met Gln Arg Leu Val Gln Leu Val Leu Thr Asn Ser Ser Asp Gly Ile
755 760 765

Asp Ser Asp Ile Lys Lys Thr Phe Leu Ala Val Ala Lys Arg Phe Tyr
770 775 780

Tyr Thr Ala Phe Val Asp Pro Glu Thr Val Asn Val His Ile Ala Lys
785 790 795 800

Val Leu Phe Glu Arg Val Asp
805

<210> 70
<211> 589
<212> PRT
<213> Tripterygium wilfordii

<400> 70

Met Ala Pro Leu Val Val Ser Leu Thr Ile Ser His Phe Val Ile Gln
1 5 10 15

Thr Gly Ser Thr Ala Leu His Tyr Ser Ala Leu Pro Glu Thr Arg Thr

30

Phe Ser Ser Lys Asn Leu Arg Ala Leu Leu Gly Arg Leu Glu Ser Thr
210 215 220

Ser Ile Asp Val Ala Glu Gln Val Lys Gln Ser Leu Gln Ile Pro Leu
225 230 235 240

Phe Trp Arg Met Pro Arg Val Glu Ala Arg Asn Phe Ile Asp Phe Tyr
245 250 255

Gln Lys Lys Asp Ala Lys Ser Ser Thr Leu Leu Glu Leu Ala Lys Leu
260 265 270

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

Ser Lys Trp Trp Glu Asn Leu Gly Phe Lys Gln Lys Leu Ser Phe Thr
290 295 300

Arg Asp Arg Leu Met Gln Ser Tyr Phe Ser Thr Thr Gly Ile Thr Phe
305 310 315 320

Lys Pro Gln Phe Ser Lys Ala Arg Ile Ala Ala Thr Lys Phe Ile Asn
325 330 335

Ile Val Asn Thr Ile Asp Asp Ile His Asp Tyr Tyr Gly Ser Gln Asp
340 345 350

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

Met Glu Glu Leu Pro Asp Tyr Met Lys Ile Cys Tyr Phe Ala Met Tyr
370 375 380

Asn Leu Val Asn Glu Leu Ala Tyr Asp Val Leu Ile Asn Gln Gly Ile
385 390 395 400

Asp Val Leu Pro Cys Leu Arg Glu Ala Trp Thr Lys Phe Cys Gly Ala
405 410 415

Ala Phe Val Glu Ser Gln Trp Cys Tyr Thr Gly Tyr Thr Pro Ser Met

420

425

430

Asp Asp Tyr Leu Lys Asn Cys Trp Ile Ser Ile Gly Val His Gly Ser
 435 440 445

Leu Asn Phe Ala Arg Ala His Gln Gln Gly Ser Arg Ser Pro Ile Ala
 450 455 460

Asn Thr Pro Leu His Cys Leu Glu Asp Pro Leu Leu Tyr Trp Ser Ser
 465 470 475 480

Val Ile Cys Arg Leu Asn Asn Asp Leu Ala Thr Phe Gln His Glu Ser
 485 490 495

Lys Thr Gly Glu Val Val Ser Phe Val Lys Cys Tyr Met Val Glu Lys
 500 505 510

Gly Val Ser Gln Glu Gln Ala Cys Asp Glu Ile Arg Glu Leu Ile Lys
 515 520 525

His Ala Trp Lys Met Leu Asn Thr Glu Arg Arg Arg Ser Asp Leu Pro
 530 535 540

Pro Leu Met Val Glu Met Cys Met Asp Thr Pro Lys Leu Ser Gln Cys
 545 550 555 560

Leu Tyr Gln His Gly Asp Gly Phe Gly Val Ala Ile Asp Leu Thr Lys
 565 570 575

Asp Val Met Ser Ser Leu Ile Phe Arg Gln Ile Pro Ile
 580 585

<210> 71

<211> 793

<212> PRT

<213> *Salvia miltiorrhiza*

<400> 71

Met Ala Ser Leu Ser Ser Thr Ile Leu Ser Arg Ser Pro Ala Ala Arg
1 5 10 15

Arg Arg Ile Thr Pro Ala Ser Ala Lys Leu His Arg Pro Glu Cys Phe
20 25 30

Ala Thr Ser Ala Trp Met Gly Ser Ser Ser Lys Asn Leu Ser Leu Ser
35 40 45

Tyr Gln Leu Asn His Lys Lys Ile Ser Val Ala Thr Val Asp Ala Pro
50 55 60

Gln Val His Asp His Asp Gly Thr Thr Val His Gln Gly His Asp Ala
65 70 75 80

Val Lys Asn Ile Glu Asp Pro Ile Glu Tyr Ile Arg Thr Leu Leu Arg
85 90 95

Thr Thr Gly Asp Gly Arg Ile Ser Val Ser Pro Tyr Asp Thr Ala Trp
100 105 110

Val Ala Met Ile Lys Asp Val Glu Gly Arg Asp Gly Pro Gln Phe Pro
115 120 125

Ser Ser Leu Glu Trp Ile Val Gln Asn Gln Leu Glu Asp Gly Ser Trp
130 135 140

Gly Asp Gln Lys Leu Phe Cys Val Tyr Asp Arg Leu Val Asn Thr Ile
145 150 155 160

Ala Cys Val Val Ala Leu Arg Ser Trp Asn Val His Ala His Lys Val
165 170 175

Lys Arg Gly Val Thr Tyr Ile Lys Glu Asn Val Asp Lys Leu Met Glu
180 185 190

Gly Asn Glu Glu His Met Thr Cys Gly Phe Glu Val Val Phe Pro Ala
195 200 205

Leu Leu Gln Lys Ala Lys Ser Leu Gly Ile Glu Asp Leu Pro Tyr Asp
210 215 220

Ser Pro Ala Val Gln Glu Val Tyr His Val Arg Glu Gln Lys Leu Lys
225 230 235 240

Arg Ile Pro Leu Glu Ile Met His Lys Ile Pro Thr Ser Leu Leu Phe
245 250 255

Ser Leu Glu Gly Leu Glu Asn Leu Asp Trp Asp Lys Leu Leu Lys Leu
260 265 270

Gln Ser Ala Asp Gly Ser Phe Leu Thr Ser Pro Ser Ser Thr Ala Phe
275 280 285

Ala Phe Met Gln Thr Lys Asp Glu Lys Cys Tyr Gln Phe Ile Lys Asn
290 295 300

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

Val Phe Gly Arg Leu Trp Ala Ile Asp Arg Leu Gln Arg Leu Gly Ile
325 330 335

Ser Arg Phe Phe Glu Pro Glu Ile Ala Asp Cys Leu Ser His Ile His
340 345 350

