

SEQUENCE LISTING

<110> BioPhero ApS

<120> Improved methods and cells for increasing enzyme activity and production of insect pheromones

<130> P5860PC00

<160> 192

<170> PatentIn version 3.5

<210> 1

<211> 336

<212> PRT

<213> Agrotis segetum

<400> 1

Met Ala Gln Gly Val Gln Thr Thr Thr Ile Leu Arg Glu Glu Glu Pro
1 5 10 15

Ser Leu Thr Phe Val Val Pro Gln Glu Pro Arg Lys Tyr Gln Ile Val
20 25 30

Tyr Pro Asn Leu Ile Thr Phe Gly Tyr Trp His Ile Ala Gly Leu Tyr
35 40 45

Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp Gln Thr Ile Leu Phe
50 55 60

Ser Phe Met Leu Val Val Leu Ala Glu Leu Gly Ile Thr Ala Gly Ala
65 70 75 80

His Arg Leu Trp Ala His Lys Thr Tyr Lys Ala Lys Leu Pro Leu Gln
85 90 95

Ile Ile Leu Met Ile Leu Asn Ser Ile Ala Phe Gln Asn Ser Ala Ile
100 105 110

Asp Trp Val Arg Asp His Arg Leu His His Lys Tyr Ser Asp Thr Asp
115 120 125

Ala Asp Pro His Asn Ala Thr Arg Gly Phe Phe Tyr Ser His Val Gly
130 135 140

Trp Leu Leu Val Arg Lys His Pro Glu Val Lys Arg Arg Gly Lys Glu
145 150 155 160

Leu Asp Met Ser Asp Ile Tyr Asn Asn Pro Val Leu Arg Phe Gln Lys
165 170 175

Lys Tyr Ala Ile Pro Phe Ile Gly Ala Met Cys Phe Gly Leu Pro Thr
180 185 190

Phe Ile Pro Val Tyr Phe Trp Gly Glu Thr Trp Ser Asn Ala Trp His
195 200 205

Ile Thr Met Leu Arg Tyr Ile Leu Asn Leu Asn Ile Thr Phe Leu Val
210 215 220

Asn Ser Ala Ala His Ile Trp Gly Tyr Lys Pro Tyr Asp Ile Lys Ile
225 230 235 240

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

Ser Ile Thr Thr Thr Thr Phe Phe Pro Trp Asp Tyr Arg Ala Ala Glu
260 265 270

Leu Gly Asn Asn Tyr Leu Asn Leu Thr Thr Lys Phe Ile Asp Phe Phe
275 280 285

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

Ile Lys Ser Lys Ala Glu Arg Thr Gly Asp Gly Thr Asn Leu Trp Gly
305 310 315 320

Leu Glu Asp Lys Gly Glu Glu Asp Phe Leu Lys Ile Trp Lys Asp Asn
325 330 335

<210> 2
<211> 326
<212> PRT
<213> Amyelois transitella

<400> 2

Met Val Pro Asn Lys Gly Ser Ser Asp Val Leu Ser Glu His Ser Glu
1 5 10 15

Pro Gln Phe Thr Lys Leu Ile Ala Pro Gln Ala Gly Pro Arg Lys Tyr
20 25 30

Lys Ile Val Tyr Arg Asn Leu Leu Thr Phe Gly Tyr Trp His Leu Ser
35 40 45

Ala Val Tyr Gly Leu Tyr Leu Cys Phe Thr Cys Ala Lys Trp Ala Thr
50 55 60

Ile Leu Phe Ala Phe Phe Leu Tyr Val Ile Ala Glu Ile Gly Ile Thr
65 70 75 80

Gly Gly Ala His Arg Leu Trp Ala His Arg Thr Tyr Lys Ala Lys Leu
 85 90 95

Pro Leu Glu Ile Leu Leu Leu Ile Met Asn Ser Ile Ala Phe Gln Asp
 100 105 110

Thr Ala Phe Thr Trp Ala Arg Asp His Arg Leu His His Lys Tyr Ser
 115 120 125

Asp Thr Asp Ala Asp Pro His Asn Ala Thr Arg Gly Phe Phe Tyr Ser
 130 135 140

His Val Gly Trp Leu Leu Val Lys Lys His Pro Glu Val Lys Ala Arg
 145 150 155 160

Gly Lys Tyr Leu Ser Leu Asp Asp Leu Lys Asn Asn Pro Leu Leu Lys
 165 170 175

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

Met Pro Thr Phe Val Pro Val Tyr Phe Trp Gly Glu Gly Ile Ser Thr
 195 200 205

Ala Trp Asn Ile Asn Leu Leu Arg Tyr Val Met Asn Leu Asn Met Thr
 210 215 220

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

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

Gly Glu Gly Phe His Asn Tyr His His Thr Tyr Pro Trp Asp Tyr Arg
 260 265 270

Ala Ala Glu Leu Gly Asn Asn Arg Leu Asn Met Thr Thr Ala Phe Ile
 275 280 285

Asp Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Ser Val Pro
 290 295 300

Gln Glu Ala Ile Ala Lys Arg Cys Ala Lys Thr Gly Asp Gly Thr Asp
 305 310 315 320

Met Trp Gly Arg Lys Arg
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<210> 3
<211> 351
<212> PRT
<213> Amyelois transitella