Lys Phe Trp Thr Asp Lys Gly Val Phe Ser Gly Arg Glu Ser Glu Phe
355 360 365

Cys Asp Ile Asp Asp Thr Ser Met Gly Met Arg Leu Met Arg Met His
370 375 380

Gly Tyr Asp Val Asp Pro Asn Val Leu Arg Asn Phe Lys Gln Lys Asp
385 390 395 400

Gly Lys Phe Ser Cys Tyr Gly Gly Gln Met Ile Glu Ser Pro Ser Pro
405 410 415

Ile Tyr Asn Leu Tyr Arg Ala Ser Gln Leu Arg Phe Pro Gly Glu Glu
420 425 430

Ile Leu Glu Asp Ala Lys Arg Phe Ala Tyr Asp Phe Leu Lys Glu Lys
435 440 445

Leu Ala Asn Asn Gln Ile Leu Asp Lys Trp Val Ile Ser Lys His Leu
450 455 460

Pro Asp Glu Ile Lys Leu Gly Leu Glu Met Pro Trp Leu Ala Thr Leu
465 470 475 480

Pro Arg Val Glu Ala Lys Tyr Tyr Ile Gln Tyr Tyr Ala Gly Ser Gly
485 490 495

Asp Val Trp Ile Gly Lys Thr Leu Tyr Arg Met Pro Glu Ile Ser Asn
500 505 510

Asp Thr Tyr His Asp Leu Ala Lys Thr Asp Phe Lys Arg Cys Gln Ala
515 520 525

Lys His Gln Phe Glu Trp Leu Tyr Met Gln Glu Trp Tyr Glu Ser Cys
530 535 540

Gly Ile Glu Glu Phe Gly Ile Ser Arg Lys Asp Leu Leu Leu Ser Tyr
545 550 555 560

Phe Leu Ala Thr Ala Ser Ile Phe Glu Leu Glu Arg Thr Asn Glu Arg
565 570 575

Ile Ala Trp Ala Lys Ser Gln Ile Ile Ala Lys Met Ile Thr Ser Phe
580 585 590

Phe Asn Lys Glu Thr Thr Ser Glu Glu Asp Lys Arg Ala Leu Leu Asn
595 600 605

Glu Leu Gly Asn Ile Asn Gly Leu Asn Asp Thr Asn Gly Ala Gly Arg
610 615 620

Glu Gly Gly Ala Gly Ser Ile Ala Leu Ala Thr Leu Thr Gln Phe Leu
625 630 635 640

Glu Gly Phe Asp Arg Tyr Thr Arg His Gln Leu Lys Asn Ala Trp Ser
645 650 655

Val Trp Leu Thr Gln Leu Gln His Gly Glu Ala Asp Asp Ala Glu Leu
660 665 670

Leu Thr Asn Thr Leu Asn Ile Cys Ala Gly His Ile Ala Phe Arg Glu
675 680 685

Glu Ile Leu Ala His Asn Glu Tyr Lys Ala Leu Ser Asn Leu Thr Ser
690 695 700

Lys Ile Cys Arg Gln Leu Ser Phe Ile Gln Ser Glu Lys Glu Met Gly
705 710 715 720

Val Glu Gly Glu Ile Ala Ala Lys Ser Ser Ile Lys Asn Lys Glu Leu
725 730 735

Glu Glu Asp Met Gln Met Leu Val Lys Leu Val Leu Glu Lys Tyr Gly
740 745 750

Gly Ile Asp Arg Asn Ile Lys Lys Ala Phe Leu Ala Val Ala Lys Thr
755 760 765

Tyr Tyr Tyr Arg Ala Tyr His Ala Ala Asp Thr Ile Asp Thr His Met
770 775 780

Phe Lys Val Leu Phe Glu Pro Val Ala
785 790

<210> 72
<211> 595
<212> PRT
<213> *Salvia miltiorrhiza*

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

<400> 72

Met Ser Leu Ala Phe Asn Pro Ala Ala Thr Ala Phe Ser Gly Asn Gly
1 5 10 15

Ala Arg Ser Arg Arg Glu Asn Phe Pro Val Lys His Val Thr Val Arg
20 25 30

Gly Phe Pro Met Ile Thr Asn Lys Ser Ser Phe Ala Val Lys Cys Asn
35 40 45

Leu Thr Thr Thr Asp Leu Met Gly Lys Ile Ala Glu Lys Phe Lys Gly
50 55 60

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

Met Pro Ser Asn Leu Cys Ile Ile Asp Thr Leu Gln Arg Leu Gly Val
85 90 95

Asp Arg Tyr Phe Arg Ser Glu Ile Asp Thr Ile Leu Glu Asp Thr Tyr
100 105 110

Arg Leu Trp Gln Arg Lys Glu Arg Ala Ile Phe Ser Asp Thr Ala Ile
115 120 125

His Ala Met Ala Phe Arg Leu Leu Arg Val Lys Gly Tyr Glu Val Ser
130 135 140

Ser Glu Glu Leu Ala Pro Tyr Ala Asp Gln Glu His Val Asp Leu Gln

145		150		155		160									
Thr	Ile	Glu	Val	Ala	Thr	Val	Ile	Glu	Leu	Tyr	Arg	Ala	Ala	Gln	Glu
				165					170					175	
Arg	Thr	Gly	Glu	Asp	Glu	Ser	Ser	Leu	Lys	Lys	Leu	His	Ala	Trp	Thr
			180					185					190		
Thr	Thr	Phe	Leu	Lys	Gln	Lys	Leu	Leu	Thr	Asn	Ser	Ile	Pro	Asp	Lys
		195					200					205			
Lys	Leu	His	Lys	Leu	Val	Glu	Tyr	Tyr	Leu	Lys	Asn	Xaa	His	Gly	Ile
	210					215					220				
Leu	Asp	Arg	Met	Gly	Val	Arg	Gln	Asn	Leu	Asp	Leu	Tyr	Asp	Ile	Ser
225					230					235					240
Tyr	Tyr	Arg	Thr	Ser	Lys	Ala	Ala	Asn	Arg	Phe	Ser	Asn	Leu	Cys	Ser
				245					250					255	
Glu	Asp	Phe	Leu	Ala	Phe	Ala	Arg	Gln	Asp	Phe	Asn	Ile	Cys	Gln	Ala
			260					265					270		
Gln	His	Gln	Lys	Glu	Leu	Gln	Gln	Leu	Gln	Arg	Trp	Tyr	Ala	Asp	Cys
		275					280					285			
Lys	Leu	Asp	Thr	Leu	Lys	Tyr	Gly	Arg	Asp	Val	Val	Arg	Val	Ala	Asn
	290					295					300				
Phe	Leu	Thr	Ser	Ala	Ile	Ile	Gly	Asp	Pro	Glu	Leu	Ser	Asp	Val	Arg
305					310					315					320
Ile	Val	Phe	Ala	Gln	His	Ile	Val	Leu	Val	Thr	Arg	Ile	Asp	Asp	Phe
			325						330				335		
Phe	Asp	His	Arg	Gly	Ser	Arg	Glu	Glu	Ser	Tyr	Lys	Ile	Leu	Glu	Leu
			340					345					350		

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

Val Glu Ile Leu Phe Thr Ala Val Tyr Asn Thr Val Asn Glu Leu Ala
370 375 380

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

Lys Leu Trp Val Gln Ile Leu Ser Ile Phe Lys Arg Glu Leu Asp Thr
405 410 415

Trp Ser Asp Asp Thr Ala Leu Thr Leu Asp Asp Tyr Leu Ser Ala Ser
420 425 430

Trp Val Ser Ile Gly Cys Arg Ile Cys Ile Leu Met Ser Met Gln Phe
435 440 445

Ile Gly Ile Lys Leu Ser Asp Glu Met Leu Leu Ser Glu Glu Cys Ile
450 455 460

Asp Leu Cys Arg His Val Ser Met Val Asp Arg Leu Leu Asn Asp Val
465 470 475 480

Gln Thr Phe Glu Lys Glu Arg Lys Glu Asn Thr Gly Asn Ser Val Thr
485 490 495

Leu Leu Leu Ala Ala Asn Lys Asp Asp Ser Ser Phe Thr Glu Glu Glu
500 505 510

Ala Ile Arg Ile Ala Lys Glu Met Ala Glu Cys Asn Arg Arg Gln Leu
515 520 525

Met Gln Ile Val Tyr Lys Thr Gly Thr Ile Phe Pro Arg Gln Cys Lys
530 535 540

Asp Met Phe Leu Lys Val Cys Arg Ile Gly Cys Tyr Leu Tyr Ala Ser

545 550 555 560

Leu Val Tyr Glu Pro Leu Thr Ile His Pro Leu Val Ala Asn Asn Val
580 585 590

<210>	73
<211>	300
<212>	PRT
<213>	Synechococcus sp
<400>	73

Leu Gln Glu Gln Lys Thr Ile Val Glu Thr Ala Leu Asp Gln Ser Leu
20 25 30

Leu Ala Gly Gly Lys Arg Leu Arg Pro Ile Leu Cys Leu Ala Ala Cys
50 55 60

Leu Glu Met Ile His Thr Met Ser Leu Ile His Asp Asp Leu Pro Ala
85 90 95

Tyr Gly Glu Asp Ile Ala Ile Leu Ala Gly Asp Ala Leu Leu Ser Tyr
115 120 125

Ala Phe Glu Tyr Val Ala Arg Thr Pro Asp Val Pro Ala Glu Arg Leu
130 135 140

Leu Gln Val Ile Val Arg Leu Gly Gln Ala Val Gly Ala Glu Gly Leu
145 150 155 160

Val Gly Gly Gln Val Val Asp Leu Glu Ser Glu Gly Lys Thr Asp Val
165 170 175

Ala Val Glu Thr Leu Asn Phe Ile His Thr His Lys Thr Gly Ala Leu
180 185 190

Leu Glu Val Cys Val Thr Ala Gly Ala Ile Leu Ala Gly Ala Lys Pro
195 200 205

Glu Glu Val Gln Leu Leu Ser Arg Tyr Ala Gln Asn Ile Gly Leu Ala
210 215 220

Phe Gln Ile Val Asp Asp Ile Leu Asp Ile Thr Ala Thr Ala Glu Glu
225 230 235 240

Leu Gly Lys Thr Ala Gly Lys Asp Leu Glu Ala Gln Lys Val Thr Tyr
245 250 255

Pro Ser Leu Trp Gly Ile Glu Lys Ser Gln Ala Glu Ala Gln Lys Leu
260 265 270

Val Ala Glu Ala Ile Ala Ser Leu Glu Pro Tyr Gly Glu Lys Ala Asn
275 280 285

Pro Leu Lys Ala Leu Ala Glu Tyr Ile Val Asn Arg
290 295 300

<210> 74

<211> 533

<212> PRT

<213> Tripterygium wilfordii

<400> 74

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

Phe Ala Val Leu Leu Leu Phe Ile Cys Leu Arg Ile Leu Thr Asn Val
20 25 30

Leu Lys Pro Lys Lys Ser Lys Thr Ser Pro Pro Gln Ala Ser Gly Ala
35 40 45

Trp Pro Leu Ile Gly His Leu Leu His Leu Arg Gly Pro Gln Ala Pro
50 55 60

His Ile Thr Leu Gly Lys Met Ala Asp Lys Tyr Gly Pro Ile Phe Lys
65 70 75 80

Ile Lys Leu Gly Val His Pro Thr Leu Val Ile Ser Asp Ser Glu Val
85 90 95

Ala Lys Glu Cys Leu Thr Thr His Asp Ile Ala Leu Ala Gly Arg Pro
100 105 110

Ala Thr Val Ala Met Glu Ile Met Gly Tyr Asn His Ala Met Phe Ala
115 120 125

Phe Ser Pro Tyr Gly Pro Tyr Trp Arg His Met Arg Lys Leu Ala Thr
130 135 140

Val Glu Leu Leu Ser Ala Gln Arg Leu Glu Thr Phe Lys His Ile Arg
145 150 155 160

Glu Ser Glu Leu Lys Arg Ser Met Lys Glu Met Tyr Gln Ser Trp Val
165 170 175

His Asn Lys Ser Gly Ser Gly Asp Ser Asn His Val Thr Val Asp Met

180

185

190

Thr Arg Ile Leu Gly Asp Ile Ile Ala Asn Val Ile Tyr Arg Met Val
 195 200 205

Val Gly Lys Val Tyr Ala Ser Lys Gly Glu Glu Asp Ala Arg Trp Lys
 210 215 220

Gln Val Val Trp Glu Tyr Ile Lys Leu Leu Ser His Phe Gly Val Gly
 225 230 235 240

Asp Ala Leu Pro Phe Leu Arg Trp Leu Asp Leu Gly Gly Val Glu Lys
 245 250 255

Ser Met Lys Lys Ala Ala Lys Glu Leu Asp Ile Tyr Val Glu Glu Trp
 260 265 270

Leu Glu Glu His Lys Lys Lys Arg Ser Glu Arg Lys Ser Asp Asn Gly
 275 280 285

Ile Val Glu Glu Asp Phe Met Asp Val Met Leu Ser Val Phe Asp Asp
 290 295 300

Asp Asp Gln Leu Glu Asn Phe Ala His His Ser Ala His Thr Ile Asn
 305 310 315 320

Lys Ala Met Cys Leu Ala Ile Ile Leu Ala Ala Ser Asp Thr Thr Lys
 325 330 335

Thr Thr Leu Thr Trp Ala Leu Ser Leu Leu Leu Asn His Pro Asp Val
 340 345 350