<400> 3

Met Pro Pro Gln Gly Gln Asp Arg Glu Ser Trp Val Leu Tyr Glu Thr
1 5 10 15

Asp Asp Lys Thr Gln Asp Gly Gly Thr His Val Val Pro Pro Ser Ala
20 25 30

Glu Lys Arg Val Trp Lys Ile Val Trp Arg Asn Val Ile Ala Phe Ala
35 40 45

Leu Leu His Ile Gly Gly Val Tyr Gly Ala Tyr Leu Phe Leu Phe Lys
50 55 60

Ala Met Trp Leu Thr Asp Leu Phe Ala Val Phe Leu Tyr Leu Cys Ser
65 70 75 80

Gly Leu Gly Val Thr Ala Gly Ala His Arg Leu Trp Ala His Lys Ser
85 90 95

Tyr Lys Ala Arg Leu Pro Leu Arg Leu Leu Leu Thr Val Phe Asn Thr
100 105 110

Ile Ala Phe Gln Asp Ala Val Ile Asp Trp Ala Arg Asp His Arg Leu
115 120 125

His His Lys Tyr Ser Glu Thr Asp Ala Asp Pro His Asn Ala Thr Arg
130 135 140

Gly Phe Phe Phe Ser His Ile Gly Trp Leu Leu Val Arg Lys His Pro
145 150 155 160

Gln Ile Lys Glu Lys Gly Pro Thr Ile Asp Leu Asn Asp Leu Arg Ala
165 170 175

Asp Pro Val Leu His Phe Gln Lys Lys Tyr Tyr Leu Tyr Leu Met Pro
180 185 190

Leu Ala Cys Phe Val Met Pro Thr Leu Val Pro Thr Leu Trp Gly Glu
195 200 205

Ser Leu Trp Asn Ala Tyr Phe Val Cys Ala Ile Phe Arg Tyr Ile Tyr
210 215 220

Val Leu Asn Val Thr Trp Leu Val Asn Ser Ala Ala His Ala Trp Gly

225 230 235 240

 Ser Lys Pro Tyr Asp Lys Asn Ile Asn Pro Val Glu Thr Lys Pro Val
 245 250 255

 Ser Leu Val Val Leu Gly Glu Gly Phe His Asn Tyr His His Thr Phe
 260 265 270

 Pro Trp Asp Tyr Lys Thr Ala Glu Leu Gly Asp Tyr Ser Leu Asn Phe
 275 280 285

 Ser Lys Leu Phe Ile Asp Ala Met Ala Lys Ile Gly Trp Ala Tyr Asp
 290 295 300

 Leu Lys Thr Val Ser Pro Asp Val Ile Glu Lys Arg Val Lys Arg Thr
 305 310 315 320

 Gly Asp Gly Ser His His Val Trp Gly Trp Asp Asp Lys Asp Val Pro
 325 330 335

 Val Glu Glu Lys Glu Glu Ala Thr Ile Phe Asn Pro Ser Lys Asp
 340 345 350

 <210> 4
 <211> 352
 <212> PRT
 <213> Amyelois transitella

 <400> 4

 Met Ala Pro Asn Ala Thr Asp Ala Asn Gly Val Leu Phe Glu Thr Asp
 1 5 10 15

 Ala Ala Thr Pro Asp Leu Ala Leu Pro His Ala Pro Val Gln Gln Ala
 20 25 30

 Asp Asn Tyr Pro Lys Lys Tyr Val Trp Arg Asn Ile Ile Leu Phe Ala
 35 40 45

 Tyr Leu His Ile Ala Ala Leu Tyr Gly Gly Tyr Leu Phe Leu Phe His
 50 55 60

 Ala Lys Trp Gln Thr Asp Ile Phe Ala Tyr Ile Leu Tyr Val Met Ser
 65 70 75 80

 Gly Leu Gly Ile Thr Ala Gly Ala His Arg Leu Trp Ala His Lys Ser
 85 90 95

 Tyr Lys Ala Lys Trp Pro Leu Arg Leu Ile Leu Val Ile Phe Asn Thr
 100 105 110

Leu Ala Phe Gln Asp Ser Ala Ile Asp Trp Ser Arg Asp His Arg Met
115 120 125

His His Lys Tyr Ser Glu Thr Asp Ala Asp Pro His Asn Ala Thr Arg
130 135 140

Gly Phe Phe Phe Ser His Ile Gly Trp Leu Leu Val Arg Lys His Pro
145 150 155 160

Glu Leu Lys Arg Lys Gly Lys Gly Leu Asp Leu Ser Asp Leu Tyr Ala
165 170 175

Asp Pro Ile Leu Arg Phe Gln Lys Lys Tyr Tyr Leu Ile Leu Met Pro
180 185 190

Leu Thr Cys Phe Val Leu Pro Thr Val Ile Pro Val Tyr Tyr Trp Gly
195 200 205

Glu Thr Trp Thr Asn Ala Phe Phe Val Ala Ala Leu Phe Arg Tyr Ala
210 215 220

Phe Ile Leu Asn Val Thr Trp Leu Val Asn Ser Ala Ala His Lys Trp
225 230 235 240

Gly Asp Lys Pro Tyr Asp Arg Asn Ile Lys Pro Ser Glu Asn Ile Ser
245 250 255

Val Ser Met Phe Ala Leu Gly Glu Gly Phe His Asn Tyr His His Thr
260 265 270

Phe Pro Trp Asp Tyr Lys Thr Ala Glu Leu Gly Asn Asn Met Leu Asn
275 280 285

Phe Thr Thr Asn Phe Ile Asn Phe Phe Ala Lys Ile Gly Trp Ala Tyr
290 295 300

Asp Leu Lys Thr Val Ser Asp Glu Ile Val Arg Ser Arg Ala Lys Arg
305 310 315 320

Thr Gly Asp Gly Ser His His Leu Trp Gly Trp Gly Asp Lys Asp His
325 330 335

Ser Arg Glu Glu Met Ala Ala Ala Ile Arg Ile His Pro Lys Asp Asp
340 345 350

<210> 5

<211> 349

<212> PRT

<213> Chauliognathus lugubris

<400> 5

Met Ala Pro Asn Ser Asn Asp Ala Thr Gly Val Leu Gln Glu Thr Asp
1 5 10 15

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

Lys Ser Lys Leu Ile Ile Val Trp Ser Asn Val Met Tyr Phe Val Ile
35 40 45

Leu His Val Gly Ala Leu Tyr Gly Leu Trp Leu Leu Leu Thr Ser Ala
50 55 60

Gln Ile Trp Thr Cys Leu Trp Val Phe Ala Met Tyr Glu Phe Gly Glu
65 70 75 80

Ile Cys Ile Thr Ala Gly Val His Arg Leu Trp Ser His Arg Ser Tyr
85 90 95

Lys Ala Lys Trp Pro Leu Arg Leu Phe His Thr Met Gly Gln Thr Leu
100 105 110

Ala Phe Gln Asp Ala Val Val Asp Trp Ala Arg Asp His Arg Val His
115 120 125

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

Phe Phe Phe Ser His Met Gly Trp Leu Met Cys Arg Lys Ser Lys Gln
145 150 155 160

Val Lys Glu Lys Gly Lys Glu Pro Asp Ile Ser Asp Leu Tyr Ala Asp
165 170 175

Pro Ile Leu Arg Tyr Gln Lys Lys Tyr Tyr Met Leu Phe Met Pro Leu
180 185 190

Met Cys Phe Ala Phe Pro Thr Val Val Pro Leu Tyr Phe Trp Asn Glu
195 200 205

Ser Leu Lys Thr Ala Phe Phe Val Asn Ile Phe Arg Tyr Ile Phe Ser
210 215 220

Leu His Ala Thr Trp Leu Val Asn Ser Ala Ala His Leu Tyr Gly Glu
225 230 235 240

Lys Pro Tyr Asn Lys His Ile Asn Pro Ala Glu Asn Leu Ala Val Ser
245 250 255

Leu Ile Val Asn Gly Glu Arg Trp His Asn Tyr His His Thr Phe Pro
 260 265 270

Trp Asp Tyr Lys Ala Gly Glu Phe Gly Arg Tyr Gly Thr Asn Leu Thr
 275 280 285

Thr Val Phe Ile Asn Ala Met Ala Lys Ile Gly Leu Ala Tyr Asp Leu
 290 295 300

Lys Phe Val Pro Glu Asp Val Val Lys Arg Arg Val His Lys Thr Gly
 305 310 315 320

Asp Gly Ser His Ala Val Trp Gly Trp Gly Asp Lys Asp Gln Thr Val
 325 330 335

Glu Glu Ile Ser Lys Thr Ile Val Ala Tyr Asn Gln Ser
 340 345

<210> 6
 <211> 371
 <212> PRT
 <213> Chilo supprealis

<400> 6

Met Asp Phe Glu Ser Glu Leu Gln Asn Cys Ser Asn Lys Ser Gln Lys
 1 5 10 15

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

Glu Asp Asp Ala Ala Thr Pro Asp Met Ala Leu Ser Asn Thr Pro Val
 35 40 45

Gln Lys Ala Asp Asn Tyr Pro Lys Lys Leu Val Trp Arg Asn Ile Ile
 50 55 60

Ala Phe Ala Tyr Leu His Ile Ala Ala Val Tyr Gly Gly Tyr Leu Phe
 65 70 75 80

Leu Phe Ala Ala Lys Trp Gln Thr Asp Ile Phe Ala Tyr Ile Leu Tyr
 85 90 95

Val Met Ser Gly Leu Gly Ile Thr Ala Gly Ala His Arg Leu Trp Ala
 100 105 110

His Lys Ser Tyr Lys Ala Lys Trp Pro Leu Arg Leu Ile Leu Val Phe
 115 120 125

Phe Asn Thr Leu Ala Phe Gln Asp Ser Ala Ile Asp Trp Ala Arg Asp
130 135 140

His Arg Met His His Lys Tyr Ser Glu Thr Asp Ala Asp Pro His Asn
145 150 155 160

Ala Thr Arg Gly Phe Phe Phe Ser His Ile Gly Trp Leu Leu Val Arg
165 170 175

Lys His Pro Glu Leu Lys Gln Lys Gly Lys Gly Leu Asp Leu Ser Asp
180 185 190

Leu Tyr Ala Asp Pro Ile Leu Arg Phe Gln Lys Lys Tyr Tyr Leu Ile
195 200 205

Leu Met Pro Ile Ala Cys Phe Ile Leu Pro Thr Val Ile Pro Leu Tyr
210 215 220

Tyr Trp Gly Glu Asn Trp Val Thr Ala Phe Phe Val Ala Ala Leu Phe
225 230 235 240

Arg Tyr Ala Phe Ile Leu Asn Val Thr Trp Leu Val Asn Ser Ala Ala
245 250 255

His Lys Trp Gly Asp Lys Pro Tyr Asp Lys Asn Ile Lys Pro Ser Glu
260 265 270

Asn Ile Ser Val Ser Ile Phe Ala Leu Gly Glu Gly Phe His Asn Tyr
275 280 285

His His Thr Phe Pro Trp Asp Tyr Lys Thr Ala Glu Leu Gly Asn Asn
290 295 300

Arg Leu Asn Phe Thr Thr Asn Phe Ile Asn Phe Phe Ala Lys Ile Gly
305 310 315 320

Trp Ala Tyr Asp Met Lys Thr Val Ser Asp Glu Ile Val Gln Ser Arg
325 330 335

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

Lys Asp His Cys Lys Glu Glu Val Ala Ala Ala Ile Arg Ile Asn Pro
355 360 365

Lys Asp Asp
370

<210> 7

<211> 334
<212> PRT
<213> Choristoneura parallela

<400> 7

Met Ala Pro Asn Val Glu Asp Met Glu Ser Asp Met Pro Glu Ser Glu
1 5 10 15

Lys Trp Glu Lys Leu Val Ala Pro Gln Ala Ala Pro Arg Lys Tyr Glu
20 25 30

Ile Ile Tyr Thr Asn Leu Leu Thr Phe Gly Tyr Gly His Ile Ala Gly
35 40 45

Leu Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp Gln Thr Val
50 55 60

Ile Leu Ala Ile Ile Leu Asn Glu Met Ala Ile Leu Gly Ile Thr Ala
65 70 75 80

Gly Ala His Arg Leu Trp Ser His Arg Ser Tyr Lys Ala Ala Val Pro
85 90 95

Leu Gln Ile Ile Leu Met Ile Phe Asn Ser Leu Ala Phe Gln Asn Ser
100 105 110

Ala Ile Asn Trp Val Arg Asp His Arg Met His His Lys Tyr Ser Asp
115 120 125

Thr Asp Gly Asp Pro His Asn Ala Ser Arg Gly Phe Phe Tyr Ser His
130 135 140

Val Gly Trp Leu Leu Val Lys Lys His Pro Glu Val Lys Lys Arg Gly
145 150 155 160

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

Gln Lys Lys Tyr Ala Ile Pro Phe Ile Gly Met Ile Cys Phe Val Leu
180 185 190

Pro Thr Ile Ile Pro Met Tyr Phe Trp Gly Glu Thr Leu Ser Asn Ala
195 200 205

Trp His Ile Thr Met Leu Arg Tyr Val Phe Ser Leu Asn Ser Ile Phe
210 215 220

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

Asn Ile Leu Pro Ala Glu Asn Lys Ile Ala Leu Ile Ala Cys Leu Gly
245 250 255

Asp Ser Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg Ala
260 265 270

Ser Glu Leu Gly Asn Ile Gly Met Asn Trp Thr Ala Gln Phe Ile Asp
275 280 285

Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Ala Ser Asp
290 295 300

Glu Asn Ile Asn Ser Arg Met Lys Arg Thr Gly Asp Gly Thr Asp Ile
305 310 315 320

Ser Gly Gln Lys Tyr Ser Cys Glu Ser Ser Glu Val Leu Gln
325 330

<210> 8
<211> 335
<212> PRT
<213> Choristoneura rosaceana

<400> 8

Met Ala Pro Asn Val Glu Asp Met Glu Ser Asp Leu Pro Glu Ser Glu
1 5 10 15

Glu Lys Leu Glu Lys Leu Val Ala Pro Gln Ala Ala Pro Arg Lys Tyr
20 25 30

Gln Ile Ile Tyr Thr Asn Leu Leu Thr Phe Gly Tyr Trp His Ile Ala
35 40 45

Gly Leu Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp Gln Thr
50 55 60

Ile Ile Leu Ala Leu Ile Leu Asn Glu Met Ala Ile Leu Gly Ile Thr
65 70 75 80

Ala Gly Ala His Arg Leu Trp Ala His Arg Ser Tyr Lys Ala Thr Val
85 90 95

Pro Leu Gln Ile Ile Leu Ile Ile Phe Asn Ser Leu Ser Phe Gln Asn
100 105 110

Ser Ala Ile His Trp Ile Arg Asp His Arg Met His His Lys Tyr Ser
115 120 125

Asp Thr Asp Gly Asp Pro His Asn Ala Ser Arg Gly Phe Phe Tyr Ser

130

135

140

His Val Gly Trp Leu Leu Val Lys Lys His Pro Glu Val Lys Lys Arg
 145 150 155 160

Ala Lys Thr Ile Asp Met Ser Asp Ile Tyr Ser Asn Pro Ile Leu Arg
 165 170 175

Phe Gln Lys Lys Tyr Ala Ile Pro Phe Ile Gly Met Ile Cys Phe Val
 180 185 190

Leu Pro Thr Ile Ile Pro Met Tyr Phe Trp Gly Glu Thr Leu Ser Asn
 195 200 205

Ala Trp His Ile Thr Met Leu Arg Tyr Val Phe Ser Leu Asn Ser Ile
 210 215 220

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

Lys Asn Ile Leu Pro Ala Glu Asn Lys Met Thr Phe Ile Ala Cys Leu
 245 250 255

Gly Glu Asn Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg
 260 265 270

Ala Ser Glu Leu Gly Asn Ile Gly Met Asn Trp Thr Ala Lys Phe Ile
 275 280 285

Asp Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Ala Ser
 290 295 300

Asp Glu Asn Ile Lys Ser Arg Met Lys Arg Thr Gly Asp Gly Thr Asp
 305 310 315 320

Val Ser Gly Gln Lys Tyr Ser Cys Glu Ser Ser Glu Val Leu Gln
 325 330 335

<210> 9

<211> 348

<212> PRT

<213> Cydia pomonella

<400> 9

Met Pro Pro Arg Glu Ser Lys Lys Val Ala Leu Arg Ser Tyr Glu Thr
 1 5 10 15

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

Leu Phe Leu His Ile Ala Gly His Ile Ser Ala Val Tyr Gly Leu Tyr
 35 40 45

Leu Cys Phe Thr Ala Ala Gln Trp Lys Thr Ile Phe Phe Ala Tyr Leu
 50 55 60

Trp Leu Leu Met Gly Glu Leu Gly Val Val Cys Gly Ala His Arg Leu
 65 70 75 80

Trp Ser His Arg Ser Phe Lys Val Lys Pro Pro Leu Glu Ile Met Leu
 85 90 95

Met Leu Phe Asn Cys Ile Gly Phe Gln Asn Thr Ala Thr Asp Trp Val
 100 105 110

Arg Asn His Arg Leu His His Lys His Ser Asp Thr Asp Ala Asp Pro
 115 120 125

His Asn Ser Asn Arg Gly Met Leu Phe Ser His Ile Gly Trp Leu Cys
 130 135 140

Val Arg Lys His Pro Asp Val Lys Glu Arg Gly Lys Thr Thr Asp Met
 145 150 155 160

Ser Asp Ile Tyr Ser Asn Pro Val Leu Arg Phe Gln Lys Lys His Lys
 165 170 175

Val Pro Leu Phe Gly Ala Met Cys Phe Gly Leu Pro Thr Leu Ile Pro
 180 185 190

Thr Leu Trp Gly Glu Asp Ile Val Thr Ala Trp His Val Asn Leu Leu
 195 200 205

Arg Phe Val Leu Asn Leu Asn Ser Ile Leu Leu Val Asn Ser Ile Ala
 210 215 220

His Lys Tyr Gly Thr Arg Pro Tyr Asp Arg Thr Ile Cys Pro Arg Gln
 225 230 235 240

Asn Thr Thr Cys Asn Met Met Thr Leu Gly Glu Gly Phe His Asn Tyr
 245 250 255

His His Thr Phe Pro Trp Asp Tyr Arg Ser Ala Glu Leu Gly Lys Asn
 260 265 270

Tyr Leu Asn Phe Thr Lys Trp Phe Ile Asp Phe Phe Ala Leu Ile Gly
 275 280 285

Trp Ala Tyr Asp Leu Lys Thr Val Pro Asp Asp Met Ile Gln Arg Arg
290 295 300

Met Lys Arg Thr Gly Asp Gly Ser Asn Ser Trp Gly Trp Gly Asp Lys
305 310 315 320

Asp Met Thr Lys Glu Glu Arg Asp Ser Ala Thr Ile Ile Tyr Pro Glu
325 330 335

Lys Lys Asp Asp Ile Lys Met Ile Ser Lys Lys Asn
340 345

<210> 10
<211> 349
<212> PRT
<213> Cydia pomonella

<400> 10

Met Pro Pro Gln Gly Gln Pro Pro Ala Trp Val Leu Asp Glu Ser Asp
1 5 10 15

Ala Val Thr Glu Asp Lys Asp Val Ala Thr Pro Ala Pro Glu Ala Glu
20 25 30

Lys Arg Lys Leu Gln Ile Val Trp Arg Asn Val Thr Leu Phe Val Phe
35 40 45

Leu His Ile Gly Ala Leu Tyr Gly Gly Tyr Leu Phe Phe Thr Lys Ala
50 55 60

Met Trp Thr Thr Arg Ile Phe Thr Val Leu Leu Tyr Ile Met Ser Gly
65 70 75 80

Leu Gly Ile Thr Ala Gly Ala His Arg Leu Trp Ala His Lys Ser Tyr
85 90 95

Lys Ala Arg Leu Pro Leu Arg Leu Leu Leu Thr Leu Phe Asn Thr Ile
100 105 110

Ala Phe Gln Asp Ser Val Leu Asp Trp Ala Arg Asp His Arg Met His
115 120 125

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

Phe Phe Phe Ser His Val Gly Trp Leu Leu Val Arg Lys His Pro Gln
145 150 155 160

Ile Lys Ala Lys Gly His Thr Ile Asp Met Ser Asp Leu Leu Ala Asp
165 170 175

Pro Val Leu Arg Phe Gln Lys Lys Tyr Tyr Leu Thr Leu Met Pro Leu
 180 185 190

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

Leu Trp Asn Ala Tyr Phe Val Cys Ala Ile Phe Arg Tyr Cys Tyr Val
 210 215 220

Leu Asn Val Thr Trp Leu Val Asn Ser Ala Ala His Lys Trp Gly Asp
 225 230 235 240

Arg Pro Tyr Asp Lys Asn Ile Asn Pro Val Glu Thr Lys Pro Val Ser
 245 250 255

Leu Val Val Phe Gly Glu Gly Phe His Asn Tyr His His Thr Phe Pro
 260 265 270

Trp Asp Tyr Lys Thr Ala Glu Leu Gly Gly Tyr Ser Leu Asn Leu Ser
 275 280 285

Lys Leu Phe Ile Asp Thr Met Ser Lys Ile Gly Trp Ala Tyr Asp Leu
 290 295 300

Lys Ser Val Ser Pro Asp Ile Val Glu Lys Arg Val Lys Arg Thr Gly
 305 310 315 320

Asp Gly Ser His His Val Trp Gly Trp Asp Asp Ala Pro Ser Glu Gln
 325 330 335

Lys Val Ala Ala Thr Ile Val Asn Pro Asp Lys Thr Glu
 340 345

<210> 11
 <211> 334
 <212> PRT
 <213> Cydia pomonella

<400> 11

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

Pro Val Ser Pro Gln Ala Ala Pro Arg Glu Tyr Thr Val Val Tyr Ser
 20 25 30

Val Val Leu Ile Phe Val Tyr Trp His Ile Gly Ala Leu Tyr Gly Leu
 35 40 45

Tyr Leu Gly Phe Thr Ser Ala Lys Trp Ala Thr Ile Ile Phe Asn Tyr
50 55 60

Leu Ile Tyr Val Ser Gly Gly Phe Ala Ile Thr Ala Gly Ser His Arg
65 70 75 80

Leu Trp Ser His Arg Ala Phe Lys Ala Lys Leu Pro Leu Gln Ile Leu
85 90 95

Leu Met Leu Leu Gln Thr Met Ser Cys Gln Lys Ser Val Leu Asn Trp
100 105 110

Val Arg Asp His Arg Leu His His Met Tyr Cys Asp Thr Asp Ala Asp
115 120 125

Pro Tyr Asn Ser Thr Arg Gly Ile Phe Tyr Ser His Ile Gly Trp Leu
130 135 140

Met Val Lys Lys His Pro Glu Val Ile Arg Lys Gly Arg Thr Ile Asp
145 150 155 160

Met Ser Asp Leu Glu Asn Asn Pro Val Leu Lys Phe Gln Lys Lys Phe
165 170 175

Tyr Pro Ile Leu Val Thr Leu Met Ala Phe Ile Leu Pro Ala Leu Ile
180 185 190

Pro Val Ile Phe Trp Gln Glu Ser Leu Asn Ile Ala His His Val Ser
195 200 205

Leu Val His Leu Val Val Gly Ser His Met Thr Phe Ala Ile Asn Ser
210 215 220

Ile Ala His Ala Phe Gly Ser Lys Pro Cys Asp Lys Thr Ile Ser Pro
225 230 235 240

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

Asn Tyr His His Val Phe Pro Phe Asp Tyr Arg Val Ala Glu Leu Gly
260 265 270

Asn Asn Tyr Leu Asn Leu Thr Thr Asn Phe Ile Asp Phe Phe Ala Trp
275 280 285

Ile Gly Trp Ala Tyr Asp Leu Lys Tyr Ala Ser Pro Asp Met Val Ala
290 295 300

Lys Arg Ala Lys Arg Thr Gly Asp Gly Thr Asp Leu Trp Gly Arg Ala

305 310 315 320

Ile Glu His Ala Asp Ile Gln Ala Lys Arg Val His Pro Ser
325 330

<210> 12
<211> 352
<212> PRT
<213> Dendrolimus punctatus

<400> 12

Met Ala Pro Lys Glu Ala Asp Val Asn Gly Val Leu Phe Glu Ser Asp
1 5 10 15

Ala Thr Thr Pro Asp Met Ala Leu Pro Thr Thr Pro Val Gln Gln Ala
20 25 30

Asp Asn Tyr Pro Lys Lys Leu Val Trp Arg Asn Ile Leu Leu Phe Ala
35 40 45

Tyr Leu His Leu Ala Ala Leu Tyr Gly Gly Tyr Leu Phe Leu Phe Ser
50 55 60

Ala Lys Trp Gln Thr Asp Ile Phe Ala Tyr Ile Leu Tyr Ile Met Ser
65 70 75 80

Gly Leu Gly Ile Thr Ala Gly Ala His Arg Leu Trp Ala His Lys Ser
85 90 95

Tyr Lys Ala Lys Trp Pro Leu Arg Leu Ile Leu Val Leu Phe Asn Thr
100 105 110

Leu Ala Phe Gln Asp Ser Ala Ile Asp Trp Ala Arg Asp His Arg Met
115 120 125

His His Lys Tyr Ser Glu Thr Asp Ala Asp Pro His Asn Ala Thr Arg
130 135 140

Gly Phe Phe Phe Ser His Ile Gly Trp Leu Leu Val Arg Lys His Pro
145 150 155 160

Glu Leu Lys Lys Lys Gly Lys Gly Leu Asp Ile Ser Asp Leu Tyr Ala
165 170 175

Asp Pro Ile Leu Arg Phe Gln Lys Lys Tyr Tyr Leu Leu Leu Met Pro
180 185 190

Leu Gly Cys Phe Ile Leu Pro Thr Val Ile Pro Val Tyr Leu Trp Asn
195 200 205

Glu Thr Trp Ser Asn Ala Phe Leu Val Ala Ala Leu Phe Arg Tyr Ala
210 215 220

Val Ile Leu Asn Val Thr Trp Leu Val Asn Ser Ala Ala His Lys Trp
225 230 235 240

Gly Asp Lys Pro Tyr Asp Lys Ser Ile Lys Pro Ser Glu Asn Leu Ser
245 250 255

Val Ala Leu Phe Ala Leu Gly Glu Gly Phe His Asn Tyr His His Thr
260 265 270

Phe Pro Trp Asp Tyr Lys Thr Ala Glu Leu Gly Asn Asn Arg Leu Asn
275 280 285

Phe Thr Thr Thr Phe Ile Asn Phe Phe Ala Lys Ile Gly Trp Ala Tyr
290 295 300

Asp Met Lys Thr Val Ser Asp Glu Ile Ile Gln Asn Arg Val Lys Arg
305 310 315 320

Thr Gly Asp Gly Ser His His Leu Trp Gly Trp Gly Asp Lys Asp His
325 330 335

Ser Lys Glu Glu Ile Asn Ala Ala Ile Arg Ile Asn Pro Lys Asp Asp
340 345 350

<210> 13
<211> 416
<212> PRT
<213> Drosophila grimshawi

<400> 13

Met Phe Ser Glu Tyr Tyr Val Tyr Arg Arg Lys Leu Leu Gly Ile Ser
1 5 10 15

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

Leu Lys Met Pro Pro Asn Ala Ile Ser Ser Pro Pro Asp Ala Leu Pro
35 40 45

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

Gly Ala Ser Lys Gln Thr Gly Val Leu Phe Glu Ala Asp Ala Asp Thr
65 70 75 80

Asn Asp Gly Gly Leu Thr Met Asp Ile Thr Gln Phe Lys Asn Ala Glu

85

90

95

Lys Arg Lys Leu Lys Trp Val Trp Arg Asn Ile Val Leu Phe Ala Tyr
 100 105 110

Val His Val Ala Ala Leu Tyr Gly Gly Tyr Leu Leu Val Thr Gln Ala
 115 120 125

Lys Trp Ala Thr Ile Val Phe Ser Met Phe Leu Tyr Ser Ala Gly Met
 130 135 140

Ile Gly Ile Thr Gly Gly Ala His Arg Leu Trp Ala His Arg Ser Tyr
 145 150 155 160

Lys Ala Lys Trp Pro Leu Arg Val Ile Leu Val Ala Phe Asn Ser Ile
 165 170 175

Ala Phe Gln Asp Ala Ala Tyr His Trp Ala Arg Asp His Arg Val His
 180 185 190

His Lys Phe Ser Glu Thr Asp Ala Asp Pro His Asn Ala Thr Arg Gly
 195 200 205

Phe Phe Phe Ser His Val Gly Trp Leu Leu Cys Lys Lys His Pro Asp
 210 215 220

Val Val Ala Lys Gly Lys Ser Leu Asp Leu Ser Asp Leu Arg Ala Asp
 225 230 235 240

Arg Val Leu Met Phe Gln Lys Lys His Tyr Phe Val Leu Met Pro Leu
 245 250 255

Ala Cys Phe Ile Leu Pro Thr Cys Ile Pro Met Leu Cys Trp Asn Glu
 260 265 270

Ser Leu Leu Cys Ser Val Leu Val Pro Thr Ile Phe Arg Trp Cys Leu
 275 280 285

Gln Leu Asn Met Thr Trp Leu Val Asn Ser Ala Ala His Lys Phe Gly
 290 295 300

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

Ser Leu Phe Thr Leu Gly Glu Gly Trp His Asn Tyr His His Val Phe
 325 330 335

Pro Trp Asp Tyr Lys Thr Ala Glu Trp Gly Asn Tyr Ser Leu Asn Met
 340 345 350

Thr Thr Ala Phe Ile Asp Leu Phe Ala Lys Ile Gly Trp Ala Tyr Asp
 355 360 365
 Leu Lys Ser Val Val Pro Glu Thr Val Glu Arg Arg Val Arg Arg Thr
 370 375 380
 Gly Asp Gly Ser His Glu Leu Trp Gly Trp Gly Asp Lys Asp Leu Thr
 385 390 395 400
 Pro Glu Asp Gly Gln Ser Val Leu His Val Leu Asp Lys Lys Ser Asn
 405 410 415
 <210> 14
 <211> 361
 <212> PRT
 <213> Drosophila melanogaster
 <400> 14
 Met Ala Pro Tyr Ser Arg Ile Tyr His Gln Asp Lys Ser Ser Arg Glu
 1 5 10 15
 Thr Gly Val Leu Phe Glu Asp Asp Ala Gln Thr Val Asp Ser Asp Leu
 20 25 30
 Thr Thr Asp Arg Phe Gln Leu Lys Arg Ala Glu Lys Arg Arg Leu Pro
 35 40 45
 Leu Val Trp Arg Asn Ile Ile Leu Phe Ala Leu Val His Leu Ala Ala
 50 55 60
 Leu Tyr Gly Leu His Ser Ile Phe Thr Arg Ala Lys Leu Ala Thr Thr
 65 70 75 80
 Leu Phe Ala Ala Gly Leu Tyr Ile Ile Gly Met Leu Gly Val Thr Ala
 85 90 95
 Gly Ala His Arg Leu Trp Ala His Arg Thr Tyr Lys Ala Lys Trp Pro
 100 105 110
 Leu Arg Leu Leu Leu Val Ile Phe Asn Thr Ile Ala Phe Gln Asp Ala
 115 120 125
 Val Tyr His Trp Ala Arg Asp His Arg Val His His Lys Tyr Ser Glu
 130 135 140
 Thr Asp Ala Asp Pro His Asn Ala Thr Arg Gly Phe Phe Phe Ser His
 145 150 155 160

Val Gly Trp Leu Leu Cys Lys Lys His Pro Asp Ile Lys Glu Lys Gly
165 170 175

Arg Gly Leu Asp Leu Ser Asp Leu Arg Ala Asp Pro Ile Leu Met Phe
180 185 190

Gln Arg Lys His Tyr Tyr Ile Leu Met Pro Leu Ala Cys Phe Val Leu
195 200 205

Pro Thr Val Ile Pro Met Val Tyr Trp Asn Glu Thr Leu Ala Ser Ser
210 215 220

Trp Phe Val Ala Thr Met Phe Arg Trp Cys Phe Gln Leu Asn Met Thr
225 230 235 240

Trp Leu Val Asn Ser Ala Ala His Lys Phe Gly Asn Arg Pro Tyr Asp
245 250 255

Lys Thr Met Asn Pro Thr Gln Asn Ala Phe Val Ser Ala Phe Thr Phe
260 265 270

Gly Glu Gly Trp His Asn Tyr His His Ala Phe Pro Trp Asp Tyr Lys
275 280 285

Thr Ala Glu Trp Gly Cys Tyr Ser Leu Asn Ile Thr Thr Ala Phe Ile
290 295 300

Asp Leu Phe Ala Lys Ile Gly Trp Ala Tyr Asp Leu Lys Thr Val Ala
305 310 315 320

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

Glu Leu Trp Gly Trp Gly Asp Lys Asp Leu Thr Ala Glu Asp Ala Arg
340 345 350

Asn Val Leu Leu Val Asp Lys Ser Arg
355 360

<210> 15
<211> 381
<212> PRT
<213> Drosophila virilis

<400> 15

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

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

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

Cys Ala Leu Asp Val Asp Val Lys Lys Leu Lys Lys Ala Glu Lys Arg
 50 55 60

Lys Leu Lys Leu Val Trp Arg Asn Ile Met Leu Phe Gly Tyr Leu His
 65 70 75 80

Leu Ala Ala Val Tyr Gly Gly Tyr Leu Met Leu Thr Gln Ala Lys Trp
 85 90 95

Ala Thr Val Val Phe Ser Phe Phe Leu Tyr Thr Ala Gly Met Ile Gly
 100 105 110

Ile Thr Gly Gly Ala His Arg Leu Trp Ala His Arg Ser Tyr Lys Ala
 115 120 125

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

Gln Asp Ala Ala Phe His Trp Ala Arg Asp His Arg Val His His Lys
 145 150 155 160

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

Phe Ser His Val Gly Trp Leu Leu Cys Lys Lys His Pro Asp Val Val
 180 185 190

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

Leu Met Phe Gln Leu Lys His Tyr Phe Val Leu Met Pro Leu Ala Cys
 210 215 220

Phe Ile Leu Pro Thr Ile Ile Pro Met Ile Cys Trp Asn Glu Ser Leu
 225 230 235 240

Leu Cys Ser Trp Phe Val Ala Thr Met Phe Arg Trp Cys Phe Gln Leu
 245 250 255

Asn Met Thr Trp Leu Val Asn Ser Ala Ala His Lys Phe Gly Gly Arg
 260 265 270

Pro Tyr Asp Lys Asn Ile Asn Pro Ser Gln Ser Pro Tyr Val Ser Ala
 275 280 285

Phe Thr Phe Gly Glu Gly Trp His Asn Tyr His His Val Phe Pro Trp
290 295 300

Asp Tyr Lys Thr Ala Glu Trp Gly Arg Tyr Ser Leu Asn Met Thr Thr
305 310 315 320

Ala Phe Ile Asp Phe Phe Ala Lys Ile Gly Trp Ala Tyr Glu Leu Lys
325 330 335

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

Gly Thr His Glu Leu Trp Gly Trp Gly Asp Lys Asp Leu Thr Ala Glu
355 360 365

Asp Ala Gln His Val Leu Phe Val Asp Lys Lys Ala Ala
370 375 380

<210> 16
<211> 332
<212> PRT
<213> Epiphyas postvittana

<400> 16

Met Ala Pro Asn Val Glu Glu Ile Glu Thr Asp Leu Thr Glu Thr Glu
1 5 10 15

Glu Lys Trp Glu Lys Leu Val Ala Pro Gln Ala Ala Pro Arg Lys His
20 25 30

Glu Ile Leu Tyr Thr Asn Leu Leu Ile Phe Gly Tyr Gly His Leu Ala
35 40 45

Gly Leu Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Arg Leu Gln Thr
50 55 60

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

Ala Gly Ala His Arg Leu Trp Thr His Arg Ser Tyr Lys Ala Thr Met
85 90 95

Pro Leu Gln Ile Ile Leu Ile Ile Phe Asn Ser Leu Ser Phe Gln Asn
100 105 110

Ser Ala Ile Asn Trp Val Arg Asp His Arg Ser His His Lys Tyr Cys
115 120 125

Asp Thr Asp Ala Asp Pro His Asn Ala Ala Arg Gly Leu Phe Tyr Ser

130

135

140

His Ile Gly Trp Leu Leu Val Lys Lys His Pro Glu Val Lys Lys Arg
 145 150 155 160

Gly Lys Met Thr Asp Met Ser Asp Val Tyr Arg Asn Pro Val Leu Arg
 165 170 175

Phe Gln Lys Lys Tyr Ala Val Pro Phe Ile Gly Thr Ile Cys Phe Val
 180 185 190

Leu Pro Thr Ile Ile Pro Met Tyr Phe Trp Gly Glu Ser Leu Asn Asn
 195 200 205

Ala Trp His Ile Thr Leu Leu Arg Tyr Ile Phe Ser Met His Thr Ile
 210 215 220

Phe Leu Val Asn Ser Val Ala His Leu Trp Gly Asn Arg Pro Tyr Asp
 225 230 235 240

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

Gly Glu Ala Ser His Asn Tyr His His Thr Phe Pro Trp Asp Tyr Arg
 260 265 270

Ser Thr Glu Leu Gly Tyr Leu Pro Thr Asn Phe Thr Thr Asn Phe Ile
 275 280 285

Asp Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Thr Ser
 290 295 300

Gly Glu Ile Ile Asn Ser Arg Ile Gln Arg Thr Gly Asp Gly Thr His
 305 310 315 320

Ser Arg Ser Lys Lys Asn Ile Ser Thr Gln Asp Glu
 325 330

<210> 17

<211> 346

<212> PRT

<213> Grapholita molesta

<400> 17

Met Pro Pro Glu Ser Lys Asn Val Pro Ile Gln Gln Asn Phe Arg Lys
 1 5 10 15

Pro Leu Glu Phe Leu Pro Arg Lys Tyr Asp Val Val Tyr Glu Asn Val
 20 25 30

Phe Leu His Ile Ala Gly His Ile Ser Ala Ala Tyr Gly Leu Tyr Leu
35 40 45
Cys Phe Thr Val Ala Lys Trp Gln Thr Ile Ala Leu Ala Phe Val Trp
50 55 60
Tyr His Leu Gly Lys Ile Gly Ile Ile Cys Gly Ala His Arg Leu Trp
65 70 75 80
Ser His Arg Cys Tyr Lys Ala Lys Met Pro Leu His Ile Ile Leu Met
85 90 95
Ile Cys Asn Cys Ile Gly Phe Glu Asn Thr Ala Ile Asn Trp Val Arg
100 105 110
Asn His Arg Met His His Lys His Ser Asp Thr Asp Gly Asp Pro His
115 120 125
Asn Ser Asn Arg Gly Ala Phe Phe Ser His Ile Gly Trp Leu Cys Val
130 135 140
Arg Lys His Pro Glu Thr Arg Asn Cys Lys Val Asp Met Ser Asp Ile
145 150 155 160
Tyr Ser Asn Pro Val Leu Val Phe Gln Lys Arg Tyr Lys Tyr Pro Leu
165 170 175
Val Gly Phe Leu Cys Tyr Gly Leu Pro Thr Phe Ile Pro Met Tyr Phe
180 185 190
Trp Gly Glu Thr Leu Val Thr Ala Trp His Val Asn Ile Leu Arg Tyr
195 200 205
Phe Leu Ser Met Asn Ala Val Phe Leu Val Asn Ser Leu Ala His Leu
210 215 220
Tyr Gly Asn Lys Pro Tyr Asp Ile Ser Ile Cys Pro Arg Gln Ser Pro
225 230 235 240
Phe Val Ser Leu Leu Thr Ile Gly Glu Gly Phe His Asn Tyr His His
245 250 255
Thr Phe Pro Trp Asp Tyr Arg Ala Ala Glu Leu Gly Asn Asn Tyr Leu
260 265 270
Asn Val Gly Lys Trp Val Ile Asp Phe Phe Ala Met Ile Gly Trp Ala
275 280 285