Met Lys Lys Val Gln Gln Glu Leu Ala Ala His Ile Gly Pro Asp Lys
 355 360 365

Pro Val Lys Glu Ser Asp Val Lys Ser Leu Val Tyr Leu Glu Ala Val
 370 375 380

Val Lys Glu Thr Leu Arg Leu Tyr Pro Pro Gly Pro Leu Gly Leu Pro
385 390 395 400

His Glu Ser Met Glu Asp Cys Thr Val Ala Gly Tyr His Val Pro Ser
405 410 415

Gly Thr Arg Ile Leu Tyr Asn Leu Trp Lys Ile Gln Gln Asp Pro Gln
420 425 430

Val Trp Glu Asn Pro Ser Glu Phe Lys Pro Asp Arg Phe Leu Thr Thr
435 440 445

His Lys Asp Val Asp Val Arg Gly Arg Asn Phe Glu Tyr Leu Pro Phe
450 455 460

Gly Ser Gly Arg Arg Met Cys Pro Gly Met Ser Phe Ala Leu Gln Val
465 470 475 480

Met Glu Val Ser Leu Ala Asn Met Leu His Gly Phe Asp Phe Ala Thr
485 490 495

Pro Asn Gly Lys Pro Val Asp Met Thr Glu Val Asn Gly Leu Val Thr
500 505 510

Asp Arg Ala Thr Pro Leu Glu Ala Leu Ile Thr Pro Arg Leu Pro Ala
515 520 525

His Leu Tyr Met Gly
530

<210> 75
<211> 533
<212> PRT
<213> Tripterygium wilfordii

<400> 75

Met Glu Phe Leu Leu Ser Leu Pro Thr Asn Thr Ile Ala Thr Thr Ser
1 5 10 15

Phe Ala Val Leu Leu Leu Tyr Leu Cys Leu Arg Ile Phe Thr Asn Val
20 25 30

Leu Lys Pro Lys Lys Ser Lys Thr Ser Pro Pro Gln Ala Gly Gly Ala
35 40 45

Trp Pro Leu Ile Gly His Leu His Leu Leu Ile Gly Pro Gln Ala Ser
50 55 60

Tyr Ile Thr Leu Ser Lys Met Ala Asp Lys Tyr Gly Pro Ile Phe Lys
65 70 75 80

Ile Lys Leu Gly Val His Pro Thr Leu Val Ile Ser Asn Ser Glu Val
85 90 95

Ala Lys Glu Cys Leu Thr Thr His Asp Lys Val Leu Ala Asn Arg Pro
100 105 110

Ala Thr Val Ala Met Glu Ile Met Gly Tyr Asn His Ala Met Phe Gly
115 120 125

Trp Ser Pro Tyr Gly Pro Tyr Trp Arg His Met Arg Lys Leu Ala Thr
130 135 140

Val Glu Leu Leu Ser Ala Gln Arg Leu Glu Thr Phe Lys His Ile Arg
145 150 155 160

Glu Ser Glu Leu Lys Arg Ser Met Lys Glu Met Tyr Gln Ser Trp Val
165 170 175

His Asn Lys Ser Gly Ser Gly Asp Ser Asn His Val Thr Val Asp Met
180 185 190

Thr Arg Ile Leu Gly Asp Ile Ile Ala Asn Val Ile Tyr Arg Met Val
195 200 205

Val Gly Lys Val Tyr Ala Ser Lys Gly Glu Glu Asp Ala Arg Trp Lys
210 215 220

Gln Val Val Trp Glu Tyr Ile Lys Leu Leu Ser His Phe Gly Val Gly
225 230 235 240

Asp Ala Leu Pro Phe Leu Arg Trp Leu Asp Leu Gly Gly Val Glu Lys
245 250 255

Ser Met Lys Lys Ala Ala Lys Glu Leu Asp Ile Tyr Val Glu Glu Trp
260 265 270

Leu Glu Glu His Lys Lys Lys Arg Ser Glu Arg Lys Ser Asp Asn Gly
275 280 285

Ile Val Glu Glu Asp Phe Met Asp Val Met Leu Ser Val Phe Asp Asp
290 295 300

Asp Asp Gln Leu Glu Asn Phe Ala His His Ser Ala His Thr Ile Asn
305 310 315 320

Lys Ala Met Cys Leu Ala Ile Ile Leu Ala Ala Ser Asp Thr Thr Lys
325 330 335

Thr Thr Leu Thr Trp Ala Leu Ser Leu Leu Leu Asn His Pro Asp Val
340 345 350

Met Lys Lys Val Gln Gln Glu Leu Ala Ala His Ile Gly Pro Asp Lys
355 360 365

Pro Val Lys Glu Ser Asp Val Lys Ser Leu Val Tyr Leu Glu Ala Val
370 375 380

Val Lys Glu Thr Leu Arg Leu Tyr Pro Pro Gly Pro Leu Gly Leu Pro
385 390 395 400

His Glu Ser Met Glu Asp Cys Thr Val Ala Gly Tyr His Val Pro Ser
405 410 415

Gly Thr Arg Ile Leu Tyr Asn Leu Trp Lys Ile Gln Gln Asp Pro Gln
420 425 430

Val Trp Glu Asn Pro Ser Glu Phe Lys Pro Asp Arg Phe Leu Thr Thr
435 440 445

His Lys Asp Val Asp Val Arg Gly Arg Asn Phe Glu Tyr Leu Pro Phe
450 455 460

Gly Ser Gly Arg Arg Met Cys Pro Gly Met Ser Phe Ala Leu Gln Val
465 470 475 480

Met Glu Val Ser Leu Ala Asn Met Leu His Gly Phe Asp Phe Ala Thr
485 490 495

Pro Asn Gly Lys Pro Val Asp Met Thr Glu Val Asn Gly Leu Val Thr
500 505 510

Asp Arg Ala Thr Pro Leu Glu Ala Leu Ile Thr Pro Arg Leu Pro Ala
515 520 525

His Leu Tyr Met Gly
530

<210> 76
<211> 530
<212> PRT
<213> Tripterygium wilfordii

<400> 76

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

Phe Ala Val Leu Leu Leu Tyr Leu Phe Leu Arg Ile Phe Thr Asn Val
20 25 30

Leu Lys Pro Lys Lys Ser Lys Thr Ser Pro Pro Gln Ala Gly Gly Ala

35

40

45

Trp Pro Leu Ile Gly His Leu His Leu Leu Ile Gly Pro Gln Ala Ser
 50 55 60

Tyr Ile Thr Leu Ser Lys Met Ala Asp Lys Tyr Gly Pro Ile Phe Lys
 65 70 75 80

Ile Lys Leu Gly Val His Pro Thr Leu Val Ile Ser Asn Ser Glu Val
 85 90 95

Ala Lys Glu Cys Leu Thr Thr His Asp Lys Val Leu Ala Asn Arg Pro
 100 105 110

Ala Thr Val Ala Met Glu Ile Met Gly Tyr Asn His Ala Met Phe Gly
 115 120 125

Trp Ser Pro Tyr Gly Pro Tyr Trp Arg Gln Leu Arg Lys Leu Val Thr
 130 135 140

Val Glu Leu Leu Ser Asn Gln Arg Leu Lys Thr Phe Lys His Ile Arg
 145 150 155 160

Glu Ser Glu Val Lys Asn Ser Leu Lys Glu Met Tyr Gln Ser Trp Val
 165 170 175

His Asn Lys Ser Gly Asp Ser Asn His Val Ser Val Asp Met Thr Arg
 180 185 190

Ile Phe Gly Asp Ile Thr Gly Asn Leu Ile Tyr Arg Ile Val Val Gly
 195 200 205

Lys Val Tyr Ala Arg Lys Gly Glu Gly Val Val Arg Trp Lys Gln Val
 210 215 220

Val Gly Asp Tyr Met Lys Leu Leu Thr His Phe Asn Val Gly Asp Ala
 225 230 235 240

Met Pro Phe Met Arg Trp Phe Asp Leu Gly Gly Leu Glu Lys Ala Met
245 250 255

Lys Ile Thr Phe Lys Glu Leu Asp Gly Tyr Val Glu Glu Trp Leu Glu
260 265 270

Glu His Lys Lys Lys Arg Ser Asn Ser Gly Gly His Gly Ile Val Glu
275 280 285

Glu Asp Phe Met Asp Val Met Leu Ser Ile Phe Asp Asp Gly Gly Gln
290 295 300

Gln Glu Tyr Cys Thr Asp Asn Ser Thr His Thr Thr Asn Lys Ala Met
305 310 315 320

Cys Met Ala Leu Ile Leu Gly Ala Ser Glu Thr Thr Lys Thr Thr Leu
325 330 335

Thr Trp Ser Leu Ser Leu Leu Leu Asn Asn Leu Asp Val Leu Lys Lys
340 345 350

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

Glu Ser Asp Val Asn Ser Leu Val Tyr Leu Asp Ala Val Ile Thr Glu
370 375 380

Thr Leu Arg Leu Tyr Pro Leu Gly Pro Leu Gly Leu Pro His Glu Ser
385 390 395 400

Ile Glu Asp Cys Thr Ile Ala Gly Tyr His Val Pro Ala Arg Thr Arg
405 410 415

Ile Leu Phe Asn Leu Trp Lys Ile His Gln Asp Pro Arg Val Trp Glu
420 425 430

Asn Pro Leu Glu Phe Lys Pro Glu Arg Phe Leu Lys Glu His Asn Asn

435

440

445

Ile Asp Val Arg Gly Gly His Phe Glu Leu Leu Pro Phe Gly Ser Gly
 450 455 460

Arg Arg Met Cys Pro Gly Val Ser Phe Ala Leu Gln Val Leu Lys Leu
 465 470 475 480

Ile Leu Ala Asn Met Leu His Gly Phe Asp Phe Ala Thr Pro Asn Asp
 485 490 495

Glu Pro Val Asp Met Thr Glu Val Asn His Met Ala Thr Thr Arg Ala
 500 505 510

Thr Pro Leu Glu Thr Leu Ile Ser Pro Arg Leu Pro Ser His Leu Tyr
 515 520 525

Met Gly
 530

<210> 77

<211> 749

<212> PRT

<213> Plectranthus barbatus

<400> 77

Met Ala Trp Met Asn Asn Gly Lys Asn Leu Asn Cys Gln Leu Thr His
 1 5 10 15

Lys Lys Ile Ser Lys Val Ala Glu Ile Arg Val Ala Thr Val Asn Ala
 20 25 30

Pro Pro Val His Asp Gln Asp Asp Ser Thr Glu Asn Gln Cys His Asp
 35 40 45

Ala Val Asn Asn Ile Glu Asp Pro Ile Glu Tyr Ile Arg Thr Leu Leu
 50 55 60

Arg Thr Thr Gly Asp Gly Arg Ile Ser Val Ser Pro Tyr Asp Thr Ala
65 70 75 80

Trp Val Ala Leu Ile Lys Asp Leu Gln Gly Arg Asp Ala Pro Glu Phe
85 90 95

Pro Ser Ser Leu Glu Trp Ile Ile Gln Asn Gln Leu Ala Asp Gly Ser
100 105 110

Trp Gly Asp Ala Lys Phe Phe Cys Val Tyr Asp Arg Leu Val Asn Thr
115 120 125

Ile Ala Cys Val Val Ala Leu Arg Ser Trp Asp Val His Ala Glu Lys
130 135 140

Val Glu Arg Gly Val Arg Tyr Ile Asn Glu Asn Val Glu Lys Leu Arg
145 150 155 160

Asp Gly Asn Glu Glu His Met Thr Cys Gly Phe Glu Val Val Phe Pro
165 170 175

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

Asp Ala Pro Val Ile Gln Glu Ile Tyr His Ser Arg Glu Gln Lys Ser
195 200 205

Lys Arg Ile Pro Leu Glu Met Met His Lys Val Pro Thr Ser Leu Leu
210 215 220

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

Leu Gln Ser Ala Asp Gly Ser Phe Leu Thr Ser Pro Ser Ser Thr Ala
245 250 255

Phe Ala Phe Met Gln Thr Arg Asp Pro Lys Cys Tyr Gln Phe Ile Lys
260 265 270

Asn Thr Ile Gln Thr Phe Asn Gly Gly Ala Pro His Thr Tyr Pro Val
275 280 285

Asp Val Phe Gly Arg Leu Trp Ala Ile Asp Arg Leu Gln Arg Leu Gly
290 295 300

Ile Ser Arg Phe Phe Glu Ser Glu Ile Ala Asp Cys Ile Ala His Ile
305 310 315 320

His Arg Phe Trp Thr Glu Lys Gly Val Phe Ser Gly Arg Glu Ser Glu
325 330 335

Phe Cys Asp Ile Asp Asp Thr Ser Met Gly Val Arg Leu Met Arg Met
340 345 350

His Gly Tyr Asp Val Asp Pro Asn Val Leu Lys Asn Phe Lys Lys Asp
355 360 365

Asp Lys Phe Ser Cys Tyr Gly Gly Gln Met Ile Glu Ser Pro Ser Pro
370 375 380