Tyr Asp Leu Lys Thr Val Pro Asp Glu Thr Ile Lys Arg Arg Met Lys
290 295 300

Arg Thr Gly Asp Gly Thr Asn Cys Trp Gly Trp Gly Asp Lys Asp Met
305 310 315 320

Thr Arg Glu Asp Arg Asp Ile Ala Lys Ile Ile Tyr Pro Glu Ser Ile
325 330 335

Ser Lys Glu Glu Arg Asp Ile Ile Ala Met
340 345

<210> 18
<211> 341
<212> PRT
<213> Grapholita molesta

<400> 18

Met Thr Pro Asp Ala Arg Glu Glu Thr Leu Leu Glu Asp Asp Gly Tyr
1 5 10 15

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

Tyr Leu Asn Ile Ala Met Tyr Ser Phe Phe His Thr Ala Gly Ala Tyr
35 40 45

Gly Leu Tyr Leu Ala Ala Thr Glu Ala Lys Trp Ala Thr Ile Phe Leu
50 55 60

Ala Phe Ile Leu His Glu Ala Ala Ile Leu Gly Val Thr Ala Gly Ala
65 70 75 80

His Arg Leu Trp Ala His Arg Thr Tyr Lys Ala Lys Leu Pro Leu Gln
85 90 95

Ile Phe Leu Met Leu Leu His Ser Phe Ala Cys Arg Tyr Ser Ala Phe
100 105 110

His Trp Ala Arg Asp His Arg Leu His His Lys Tyr Ser Asp Thr Asp
115 120 125

Gly Asp Pro His Asn Ala Ser Arg Gly Leu Phe Phe Ser His Ile Gly
130 135 140

Trp Leu Met Phe Lys Lys His Pro Glu Ala Lys Lys Arg Met Gly Lys
145 150 155 160

Ile Asp Val Ser Asp Leu Lys Ala Asn Lys Val Leu Met Phe Gln Lys
165 170 175

Lys Tyr Ser Ile Pro Phe Ile Gly Thr Ile Cys Phe Ile Leu Pro Thr
 180 185 190

Leu Ile Pro Met Tyr Phe Trp Asp Glu Thr Phe Ser Ser Ala Phe Phe
 195 200 205

Val Thr Val Leu Arg Val Ile Val Ser Leu His Val Thr Phe Leu Val
 210 215 220

Asn Ser Phe Ala His Ala Phe Gly Asn Arg Pro Tyr Asp Arg Tyr Ile
 225 230 235 240

Lys Pro Ser Gln Ser Ile Pro Ile Ser Leu Ala Thr Leu Gly Glu Gly
 245 250 255

Tyr His Asn Tyr His His Ala Phe Pro Trp Asp Tyr Lys Ala Ser Glu
 260 265 270

Phe Gly Asn Thr Ile Gly Asn Phe Thr Thr Met Val Ile Asn Phe Phe
 275 280 285

Ala Trp Leu Gly Trp Ala Tyr Asp Leu Lys Ser Val Gly Ala Asp Met
 290 295 300

Ile Ala Lys Lys Lys Glu Lys Thr Gly Asp Gly Thr Asn Leu Trp Gly
 305 310 315 320

Trp Gly Asp Lys Asp Met Ser Lys Glu His Lys Glu Ile Ala Asn Val
 325 330 335

Thr Tyr Lys Glu Lys
 340

<210> 19
 <211> 338
 <212> PRT
 <213> Helicoverpa zea

<400> 19

Met Ala Gln Ser Tyr Gln Ser Thr Thr Val Leu Ser Glu Glu Lys Glu
 1 5 10 15

Leu Thr Leu Gln His Leu Val Pro Gln Ala Ser Pro Arg Lys Tyr Gln
 20 25 30

Ile Val Tyr Pro Asn Leu Ile Thr Phe Gly Tyr Trp His Ile Ala Gly
 35 40 45

Leu Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp Ala Thr Ile
50 55 60

Leu Phe Ser Tyr Ile Leu Phe Val Leu Ala Glu Ile Gly Ile Thr Ala
65 70 75 80

Gly Ala His Arg Leu Trp Ala His Lys Thr Tyr Lys Ala Lys Leu Pro
85 90 95

Leu Glu Ile Leu Leu Met Val Phe Asn Ser Ile Ala Phe Gln Asn Ser
100 105 110

Ala Ile Asp Trp Val Arg Asp His Arg Leu His His Lys Tyr Ser Asp
115 120 125

Thr Asp Ala Asp Pro His Asn Ala Ser Arg Gly Phe Phe Tyr Ser His
130 135 140

Val Gly Trp Leu Leu Val Arg Lys His Pro Glu Val Lys Lys Arg Gly
145 150 155 160

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

Gln Lys Lys Tyr Ala Ile Pro Phe Ile Gly Ala Val Cys Phe Ala Leu
180 185 190

Pro Thr Met Ile Pro Val Tyr Phe Trp Gly Glu Thr Trp Ser Asn Ala
195 200 205

Trp His Ile Thr Met Leu Arg Tyr Ile Met Asn Leu Asn Val Thr Phe
210 215 220

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

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

Glu Gly Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg Ala
260 265 270

Ala Glu Leu Gly Asn Asn Ser Leu Asn Leu Thr Thr Lys Phe Ile Asp
275 280 285

Leu Phe Ala Ala Ile Gly Trp Ala Tyr Asp Leu Lys Thr Val Ser Glu
290 295 300

Asp Met Ile Lys Gln Arg Ile Lys Arg Thr Gly Asp Gly Thr Asp Leu

305 310 315 320

Trp Gly His Glu Gln Asn Cys Asp Glu Val Trp Asp Val Lys Asp Lys
325 330 335

Ser Ser

<210> 20
<211> 337
<212> PRT
<213> Lobesia botrana

<400> 20

Met Val Pro Arg Ala Ala Ser Glu Glu Thr Asp Leu Lys Glu Ala Thr
1 5 10 15

Gln Leu Glu Pro Arg Lys Tyr Glu Ile Val Tyr Thr Asn Val Ile Tyr
20 25 30

Phe Thr Tyr Trp His Ile Ala Gly Leu Tyr Gly Leu Tyr Leu Cys Phe
35 40 45

Thr Ser Ala Lys Trp Glu Thr Ile Val Phe Ala Trp Ala Trp Tyr Val
50 55 60

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

Arg Thr Tyr Lys Ala Lys Met Pro Leu Gln Ile Ile Leu Met Leu Phe
85 90 95

Asn Cys Ile Gly Phe Gln Asn Thr Ala Thr Asp Trp Val Arg Asp His
100 105 110

Arg Val His His Lys His Ser Asp Thr Asp Ala Asp Pro His Asn Ser
115 120 125

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

His Arg Leu Val Lys Glu Lys Gly Glu Ala Val Asp Met Thr Asp Ile
145 150 155 160

Tyr Ser Asn Pro Val Leu Arg Phe Gln Lys Lys Tyr Ser Leu Pro Leu
165 170 175

Ile Gly Thr Leu Cys Phe Ala Leu Pro Thr Leu Leu Pro Ala Tyr Cys
180 185 190

Trp Gly Glu Ala Val Gly Thr Ala Trp Asn Ile Asn Leu Leu Arg Tyr
195 200 205

Cys Leu Asn Leu Asn Gly Thr Phe Leu Thr Asn Ser Ala Ala His Lys
210 215 220

Phe Gly Ser Lys Pro Tyr Asp Lys Thr Ile Pro Pro Thr Gln Asn Leu
225 230 235 240

Leu Val Ser Phe Met Thr Leu Gly Glu Gly Phe His Asn Tyr His His
245 250 255

Val Phe Ser Trp Asp Tyr Arg Ala Ala Glu Leu Gly Asn Thr Tyr Leu
260 265 270

Asn Met Thr Thr Ile Phe Ile Asp Phe Phe Ala Leu Ile Gly Trp Ala
275 280 285

Tyr Asp Leu Lys Thr Val Pro Glu Asp Val Ile Lys Lys Arg Met Ala
290 295 300

Arg Thr Gly Asp Gly Thr Asn Leu Trp Gly Trp Gly Asp Lys Asp Met
305 310 315 320

Thr Lys Glu Asp Val Val Asp Thr Glu Ile Arg Phe His Ala Lys Lys
325 330 335

Glu

<210> 21
<211> 352
<212> PRT
<213> Lobesia botrana

<400> 21

Met Pro Pro Asn Val Thr Asp Val Asn Gly Val Leu Phe Glu Ser Asp
1 5 10 15

Ala Ala Thr Pro Asp Leu Ala Leu Ala Thr Pro Pro Val Gln Lys Ala
20 25 30

Asp Asn Thr Pro Arg Val Tyr Val Trp Arg Asn Ile Ile Leu Phe Gly
35 40 45

Tyr Leu His Ile Ala Ala Leu Tyr Gly Gly Tyr Leu Phe Leu Val Ser
50 55 60

Ala Lys Trp Gln Thr Asp Ile Phe Ala Tyr Leu Leu Tyr Val Ala Ser

65		70		75		80	
Gly	Leu	Gly	Ile	Thr	Ala	Gly	Ala
			85				His
						Arg	Leu
						90	Trp
							Ala
							His
							Lys
							Ser
							95
Tyr	Lys	Ala	Lys	Trp	Pro	Leu	Arg
			100				Val
							105
							Ile
							Leu
							Thr
							Ile
							Phe
							Asn
							Thr
							110
Ile	Ala	Phe	Gln	Asp	Ser	Ala	Ile
							120
							Asp
							Trp
							Ala
							Arg
							Asp
							His
							Arg
							Met
							125
His	His	Lys	Tyr	Ser	Glu	Thr	Asp
							Ala
							135
							Asp
							Pro
							His
							Asn
							Ala
							Thr
							Arg
							140
Gly	Phe	Phe	Phe	Ser	His	Ile	Gly
							Trp
							Leu
							Leu
							Val
							Arg
							Lys
							His
							Pro
							160
Gly	Phe	Phe	Phe	Ser	His	Ile	Gly
							Trp
							Leu
							Leu
							Val
							Arg
							Lys
							His
							Pro
							150
Glu	Leu	Lys	Arg	Lys	Gly	Lys	Gly
							Leu
							Asp
							Leu
							Ser
							Asp
							Leu
							Tyr
							Ala
							175
Asp	Pro	Ile	Leu	Arg	Phe	Gln	Lys
							185
							Tyr
							Tyr
							Leu
							Ile
							Leu
							Met
							Pro
							190
Leu	Ala	Cys	Phe	Ile	Met	Pro	Thr
							Leu
							Ile
							Pro
							Val
							Tyr
							Phe
							Trp
							Gly
							205
Glu	Thr	Trp	Thr	Asn	Ala	Phe	Phe
							Val
							Ala
							Ala
							Leu
							Phe
							Arg
							Tyr
							Ala
							220
Phe	Ile	Leu	Asn	Ile	Thr	Trp	Leu
							Val
							Asn
							Ser
							Ala
							Ala
							His
							Lys
							Trp
							240
Gly	Asp	Lys	Pro	Tyr	Asp	Lys	Thr
							Ile
							Lys
							Pro
							Ser
							Glu
							Asn
							Leu
							Ser
							255
Val	Ser	Leu	Phe	Ala	Phe	Gly	Glu
							Gly
							Phe
							His
							Asn
							Tyr
							His
							His
							Thr
							270
Phe	Pro	Trp	Asp	Tyr	Lys	Thr	Ala
							Glu
							Leu
							Gly
							Asn
							His
							Arg
							Leu
							Asn
							285
Phe	Thr	Thr	Lys	Phe	Ile	Asn	Phe
							Phe
							Ala
							Lys
							Leu
							Gly
							Trp
							Ala
							Tyr
							300
Asp	Met	Lys	Thr	Val	Ser	Asp	Glu
							Ile
							Val
							Gln
							Lys
							Arg
							Val
							Gln
							Arg
							320
Thr	Gly	Asp	Gly	Ser	His	His	Leu
							Trp
							Gly
							Trp
							Gly
							Asp
							Lys
							Asp
							Gln
							335

Ser Lys Asp Glu Val Asp Ala Ala Ile Arg Ile Asn Pro Lys Asp Asp
 340 345 350

<210> 22
 <211> 341
 <212> PRT
 <213> Manducta sexta

<400> 22

Met Ala Pro Asn Phe Gly Asn Glu Val Ser Ser Pro Ile Val Ala Glu
 1 5 10 15

Glu Ser Tyr Glu Lys Leu Ile Pro Pro Gln Ala Ala Pro Arg Lys Tyr
 20 25 30

Lys Tyr Leu Tyr Ala Asn Met Ile Tyr Phe Thr Tyr Trp His Ile Ala
 35 40 45

Gly Leu Tyr Gly Ile Tyr Leu Ala Ile Thr Thr Ala Lys Trp Ala Thr
 50 55 60

Ile Ile Leu Ala Tyr Leu Leu Phe Val Ala Gly Glu Ile Gly Ile Thr
 65 70 75 80

Ala Gly Ala His Arg Leu Trp Ala His Lys Ser Tyr Lys Ala Lys Leu
 85 90 95

Pro Leu Gln Ile Leu Leu Met Leu Phe Asn Ser Thr Ala Phe Gln Asn
 100 105 110

Ser Val Ile Thr Trp Val Lys Asp His Arg Met His His Lys Tyr Ser
 115 120 125

Asp Thr Asp Ala Asp Pro His Asn Ala Thr Arg Gly Phe Phe Tyr Ser
 130 135 140

His Val Gly Trp Leu Met Val Lys Arg His Pro Glu Ala Ile Lys Arg
 145 150 155 160

Gly Lys Ser Leu Asp Met Ser Asp Ile Tyr Asn Asn Pro Val Leu Lys
 165 170 175

Phe Gln Lys Lys Tyr Ala Ile Pro Leu Ile Thr Thr Val Ala Phe Val
 180 185 190

Leu Pro Thr Ile Ile Pro Met Tyr Phe Trp Asp Glu Ser Phe Asn Val
 195 200 205

Ala Trp His Met Thr Met Leu Arg Tyr Ile Ile Asn Leu Asn Thr Ile
210 215 220

Phe Leu Val Asn Ser Val Ala His Met Trp Gly Tyr Lys Pro Tyr Asp
225 230 235 240

Lys Asn Ile Ala Pro Thr Gln Asn Tyr Ile Ala Thr Phe Ala Thr Leu
245 250 255

Gly Glu Gly Phe His Asn Tyr His His Ala Phe Pro Trp Asp Tyr Arg
260 265 270

Ala Ser Glu Leu Gly Asn Asn Tyr Leu Asn Leu Thr Thr Lys Phe Ile
275 280 285

Asp Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Val Pro
290 295 300

Glu Asp Leu Leu Gln Lys Arg Met Glu Arg Thr Gly Asp Gly Thr Asn
305 310 315 320

Leu Trp Gly Arg Gly Asp Lys Asn Met Lys Lys Asp Tyr Val Lys Ser
325 330 335

Thr Asp Val His Glu
340

<210> 23
<211> 329
<212> PRT
<213> Ostrinia nubilalis

<400> 23

Met Val Pro Tyr Ala Thr Thr Ala Asp Gly His Pro Glu Lys Asp Glu
1 5 10 15

Cys Phe Glu Asp Asn Glu Ile Lys Ser Asn Ser Leu Pro Lys Leu Glu
20 25 30

Ile Leu Tyr Phe Asn Val Met Thr Phe Thr Phe Leu His Leu Ser Ala
35 40 45

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

Gly Leu Gly Ile Ile Phe Tyr Phe Phe Ala Glu Ile Gly Ile Thr Ala
65 70 75 80

Gly Ala His Arg Leu Trp Ser His Arg Ser Tyr Lys Ala Lys Leu Pro
85 90 95

Leu Glu Ile Leu Leu Met Val Phe Asn Ser Met Ala Phe Gln Asn Thr
 100 105 110
 Ala Leu Ser Trp Ala Arg Asp His Arg Val His His Lys Cys Pro Asp
 115 120 125
 Thr Asn Gly Asp Pro His Asn Ala Asn Arg Gly Phe Phe Tyr Ser His
 130 135 140
 Val Gly Trp Leu Met Thr Lys Lys Ser Asp Glu Val Ile Lys Gln Gly
 145 150 155 160
 Lys Leu Cys Asp Val Ala Asp Leu Tyr Ser Asn Pro Val Leu Arg Phe
 165 170 175
 Gln Lys Lys Tyr Ala Val Pro Phe Ile Gly Thr Leu Cys Phe Val Leu
 180 185 190
 Pro Thr Leu Ile Pro Met Tyr Phe Trp Gly Glu Thr Leu Asn Asn Ala
 195 200 205
 Trp His Phe Asn Met Phe Arg Tyr Val Ile Asn Leu Asn Ala Thr Phe
 210 215 220
 Cys Val Asn Ser Val Val His Lys Trp Gly Tyr Lys Pro Tyr Asp Lys
 225 230 235 240
 Asn Ile Cys Pro Thr Gln Asn Val Leu Leu Asn Leu Ala Val Leu Gly
 245 250 255
 Glu Ala Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg Ala
 260 265 270
 Ala Glu Leu Gly Asn Gln Lys Met Asn Pro Thr Thr Leu Phe Ile Asp
 275 280 285
 Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Ala Ser Lys
 290 295 300
 Glu Met Ile Lys Ser Arg Ser Glu Arg Thr Gly Asp Gly Thr Asp Leu
 305 310 315 320
 Trp Gly His Ser Ala Asp Lys Leu Lys
 325

<210> 24
 <211> 339
 <212> PRT

<213> Pectinophora gossypiella

<400> 24

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

Asp Leu Lys Ser Ser Glu Asp Thr Lys Gln Lys Leu Val His Leu Asn
20 25 30

Leu Leu Thr Phe Gly Tyr Gly His Leu Ala Gly Leu Tyr Gly Leu Tyr
35 40 45

Leu Cys Phe Thr Ser Ala Lys Trp Pro Thr Ile Phe Leu Asn Tyr Val
50 55 60

Leu Leu Ile Ile Ser Glu Leu Gly Val Thr Ala Gly Ala His Arg Leu
65 70 75 80

Trp Ala His Lys Thr Tyr Lys Ala Lys Leu Pro Leu Gln Ile Leu Leu
85 90 95

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

Arg Asp His Arg Met His His Lys Tyr Ser Asp Thr Asp Ala Asp Pro
115 120 125

His Asn Ser Asn Arg Gly Phe Phe Tyr Ser His Val Gly Trp Leu Leu
130 135 140

Met Arg Lys His Pro Glu Val Lys Arg Leu Gly Lys Gly Ile Glu Met
145 150 155 160

Arg Asp Ile Tyr Ser Asn Pro Val Leu Arg Phe Gln Lys Arg Tyr Ala
165 170 175

Leu Pro Val Ile Gly Ala Ala Cys Phe Ile Leu Pro Thr Val Ile Pro
180 185 190

Val Tyr Cys Trp Gly Glu Thr Leu Ser Asn Ser Trp His Val Thr Ile
195 200 205

Phe Arg Tyr Val Val Asn Leu Asn Val Thr Phe Leu Val Asn Ser Ala
210 215 220

Ala His Ile Trp Gly Asn Lys Pro Tyr Asp Lys Thr Leu Arg Pro Ala
225 230 235 240

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

245

250

255

Tyr His His Val Phe Pro Trp Asp Tyr Arg Thr Ala Glu Leu Gly Asn
 260 265 270

Asn Lys Leu Asn Val Thr Thr Phe Phe Ile Asn Phe Phe Ala Trp Ile
 275 280 285

Gly Trp Ala Tyr Asp Leu Lys Thr Ala Pro Asp Asp Ile Ile Arg Lys
 290 295 300

Arg Val Glu Arg Thr Gly Asp Gly Thr Asn Met Trp Gly Trp Gly Asp
 305 310 315 320

Lys Asp Met Ser Lys Asp Asp Arg Glu Ser Val Lys Ile Leu Gly Glu
 325 330 335

Lys Phe Leu

<210> 25

<211> 368

<212> PRT

<213> Pelargonium hortorum

<400> 25

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

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

Gly Val Thr Gly Val Met Ala Pro Gln Lys Ile Glu Ile Phe Lys Ser
 35 40 45

Met Glu Glu Trp Gly Lys His Asn Ile Leu Pro Leu Ala Lys Pro Val
 50 55 60

Glu Lys Ser Trp Gln Pro Thr Asp Phe Leu Pro Asp Pro Ser Ser Glu
 65 70 75 80

Gly Phe Met Glu Glu Tyr Asn Ala Phe Lys Glu Arg Thr Arg Glu Leu
 85 90 95

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

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

Asp Glu Thr Gly His Ser Glu Ser Pro Trp Ala Val Trp Ser Arg Ala
 130 135 140

Trp Thr Ala Glu Glu Asn Arg His Gly Asp Leu Leu Asn Lys Tyr Leu
 145 150 155 160

Tyr Leu Ser Gly Lys Leu Asp Met Arg Gln Val Glu Lys Thr Ile Gln
 165 170 175

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

His Leu Phe Ile Tyr Thr Ser Phe Gln Glu Arg Ala Thr Phe Ile Ser
 195 200 205

His Ala Asn Thr Ala Lys Leu Ala Gln Gln His Gly Asp Lys Gln Leu
 210 215 220

Ala Gln Ile Cys Gly Thr Ile Ala Ala Asp Glu Lys Arg His Glu Thr
 225 230 235 240

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

Thr Met Ser Cys Leu Ala His Met Met Lys Arg Lys Ile Thr Met Pro
 260 265 270

Ala His Leu Met Arg Asp Gly Arg Asp Pro His Leu Phe Gln His Phe
 275 280 285

Ser Val Val Ala Ser Arg Thr Gly Val Tyr Thr Val Met Asp Tyr Ile
 290 295 300

Asn Ile Leu Glu His Phe Val Glu Lys Trp Asn Ile Glu Lys Ile Thr
 305 310 315 320

Ala Gly Leu Ser Asp Lys Gly Arg Glu Ala Gln Asp Tyr Val Cys Lys
 325 330 335

Leu Gly Glu Arg Leu Arg Lys Val Glu Glu Arg Ala His Gln Arg Val
 340 345 350

Val Gln Ala Asp Pro Ile Pro Phe Ser Trp Ile Phe Asp Arg Lys Val
 355 360 365

<210> 26
 <211> 348
 <212> PRT
 <213> Plutella xylostella

<400> 26

Met Cys Pro Lys Ser Pro Glu Gln Ala Ser Val Val Glu Glu Arg Glu
1 5 10 15

Glu Lys Ser Ala Glu Phe Glu Lys Leu Ile Ala Pro Gln Ala Gly Pro
20 25 30

Arg Lys Phe Asn Ile Val Tyr Phe Asn Leu Leu Thr Phe Gly Tyr Trp
35 40 45

His Leu Ala Gly Ala Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys
50 55 60