Ile Tyr Asn Leu Tyr Arg Ala Ser Gln Leu Arg Phe Pro Gly Glu Gln
385 390 395 400

Ile Leu Glu Asp Ala Asn Lys Phe Ala Tyr Asp Phe Leu Gln Glu Lys
405 410 415

Leu Ala His Asn Gln Ile Leu Asp Lys Trp Val Ile Ser Lys His Leu
420 425 430

Pro Asp Glu Ile Lys Leu Gly Leu Glu Met Pro Trp Tyr Ala Thr Leu
435 440 445

Pro Arg Val Glu Ala Arg Tyr Tyr Ile Gln Tyr Tyr Ala Gly Ser Gly
450 455 460

Asp Val Trp Ile Gly Lys Thr Leu Tyr Arg Met Pro Glu Ile Ser Asn
465 470 475 480

Asp Thr Tyr His Glu Leu Ala Lys Thr Asp Phe Lys Arg Cys Gln Ala
485 490 495

Gln His Gln Phe Glu Trp Ile Tyr Met Gln Glu Trp Tyr Glu Ser Cys
500 505 510

Asn Met Glu Glu Phe Gly Ile Ser Arg Lys Glu Leu Leu Val Ala Tyr
515 520 525

Phe Leu Ala Thr Ala Ser Ile Phe Glu Leu Glu Arg Ala Asn Glu Arg
530 535 540

Ile Ala Trp Ala Lys Ser Gln Ile Ile Ser Thr Ile Ile Ala Ser Phe
545 550 555 560

Phe Asn Asn Gln Asn Thr Ser Pro Glu Asp Lys Leu Ala Phe Leu Thr
565 570 575

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

Gln Phe Leu Glu Gly Phe Asp Arg Tyr Thr Ser His Gln Leu Lys Asn
595 600 605

Ala Trp Ser Val Trp Leu Arg Lys Leu Gln Gln Gly Glu Gly Asn Gly
610 615 620

Gly Ala Asp Ala Glu Leu Leu Val Asn Thr Leu Asn Ile Cys Ala Gly
625 630 635 640

His Ile Ala Phe Arg Glu Glu Ile Leu Ala His Asn Asp Tyr Lys Thr
645 650 655

Leu Ser Asn Leu Thr Ser Lys Ile Cys Arg Gln Leu Ser Gln Ile Gln
660 665 670

Asn Glu Lys Glu Leu Glu Thr Glu Gly Gln Lys Thr Ser Ile Lys Asn
675 680 685

Lys Glu Leu Glu Glu Asp Met Gln Arg Leu Val Lys Leu Val Leu Glu
690 695 700

Lys Ser Arg Val Gly Ile Asn Arg Asp Met Lys Lys Thr Phe Leu Ala
705 710 715 720

Val Val Lys Thr Tyr Tyr Tyr Lys Ala Tyr His Ser Ala Gln Ala Ile
725 730 735

Asp Asn His Met Phe Lys Val Leu Phe Glu Pro Val Ala
740 745

<210> 78
<211> 567
<212> PRT
<213> Plectranthus barbatus

<400> 78

Met Ile Thr Ser Lys Ser Ser Ala Ala Val Lys Cys Ser Leu Thr Thr
1 5 10 15

Pro Thr Asp Leu Met Gly Lys Ile Lys Glu Val Phe Asn Arg Glu Val
20 25 30

Asp Thr Ser Pro Ala Ala Met Thr Thr His Ser Thr Asp Ile Pro Ser
35 40 45

Asn Leu Cys Ile Ile Asp Thr Leu Gln Arg Leu Gly Ile Asp Gln Tyr
50 55 60

Phe Gln Ser Glu Ile Asp Ala Val Leu His Asp Thr Tyr Arg Leu Trp
65 70 75 80

Gln Leu Lys Lys Lys Asp Ile Phe Ser Asp Ile Thr Thr His Ala Met

85

90

95

Ala Phe Arg Leu Leu Arg Val Lys Gly Tyr Glu Val Ala Ser Asp Glu
 100 105 110

Leu Ala Pro Tyr Ala Asp Gln Glu Arg Ile Asn Leu Gln Thr Ile Asp
 115 120 125

Val Pro Thr Val Val Glu Leu Tyr Arg Ala Ala Gln Glu Arg Leu Thr
 130 135 140

Glu Glu Asp Ser Thr Leu Glu Lys Leu Tyr Val Trp Thr Ser Ala Phe
 145 150 155 160

Leu Lys Gln Gln Leu Leu Thr Asp Ala Ile Pro Asp Lys Lys Leu His
 165 170 175

Lys Gln Val Glu Tyr Tyr Leu Lys Asn Tyr His Gly Ile Leu Asp Arg
 180 185 190

Met Gly Val Arg Arg Asn Leu Asp Leu Tyr Asp Ile Ser His Tyr Lys
 195 200 205

Ser Leu Lys Ala Ala His Arg Phe Tyr Asn Leu Ser Asn Glu Asp Ile
 210 215 220

Leu Ala Phe Ala Arg Gln Asp Phe Asn Ile Ser Gln Ala Gln His Gln
 225 230 235 240

Lys Glu Leu Gln Gln Leu Gln Arg Trp Tyr Ala Asp Cys Arg Leu Asp
 245 250 255

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

Ser Ala Met Ile Gly Asp Pro Glu Leu Ser Asp Leu Arg Leu Ala Phe
 275 280 285

Ala Lys His Ile Val Leu Val Thr Arg Ile Asp Asp Phe Phe Asp His
290 295 300

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

Trp Lys Glu Lys Pro Ala Gly Glu Tyr Val Ser Glu Glu Val Glu Ile
325 330 335

Leu Phe Thr Ala Val Tyr Asn Thr Val Asn Glu Leu Ala Glu Met Ala
340 345 350

His Ile Glu Gln Gly Arg Ser Val Lys Asp Leu Leu Val Lys Leu Trp
355 360 365

Val Glu Ile Leu Ser Val Phe Arg Ile Glu Leu Asp Thr Trp Thr Asn
370 375 380

Asp Thr Ala Leu Thr Leu Glu Glu Tyr Leu Ser Gln Ser Trp Val Ser
385 390 395 400

Ile Gly Cys Arg Ile Cys Ile Leu Ile Ser Met Gln Phe Gln Gly Val
405 410 415

Lys Leu Ser Asp Glu Met Leu Gln Ser Glu Glu Cys Thr Asp Leu Cys
420 425 430

Arg Tyr Val Ser Met Val Asp Arg Leu Leu Asn Asp Val Gln Thr Phe
435 440 445

Glu Lys Glu Arg Lys Glu Asn Thr Gly Asn Ser Val Ser Leu Leu Gln
450 455 460