Phe Ala Thr Val Leu Phe Ala Ile Leu Thr Tyr Thr Ala Ala Glu Ile
65 70 75 80

Gly Ile Thr Ala Gly Ala His Arg Leu Trp Ser His Lys Ala Tyr Lys
85 90 95

Ala Lys Leu Pro Leu Gln Ile Ile Leu Met Thr Phe Asn Thr Leu Ala
100 105 110

Phe Gln Asn Ser Ala Ile Glu Trp Val Arg Asp His Arg Leu His His
115 120 125

Lys Tyr Ser Asp Thr Asp Ala Asp Pro His Asn Ala Thr Arg Gly Phe
130 135 140

Phe Tyr Ser His Val Gly Trp Leu Leu Val Arg Lys His Ser Glu Val
145 150 155 160

Lys Lys Arg Gly Lys Thr Ile Asp Met Ser Asp Met Tyr Ser Asn Pro
165 170 175

Val Leu Ala Phe Gln Lys Arg Tyr Ile Val Pro Trp Val Ile Leu Val
180 185 190

Thr Phe Leu Leu Pro Thr Ile Ile Pro Val Tyr Leu Trp Asn Glu Ser
195 200 205

Leu Trp Thr Ser Trp His Val Thr Met Leu Arg Tyr Val Ala Asn Leu
210 215 220

Asn Ala Thr Phe Leu Val Asn Ser Ala Ala His Leu Trp Gly Tyr Lys
225 230 235 240

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

Ala Thr Phe Gly Glu Gly Phe His Asn Tyr His His Val Phe Pro Trp
260 265 270

Asp Tyr Lys Ala Ala Glu Leu Gly Asn Asn Arg Tyr Asn Leu Thr Thr
275 280 285

Lys Phe Ile Asp Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys
290 295 300

Ser Val Ser Glu Glu Leu Val Val Asn Arg Met Arg Arg Thr Gly Asp
305 310 315 320

Gly Ser Asn Leu Trp Gly Trp Gly Asp Lys Asp Met Thr Glu Glu Asp
325 330 335

Arg Asn Gly Ala Leu Leu Thr Thr Lys Ser Val Val
340 345

<210> 27
<211> 396
<212> PRT
<213> Ricinus communis

<400> 27

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

Ser Phe Ala Leu Pro Pro Met Ala Ser Thr Arg Ser Pro Lys Phe Tyr
20 25 30

Met Ala Ser Thr Leu Lys Ser Gly Ser Lys Glu Val Glu Asn Leu Lys
35 40 45

Lys Pro Phe Met Pro Pro Arg Glu Val His Val Gln Val Thr His Ser
50 55 60

Met Pro Pro Gln Lys Ile Glu Ile Phe Lys Ser Leu Asp Asn Trp Ala
65 70 75 80

Glu Glu Asn Ile Leu Val His Leu Lys Pro Val Glu Lys Cys Trp Gln
85 90 95

Pro Gln Asp Phe Leu Pro Asp Pro Ala Ser Asp Gly Phe Asp Glu Gln
100 105 110

Val Arg Glu Leu Arg Glu Arg Ala Lys Glu Ile Pro Asp Asp Tyr Phe
115 120 125

Val Val Leu Val Gly Asp Met Ile Thr Glu Glu Ala Leu Pro Thr Tyr
130 135 140

Gln Thr Ala Leu Asn Arg Gly Asp Gly Val Arg Asp Glu Thr Gly Ala
145 150 155 160

Ser Pro Thr Ser Trp Ala Ile Trp Thr Arg Ala Trp Thr Ala Glu Glu
165 170 175

Asn Arg His Gly Asp Leu Leu Asn Lys Tyr Leu Tyr Leu Ser Gly Arg
180 185 190

Val Asp Met Arg Gln Ile Glu Lys Thr Ile Gln Tyr Leu Ile Gly Ser
195 200 205

Gly Met Asp Val Arg Val Glu Asn Ser Pro Tyr Leu Leu Phe Ile Tyr
210 215 220

Thr Ser Phe Gln Glu Arg Ala Thr Phe Ile Ser His Gly Asn Thr Ala
225 230 235 240

Arg Gln Ala Lys Glu His Gly Asp Ile Lys Leu Ala Gln Ile Cys Gly
245 250 255

Thr Ile Ala Ala Asp Glu Lys Arg His Glu Thr Ala Tyr Thr Lys Ile
260 265 270

Val Glu Lys Leu Phe Glu Ile Asp Pro Asp Gly Thr Val Leu Ala Phe
275 280 285

Ala Asp Met Met Arg Lys Lys Ile Ser Met Pro Ala His Leu Met Tyr
290 295 300

Asp Gly Arg Asp Asp Asn Leu Phe Asp His Phe Ser Ala Val Ala Gln
305 310 315 320

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

Leu Val Gly Arg Trp Lys Val Asp Lys Leu Thr Gly Leu Ser Ala Glu
340 345 350

Gly Gln Lys Ala Gln Asp Tyr Val Cys Arg Leu Pro Pro Arg Ile Arg
355 360 365

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

Pro Phe Ser Trp Ile Phe Asp Arg Gln Val Lys Leu

385

390

395

<210> 28

<211> 510

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 28

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

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

Glu Ala Asn Ile Leu Ala Thr Gly Leu Asn Lys Lys Ala Pro Arg Ile
35 40 45

Val Asn Gly Phe Gly Ser Leu Met Gly Ser Lys Glu Met Val Ser Val
50 55 60

Glu Phe Asp Lys Lys Gly Asn Glu Lys Lys Ser Asn Leu Asp Arg Leu
65 70 75 80

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

Ile Ser Glu Gln Pro Trp Thr Leu Asn Asn Trp His Gln His Leu Asn
100 105 110

Trp Leu Asn Met Val Leu Val Cys Gly Met Pro Met Ile Gly Trp Tyr
115 120 125

Phe Ala Leu Ser Gly Lys Val Pro Leu His Leu Asn Val Phe Leu Phe
130 135 140

Ser Val Phe Tyr Tyr Ala Val Gly Gly Val Ser Ile Thr Ala Gly Tyr
145 150 155 160

His Arg Leu Trp Ser His Arg Ser Tyr Ser Ala His Trp Pro Leu Arg
165 170 175

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

Trp Trp Gly His Ser His Arg Ile His His Arg Tyr Thr Asp Thr Leu
195 200 205

Arg Asp Pro Tyr Asp Ala Arg Arg Gly Leu Trp Tyr Ser His Met Gly
210 215 220

Trp Met Leu Leu Lys Pro Asn Pro Lys Tyr Lys Ala Arg Ala Asp Ile
 225 230 235 240

Thr Asp Met Thr Asp Asp Trp Thr Ile Arg Phe Gln His Arg His Tyr
 245 250 255

Ile Leu Leu Met Leu Leu Thr Ala Phe Val Ile Pro Thr Leu Ile Cys
 260 265 270

Gly Tyr Phe Phe Asn Asp Tyr Met Gly Gly Leu Ile Tyr Ala Gly Phe
 275 280 285

Ile Arg Val Phe Val Ile Gln Gln Ala Thr Phe Cys Ile Asn Ser Leu
 290 295 300

Ala His Tyr Ile Gly Thr Gln Pro Phe Asp Asp Arg Arg Thr Pro Arg
 305 310 315 320

Asp Asn Trp Ile Thr Ala Ile Val Thr Phe Gly Glu Gly Tyr His Asn
 325 330 335

Phe His His Glu Phe Pro Thr Asp Tyr Arg Asn Ala Ile Lys Trp Tyr
 340 345 350

Gln Tyr Asp Pro Thr Lys Val Ile Ile Tyr Leu Thr Ser Leu Val Gly
 355 360 365

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

Leu Ile Gln Gln Glu Gln Lys Lys Ile Asn Lys Lys Lys Ala Lys Ile
 385 390 395 400

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

Phe Leu Ala Lys Ser Lys Glu Asn Lys Gly Leu Val Ile Ile Ser Gly
 420 425 430

Ile Val His Asp Val Ser Gly Tyr Ile Ser Glu His Pro Gly Gly Glu
 435 440 445

Thr Leu Ile Lys Thr Ala Leu Gly Lys Asp Ala Thr Lys Ala Phe Ser
 450 455 460

Gly Gly Val Tyr Arg His Ser Asn Ala Ala Gln Asn Val Leu Ala Asp
 465 470 475 480

Met Arg Val Ala Val Ile Lys Glu Ser Lys Asn Ser Ala Ile Arg Met
485 490 495

Ala Ser Lys Arg Gly Glu Ile Tyr Glu Thr Gly Lys Phe Phe
500 505 510

<210> 29
<211> 338
<212> PRT
<213> Spodoptera exigua

<400> 29

Met Ala Gln Thr Ile Gln Thr Thr Thr Ile Leu Glu Gln Lys Glu Glu
1 5 10 15

Lys Thr Val Thr Leu Leu Val Pro Gln Ala Gly Lys Arg Lys Phe Glu
20 25 30

Phe Val Tyr Gln Asn Leu Ile Thr Phe Ala Tyr Trp His Ile Ala Gly
35 40 45

Leu Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp Ala Thr Ile
50 55 60

Leu Phe Ser Phe Ile Leu Phe Val Ile Ala Glu Ile Gly Ile Thr Ala
65 70 75 80

Gly Ala His Arg Leu Trp Ser His Lys Ser Tyr Lys Val Lys Leu Pro
85 90 95

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

Val Ile Asp Trp Val Arg Asp His Arg Leu His His Lys Tyr Ser Asp
115 120 125

Thr Asp Ala Asp Pro His Asn Ala Ser Arg Gly Phe Phe Tyr Ser His
130 135 140

Ile Gly Trp Leu Phe Val Arg Lys His Pro Glu Val Lys Lys Arg Gly
145 150 155 160

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

Gln Arg Lys Tyr Ala Val Pro Phe Ile Gly Ala Val Cys Phe Gly Leu
180 185 190

Pro Thr Leu Ile Pro Val Tyr Cys Trp Gly Glu Ser Trp Thr Asn Ala
195 200 205

Trp His Ile Thr Met Leu Arg Tyr Ile Met Asn Leu Asn Ala Thr Phe
 210 215 220

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

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

Glu Gly Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg Ala
 260 265 270

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

Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Val Ser Lys
 290 295 300

Glu Met Ile Lys Gln Arg Ser Lys Arg Thr Gly Asp Gly Thr Asn Leu
 305 310 315 320

Trp Gly Leu Glu Asp Lys Asp Thr Pro Glu Asn Leu Lys Asn Ile Lys
 325 330 335

Gly Glu

<210> 30
 <211> 338
 <212> PRT
 <213> Spodoptera littoralis

<400> 30

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

Lys Thr Val Thr Leu Leu Val Pro Gln Ala Gly Lys Arg Lys Phe Glu
 20 25 30

Ile Val Tyr Phe Asn Ile Ile Thr Phe Ala Tyr Trp His Ile Ala Gly
 35 40 45

Leu Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Thr Lys Trp Ala Thr Val
 50 55 60

Leu Phe Ser Phe Phe Leu Phe Val Val Ala Glu Val Gly Val Thr Ala
 65 70 75 80

Gly Ser His Arg Leu Trp Ser His Lys Thr Tyr Lys Ala Lys Leu Pro
85 90 95

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

Val Ile Asp Trp Val Arg Asp His Arg Leu His His Lys Tyr Ser Asp
115 120 125

Thr Asp Ala Asp Pro His Asn Ala Ser Arg Gly Phe Phe Tyr Ser His
130 135 140

Val Gly Trp Leu Leu Val Arg Lys His Pro Asp Val Lys Lys Arg Gly
145 150 155 160

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

Gln Lys Lys Tyr Ala Ile Pro Phe Ile Gly Ala Val Cys Phe Val Leu
180 185 190

Pro Thr Leu Ile Pro Val Tyr Gly Trp Gly Glu Thr Trp Thr Asn Ala
195 200 205

Trp His Val Ala Met Leu Arg Tyr Ile Met Asn Leu Asn Val Thr Phe
210 215 220

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

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

Glu Gly Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg Ala
260 265 270

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

Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Val Ser Lys
290 295 300

Glu Met Ile Lys Gln Arg Ser Lys Arg Thr Gly Asp Gly Thr Asn Leu
305 310 315 320

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

Gly Glu

<210> 31
 <211> 338
 <212> PRT
 <213> Spodoptera littoralis

<400> 31

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

Lys Thr Val Thr Leu Leu Val Pro Gln Ala Gly Lys Arg Lys Phe Glu
 20 25 30

Ile Val Tyr Phe Asn Ile Ile Thr Phe Ala Tyr Trp His Ile Ala Gly
 35 40 45

Leu Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Thr Lys Trp Ala Thr Val
 50 55 60