Ala Ala His Lys Asp Glu Arg Val Ile Asn Glu Glu Glu Ala Cys Ile
465 470 475 480

Lys Val Lys Glu Leu Ala Glu Tyr Asn Arg Arg Lys Leu Met Gln Ile

485

490

495

Val Tyr Lys Thr Gly Thr Ile Phe Pro Arg Lys Cys Lys Asp Leu Phe
 500 505 510

Leu Lys Ala Cys Arg Ile Gly Cys Tyr Leu Tyr Ser Ser Gly Asp Glu
 515 520 525

Phe Thr Ser Pro Gln Gln Met Met Glu Asp Met Lys Ser Leu Val Tyr
 530 535 540

Glu Pro Leu Pro Ile Ser Pro Pro Glu Ala Asn Asn Ala Ser Gly Glu
 545 550 555 560

Lys Met Ser Cys Val Ser Asn
 565

<210> 79
 <211> 722
 <212> PRT
 <213> Plectranthus barbatus

<400> 79

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

Ser Asp Glu Ser Ser Leu Leu Ser Arg Pro Thr Ala Ala Leu His Ile
 20 25 30

Lys Lys Gln Lys Phe Ser Val Gly Ala Ala Leu Tyr Gln Asp Asn Thr
 35 40 45

Asn Asp Val Val Pro Ser Gly Glu Gly Leu Thr Arg Gln Lys Pro Arg
 50 55 60

Thr Leu Ser Phe Thr Gly Glu Lys Pro Ser Thr Pro Ile Leu Asp Thr
 65 70 75 80

Ile Asn Tyr Pro Ile His Met Lys Asn Leu Ser Val Glu Glu Leu Glu
85 90 95

Ile Leu Ala Asp Glu Leu Arg Glu Glu Ile Val Tyr Thr Val Ser Lys
100 105 110

Thr Gly Gly His Leu Ser Ser Ser Leu Gly Val Ser Glu Leu Thr Val
115 120 125

Ala Leu His His Val Phe Asn Thr Pro Asp Asp Lys Ile Ile Trp Asp
130 135 140

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

Arg Met His Thr Ile Arg Gln Thr Phe Gly Leu Ala Gly Phe Pro Lys
165 170 175

Arg Asp Glu Ser Pro His Asp Ala Phe Gly Ala Gly His Ser Ser Thr
180 185 190

Ser Ile Ser Ala Gly Leu Gly Met Ala Val Gly Arg Asp Leu Leu Gln
195 200 205

Lys Asn Asn His Val Ile Ser Val Ile Gly Asp Gly Ala Met Thr Ala
210 215 220

Gly Gln Ala Tyr Glu Ala Met Asn Asn Ala Gly Phe Leu Asp Ser Asn
225 230 235 240

Leu Ile Ile Val Leu Asn Asp Asn Lys Gln Val Ser Leu Pro Thr Ala
245 250 255

Thr Val Asp Gly Pro Ala Pro Pro Val Gly Ala Leu Ser Lys Ala Leu
260 265 270

Thr Lys Leu Gln Ala Ser Arg Lys Phe Arg Gln Leu Arg Glu Ala Ala
275 280 285

Lys Gly Met Thr Lys Gln Met Gly Asn Gln Ala His Glu Ile Ala Ser
290 295 300

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

Leu Phe Glu Glu Leu Gly Ile Tyr Tyr Ile Gly Pro Val Asp Gly His
325 330 335

Asn Ile Glu Asp Leu Val Tyr Ile Phe Lys Lys Val Lys Glu Met Pro
340 345 350

Ala Pro Gly Pro Val Leu Ile His Ile Ile Thr Glu Lys Gly Lys Gly
355 360 365

Tyr Pro Pro Ala Glu Val Ala Ala Asp Lys Met His Gly Val Val Lys
370 375 380

Phe Asp Pro Thr Thr Gly Lys Gln Met Lys Val Lys Thr Lys Thr Gln
385 390 395 400

Ser Tyr Thr Gln Tyr Phe Ala Glu Ser Leu Val Ala Glu Ala Glu Gln
405 410 415

Asp Glu Lys Val Val Ala Ile His Ala Ala Met Gly Gly Gly Thr Gly
420 425 430

Leu Asn Ile Phe Gln Lys Arg Phe Pro Asp Arg Cys Phe Asp Val Gly
435 440 445

Ile Ala Glu Gln His Ala Val Thr Phe Ala Ala Gly Leu Ala Thr Glu
450 455 460

Gly Leu Lys Pro Phe Cys Thr Ile Tyr Ser Ser Phe Leu Gln Arg Gly
465 470 475 480

Tyr Asp Gln Val Val His Asp Val Asp Leu Gln Lys Leu Pro Val Arg
485 490 495

Phe Met Met Asp Arg Ala Gly Leu Val Gly Ala Asp Gly Pro Thr His
500 505 510

Cys Gly Ala Phe Asp Thr Thr Tyr Met Ala Cys Leu Pro Asn Met Val
515 520 525

Val Met Ala Pro Ser Asp Glu Ala Glu Leu Met His Met Val Ala Thr
530 535 540

Ala Ala Val Ile Asp Asp Arg Pro Ser Cys Val Arg Tyr Pro Arg Gly
545 550 555 560

Asn Gly Ile Gly Val Pro Leu Pro Pro Asn Asn Lys Gly Ile Pro Leu
565 570 575

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

Leu Gly Phe Gly Thr Ile Val Gln Asn Cys Leu Ala Ala Ala Gln Leu
595 600 605

Leu Gln Glu His Gly Ile Ser Val Ser Val Ala Asp Ala Arg Phe Cys
610 615 620

Lys Pro Leu Asp Gly Asp Leu Ile Lys Asn Leu Val Lys Glu His Glu
625 630 635 640

Val Leu Ile Thr Val Glu Glu Gly Ser Ile Gly Gly Phe Ser Ala His
645 650 655

Val Ser His Phe Leu Ser Leu Asn Gly Leu Leu Asp Gly Asn Leu Lys
660 665 670

Trp Arg Pro Met Val Leu Pro Asp Arg Tyr Ile Asp His Gly Ala Tyr
675 680 685

Pro Asp Gln Ile Glu Glu Ala Gly Leu Ser Ser Lys His Ile Ala Gly
690 695 700

Thr Val Leu Ser Leu Ile Gly Gly Gly Lys Asp Ser Leu His Leu Ile
705 710 715 720

Asn Met

<210> 80

<211> 525