Leu Phe Ser Phe Phe Leu Phe Val Val Ala Glu Val Gly Val Thr Ala
 65 70 75 80

Gly Ser His Arg Leu Trp Ser His Lys Thr Tyr Lys Ala Lys Leu Pro
 85 90 95

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

Val Ile Asp Trp Val Arg Asp His Arg Leu His His Lys Tyr Ser Asp
 115 120 125

Thr Asp Ala Asp Pro His Asn Ala Ser Arg Gly Phe Phe Tyr Ser His
 130 135 140

Val Gly Trp Leu Leu Val Arg Lys His Pro Asp Val Lys Lys Arg Gly
 145 150 155 160

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

Gln Lys Lys Tyr Ala Ile Pro Phe Ile Gly Ala Val Cys Phe Val Leu
 180 185 190

Pro Thr Leu Ile Pro Val Tyr Gly Trp Gly Glu Thr Trp Thr Asn Ala
 195 200 205

Trp His Val Ala Met Leu Arg Tyr Ile Met Asn Leu Asn Val Thr Phe
 210 215 220

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

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

Glu Gly Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg Ala
260 265 270

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

Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Val Ser Lys
290 295 300

Glu Met Ile Lys Gln Arg Ser Lys Arg Thr Gly Asp Gly Thr Asn Leu
305 310 315 320

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

Gly Glu

<210> 32
<211> 338
<212> PRT
<213> Spodoptera litura

<400> 32

Met Ala Gln Thr Ile Gln Thr Thr Thr Ile Leu Glu Gln Lys Glu Glu
1 5 10 15

Lys Thr Val Thr Leu Leu Val Pro Gln Ala Gly Lys Arg Lys Phe Glu
20 25 30

Ile Val Tyr Phe Asn Leu Val Ser Phe Ala Tyr Trp His Ile Ala Gly
35 40 45

Leu Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp Ala Thr Ile
50 55 60

Leu Phe Ser Phe Phe Leu Phe Val Val Ala Glu Val Gly Val Thr Ala
65 70 75 80

Gly Ala His Arg Leu Trp Ser His Lys Thr Tyr Lys Ala Lys Leu Pro
85 90 95

Leu Gln Ile Leu Leu Met Val Met Asn Ser Leu Ala Phe Gln Asn Thr

100

105

110

Ala Ile Asp Trp Val Arg Asp His Arg Leu His His Lys Tyr Ser Asp
 115 120 125

Thr Asp Ala Asp Pro His Asn Ala Ser Arg Gly Phe Phe Tyr Ser His
 130 135 140

Ile Gly Trp Leu Phe Val Arg Lys His Pro Asp Val Lys Lys Arg Gly
 145 150 155 160

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

Gln Lys Lys Tyr Ala Ile Pro Phe Ile Gly Ala Val Cys Phe Ala Leu
 180 185 190

Pro Thr Leu Ile Pro Val Tyr Gly Trp Gly Glu Thr Trp Thr Asn Ala
 195 200 205

Trp His Val Ala Met Leu Arg Tyr Ile Met Asn Leu Asn Val Thr Phe
 210 215 220

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

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

Glu Gly Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg Ala
 260 265 270

Ala Glu Leu Gly Asn Asn Cys Leu Asn Phe Thr Thr Lys Phe Ile Asp
 275 280 285

Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Val Ser Lys
 290 295 300

Glu Met Ile Lys Gln Arg Ser Lys Arg Thr Gly Asp Gly Thr Asn Leu
 305 310 315 320

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

Gly Glu

<210> 33

<211> 353

<212> PRT

<213> Spodoptera litura

<400> 33

Met Ala Pro Asn Ile Ser Glu Asp Val Asn Gly Val Leu Phe Glu Ser
1 5 10 15

Asp Ala Ala Thr Pro Asp Leu Ala Leu Ala Arg Pro Pro Val Gln Lys
20 25 30

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

Ala Tyr Leu His Leu Ala Ala Leu Tyr Gly Gly Tyr Leu Phe Leu Phe
50 55 60

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

Ser Gly Leu Gly Ile Thr Ala Gly Ala His Arg Leu Trp Ala His Lys
85 90 95

Ser Tyr Lys Ala Lys Trp Pro Leu Lys Val Ile Leu Ile Ile Phe Asn
100 105 110

Thr Val Ala Phe Gln Asp Ala Ala Met Asp Trp Ala Arg Asp His Arg
115 120 125

Met His His Lys Tyr Ser Glu Thr Asp Ala Asp Pro His Asn Ala Thr
130 135 140

Arg Gly Phe Phe Phe Ser His Ile Gly Trp Leu Leu Val Arg Lys His
145 150 155 160

Pro Asp Leu Lys Glu Lys Gly Lys Gly Leu Asp Met Ser Asp Leu Leu
165 170 175

Ala Asp Pro Val Leu Arg Phe Gln Lys Lys Tyr Tyr Leu Leu Leu Met
180 185 190

Pro Leu Ala Cys Phe Val Met Pro Thr Val Ile Pro Val Tyr Leu Trp
195 200 205

Gly Glu Thr Trp Thr Asn Ala Phe Phe Val Ala Ala Met Phe Arg Tyr
210 215 220

Ala Phe Ile Leu Asn Val Thr Trp Leu Val Asn Ser Ala Ala His Lys
225 230 235 240

Trp Gly Asp Lys Pro Tyr Asp Lys Ser Ile Lys Pro Ser Glu Asn Met
245 250 255

Ser Val Ala Met Phe Ala Leu Gly Glu Gly Phe His Asn Tyr His His
260 265 270

Thr Phe Pro Trp Asp Tyr Lys Thr Ala Glu Phe Gly Asn Asn Lys Leu
275 280 285

Asn Phe Thr Thr Ala Phe Ile Asn Phe Phe Ala Lys Ile Gly Trp Ala
290 295 300

Tyr Asp Met Lys Thr Val Ser Glu Asp Ile Val Lys Asn Arg Val Lys
305 310 315 320

Arg Thr Gly Asp Gly Ser His His Leu Trp Gly Trp Gly Asp Glu Asn
325 330 335

Gln Pro Lys Glu Glu Ile Glu Ala Ala Ile Arg Ile Asn Pro Lys Asp
340 345 350

Asp

<210> 34

<211> 347

<212> PRT

<213> *Thaumetopoea pityocampa*

<400> 34

Met Ala Pro Asn Thr Arg Glu Asn Glu Thr Ile Tyr Asp Glu Val Glu
1 5 10 15

His Lys Leu Glu Lys Leu Val Pro Pro Gln Ala Gly Pro Trp Asn Tyr
20 25 30

Lys Ile Val Tyr Leu Asn Leu Leu Thr Phe Ser Tyr Trp Leu Ile Ala
35 40 45

Gly Ala Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp Ala Thr
50 55 60

Ile Ile Phe Glu Phe Ile Leu Phe Phe Phe Ala Glu Met Gly Ile Thr
65 70 75 80

Ala Gly Ala His Arg Leu Trp Thr His Lys Ser Tyr Lys Ala Lys Leu
85 90 95

Pro Leu Glu Ile Phe Leu Met Val Leu Asn Ser Val Ala Phe Gln Asn
100 105 110

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

<210> 35
 <211> 302
 <212> PRT

<213> Tribolium castaneum

<400> 35

Met Phe Leu Arg Thr Ile Thr Ser Lys Phe Tyr Ser Asp Gln Ile Val
1 5 10 15

Trp Arg Asn Val Phe Leu Leu Leu Ile Leu His Ile Ile Ser Leu Gln
20 25 30

Gly Trp Tyr Phe Val Leu Thr Thr Thr Asn Trp Pro Thr Leu Ile Tyr
35 40 45

Gly Phe Ile Phe Gly Ala Leu Thr Gly Gln Gly Ile Lys Leu Gly Ala
50 55 60

His Arg Leu Trp Ala His Arg Cys Tyr Lys Ala Lys Leu Pro Leu Arg
65 70 75 80

Ile Phe Leu Cys Phe Leu Gln Thr Val Thr Leu Gln Asn Pro Leu Tyr
85 90 95

Glu Trp Val Arg Asp His Gln Val His His Lys Tyr Thr Asp Thr Asn
100 105 110

Ala Asp Pro Leu Asn Ala Thr Arg Gly Phe Phe Phe Ser His Met Gly
115 120 125

Trp Leu Leu Val Arg Lys His Pro Asn Val Ile Ala Lys Gly Lys Thr
130 135 140

Leu Asp Leu Ser Asp Leu Glu Glu Asp Pro Val Val Met Phe Gln Lys
145 150 155 160

Lys Tyr Tyr Lys Ile Ile Ala Pro Val Leu Thr Leu Ala Ile Pro Ala
165 170 175

Leu Ile Pro Trp Tyr Phe Phe Gly Glu Asp Leu Tyr Leu Ser Trp Val
180 185 190

Thr Thr Cys Val Leu Pro Tyr Phe Ile Thr Leu His Ser Thr Trp Ala
195 200 205

Val Asn Ser Val Ala His Ile Trp Gly Thr Lys Pro Tyr Asn Lys Asn
210 215 220

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

Gly Trp His Asn Tyr His His Val Phe Pro Trp Asp Tyr Lys Ala Ala

245

250

255

Glu Leu Gly Asn Tyr Arg Pro Asn Leu Ser Thr Ala Phe Ile Asp Phe
 260 265 270

Met Ala Lys Ile Ala Trp Ala Tyr Asp Leu Lys Ser Val Ser Pro Glu
 275 280 285

Met Leu Arg Lys Arg Lys Met Arg Thr Gly Asp Cys Asp Tyr
 290 295 300

<210> 36

<211> 389

<212> PRT

<213> Tribolium castaneum

<400> 36

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

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

Val Leu Pro Gln Val Lys Pro Gln Ile Ser Ser Arg Ser Ser Val Ser
 35 40 45

Gln Tyr Arg Trp Gln Ile Val Trp Arg Asn Val Leu Ile Phe Ile Tyr
 50 55 60

Leu His Ile Ala Gly Ile Tyr Gly Leu Tyr Tyr Ala Ile Ala Gln Ala
 65 70 75 80

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

Ile Gly Val Thr Ala Gly Ala His Arg Leu Trp Ala His Arg Thr Tyr
 100 105 110

Lys Ala Lys Leu Pro Leu Arg Ile Tyr Leu Ala Phe Cys Gln Thr Val
 115 120 125

Ala Leu Gln Asn Asp Ile Tyr Glu Trp Val Arg Asp His Arg Val His
 130 135 140

His Lys Phe Thr Asp Thr Asp Ala Asp Pro His Asn Ser Asn Arg Gly
 145 150 155 160

Phe Phe Phe Ser His Met Gly Trp Leu Leu Val Lys Lys His Lys Asp
 165 170 175

Val Phe Val Lys Gly Lys Thr Val Asp Met Ser Asp Val Glu Ala Asp
180 185 190

Pro Val Val Arg Phe Gln Arg Lys Tyr Tyr Ile Ile Leu Thr Pro Ile
195 200 205

Leu Thr Phe Val Phe Pro Ala Ile Val Pro Trp Tyr Phe Trp Asn Glu
210 215 220

Thr Pro Thr Val Cys Phe Tyr Ser Val Ala Ile Phe Arg Tyr Ile Leu
225 230 235 240

Thr Leu His Gly Thr Trp Leu Val Asn Ser Ala Ala His Ile Trp Gly
245 250 255

Tyr Arg Pro Tyr Asp Lys Asn Ile Asn Ala Thr Glu Asn Lys Ser Val
260 265 270

Ser Ile Leu Ala Phe Gly Glu Gly Trp His Asn Tyr His His Val Phe
275 280 285

Pro Trp Asp Tyr Lys Ala Ala Glu Leu Gly Asn Tyr Arg Met Asn Phe
290 295 300

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

Leu Lys Thr Val Ser Val Asp Met Ile Asn Lys Arg Arg Lys Arg Thr
325 330 335

Gly Asp Gly Thr Gly Leu Val Asp Glu Glu Leu Leu Glu Asn Glu Asp
340 345 350

Lys His His His His Asp Asp Ser Ile Trp Gly Trp Gly Asp Lys
355 360 365

Asp Met Lys Gln Asp Asp Met Asp Met Val Gln Val His Asn Pro Ser
370 375 380

Arg Glu Lys Phe Asp
385

<210> 37
<211> 349
<212> PRT
<213> Trichoplusia ni

<400> 37

Met Ala Val Met Ala Gln Thr Val Gln Glu Thr Ala Thr Val Leu Glu

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Glu Glu Ala Arg Thr Val Thr Leu Val Ala Pro Lys Thr Thr Pro Arg	20	25	30
Lys Tyr Lys Tyr Ile Tyr Thr Asn Phe Leu Thr Phe Ser Tyr Ala His	35	40	45
Leu Ala Ala Leu Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp	50	55	60
Glu Thr Leu Leu Phe Ser Phe Val Leu Phe His Met Ser Asn Ile Gly	65	70	75
Ile Thr Ala Gly Ala His Arg Leu Trp Thr His Lys Thr Phe Lys Ala	85	90	95
Lys Leu Pro Leu Glu Ile Val Leu Met Ile Phe Asn Ser Leu Ala Phe	100	105	110
Gln Asn Thr Ala Ile Thr Trp Ala Arg Glu His Arg Leu His His Lys	115	120	125
Tyr Ser Asp Thr Asp Ala Asp Pro His Asn Ala Ser Arg Gly Phe Phe	130	135	140
Tyr Ser His Val Gly Trp Leu Leu Val Lys Lys His Pro Asp Val Leu	145	150	155
Lys Tyr Gly Lys Thr Ile Asp Met Ser Asp Val Tyr Asn Asn Pro Val	165	170	175
Leu Lys Phe Gln Lys Lys Tyr Ala Val Pro Leu Ile Gly Thr Val Cys	180	185	190
Phe Ala Leu Pro Thr Leu Ile Pro Val Tyr Cys Trp Gly Glu Ser Trp	195	200	205
Asn Asn Ala Trp His Ile Ala Leu Phe Arg Tyr Ile Phe Asn Leu Asn	210	215	220
Val Thr Phe Leu Val Asn Ser Ala Ala His Ile Trp Gly Asn Lys Pro	225	230	235
Tyr Asp Lys Ser Ile Leu Pro Ala Gln Asn Leu Leu Val Ser Phe Leu	245	250	255
Ala Ser Gly Glu Gly Phe His Asn Tyr His His Val Phe Pro Trp Asp	260	265	270

Tyr Arg Thr Ala Glu Leu Gly Asn Asn Phe Leu Asn Leu Thr Thr Leu
 275 280 285

Phe Ile Asp Phe Cys Ala Trp Phe Gly Trp Ala Tyr Asp Leu Lys Ser
 290 295 300

Val Ser Glu Asp Ile Ile Lys Gln Arg Ala Lys Arg Thr Gly Asp Gly
 305 310 315 320

Ser Ser Gly Val Ile Trp Gly Trp Asp Asp Lys Asp Met Asp Arg Asp
 325 330 335

Ile Lys Ser Lys Ala Asn Ile Phe Tyr Ala Lys Lys Glu
 340 345

<210> 38
 <211> 482
 <212> PRT
 <213> Yarrowia lipolytica

<400> 38

Met Val Lys Asn Val Asp Gln Val Asp Leu Ser Gln Val Asp Thr Ile
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Ala Ser Gly Arg Asp Val Asn Tyr Lys Val Lys Tyr Thr Ser Gly Val
 20 25 30

Lys Met Ser Gln Gly Ala Tyr Asp Asp Lys Gly Arg His Ile Ser Glu
 35 40 45

Gln Pro Phe Thr Trp Ala Asn Trp His Gln His Ile Asn Trp Leu Asn
 50 55 60

Phe Ile Leu Val Ile Ala Leu Pro Leu Ser Ser Phe Ala Ala Ala Pro
 65 70 75 80

Phe Val Ser Phe Asn Trp Lys Thr Ala Ala Phe Ala Val Gly Tyr Tyr
 85 90 95

Met Cys Thr Gly Leu Gly Ile Thr Ala Gly Tyr His Arg Met Trp Ala
 100 105 110

His Arg Ala Tyr Lys Ala Ala Leu Pro Val Arg Ile Ile Leu Ala Leu
 115 120 125

Phe Gly Gly Gly Ala Val Glu Gly Ser Ile Arg Trp Trp Ala Ser Ser
 130 135 140

His Arg Val His His Arg Trp Thr Asp Ser Asn Lys Asp Pro Tyr Asp
145 150 155 160

Ala Arg Lys Gly Phe Trp Phe Ser His Phe Gly Trp Met Leu Leu Val
165 170 175

Pro Asn Pro Lys Asn Lys Gly Arg Thr Asp Ile Ser Asp Leu Asn Asn
180 185 190

Asp Trp Val Val Arg Leu Gln His Lys Tyr Tyr Val Tyr Val Leu Val
195 200 205

Phe Met Ala Ile Val Leu Pro Thr Leu Val Cys Gly Phe Gly Trp Gly
210 215 220

Asp Trp Lys Gly Gly Leu Val Tyr Ala Gly Ile Met Arg Tyr Thr Phe
225 230 235 240

Val Gln Gln Val Thr Phe Cys Val Asn Ser Leu Ala His Trp Ile Gly
245 250 255

Glu Gln Pro Phe Asp Asp Arg Arg Thr Pro Arg Asp His Ala Leu Thr
260 265 270

Ala Leu Val Thr Phe Gly Glu Gly Tyr His Asn Phe His His Glu Phe
275 280 285

Pro Ser Asp Tyr Arg Asn Ala Leu Ile Trp Tyr Gln Tyr Asp Pro Thr
290 295 300

Lys Trp Leu Ile Trp Thr Leu Lys Gln Val Gly Leu Ala Trp Asp Leu
305 310 315 320

Gln Thr Phe Ser Gln Asn Ala Ile Glu Gln Gly Leu Val Gln Gln Arg
325 330 335

Gln Lys Lys Leu Asp Lys Trp Arg Asn Asn Leu Asn Trp Gly Ile Pro
340 345 350

Ile Glu Gln Leu Pro Val Ile Glu Phe Glu Glu Phe Gln Glu Gln Ala
355 360 365

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

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

Val Gly Lys Asp Gly Thr Ala Val Phe Asn Gly Gly Val Tyr Arg His

405

410

415

Ser Asn Ala Gly His Asn Leu Leu Ala Thr Met Arg Val Ser Val Ile
 420 425 430

Arg Gly Gly Met Glu Val Glu Val Trp Lys Thr Ala Gln Asn Glu Lys
 435 440 445

Lys Asp Gln Asn Ile Val Ser Asp Glu Ser Gly Asn Arg Ile His Arg
 450 455 460

Ala Gly Leu Gln Ala Thr Arg Val Glu Asn Pro Gly Met Ser Gly Met
 465 470 475 480

Ala Ala

<210> 39
 <211> 1011
 <212> DNA
 <213> Agrotis segetum

<400> 39
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<210> 40

<211> 981
<212> DNA
<213> Amyelois transitella

<400> 40
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<210> 41
<211> 1059
<212> DNA
<213> Amyelois transitella

<400> 41
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caaatcaagg agaaaggcc caccatcgac ctgaacgact tgagggccga tcccgtactc 540
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ttagtaccta cactctgggg tgaatctcta tggaacgcgt atttcgtatg cgctatcttc	660
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<210> 42
 <211> 1059
 <212> DNA
 <213> Amyelois transitella

<400> 42	
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<210> 43
 <211> 1050
 <212> DNA
 <213> Chauliognathus lugubris

<400> 43
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<210> 44
<211> 1116
<212> DNA
<213> Chilo supprealis

<400> 44
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<210> 45

<211> 1005

<212> DNA

<213> Choristoneura parallela

<400> 45

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<210> 46

<211> 1008

<212> DNA

<213> Choristoneura rosaceana

<400> 46
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<210> 47
<211> 1047
<212> DNA
<213> Cydia pomonella

<400> 47
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<210> 48
 <211> 1050
 <212> DNA
 <213> Cydia pomonella

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 <212> DNA
 <213> Cydia pomonella

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<210> 50

<211> 1059

<212> DNA

<213> Dendrolimus punctatus

<400> 50

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 <212> DNA
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 <212> DNA
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 <212> DNA
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 <212> DNA
 <213> Epiphyas postvittana

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<210> 55
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 <212> DNA
 <213> Grapholita molesta

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<211> 1026
<212> DNA
<213> Grapholita molesta

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<210> 58
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 <212> DNA
 <213> Lobesia botrana

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<210> 59
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 <213> Lobesia botrana

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 <212> DNA
 <213> *Manducta sexta*

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<210> 62

<211> 1020

<212> DNA

<213> Pectinophora gossypiella

<400> 62

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<210> 63
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 <212> DNA
 <213> *Pelargonium hortorum*

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 <211> 1050
 <212> DNA
 <213> *Plutella xylostella*

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 <213> Ricinus communis

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<210> 66
 <211> 1533
 <212> DNA
 <213> *Saccharomyces cerevisiae*

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<211> 1017	
<212> DNA	
<213> Spodoptera exigua	
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<210> 68
 <211> 1017
 <212> DNA
 <213> Spodoptera littoralis

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<210> 69

<211> 1017

<212> DNA

<213> Spodoptera littoralis

<400> 69

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<211> 1017
 <212> DNA
 <213> Spodoptera litura

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<210> 71
 <211> 1062
 <212> DNA
 <213> Spodoptera litura

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<210> 72
 <211> 1044
 <212> DNA
 <213> *Thaumetopoea pityocampa*

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accttctcct actggctgat cgctggcgct tacggcctgt acctgtgttt cacctctgcc	180
aagtgggcca ccatcatctt tgagttcatc ctgttcttct tcgctgagat gggcatcacc	240
gccggtgctc accgactgtg gaccacaag tcctacaagg ccaagctgcc cctggagatt	300
tttctgatgg tgctcaactc tgtggctttt cagaacactg ctactgattg ggtgcgagac	360
caccgactcc atcacaagta ttgggacact gacgccgacc cccacaacgc cgcccgagga	420
ctgttcttct ctcacgtggg atggctgctt gtccgaaaac acgacgaggt caagaagcga	480
ggcaagttca ccgacatgtc tgacatctac aacaaccctg tgctgaagtt ccagaagaag	540
tacgccatcc cttttatcgg agccgtgtgt ttcatcctgc ccaccgtgat tcctatgtac	600
ttctggggcg agtctctgaa caacgcttgg catatttgta tcttgcgata cgccatgaac	660
ttaaactgta ctttctctgt gaactctcta gcccatatct ggggtaacaa gccctacgac	720
aaggacatca agccgcaca gaacttcggc gtgaccctgg ccacctttgg tgagggttc	780
cacaactacc accacgtgtt tccctgggac tatagaacct ctgagctcgg cgacaacaag	840
tttaacttca ccaccaagt catcaatttc ttcgagagaa ttggactggc ctacgacctg	900
aagactgtgt ccgacgacgt gatcgccag cgagctaagc gaactggaga tggcaccac	960
ctgtgggact gtgccgataa gaacaacaac gacgtggtgc aaaccaaggc ccagattgac	1020
accctctgta ccaagcacga gtaa	1044

<210> 73
 <211> 909
 <212> DNA
 <213> *Tribolium castaneum*

<400> 73
atgttcctgc gaaccatcac ctctaagttc tactctgacc agatcgtgtg gcgaaacgtg 60
ttcctgctgc tgatcctgca catcatctcc ctgcaaggct ggtacttcgt gctgaccacc 120
accaactggc ccactctgat ctacggcttc atcttcggcg ccctgaccgg ccaggggaatc 180
aagctgggag cccaccgact gtgggctcac cgatgctaca aggccaagct gcccctgcga 240
atcttcctgt gcttcctgca gaccgtgact ctgcagaacc ctctgtacga gtgggtgcga 300
gatcaccagg tgcaccacaa gtacaccgac accaacgtg accctctgaa cgctaccgca 360
ggcttcttct tctctcacat gggctggctg ctgggtcgaa agcaccctaa cgtgatcgcc 420
aagggaaga ccctggacct gtctgacctg gaagaggacc ccgtggatgat gttccagaag 480
aagtactaca agatcattgc ccctgtgctg accctggcta tccccgctct gatcccctgg 540
tactttttcg gcgaggacct gtacctgtct tgggtgacca cctgtgtgct gccctacttc 600
atcacctgc actctacctg ggccgtgaac tctgtggccc acatctgggg caccaagcct 660
tacaacaaga acattctgcc caccgagaac attgccgtgg ccattgtggc ctacggcgaa 720
ggctggcaca actaccacca cgtgttccct tgggactaca aggctgccga gctgggcaac 780
taccgaccta acctgtctac cgccttcac gacttcatgg ccaagatcgc ctgggcctac 840
gacctgaagt ctgtgtctcc cgagatgctg cgaaagcgaa agatgcgaac cggcgactgc 900
gactactaa 909

<210> 74
<211> 1170
<212> DNA
<213> Tribolium castaneum

<400> 74
atggctccca acctgctggg caactctacc ctgttcctgg ccgagactaa ctctgctgag 60
cccatccaga tcatctctaa gcccgacctg caggacgtgc tgccccaggt gaagccccag 120
atctcttctc gatcttctgt gtctcagtac cgatggcaga tcgtgtggcg aaacgtgctg 180
atcttcatct acctgcacat tgccggcatc tacggcctgt actacgccat tgctcaggcc 240
cagtgaaga ccctgctgtg gggctacctg gtgatcctgg cctctggcat cggcgtgacc 300
gctggcgccc accgactgtg ggctcaccga acctacaagg ccaagctgcc cctgcgaatc 360
tacctggcct tctgccagac cgtggctctg cagaacgaca tctacgagtg ggtgcgagat 420
caccgagtgc accacaagtt caccgacacc gacgtgacc ctcaaacctc taaccgaggc 480
ttcttcttct ctacatggg ctggctgctg gtgaagaagc acaaggacgt tttcgtgaag 540
ggcaagaccg tggacatgtc tgacgtcgag gctgaccccg tgggtcgatt ccagcgaaag 600
tactacatca ttctgacccc tatctgacc ttctgttcc ccgctatcgt gccctggtac 660
ttctggaacg agactccac cgtgtgcttc tactctgtgg ccatcttccg atatatcctg 720

actctgcacg gcacctggct ggtgaactct gccgctcaca tctggggata ccgaccttac	780
gacaagaaca tcaacgccac cgagaacaag tctgtgtcta ttctggcctt cggcgaagga	840
tggcacaact accaccacgt gttcccttgg gactacaagg ctgccgagct gggaaactac	900
cgaatgaact tcaccaccgc ctttctggac ctgatgtcta agatcggcca ggcctacgac	960
ctcaagactg tgtctgtgga catgatcaac aagcgacgaa agcgaaccgg cgacggaacc	1020
ggcctggtgg acgaggaact gctcgagaac gaggacaagc accaccacca tcacgacgac	1080
tctatttggg gctggggcga caaggacatg aagcaggacg acatggacat ggtccaggtg	1140
cacaaccctt ctcgagagaa gttcgactaa	1170

<210> 75
 <211> 1050
 <212> DNA
 <213> Trichoplusia ni

<400> 75 atggctgtta tggctcaaac tgttcaagaa actgctaccg ttttgaaga agaagctaga	60
actgttactt tggttgctcc aaaaactacc ccaagaaagt acaagtacat ctacaccaat	120
ttcttgacct tctcctatgc tcatttggct gcattatatg gtttgtactt gtgtttcact	180
tccgctaagt gggaaacttt gttgttctct ttcgttttgt tccacatgtc caacattggt	240
attactgctg gtgctcatag attgtggact cataagactt ttaaggccaa gttgccattg	300
gaaatcgtct tgatgatttt caactccttg gctttccaaa aactgctat tacttgggct	360
agagaacata gattgcatca caagtactct gatactgatg ctgatccaca taatgcttct	420
agaggtttct tctactctca tgttggttgg ttgttgggta agaaacaccc agatgttttg	480
aagtacggta agaccattga tatgtccgat gtttacaaca accagtctt gaagttccaa	540
aagaaatacg ccgttccatt gattggtact gtttgttttg ctttgccaac cttgattcca	600
gtttactgtt ggggtgaatc ttggaacaat gcttggcata ttgctttgtt cagatatatc	660
ttcaacttga acgtcacctt cttggttaat tccgctgctc atatttgggg taacaagcca	720
tatgataagt ccattttgcc agcccaaac ttgttgggtt cttttttggc ttctggtgaa	780
ggtttccata actaccatca tgtttttcca tgggattaca gaactgctga attgggtaac	840
aacttcttga acttgaccac cttgttcatt gatttctgtg cttggtttgg ttgggcttac	900
gatttgaaat ctgtctccga agatatcatc aagcaaagag ctaaaagaac cggatgatgt	960
tcttctggtg ttatatgggg ttgggatgat aaggatatgg atagagatat taagtccaag	1020
gccaacattt tctacgctaa gaaagaatga	1050

<210> 76
 <211> 1449
 <212> DNA
 <213> Yarrowia lipolytica

<400> 76
atggtgaaaa acgtggacca agtggatctc tcgcaggctg acaccattgc ctccggccga 60
gatgtcaact acaagggtcaa gtacacctcc ggcgttaaga tgagccaggg cgcctacgac 120
gacaagggcc gccacatttc cgagcagccc ttcacctggg ccaactggca ccagcacatc 180
aactggctca acttcattct ggtgattgctg ctgcctctgt cgtcctttgc tgccgctccc 240
ttcgtctcct tcaactggaa gaccgccgcg tttgctgtcg gctattacat gtgcaccggt 300
ctcggtatca ccgccggcta ccaccgaatg tgggcccata gagcctacaa ggccgctctg 360
cccgttcgaa tcatccttgc tctgtttgga ggaggagctg tcgagggtc catccgatgg 420
tgggcctcgt ctcaccgagt ccaccaccga tggaccgact ccaacaagga cccttacgac 480
gcccgaagg gattctgggt ctcccacttt ggctggatgc tgcttgtgcc caacccaag 540
aacaagggcc gaactgacat ttctgacctc aacaacgact gggttgtccg actccagcac 600
aagtactacg tttacgttct cgtcttcatg gccattgttc tgcccaccct cgtctgtggc 660
tttggctggg gcgactggaa gggaggtctt gtctacgccg gtatcatgctg atacaccttt 720
gtgcagcagg tgactttctg tgtcaactcc cttgccact ggattggaga gcagcccttc 780
gacgaccgac gaactccccg agaccacgct cttaccgcc tggtcacctt tggagagggc 840
taccacaact tccaccacga gttcccctcg gactaccgaa acgccctcat ctggtaccag 900
tacgaccca ccaagtggct catctggacc ctcaagcagg ttggtctcgc ctgggacctc 960
cagaccttct ccagaacgc catcgagcag ggtctcgtgc agcagcgaca gaagaagctg 1020
gacaagtggc gaaacaacct caactgggggt atccccattg agcagctgcc tgtcattgag 1080
tttgaggagt tccaagagca ggccaagacc cgagatctgg ttctcatttc tggcattgtc 1140
cacgacgtgt ctgcctttgt cgagcaccac cctggtggaa aggccctcat tatgagcgcc 1200
gtcggcaagg acggtaccgc tgtcttcaac ggaggtgtct accgacactc caacgtggc 1260
cacaacctgc ttgccaccat gcgagtttcg gtcattcgag gcggcatgga ggttgaggtg 1320
tggaagactg ccagaacga aaagaaggac cagaacattg tctccgatga gagtggaaac 1380
cgaatccacc gagctggtct ccaggccacc cgggtcgaga accccggtat gtctggcatg 1440
gctgcttag 1449

<210> 77
<211> 458
<212> PRT
<213> *Agrotis segetum*

<400> 77

Met Pro Val Leu Thr Ser Arg Glu Asp Glu Lys Leu Ser Val Pro Glu
1 5 10 15

Phe Tyr Ala Gly Lys Ser Ile Phe Val Thr Gly Gly Thr Gly Phe Leu
20 25 30

Gly Lys Val Phe Ile Glu Lys Leu Leu Tyr Cys Cys Pro Asp Ile Asp
 35 40 45

Lys Ile Tyr Met Leu Ile Arg Glu Lys Lys Asn Leu Ser Ile Asp Glu
 50 55 60

Arg Met Ser Lys Phe Leu Asp Asp Pro Leu Phe Ser Arg Leu Lys Glu
 65 70 75 80

Glu Arg Pro Gly Asp Leu Glu Lys Ile Val Leu Ile Pro Gly Asp Ile
 85 90 95

Thr Ala Pro Asn Leu Gly Leu Ser Ala Glu Asn Glu Arg Ile Leu Leu
 100 105 110

Glu Lys Val Ser Val Ile Ile Asn Ser Ala Ala Thr Val Lys Phe Asn
 115 120 125

Glu Pro Leu Pro Ile Ala Trp Lys Ile Asn Val Glu Gly Thr Arg Met
 130 135 140

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

Ile Ser Thr Ala Tyr Ser Asn Ala Ser Ser Asp Arg Ile Val Val Asp
 165 170 175

Glu Ile Leu Tyr Pro Ala Pro Ala Asp Met Asp Gln Val Tyr Gln Leu
 180 185 190

Val Lys Asp Gly Val Thr Glu Glu Glu Thr Glu Arg Leu Leu Asn Gly
 195 200 205

Leu Pro Asn Thr Tyr Thr Phe Thr Lys Ala Leu Thr Glu His Leu Val
 210 215 220

Ala Glu His Gln Thr Tyr Val Pro Thr Ile Ile Ile Arg Pro Ser Val
 225 230 235 240

Val Ala Ser Ile Lys Asp Glu Pro Ile Arg Gly Trp Leu Cys Asn Trp
 245 250 255

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

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

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

Lys Ser Asp Glu Leu Lys Ile Tyr Asn Cys Cys Ser Ser Asp Cys Asn
305 310 315 320

Pro Val Thr Leu Lys Lys Ile Ile Lys Glu Phe Thr Glu Asp Thr Ile
325 330 335

Lys Asn Lys Ser His Ile Met Pro Leu Pro Gly Trp Phe Val Phe Thr
340 345 350

Lys Tyr Lys Trp Leu Leu Thr Leu Leu Thr Ile Ile Phe Gln Met Leu
355 360 365

Pro Met Tyr Leu Ala Asp Val Tyr Arg Val Leu Thr Gly Lys Ile Pro
370 375 380

Arg Tyr Met Lys Leu His His Leu Val Ile Gln Thr Arg Leu Gly Ile
385 390 395 400

Asp Phe Phe Thr Ser His Ser Trp Val Met Lys Thr Asp Arg Val Arg
405 410 415

Glu Leu Phe Gly Ser Leu Ser Leu Ala Glu Lys His Met Phe Pro Cys
420 425 430

Asp Pro Ser Ser Ile Asp Trp Thr Asp Tyr Leu Gln Ser Tyr Cys Tyr
435 440 445

Gly Val Arg Arg Phe Leu Glu Lys Lys Lys
450 455

<210> 78
<211> 458
<212> PRT
<213> Agrotis epsilon

<400> 78

Met Ala Val Ile Ile Ser Arg Glu Glu Glu Lys Leu Ser Val Pro Glu
1 5 10 15

Phe Tyr Ala Gly Lys Ser Ile Phe Ile Thr Gly Gly Thr Gly Phe Leu
20 25 30

Gly Lys Val Phe Ile Glu Lys Leu Leu Tyr Ser Cys Pro Asp Ile Asp
35 40 45

Lys Ile Tyr Met Leu Ile Arg Glu Lys Lys Asn Leu Ser Ile Asp Glu

50

55

60

Arg Met Thr Met Phe Leu Asp Asp Pro Leu Phe Ser Arg Leu Lys Glu
65 70 75 80

Lys Arg Pro Gly Asp Val Glu Lys Ile Val Leu Ile Pro Gly Asp Ile
85 90 95

Ser Ser Pro Asn Leu Gly Leu Ser Ala Glu Asn Glu Arg Ile Leu Ile
100 105 110

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

Glu Pro Leu Pro Ile Ala Trp Lys Ile Asn Val Glu Gly Thr Arg Met
130 135 140

Leu Met Asp Leu Ser Arg Arg Met Lys Arg Ile Lys Val Phe Ile His
145 150 155 160

Ile Ser Thr Ala Tyr Ser Asn Ala Asn Ser Glu Arg Ala Ala Val Glu
165 170 175

Glu Ile Leu Tyr Pro Ala Pro Ala Asp Met Asp Gln Val Tyr Gln Leu
180 185 190

Val Lys Asp Gly Val Thr Glu Glu Glu Thr Glu Ile Leu Leu Asn Gly
195 200 205

Leu Pro Asn Thr Tyr Thr Phe Thr Lys Ala Leu Ala Glu His Leu Ala
210 215 220

Ala Glu His Gln Val His Val Pro Thr Val Ile Ile Arg Pro Ser Ile
225 230 235 240

Val Gly Ser Ile Lys Asp Glu Pro Ile Arg Gly Trp Leu Cys Asn Trp
245 250 255

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

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

Tyr Val Ala Asn Leu Val Ile Val Ala Gly Ala Lys Asn Gly Gly Glu
290 295 300

Lys Ser Glu Glu Leu Lys Ile Tyr Asn Cys Cys Ser Ser Asp Cys Asn
305 310 315 320

Pro Val Thr Val Lys Lys Ile Leu Lys Glu Phe Ile Asp Asp Thr Ile
 325 330 335

Lys Asn Lys Ser His Ile Met Pro Leu Pro Gly Trp Phe Val Phe Thr
 340 345 350

Lys Tyr Lys Trp Leu Met Thr Leu Leu Thr Ile Ile Phe Gln Met Ile
 355 360 365

Pro Met Tyr Leu Ala Asp Val Tyr Arg Val Leu Met Gly Lys Asn Pro
 370 375 380

Arg Tyr Met Lys Leu His His Leu Val Ile Gln Thr Arg Leu Val Ile
 385 390 395 400

Asn Phe Phe Thr Phe His Ser Trp Val Met Lys Thr Asp Arg Ala Arg
 405 410 415

Glu Leu Phe Gly Ser Leu Ser Pro Val Glu Lys His Met Phe Pro Trp
 420 425 430

Asp Pro Ser Gly Ile Asp Trp Thr Glu Tyr Leu Gln Ser Tyr Cys Tyr
 435 440 445

Gly Val Arg His Phe Leu Glu Lys Arg Lys
 450 455

<210> 79
 <211> 478
 <212> PRT
 <213> Bicyclus anynana

<400> 79

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

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

Asn Thr Asn Glu Tyr Gln Ser Ile Ala Glu Cys Tyr Lys Gly Gln Ser
 35 40 45

Val Phe Ile Thr Gly Gly Thr Gly Phe Val Gly Lys Val Leu Leu Glu
 50 55 60

Lys Leu Leu Tyr Ser Cys Pro Gly Ile Asp Lys Val Tyr Leu Leu Val
 65 70 75 80

Arg Glu Thr Gln Gly Ala Thr Ala His Gln Arg Met Gln Lys Leu Leu
85 90 95

Glu Glu Pro Ala Phe Ser Arg Ile Lys Glu Glu Asn Pro Gln Ala Phe
100 105 110

Glu Lys Val Ile Pro Ile Val Gly Asp Ile Thr Gln Pro Gln Leu Gly
115 120 125

Ile Met Ala Glu Asn Glu Glu Leu Leu Ile Lys Glu Val Ser Phe Val
130 135 140

Tyr His Val Ala Ala Thr Thr Lys Phe Asn Glu Thr Leu Asp Ile Ala
145 150 155 160

Met Asn Val Asn Val Ala Gly Thr Gly Arg Val Leu Asp Leu Ser Lys
165 170 175

Arg Met Glu Asn Ile Lys Ala Phe Val Tyr Val Ser Thr Ala Tyr Ser
180 185 190

Asn Thr Asp Arg Glu Val Val Glu Glu Val Leu Tyr Pro Ala Pro Val
195 200 205

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

Gln Val Lys Glu Leu Ile Lys Gly Arg Pro Asn Thr Tyr Thr Phe Thr
225 230 235 240

Lys Ala Leu Ala Glu Asn Leu Val Ala Asp Asn His Gly His Val Pro
245 250 255

Ala Ile Ile Val Arg Pro Ser Ile Val Ser Ser Ser Lys Lys Glu Pro
260 265 270

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

Val Thr Met Lys Gly Phe Asn Arg Val Phe Val Ser Ser Tyr Glu Tyr
290 295 300

Asn Leu Asp Phe Ile Pro Val Asp Tyr Val Ser Asn Leu Ile Ile Val
305 310 315 320

Ala Ala Ala Arg Cys Lys Cys Ser Asp Lys Val Asp Val Tyr Asn Ser
325 330 335

Ser Thr Ser Gly Glu Asn Pro Leu Lys Ile Gly Ala Phe Phe Asp Asp

340

345

350

Ile Ile Ala Tyr Ser Cys Lys His Lys Phe Tyr Asp Ile Pro Leu Pro
 355 360 365

Met Ala Tyr Leu Thr Arg Tyr Arg Trp Val Met Phe Leu Ile Thr Leu
 370 375 380

Leu Leu Gln Thr Leu Pro Ala Tyr Ile Ala Asp Leu Phe Leu Leu Ile
 385 390 395 400

Val Gly Lys Lys Pro Arg Tyr Val Lys Leu Ala Ser Lys Ile Ser Ala
 405 410 415

Ala His Glu Val Leu Asp Tyr Phe Pro Ser Arg Thr Trp Ser Met Ser
 420 425 430

Ala Arg Gln Thr Thr Ala Leu Phe Gln Ser Leu Ser Pro Ser Asp Arg
 435 440 445

Asp Gln Phe Pro Cys Asp Pro Thr Asp Ile Asp Trp Lys Glu Tyr Ile
 450 455 460

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

<210> 80

<211> 482

<212> PRT

<213> Bombus lapidarius

<400> 80

Met Ser His His His His His Gly Ser Asn Thr Lys Leu Asn Glu
 1 5 10 15

Asn Glu Ile Asn Glu Lys Leu Arg Asn Val Asn Ser Ile Gly Gly Phe
 20 25 30

Tyr Ala Gly Thr Gly Ile Leu Ile Thr Gly Gly Thr Gly Phe Val Gly
 35 40 45

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

Ile Phe Ile Leu Ile Arg Pro Lys Arg Asn Gln Thr Ile Glu Gln Arg
 65 70 75 80

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

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

Leu Pro Asp Leu Gly Leu Leu Gln Lys Asp Arg Asp Met Leu Ile Glu
 115 120 125

Asn Val Asn Ile Val Phe His Ile Ala Ala Thr Ile Asn Phe His Gln
 130 135 140

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

Ile Lys Leu Cys Lys Glu Leu Lys His Val Ile Ser Val Val Tyr Val
 165 170 175

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

Tyr Thr Thr Asn Leu Asp Pro Ser Leu Val Met Asp Ile Cys Asp Arg
 195 200 205

Gln Asp Lys Glu Leu Ile Asn Leu Ile Glu Glu Arg Ile Leu Lys Thr
 210 215 220

His Pro Asn Thr Tyr Thr Phe Thr Lys Asn Leu Ala Glu Gln Thr Ile
 225 230 235 240

Ser Asn Asn Ser Lys Gly Leu Thr Val Ala Ile Val Arg Pro Ser Ile
 245 250 255

Ile Ser Ser Ser Leu Lys Glu Pro Phe Pro Gly Trp Leu Val Ser Phe
 260 265 270

Ala Gly Gln Ser Gly Ile Phe Lys Asn Ile Gly Asn Gly Met Ala Lys
 275 280 285

Val Leu Leu Gly Arg Gly Asp Val Ile Ser Asp Ile Val Pro Val Asp
 290 295 300

Tyr Val Val Asp Ala Ile Met Cys Ala Ala Trp His Val Thr Leu Gln
 305 310 315 320

Ile Asp Asn Asn Val Lys Val Tyr Asn Cys Thr Ser Ser Ala Arg Pro
 325 330 335

Ile Lys Leu Gly Glu Ile Val Asn Ile Phe Val Glu Cys Ser Arg Glu
 340 345 350

Ile Pro Met Lys Asn Thr Leu Trp Tyr Pro Ser Cys Thr Ile Val Ala
355 360 365

Asn Arg Phe Val Tyr Asn Val Leu Asn Ile Leu Leu Asn Val Leu Pro
370 375 380

Ala Phe Ala Val Asp Ile Phe Leu Arg Leu Arg Gly Gly Lys Pro Met
385 390 395 400

Ala Met Asn Met Asn Lys Tyr Tyr Asn Lys Leu Val Val Ala Thr Ser
405 410 415

Tyr Phe Asn Ser Asn Glu Trp Ser Phe Lys Arg Asp Asn Ile Ala Asp
420 425 430

Met Ile Asn Lys Val Asn Thr Leu Glu Asp Gly Asn Ile Val Lys Leu
435 440 445

Asp Leu Gln Asp Met Val Trp Arg Lys Tyr Ile Ala Asn Tyr Leu Ala
450 455 460

Gly Ile Lys Lys Phe Ile Leu Lys Glu Asp Pro Lys Ser Ile Asn Ala
465 470 475 480

Ala Pro

<210> 81
<211> 468
<212> PRT
<213> Chilo suppressalis

<400> 81

Met Glu Pro Tyr Lys Ser Asp Glu Glu Ile Lys Ser Lys Leu Phe Ser
1 5 10 15

Pro Val Val Asn Phe Tyr Thr Gly Lys Ser Val Phe Ile Thr Gly Ala
20 25 30

Thr Gly Phe Leu Gly Thr Val Leu Leu Glu Lys Leu Met Phe Thr Cys
35 40 45

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

Gln Ser Ile Asp Glu Lys Met Ser Lys Phe Phe Asp Ser Arg Ala Phe
65 70 75 80

Glu Arg Leu Arg Glu His Asn Pro Asn Phe Arg Ser Lys Ile Ile Pro
85 90 95

Leu Thr Gly Asp Ile Thr Lys Lys Ser Ile Gly Leu Ser Glu Asn Asp
 100 105 110

Ile Phe Ile Leu Arg Lys Glu Val Ser Val Val Phe His Ser Ala Ala
 115 120 125

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

Lys Ala Thr Glu Glu Leu Leu Lys Ile Cys Lys Asp Met His Gln Leu
 145 150 155 160

Lys Ala Phe Val Tyr Val Ser Thr Ala Tyr Ser Asn Cys Asn Arg Pro
 165 170 175

Ile Ile Asp Glu Lys Val Tyr Pro Thr Asp Val Ser Leu Glu Thr Val
 180 185 190

Tyr Glu Leu Leu Glu Tyr Ser Lys Ser Asp Lys Leu Ile Glu Phe Leu
 195 200 205

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

Glu Leu Val Gln Asn Tyr Gly Asn Ile Ile Pro Ser Ile Ile Ile Arg
 225 230 235 240

Pro Ser Ile Ile Thr Ser Ser Ile Lys Glu Pro Tyr Pro Gly Trp Leu
 245 250 255

Ser Gly Trp Asn Gly Leu Asn Gln Val Ile Leu Ser Gly Met Lys Gly
 260 265 270

Tyr Leu Arg Cys Trp Phe Ala Asp Asp Ser Cys Ile Ala Asp Thr Ile
 275 280 285

Pro Val Asp Tyr Thr Ala Asn Val Met Ile Val Ser Ala Trp Asp Ala
 290 295 300

His Glu Arg Arg Leu Lys Asn Asp Lys Gln Leu Lys Val Phe Asn Cys
 305 310 315 320

Cys Ser Gly Leu Gln Asn Pro Ile Asp Thr Gly Asn Met Met Ser Ile
 325 330 335

Cys Leu Glu His Asn Lys Lys His Glu Lys Asp Lys Ser Lys Ala Asn
 340 345 350

Thr Met Phe Ile Ile Arg Lys Asn Phe Tyr Val Tyr Phe Phe Tyr Phe
355 360 365

Leu Val Leu His Leu Ile Pro Ala Leu Ile Ile Asp Val Phe Tyr Phe
370 375 380

Leu Leu Gly Arg Glu Met Leu Met Cys Thr Asn Leu Lys Lys Ile Lys
385 390 395 400

Arg Phe Ser Ser Ile Leu Lys Val Phe Cys Phe Asn Gln Phe Leu Phe
405 410 415

Ile Asp Lys Asn Val Arg Arg Leu His Gln Ala Leu Asn Glu Thr Asp
420 425 430

Lys Val Leu Phe Asp Phe Asp Val Arg Asn Ile Gln Trp Arg Val Tyr
435 440 445

Leu Lys Asp Phe Val Ile Ala Leu Lys Glu Tyr Asp Lys Thr Ser Arg
450 455 460

Thr Val Lys Ile
465

<210> 82
<211> 507
<212> PRT
<213> Cydia pomonella

<400> 82

Met Asp Met Ile Asp Glu Ala Glu Ala Arg Gly Glu Ser Gln Ile Gln
1 5 10 15

Lys Phe Leu Ser Gly Ser Thr Ile Leu Leu Thr Gly Gly Thr Gly Phe
20 25 30

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

Lys Lys Ile Tyr Leu Leu Ala Arg Pro Lys Lys Asn Lys Glu Ile Gln
50 55 60

Lys Arg Leu Gln Glu Gln Phe Glu Asp Pro Leu Tyr Glu Arg Leu Arg
65 70 75 80

Lys Gln Val Pro Asp Phe Met Ser Lys Ile Gly Val Val Glu Gly Asp
85 90 95

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

100	105	110																	
Val	Asp	Glu	Val	Asp	Val	Ile	Phe	His	Gly	Ala	Ala	Thr	Leu	Arg	Phe				
		115					120					125							
Asn	Glu	Pro	Leu	Arg	Asp	Ala	Val	Phe	Ile	Asn	Val	Arg	Gly	Thr	Arg				
		130				135					140								
Glu	Met	Met	Leu	Leu	Ala	Arg	Ala	Cys	Thr	Lys	Leu	Lys	Ala	Met	Val				
		145			150					155					160				
His	Ile	Ser	Thr	Ala	Tyr	Ser	Asn	Cys	Thr	Leu	Ser	Glu	Ile	Asp	Glu				
				165					170					175					
Val	Phe	Tyr	Glu	Ser	Pro	Ile	Pro	Gly	Asp	Lys	Leu	Ile	Asp	Leu	Ala				
			180					185					190						
Glu	Ser	Leu	Asp	Glu	Lys	Thr	Ile	Asn	Ser	Ile	Thr	Pro	Gly	Leu	Ile				
		195					200					205							
Gly	Asp	Phe	Pro	Asn	Thr	Tyr	Ala	Tyr	Thr	Lys	Gly	Val	Ala	Glu	Asp				
		210				215					220								
Val	Leu	Gln	Lys	Tyr	Ser	Gln	Gly	Leu	Pro	Val	Ala	Val	Val	Arg	Pro				
		225			230				235						240				
Ser	Ile	Val	Ile	Gly	Thr	Ala	Lys	Asp	Pro	Val	Ala	Gly	Trp	Ile	Asp				
			245						250					255					
Asn	Val	Tyr	Gly	Pro	Thr	Gly	Val	Ile	Val	Gly	Ala	Glu	Leu	Gly	Leu				
		260					265						270						
Leu	His	Val	Leu	His	Ala	Ala	Pro	Asn	Ala	Ser	Ala	Ser	Leu	Val	Pro				
		275					280					285							
Gly	Asp	Ala	Val	Ala	Ala	Ala	Cys	Val	Ala	Ala	Ala	Trp	Ser	Val	Ser				
		290			295						300								
Arg	Ala	Glu	Asn	His	Gln	Ala	Pro	Ala	Arg	Asp	Ala	Pro	Pro	Leu	Tyr				
		305			310					315					320				
His	Cys	Val	Cys	Ser	Glu	Lys	Ala	Pro	Ile	Thr	Trp	Ser	Gln	Phe	Met				
			325						330					335					
Ser	Leu	Ala	Glu	Thr	His	Gly	Leu	Val	Val	Pro	Pro	Met	Gln	Ala	Met				
		340					345					350							
Trp	Tyr	Tyr	Met	Leu	Thr	Leu	Thr	Asn	Ser	Lys	Ala	Met	Tyr	Thr	Leu				
		355				360						365							