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 80

Met Asp Gln Leu Val Lys Thr Glu Val Thr Lys Lys Ser Phe Thr Ala
1 5 10 15

Pro Val Gln Lys Ala Ser Thr Pro Val Leu Thr Asn Lys Thr Val Ile
20 25 30

Ser Gly Ser Lys Val Lys Ser Leu Ser Ser Ala Gln Ser Ser Ser Ser
35 40 45

Gly Pro Ser Ser Ser Ser Glu Glu Asp Asp Ser Arg Asp Ile Glu Ser
50 55 60

Leu Asp Lys Lys Ile Arg Pro Leu Glu Glu Leu Glu Ala Leu Leu Ser
65 70 75 80

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

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

Thr Thr Arg Ala Val Ala Val Arg Arg Lys Ala Leu Ser Ile Leu Ala

115

120

125

Glu Ala Pro Val Leu Ala Ser Asp Arg Leu Pro Tyr Lys Asn Tyr Asp
 130 135 140

Tyr Asp Arg Val Phe Gly Ala Cys Cys Glu Asn Val Ile Gly Tyr Met
 145 150 155 160

Pro Leu Pro Val Gly Val Ile Gly Pro Leu Val Ile Asp Gly Thr Ser
 165 170 175

Tyr His Ile Pro Met Ala Thr Thr Glu Gly Cys Leu Val Ala Ser Ala
 180 185 190

Met Arg Gly Cys Lys Ala Ile Asn Ala Gly Gly Gly Ala Thr Thr Val
 195 200 205

Leu Thr Lys Asp Gly Met Thr Arg Gly Pro Val Val Arg Phe Pro Thr
 210 215 220

Leu Lys Arg Ser Gly Ala Cys Lys Ile Trp Leu Asp Ser Glu Glu Gly
 225 230 235 240

Gln Asn Ala Ile Lys Lys Ala Phe Asn Ser Thr Ser Arg Phe Ala Arg
 245 250 255

Leu Gln His Ile Gln Thr Cys Leu Ala Gly Asp Leu Leu Phe Met Arg
 260 265 270

Phe Arg Thr Thr Thr Gly Asp Ala Met Gly Met Asn Met Ile Ser Lys
 275 280 285

Gly Val Glu Tyr Ser Leu Lys Gln Met Val Glu Glu Tyr Gly Trp Glu
 290 295 300

Asp Met Glu Val Val Ser Val Ser Gly Asn Tyr Cys Thr Asp Lys Lys
 305 310 315 320

Pro Ala Ala Ile Asn Trp Ile Glu Gly Arg Gly Lys Ser Val Val Ala
325 330 335

Glu Ala Thr Ile Pro Gly Asp Val Val Arg Lys Val Leu Lys Ser Asp
340 345 350

Val Ser Ala Leu Val Glu Leu Asn Ile Ala Lys Asn Leu Val Gly Ser
355 360 365

Ala Met Ala Gly Ser Val Gly Gly Phe Asn Ala His Ala Ala Asn Leu
370 375 380

Val Thr Ala Val Phe Leu Ala Leu Gly Gln Asp Pro Ala Gln Asn Val
385 390 395 400

Glu Ser Ser Asn Cys Ile Thr Leu Met Lys Glu Val Asp Gly Asp Leu
405 410 415

Arg Ile Ser Val Ser Met Pro Ser Ile Glu Val Gly Thr Ile Gly Gly
420 425 430

Gly Thr Val Leu Glu Pro Gln Gly Ala Met Leu Asp Leu Leu Gly Val
435 440 445

Arg Gly Pro His Ala Thr Ala Pro Gly Thr Asn Ala Arg Gln Leu Ala
450 455 460

Arg Ile Val Ala Cys Ala Val Leu Ala Gly Glu Leu Ser Leu Cys Ala
465 470 475 480

Ala Leu Ala Ala Gly His Leu Val Gln Ser His Met Thr His Asn Arg
485 490 495

Lys Pro Ala Glu Pro Thr Lys Pro Asn Asn Leu Asp Ala Thr Asp Ile
500 505 510

Asn Arg Leu Lys Asp Gly Ser Val Thr Cys Ile Lys Ser

515

520

525

<210> 81

<211> 297

<212> PRT

<213> Synechococcus sp

<400> 81

Met Val Ala Gln Thr Phe Asn Leu Asp Thr Tyr Leu Ser Gln Arg Gln
 1 5 10 15

Gln Gln Val Glu Glu Ala Leu Ser Ala Ala Leu Val Pro Ala Tyr Pro
 20 25 30

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

Arg Leu Arg Pro Ile Leu Cys Leu Ala Ala Cys Glu Leu Ala Gly Gly
 50 55 60

Ser Val Glu Gln Ala Met Pro Thr Ala Cys Ala Leu Glu Met Ile His
 65 70 75 80

Thr Met Ser Leu Ile His Asp Asp Leu Pro Ala Met Asp Asn Asp Asp
 85 90 95

Phe Arg Arg Gly Lys Pro Thr Asn His Lys Val Phe Gly Glu Asp Ile
 100 105 110

Ala Ile Leu Ala Gly Asp Ala Leu Leu Ala Tyr Ala Phe Glu His Ile
 115 120 125

Ala Ser Gln Thr Arg Gly Val Pro Pro Gln Leu Val Leu Gln Val Ile
 130 135 140

Ala Arg Ile Gly His Ala Val Ala Ala Thr Gly Leu Val Gly Gly Gln
 145 150 155 160

Val Val Asp Leu Glu Ser Glu Gly Lys Ala Ile Ser Leu Glu Thr Leu
165 170 175

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

Val Ser Gly Gly Ile Leu Ala Gly Ala Asp Glu Glu Leu Leu Ala Arg
195 200 205

Leu Ser His Tyr Ala Arg Asp Ile Gly Leu Ala Phe Gln Ile Val Asp
210 215 220

Asp Ile Leu Asp Val Thr Ala Thr Ser Glu Gln Leu Gly Lys Thr Ala
225 230 235 240

Gly Lys Asp Gln Ala Ala Ala Lys Ala Thr Tyr Pro Ser Leu Leu Gly
245 250 255

Leu Glu Ala Ser Arg Gln Lys Ala Glu Glu Leu Ile Gln Ser Ala Lys
260 265 270

Glu Ala Leu Arg Pro Tyr Gly Ser Gln Ala Glu Pro Leu Leu Ala Leu
275 280 285

Ala Asp Phe Ile Thr Arg Arg Gln His
290 295