Leu Ala Leu Leu Met His Trp Ile Pro Ala Tyr Ile Ile Asp Gly Val
 370 375 380

Cys Met Val Leu Gly Lys Lys Pro Gln Leu Arg Lys Ala Tyr Thr Lys
 385 390 395 400

Ile Glu Gln Phe Ala Ala Val Ile Glu Phe Phe Ala Leu Arg Glu Trp
 405 410 415

Arg Phe His Asn Asn Asn Met Thr Arg Leu Tyr Asn Glu Leu Cys Asp
 420 425 430

Ala Asp Lys His Ile Tyr Asp Phe Asp Thr Ser Ala Ile Asp Trp Asn
 435 440 445

Glu Phe Phe Ala Asn Tyr Met Lys Gly Ile Arg Val Tyr Leu Leu Lys
 450 455 460

Asp Pro Val Ser Thr Ile Pro Glu Ser Leu Lys Arg His Lys Arg Leu
 465 470 475 480

Lys Trp Leu His Tyr Ala Leu Leu Thr Val Leu Ser Leu Leu Val Leu
 485 490 495

Arg Leu Leu Trp Phe Phe Val Ser Phe Leu Phe
 500 505

<210> 83
 <211> 455
 <212> PRT
 <213> Helicoverpa armigera

<400> 83

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

Tyr Ala Gly Lys Ser Val Phe Ile Thr Gly Gly Thr Gly Phe Leu Gly
 20 25 30

Lys Val Phe Ile Glu Lys Leu Leu Tyr Ser Cys Pro Asp Ile Gly Asn
 35 40 45

Ile Tyr Met Leu Ile Arg Glu Lys Lys Gly Leu Ser Val Ser Glu Arg
 50 55 60

Ile Lys His Phe Leu Asp Asp Pro Leu Phe Thr Arg Leu Lys Glu Lys
 65 70 75 80

Arg Pro Ala Asp Leu Glu Lys Ile Val Leu Ile Pro Gly Asp Ile Thr
85 90 95

Ala Pro Asp Leu Gly Ile Thr Ser Glu Asn Glu Lys Met Leu Ile Glu
100 105 110

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

Pro Leu Pro Thr Ala Trp Lys Ile Asn Val Glu Gly Thr Arg Met Met
130 135 140

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

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

Tyr Pro Ala Pro Ala Asp Ile Asp Gln Val His Arg Tyr Val Lys Asp
180 185 190

Gly Ile Ser Glu Glu Glu Thr Glu Lys Ile Leu Asn Gly Arg Pro Asn
195 200 205

Thr Tyr Thr Phe Thr Lys Ala Leu Thr Glu His Leu Val Ala Glu Asn
210 215 220

Gln Ala Tyr Val Pro Thr Ile Ile Val Arg Pro Ser Val Val Ala Ala
225 230 235 240

Ile Lys Asp Glu Pro Ile Lys Gly Trp Leu Gly Asn Trp Tyr Gly Ala
245 250 255

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

Gly His Ser Ser Asn Ile Val Asp Leu Ile Pro Val Asp Tyr Val Ala
275 280 285

Asn Leu Val Ile Ala Ala Gly Ala Lys Ser Ser Lys Ser Thr Glu Leu
290 295 300

Lys Val Tyr Asn Cys Cys Ser Ser Ala Cys Asn Pro Ile Thr Ile Gly
305 310 315 320

Lys Leu Met Ser Met Phe Ala Glu Asp Ala Ile Lys Gln Lys Ser Tyr
325 330 335

Ala Met Pro Leu Pro Gly Trp Tyr Ile Phe Thr Lys Tyr Lys Trp Leu

340

345

350

Val Leu Leu Leu Thr Ile Leu Phe Gln Val Ile Pro Ala Tyr Ile Thr
 355 360 365

Asp Leu Tyr Arg His Leu Ile Gly Lys Asn Pro Arg Tyr Ile Lys Leu
 370 375 380

Gln Ser Leu Val Asn Gln Thr Arg Ser Ser Ile Asp Phe Phe Thr Ser
 385 390 395 400

His Ser Trp Val Met Lys Ala Asp Arg Val Arg Glu Leu Phe Ala Ser
 405 410 415

Leu Ser Pro Ala Asp Lys Tyr Leu Phe Pro Cys Asp Pro Thr Asp Ile
 420 425 430

Asn Trp Thr His Tyr Ile Gln Asp Tyr Cys Trp Gly Val Arg His Phe
 435 440 445

Leu Glu Lys Lys Ser Tyr Glu
 450 455

<210> 84

<211> 456

<212> PRT

<213> Helicoverpa assulta

<400> 84

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

Tyr Ala Gly Lys Ser Val Phe Ile Thr Gly Gly Thr Gly Phe Leu Gly
 20 25 30

Lys Ile Phe Ile Glu Lys Leu Leu Tyr Ser Cys Pro Asp Ile Gly Asn
 35 40 45

Ile Tyr Met Leu Ile Arg Glu Lys Lys Gly Leu Ser Val Ser Glu Arg
 50 55 60

Ile Lys Gln Phe Leu Asp Asp Pro Leu Phe Thr Arg Leu Lys Glu Lys
 65 70 75 80

Arg Pro Ala Asp Leu Glu Lys Ile Val Leu Ile Pro Gly Asp Ile Thr
 85 90 95

Ala Pro Asp Leu Gly Ile Thr Ser Glu Asn Glu Lys Met Leu Ile Glu
 100 105 110

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

Pro Leu Pro Thr Ala Trp Lys Ile Asn Val Glu Gly Thr Arg Met Met
130 135 140

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

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

Tyr Pro Ala Pro Ala Asp Ile Asp Gln Val His Gln Tyr Val Lys Asp
180 185 190

Gly Ile Ser Glu Glu Glu Thr Glu Lys Ile Leu Asn Gly Arg Pro Asn
195 200 205

Thr Tyr Thr Phe Thr Lys Ala Leu Thr Glu His Leu Val Ala Glu Asn
210 215 220

Gln Ala Tyr Val Pro Thr Ile Ile Val Arg Pro Ser Val Val Ala Ala
225 230 235 240

Ile Lys Asp Glu Pro Ile Lys Gly Trp Leu Gly Asn Trp Tyr Gly Ala
245 250 255

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

Gly His Ser Ser Tyr Ile Val Asp Leu Ile Pro Val Asp Tyr Val Ala
275 280 285

Asn Leu Val Ile Ala Ala Gly Ala Lys Ser Ser Lys Ser Thr Glu Leu
290 295 300

Lys Val Tyr Asn Cys Cys Ser Ser Ala Cys Asn Pro Ile Thr Ile Gly
305 310 315 320

Lys Leu Met Ser Met Phe Ala Glu Asp Ala Ile Lys Gln Lys Ser Tyr
325 330 335

Ala Met Pro Leu Pro Gly Trp Tyr Val Phe Thr Lys Tyr Lys Trp Leu
340 345 350

Val Leu Leu Leu Thr Ile Leu Phe Gln Val Ile Pro Ala Tyr Ile Thr
355 360 365

Asp Leu Tyr Arg His Leu Ile Gly Lys Asn Pro Arg Tyr Ile Lys Leu
370 375 380

Gln Ser Leu Val Asn Gln Thr Arg Ser Ser Ile Asp Phe Phe Thr Ser
385 390 395 400

His Ser Trp Val Met Lys Ala Asp Arg Val Arg Glu Leu Phe Ala Ser
405 410 415

Leu Ser Pro Ala Asp Lys Tyr Leu Phe Pro Cys Asp Pro Thr Asp Ile
420 425 430

Asn Trp Thr His Tyr Ile Gln Asp Tyr Cys Trp Gly Val Arg His Phe
435 440 445

Leu Glu Lys Lys Thr Thr Asn Lys
450 455

<210> 85
<211> 453
<212> PRT
<213> Heliothis subflexa

<400> 85

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

Tyr Ala Gly Lys Ser Val Phe Ile Thr Gly Gly Thr Gly Phe Leu Gly
20 25 30

Lys Val Phe Ile Glu Lys Leu Leu Tyr Ser Cys Pro Asp Ile Gly Asn
35 40 45

Ile Tyr Met Leu Ile Arg Glu Lys Lys Gly Leu Ser Val Ser Glu Arg
50 55 60

Ile Lys His Phe Leu Asp Asp Pro Leu Phe Thr Arg Leu Lys Glu Lys
65 70 75 80

Arg Pro Ala Asp Leu Glu Lys Ile Val Leu Ile Pro Gly Asp Ile Thr
85 90 95

Ala Pro Asp Leu Gly Ile Thr Ser Glu Asn Glu Lys Met Leu Ile Glu
100 105 110

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

Pro Leu Pro Thr Ala Trp Lys Ile Asn Val Glu Gly Thr Arg Met Met
130 135 140

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

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

Tyr Pro Ala Pro Ala Asp Ile Asp Gln Val His Gln Tyr Val Lys Asp
 180 185 190

Gly Ile Ser Glu Glu Glu Thr Glu Lys Ile Leu Asn Gly Arg Pro Asn
 195 200 205

Thr Tyr Thr Phe Thr Lys Ala Leu Thr Glu His Leu Val Ala Glu Asn
 210 215 220

Gln Ala Tyr Val Pro Thr Ile Ile Val Arg Pro Ser Val Val Ala Ala
 225 230 235 240

Ile Lys Asp Glu Pro Ile Lys Gly Trp Leu Gly Asn Trp Tyr Gly Ala
 245 250 255

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

Gly His Ser Ser Asn Ile Val Asp Leu Ile Pro Val Asp Tyr Val Ala
 275 280 285

Asn Leu Val Ile Ala Ala Gly Ala Lys Ser Ser Lys Ser Thr Glu Leu
 290 295 300

Lys Val Tyr Asn Cys Cys Ser Ser Ala Cys Asn Pro Ile Thr Ile Gly
 305 310 315 320

Lys Leu Met Ser Met Phe Ala Glu Asp Ala Ile Lys Gln Lys Ser Tyr
 325 330 335

Ala Met Pro Leu Pro Gly Trp Tyr Ile Phe Thr Lys Tyr Lys Trp Leu
 340 345 350

Val Leu Leu Leu Thr Ile Leu Phe Gln Val Ile Pro Ala Tyr Ile Thr
 355 360 365

Asp Leu Tyr Arg His Leu Ile Gly Lys Asn Pro Arg Tyr Ile Lys Leu
 370 375 380

Gln Ser Leu Val Asn Gln Thr Arg Ser Ser Ile Asp Phe Phe Thr Asn
 385 390 395 400

His Ser Trp Val Met Lys Ala Asp Arg Val Arg Glu Leu Phe Ala Ser
405 410 415

Leu Ser Pro Ala Asp Lys Tyr Leu Phe Pro Cys Asp Pro Val Asn Ile
420 425 430

Asn Trp Arg Gln Tyr Ile Gln Asp Tyr Cys Trp Gly Val Arg His Phe
435 440 445

Leu Glu Lys Lys Thr
450

<210> 86
<211> 453
<212> PRT
<213> *Heliothis virescens*

<400> 86

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

Tyr Ala Gly Lys Ser Val Phe Ile Thr Gly Gly Thr Gly Phe Leu Gly
20 25 30

Lys Val Phe Ile Glu Lys Leu Leu Tyr Ser Cys Pro Asp Ile Val Asn
35 40 45

Ile Tyr Met Leu Ile Arg Glu Lys Lys Gly Leu Ser Val Ser Glu Arg
50 55 60

Ile Lys Gln Phe Leu Asp Asp Pro Leu Phe Thr Arg Leu Lys Asp Lys
65 70 75 80

Arg Pro Ala Asp Leu Glu Lys Ile Val Leu Ile Pro Gly Asp Ile Thr
85 90 95

Ala Pro Asp Leu Gly Ile Thr Ala Ala Asn Glu Lys Met Leu Ile Glu
100 105 110

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

Pro Leu Pro Thr Ala Trp Lys Ile Asn Val Glu Gly Thr Arg Met Met
130 135 140

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

Ser Thr Ala Tyr Thr Asn Thr Asn Arg Glu Val Val Asp Glu Ile Leu

165

170

175

Tyr Pro Ala Pro Ala Asp Ile Asp Gln Val Tyr Gln Tyr Val Lys Glu
180 185 190

Gly Ile Ser Glu Glu Asp Thr Glu Lys Ile Leu Asn Gly Arg Pro Asn
195 200 205

Thr Tyr Thr Phe Thr Lys Ala Leu Thr Glu His Leu Val Ala Glu Asn
210 215 220

Gln Ala Tyr Val Pro Thr Ile Ile Val Arg Pro Ser Val Val Ala Ala
225 230 235 240

Ile Lys Asp Glu Pro Leu Lys Gly Trp Leu Gly Asn Trp Phe Gly Ala
245 250 255

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

Gly His Ser Asn Tyr Ile Val Asp Leu Ile Pro Val Asp Tyr Val Ala
275 280 285

Asn Leu Val Ile Ala Ala Gly Ala Lys Ser Asn Thr Ser Ser Glu Leu
290 295 300

Lys Val Tyr Asn Cys Cys Ser Ser Ser Cys Asn Pro Val Lys Ile Gly
305 310 315 320

Thr Leu Met Ser Met Phe Ala Asp Asp Ala Ile Lys Gln Lys Ser Tyr
325 330 335

Ala Met Pro Leu Pro Gly Trp Tyr Ile Phe Thr Lys Tyr Lys Trp Leu
340 345 350

Val Leu Leu Leu Thr Phe Leu Phe Gln Val Ile Pro Ala Tyr Ile Thr
355 360 365

Asp Leu Ser Arg His Leu Val Gly Lys Ser Pro Arg Tyr Ile Lys Leu
370 375 380

Gln Ser Leu Val Asn Gln Thr Arg Ser Ser Ile Asp Phe Phe Thr Asn
385 390 395 400

His Ser Trp Val Met Lys Ala Asp Arg Val Arg Glu Leu Tyr Ala Ser
405 410 415

Leu Ser Pro Ala Asp Lys Tyr Leu Phe Pro Cys Asp Pro Val Asn Ile
420 425 430

Asn Trp Thr Gln Tyr Leu Gln Asp Tyr Cys Trp Gly Val Arg Asn Phe
 435 440 445

Leu Glu Lys Lys Thr
 450

<210> 87
 <211> 468
 <212> PRT
 <213> *Plutella xylostella*

<400> 87

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

Cys Asp Phe Tyr Ala Asn Ser Thr Val Phe Ile Thr Gly Gly Thr Gly
 20 25 30

Phe Leu Gly Lys Val Leu Ile Glu Lys Leu Leu Arg Ser Cys Arg Lys
 35 40 45

Ile Asp Lys Ile Tyr Val Leu Leu Arg Gly Thr Thr Asn Lys Thr Ala
 50 55 60

Gln Glu Arg Leu Glu Asp Leu Ser His Glu Val Leu Phe Glu Lys Val
 65 70 75 80

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

Asp Leu Thr Leu Pro Asn Leu Gly Met Asn Asn Glu Asp Tyr Ser Leu
 100 105 110

Ile Val Lys Asn Val Ser Ile Val Phe His Ala Ala Ala Ser Ile Arg
 115 120 125

Phe Asn Leu Lys Ile Lys Glu Ala Leu His Cys Asn Val Glu Gly Thr
 130 135 140

Lys Lys Val Ile Glu Leu Cys His Lys Ala Arg Cys Ile Lys Ala Phe
 145 150 155 160

Val His Ile Ser Thr Ala Tyr Ser Asn Thr Asp Lys Thr Phe Val Lys
 165 170 175

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

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

Arg Pro Asn Thr Tyr Thr Tyr Ala Lys Ala Val Ala Glu Tyr Glu Val
210 215 220

Leu Arg Asn His Gly Ser Val Pro Thr Ala Ile Ile Arg Pro Ser Ile
225 230 235 240

Val Thr Pro Ile Trp Arg Asp Pro Thr Pro Gly Trp Leu Asp Lys Trp
245 250 255

Ser Gly Gly Thr Pro Ile Ile Phe Gly Leu Cys Lys Gly Leu Leu Arg
260 265 270

Cys Leu Asp Thr Gln Pro Ser Asn Val Ile Asp Phe Ile Pro Ala Asp
275 280 285

Ile Ala Val Asn Leu Ser Ile Val Ala Ala Ala Lys Cys His Val Asp
290 295 300

Thr Pro Lys Ile Arg Val Tyr Asn Cys Cys Ser Gly Pro Thr Asn Pro
305 310 315 320

Met Thr Phe Lys Met Leu Ser Asp Tyr Cys His Glu Asn Ser Ile Lys
325 330 335

His Gly Leu His Trp Phe Pro Tyr Pro Lys Ile Phe Leu Ser Thr Asn
340 345 350

Arg Val Phe Leu Lys Ile Val Arg Leu Val Leu Gln Phe Leu Pro Leu
355 360 365

Phe Leu Ala Asp Met Trp Leu Lys Ile Arg Gly Lys Gln Pro Arg Phe
370 375 380

Val Lys Met Leu Glu Lys Leu Thr Lys Val Glu Lys Thr Leu His Phe
385 390 395 400

Phe Ile Lys Asn Gln Trp Gln Phe Glu Asn His Asn Val Glu Ala Leu
405 410 415

Ile Ser Thr Leu Ser Pro Ser Asp Arg Val Gln Phe Pro Cys Asp Pro
420 425 430

Ser Glu Ile Cys Trp Lys Thr His Phe Glu Asp Tyr Cys Leu Gly Ile
435 440 445

Asp Lys Tyr Leu Met Asn Thr Ser Val Lys Ser Ala Asn Ile Asn Ser

450

455

460

Gly Met Tyr Lys
465

<210> 88

<211> 454

<212> PRT

<213> Spodoptera exigua

<400> 88

Met Val Val Leu Thr Ser Lys Glu Lys Ser Asn Met Ser Val Ala Asp
1 5 10 15

Phe Tyr Ala Gly Lys Ser Val Phe Ile Thr Gly Gly Thr Gly Phe Leu
20 25 30

Gly Lys Val Phe Ile Glu Lys Leu Leu Tyr Ser Cys Pro Asp Ile Asp
35 40 45

Lys Ile Tyr Met Leu Ile Arg Glu Lys Lys Gly Gln Ser Ile Arg Glu
50 55 60

Arg Leu Thr Lys Ile Val Asp Asp Pro Leu Phe Asn Arg Leu Lys Glu
65 70 75 80

Lys Arg Pro Gly Asp Leu Asp Lys Ile Val Leu Ile Pro Gly Asp Val
85 90 95

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

Asp Lys Val Ser Val Val Ile His Ser Ala Ala Thr Val Lys Phe Asn
115 120 125

Glu Pro Leu Glu Thr Ala Trp Asn Val Asn Val Glu Gly Thr Arg Met
130 135 140

Ile Met Ala Leu Ser Arg Lys Met Lys Arg Ile Glu Ile Phe Ile His
145 150 155 160

Ile Ser Thr Ala Tyr Thr Asn Thr Asn Arg Ala Val Val Asp Glu Val
165 170 175

Leu Tyr Pro Pro Pro Ala Asp Ile Asn Glu Val His Gln Tyr Val Lys
180 185 190

Asn Gly Ile Thr Glu Glu Glu Thr Glu Lys Ile Leu Asn Gly Arg Pro
195 200 205

Asn Thr Tyr Thr Phe Thr Lys Ala Leu Thr Glu His Leu Val Ala Glu
210 215 220

Asn Gln Ala Tyr Met Pro Thr Ile Ile Val Arg Pro Ser Ile Val Gly
225 230 235 240

Ala Ile Lys Asp Asp Pro Ile Arg Gly Trp Leu Ala Asn Trp Tyr Gly
245 250 255

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

Tyr Gly Gln Ser Ser His Val Val Asp Leu Ile Pro Val Asp Tyr Val
275 280 285

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

Val Thr Ile Tyr Asn Ser Cys Ser Ser Ser Cys Asn Pro Ile Thr Met
305 310 315 320

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

Tyr Val Met Pro Leu Pro Gly Trp Tyr Val Tyr Ser Asn Tyr Arg Trp
340 345 350

Leu Val Tyr Leu Val Thr Ile Ile Phe Gln Met Ile Pro Ala Tyr Leu
355 360 365

Ala Asp Ile Gly Arg Arg Leu Leu Gly Lys Asn Pro Arg Tyr Tyr Lys
370 375 380

Leu Gln Ser Leu Val Ala Gln Thr Gln Glu Ala Val His Phe Phe Thr
385 390 395 400

Ser His Thr Trp Glu Ile Lys Ser Lys Arg Thr Ser Glu Leu Phe Ala
405 410 415

Ser Leu Ser His Thr Asp Gln Arg Ile Phe Pro Cys Asp Ala Lys Lys
420 425 430

Ile Asp Trp Thr Asp Tyr Ile Thr Asp Tyr Cys Ser Gly Val Arg Gln
435 440 445

Phe Leu Glu Lys Lys Lys
450

<210> 89
<211> 450
<212> PRT
<213> Spodoptera frugiperda

<400> 89

Met Ser Lys Ala Asn Cys Ser Asn Val Ala Ser Phe Tyr Ala Gly Lys
1 5 10 15

Ser Val Phe Ile Thr Gly Gly Thr Gly Phe Val Gly Lys Thr Leu Ile
20 25 30

Glu Lys Leu Leu Tyr Ser Cys Ser Gly Ile Asp Lys Ile Tyr Val Leu
35 40 45

Val Arg Asp Lys Tyr Gly Lys Gln Ala Ser Glu Arg Leu Ala Arg Val
50 55 60

Thr Ser Thr Pro Val Phe Asp Arg Leu Lys Thr Ser Lys Ser Glu Glu
65 70 75 80

Leu Lys Lys Ile Val Val Ile Ser Gly Asp Ile Thr Arg Glu Asn Leu
85 90 95

Gly Leu Gln Glu Asp Val Leu Lys Thr Leu Glu Asn Glu Val Ser Val
100 105 110

Val Phe His Leu Ala Ala Thr Val Ala Phe Lys Leu Pro Leu Lys Asp
115 120 125

Ala Met Arg Ile Asn Val Asn Gly Thr Glu Asn Val Ile Glu Leu Cys
130 135 140

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

Thr Asn Ser Asp Arg Lys Glu Ile Asn Glu Met Val Tyr Pro Met Pro
165 170 175

Ile Asn Leu Glu Glu Ala Arg His Val Ala Tyr Thr Tyr Ser His Asp
180 185 190

Asp Val Ile Val Ser Ala Phe Met Gly Lys Lys Pro Asn Thr Tyr Thr
195 200 205

Phe Ser Lys Ala Phe Ala Glu Gln Gln Val Met Lys Gln Cys Glu Asp
210 215 220

Leu Pro Thr Ala Ile Ile Arg Pro Ser Ile Val Met Ser Ser Val Lys
225 230 235 240

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

Phe Val Gly Met Pro Ala Gly Ile Leu Arg Val Val Leu Gly Arg Gly
260 265 270

Ser Asn Val Thr Asp Leu Val Pro Val Asp Ile Val Thr Asn Leu Ile
275 280 285

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

Asn Cys Cys Thr Gly Thr Ser Asn Pro Ile Thr Cys Asp Glu Ala Thr
305 310 315 320

Thr Ile Ser Arg Lys Val Ala Leu Lys Tyr Ser Leu Asn Glu Leu Pro
325 330 335

Trp Pro Phe Leu Met Phe Thr Pro Ser Val Phe Leu Tyr Thr Leu Ile
340 345 350

Thr Phe Leu Leu Gln Ile Val Pro Ala Tyr Leu Ile Asp Leu Trp Cys
355 360 365

Ile Leu Thr Gly Arg Lys Ala Thr Gln Ile Lys Leu Gln Arg Arg Leu
370 375 380

Lys Lys Val Val Asp Ala Val Lys Phe Phe Leu Leu Asn Glu Trp Lys
385 390 395 400

Phe Ser Asp Asp Asn Ile Arg Asp Leu Leu Lys Thr Met Ser Pro Val
405 410 415

Asp Lys Glu Ile Phe Asn Phe Asp Val Lys Thr Ile Asn Trp Glu Thr
420 425 430

Cys Ile Glu Asp Tyr Ile Leu Gly Ala Arg Lys Tyr Leu Leu Lys Ser
435 440 445

Glu Lys
450

<210> 90

<211> 454

<212> PRT

<213> Spodoptera littoralis

<400> 90

Met Val Val Leu Thr Ser Lys Glu Lys Ser Asn Met Ser Val Ala Asp
1 5 10 15

Phe Tyr Ala Gly Lys Ser Val Phe Ile Thr Gly Gly Thr Gly Phe Leu
20 25 30

Gly Lys Val Phe Ile Glu Lys Leu Leu Tyr Ser Cys Pro Asp Ile Asp
35 40 45

Lys Ile Tyr Met Leu Ile Arg Glu Lys Lys Gly Gln Ser Ile Arg Glu
50 55 60

Arg Leu Thr Lys Ile Val Asp Asp Pro Leu Phe Asn Arg Leu Lys Asp
65 70 75 80

Lys Arg Pro Gly Asp Leu Gly Lys Ile Val Leu Ile Pro Gly Asp Ile
85 90 95

Thr Val Pro Gly Leu Gly Ile Ser Glu Glu Asn Glu Thr Ile Leu Thr
100 105 110

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

Glu Pro Leu Ala Thr Ala Trp Asn Val Asn Val Glu Gly Thr Arg Met
130 135 140

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

Ile Ser Thr Ala Tyr Thr Asn Thr Asn Arg Ala Val Ile Asp Glu Val
165 170 175

Leu Tyr Pro Pro Pro Ala Asp Ile Asn Asp Val His Gln His Val Lys
180 185 190

Asn Gly Val Thr Glu Glu Glu Thr Glu Lys Ile Leu Asn Gly Arg Pro
195 200 205

Asn Thr Tyr Thr Phe Thr Lys Ala Leu Thr Glu His Leu Val Ala Glu
210 215 220

Asn Gln Ser Tyr Met Pro Thr Ile Ile Val Arg Pro Ser Ile Val Gly
225 230 235 240

Ala Ile Lys Asp Asp Pro Ile Arg Gly Trp Leu Ala Asn Trp Tyr Gly
245 250 255

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

260

265

270

Tyr Gly His Ser Asn His Val Val Asp Leu Ile Pro Val Asp Tyr Val
 275 280 285

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

Val Thr Ile Tyr Asn Ser Cys Ser Ser Ser Cys Asn Pro Ile Thr Met
 305 310 315 320

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

Tyr Val Met Pro Leu Pro Gly Trp Tyr Val Tyr Ser Asn Tyr Lys Trp
 340 345 350

Leu Val Phe Leu Val Thr Val Ile Phe Gln Val Ile Pro Ala Tyr Leu
 355 360 365

Gly Asp Ile Gly Arg Arg Leu Leu Gly Lys Asn Pro Arg Tyr Tyr Lys
 370 375 380

Leu Gln Asn Leu Val Ala Gln Thr Gln Glu Ala Val His Phe Phe Thr
 385 390 395 400

Ser His Thr Trp Glu Ile Lys Ser Lys Arg Thr Ser Glu Leu Phe Ser
 405 410 415

Ser Leu Ser Leu Thr Asp Gln Arg Met Phe Pro Cys Asp Ala Asn Arg
 420 425 430

Ile Asp Trp Thr Asp Tyr Ile Thr Asp Tyr Cys Ser Gly Val Arg Gln
 435 440 445

Phe Leu Glu Lys Ile Lys
 450

<210> 91

<211> 454

<212> PRT

<213> Spodoptera litura

<400> 91

Met Val Val Leu Thr Ser Lys Glu Lys Ser Asn Met Ser Val Ala Asp
 1 5 10 15

Phe Tyr Ala Gly Lys Ser Val Phe Ile Thr Gly Gly Thr Gly Phe Leu
 20 25 30

Gly Lys Val Phe Ile Glu Lys Leu Leu Tyr Ser Cys Pro Asp Ile Asp
 35 40 45

Lys Ile Tyr Met Leu Ile Arg Glu Lys Lys Gly Gln Ser Ile Arg Glu
 50 55 60

Arg Leu Thr Lys Ile Val Asp Asp Pro Leu Phe Asn Arg Leu Lys Asp
 65 70 75 80

Lys Arg Pro Gly Asp Leu Gly Lys Ile Ile Leu Ile Pro Gly Asp Ile
 85 90 95

Thr Val Pro Gly Leu Gly Ile Ser Glu Glu Asn Glu Thr Ile Leu Ile
 100 105 110

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

Glu Pro Leu Ala Thr Ala Trp Asn Val Asn Val Glu Gly Thr Arg Met
 130 135 140

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

Ile Ser Thr Ala Tyr Thr Asn Thr Asn Arg Ala Val Ile Asp Glu Val
 165 170 175

Leu Tyr Pro Pro Pro Ala Asp Ile Asn Asp Val His Gln His Val Lys
 180 185 190

Asn Gly Val Thr Glu Glu Glu Thr Glu Lys Ile Leu Asn Gly Arg Pro
 195 200 205

Asn Thr Tyr Thr Phe Thr Lys Ala Leu Thr Glu His Leu Val Ala Glu
 210 215 220

Asn Gln Ser Tyr Met Pro Thr Ile Ile Val Arg Pro Ser Ile Val Gly
 225 230 235 240

Ala Ile Lys Asp Asp Pro Ile Arg Gly Trp Leu Ala Asn Trp Tyr Gly
 245 250 255

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

Tyr Gly His Ser Asn His Val Val Asp Leu Ile Pro Val Asp Tyr Val
 275 280 285

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

Val Thr Ile Tyr Asn Ser Cys Ser Ser Ser Cys Asn Pro Ile Thr Met
305 310 315 320

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

Tyr Val Met Pro Leu Pro Gly Trp Tyr Val Tyr Ser Asn Tyr Arg Trp
340 345 350

Leu Val Phe Leu Val Thr Leu Ile Phe Gln Val Ile Pro Ala Tyr Leu
355 360 365

Gly Asp Ile Gly Arg Arg Leu Leu Gly Lys Asn Pro Arg Tyr Tyr Lys
370 375 380

Leu Gln Asn Leu Val Ala Gln Thr Gln Glu Ala Val His Phe Phe Thr
385 390 395 400

Ser His Thr Trp Glu Ile Lys Ser Lys Arg Thr Ser Glu Leu Phe Ser
405 410 415

Ser Leu Ser Leu Thr Asp Gln Arg Met Phe Pro Cys Asp Ala Asn Arg
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Ile Asp Trp Thr Asp Tyr Ile Thr Asp Tyr Cys Ser Gly Val Arg Gln
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Phe Leu Glu Lys Ile Lys
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<212> PRT
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<400> 92

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35 40 45

Gly Gln Thr Pro Glu Ala Arg Ile Glu Glu Ile Thr Asn Cys Lys Leu
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Phe Asp Arg Leu Arg Asp Glu Gln Pro Asp Phe Lys Ala Lys Ile Ile
65 70 75 80

Val Ile Thr Ser Glu Leu Thr Gln Pro Glu Leu Asp Leu Ser Glu Pro
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Ile Lys Glu Lys Leu Ile Glu Arg Ile Asn Ile Ile Phe His Cys Ala
100 105 110

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

Leu Glu Val Phe Met His Val Ser Thr Ala Tyr Ala Tyr Cys Asn Arg
145 150 155 160

Lys Gln Ile Glu Glu Ile Val Tyr Pro Pro Pro Val Asp Pro Lys Lys
165 170 175

Leu Ile Asp Ser Leu Glu Trp Met Asp Asp Gly Leu Val Asn Asp Ile
180 185 190

Thr Pro Lys Leu Ile Gly Asp Arg Pro Asn Thr Tyr Thr Tyr Thr Lys
195 200 205

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210 215 220

Ala Ile Ile Arg Pro Ser Ile Val Gly Ala Ser Trp Lys Glu Pro Phe
225 230 235 240

Pro Gly Trp Ile Asp Asn Phe Asn Gly Pro Ser Gly Leu Phe Ile Ala
245 250 255

Ala Gly Lys Gly Ile Leu Arg Thr Met Arg Ala Ser Asn Ser Ala Val
260 265 270

Ala Asp Leu Val Pro Val Asp Val Val Val Asn Thr Thr Leu Ala Ala
275 280 285

Ala Trp Tyr Ser Gly Val Asn Arg Pro Arg Asn Val Met Ile Tyr Asn
290 295 300

Cys Thr Thr Gly Gly Thr Asn Pro Phe His Trp Gly Glu Val Gly Tyr
305 310 315 320

His Ile Asn Leu Asn Phe Lys Ile Asn Pro Leu Glu Asn Ala Val Arg
325 330 335

His Pro Asn Cys Ser Leu Gln Ser Asn Pro Leu Leu His Gln Tyr Trp
340 345 350

Thr Ala Val Ser His Thr Met Pro Ala Phe Leu Leu Asp Leu Leu Leu
355 360 365

Arg Leu Thr Gly His Lys Pro Trp Met Met Lys Thr Ile Thr Arg Leu
370 375 380

His Lys Ala Met Met Leu Leu Glu Tyr Phe Thr Ser Asn Ser Trp Ile
385 390 395 400

Trp Asn Thr Glu Asn Met Thr Met Leu Met Asn Gln Leu Asn Pro Glu
405 410 415

Asp Lys Lys Thr Phe Asn Phe Asp Val Arg Gln Leu His Trp Ala Glu
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Tyr Met Glu Asn Tyr Cys Met Gly Thr Lys Lys Tyr Val Leu Asn Glu
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Glu Met Ser Gly Leu Pro Ala Ala Arg Lys His Leu Asn Lys Leu Arg
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Asn Ile Arg Tyr Gly Phe Asn Thr Val Leu Val Ile Leu Ile Trp Arg
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Ile Phe Ile Ala Arg Ser Gln Met Ala Arg Asn Ile Trp Tyr Phe Val
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Val Ser Leu Cys Tyr Lys Phe Leu Ser Tyr Phe Arg Ala Ser Ser Thr
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Met Arg Tyr
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<212> PRT
<213> Trichoplusia ni

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20

25

30

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

Arg Pro Lys Asp Leu Asp Lys Ile Val Leu Ile Pro Gly Asp Ile Thr
 85 90 95

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

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

Pro Leu Glu Glu Ala Trp Ser Ile Asn Val Asp Gly Thr Arg Arg Ile
 130 135 140

Leu Asp Leu Cys Arg Asn Met Lys Lys Val Glu Val Phe Leu His Ile
 145 150 155 160

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

Tyr Pro Pro Pro Ala Asp Ile Lys Glu Leu Glu Lys Leu Asp Lys His
 180 185 190

Asn Val Thr Glu Lys Gln Thr Met Lys Leu Leu Asn Gly Phe Pro Asn
 195 200 205

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

Cys Ala Tyr Met Pro Thr Ile Ile Val Arg Pro Ser Val Val Ala Ala
 225 230 235 240

Val Leu Glu Asp Pro Ile Lys Gly Trp Leu Glu Asn Trp Tyr Gly Ala
 245 250 255

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

Gly His Lys Asn Ile Ile Val Asp Val Ile Pro Ala Asp Tyr Val Ala
 275 280 285

Asn Leu Val Ile Ile Ala Gly Ala Arg Asn Asn Lys Ser Lys Glu Leu
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 Lys Ile Tyr Asn Cys Cys Ser Ser Gly Cys Asn Pro Leu Thr Ile Gly
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 Ala Thr Ile Val Thr Phe Ile Phe Gln Val Val Pro Ala Tyr Leu Ala
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 Asp Leu Tyr Arg Arg Ile Ile Gly Lys Lys Pro Lys Tyr Thr Lys Leu
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 385 390 395 400
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 <212> DNA
 <213> *Agrotis ipsilon*

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 <212> DNA
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<211> 1368

<212> DNA

<213> Helicoverpa armigera

<400> 100

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<213> Spodoptera littoralis

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gcctttctgc tggacctcct gctgcgactg accggacaca agccctggat gatgaagacc	1140
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<212> DNA	
<213> Trichoplusia ni	
<400> 110	
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tactgctgtc ccggcctggt gaagatctac atgctgatcc gagagaagaa gggcctgacc	180
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<210> 111
 <211> 547
 <212> PRT
 <213> Drosophila grimshawi
 <400> 111

Met Gly Asp Ser Thr Leu Lys Leu Pro Gly Ala Ala Ala Ala Pro Leu
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 Lys Pro Pro Ala Val Ala Ala Leu Ser Val Ser Ser Leu Gln Leu Pro
 20 25 30
 Ser Ser Ala Pro Gln Lys Leu Thr Ser Ala Ala Ser Asn Gly Asn Val
 35 40 45
 Ser Gly Ser Ala Thr Gly Asn Pro Arg Asn Lys Cys Ala Leu Lys Pro
 50 55 60
 Gly Tyr Ser Leu Met Ser Trp Ile Arg Leu Cys Asn Ser Gly Ala Asp
 65 70 75 80
 Leu Ser Gly Thr Ala Gly Arg Val Val Pro Val Ser Arg Thr Glu Leu
 85 90 95
 Ala Arg His Asn Gln Val Asn Asp Ala Trp Met Ala Ile Arg Gly Lys
 100 105 110
 Val Phe Asn Val Thr Arg Tyr Met Asp Tyr His Pro Gly Gly Val Asp
 115 120 125
 Glu Leu Met Arg Gly Val Gly Arg Asp Ala Thr Lys Leu Phe Asp Glu
 130 135 140
 Val His Ala Trp Val Asn Tyr Pro Gln Leu Leu Gly Lys Cys Tyr Val
 145 150 155 160
 Gly Pro Leu Lys Asp Thr Val Ala Ser Lys Lys Ala Thr Asp Ala Glu
 165 170 175
 Leu Leu Arg Leu Pro Pro Pro Ser Ala Pro Ala Glu Leu Lys Pro Arg
 180 185 190
 Phe Asp Trp Ile Gln Gln Arg Arg Glu Leu Thr Leu Tyr Phe Tyr Thr
 195 200 205
 Arg Arg Trp Ala Asn Pro Gly Val Leu Leu Lys Arg Lys Thr Ala Glu
 210 215 220
 Glu Leu Glu Val Arg Val Gln Leu Ala Glu Ile Trp His Leu Tyr Asn
 225 230 235 240
 Phe Lys Leu His Ser Gly Ile Ile Trp Pro Pro Lys Ala Leu Arg Val
 245 250 255

Ser Pro Glu Thr Gly Lys Ile Glu Leu Val Leu Ser Lys Gln Glu Glu
260 265 270

Gln Pro Trp Ser Ser Tyr Gly Ser His Glu Ala Ser Lys Thr Ser Gly
275 280 285

Ala Pro Glu Glu Glu Leu Leu Asp Phe Met Val Gln His Cys Ser His
290 295 300

Phe Asn His Asp Ser Phe Glu Leu Cys Leu Glu Ser Val Glu Gln Glu
305 310 315 320

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

His Asn Gly Glu Arg Val Gln Arg Ser Tyr Thr Pro Val Pro His Asn
340 345 350

Cys Leu Leu Ala Glu Ala Tyr Ser Ser Ser Ser Ser Pro Asn Ser Gln
355 360 365

Arg Phe Leu Ile Lys His Tyr Glu Asn Gly Ile Val Ser Ser Gln Leu
370 375 380

Asn Gln Leu Glu Ser Gly Gly Asn Leu Gln Leu Thr Leu Pro Arg Gly
385 390 395 400

Asn Phe Asn Leu Ala Gln Leu Glu Ala His Arg His Ile Leu Leu Leu
405 410 415

Ala Ala Gly Ser Gly Leu Thr Pro Met Leu Ser Leu Leu Arg Pro Leu
420 425 430

Leu Glu Arg His Thr Asn Arg Ile Glu Arg Leu Gln Leu Leu Tyr Phe
435 440 445

Asn Lys Thr Gln Ala Asp Ile Trp Trp Lys Asp Lys Leu Leu Ala Leu
450 455 460

Gln Ser Ser Asp Glu Arg Phe Leu Cys Gln His Ile Leu Ser Gln Glu
465 470 475 480

Val Glu Glu Gln Pro Pro Thr Pro Asn Gln Asn Thr Arg Ile Cys Pro
485 490 495

Glu Leu Leu Ala Pro Leu Phe Glu Gln Gln Gln Pro Leu Gly Glu Arg
500 505 510

Phe Ser Tyr Val Ala Ile Cys Gly Pro Thr Gly Phe Asn Thr Ala Ala

515

520

525

Leu Asp Ser Leu Arg Arg Leu Glu Phe Lys Leu Thr Asn Val His Val
 530 535 540

Phe Gln Gly
 545

<210> 112

<211> 535

<212> PRT

<213> *Drosophila melanogaster*

<400> 112

Met Ser Asp Pro Ser Leu Lys Pro Pro Ala Ser Asn Gln Pro Leu Arg
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Pro Pro Gln Leu Met Ala Pro Ala Gly Ser Gly Gly Gly Leu Gln Leu
 20 25 30

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

Gly Ser Ala Thr Gly Asn Pro Arg Asn Lys Cys Ala Leu Lys Pro Gly
 50 55 60

Tyr Ser Leu Met Asn Trp Ile Arg Leu Cys Asn Ser Gly Ala Asp Leu
 65 70 75 80

Ser Gly Thr Gly Gly Arg Leu Val Pro Val Ser Arg Thr Glu Leu Ala
 85 90 95

Arg His Asn Lys Ile Asp Asp Ala Trp Met Ala Ile Arg Gly Arg Val
 100 105 110

Phe Asn Val Thr Arg Tyr Met Asp Phe His Pro Gly Gly Val Asp Glu
 115 120 125

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

His Ala Trp Val Asn Tyr Pro Gln Leu Leu Gly Lys Cys Tyr Val Gly
 145 150 155 160

Pro Leu Lys Asp Asn Glu Thr Lys Pro Ala Lys Glu Ser Pro Gln Ile
 165 170 175

Thr Asn Val Ile Leu Gln Pro Pro Glu Ile Val Pro Arg Phe Asp Trp
 180 185 190

Ile Gln Gln Arg Ser Glu Leu Thr Leu Ile Phe Tyr Thr Arg Ser Leu
 195 200 205

Ala Asn Pro Gly Leu Val Val Arg Arg Lys Asp Leu Gln Gln Leu Ser
 210 215 220

Val Arg Val Leu Val Gln His Asn Trp His Ser Phe Asp Phe Gln Leu
 225 230 235 240

Thr Asn Asn Val Glu Trp Pro Pro Lys Leu Ala Lys Ile Gly Ser Glu
 245 250 255

Thr Gly Lys Ile Glu Leu Val Phe Val Lys Glu Glu Ala Glu Pro Trp
 260 265 270

Pro Thr Tyr Gly Thr His Val Ser Asn Arg Leu Asp Ser Ser Arg Leu
 275 280 285

His Asp Glu Thr Phe Glu Tyr Glu Val Val His Ser Lys Asp Phe Asn
 290 295 300

His Asp Ser Phe Glu Leu Cys Leu Gln Ser Val Gly Gln Lys Val Leu
 305 310 315 320

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

Gly Arg Val Ile Gln Arg Ser Tyr Thr Pro Val Asp His Thr Tyr Leu
 340 345 350

Arg Leu Glu Asn Ile Arg Ser Ser Arg Ser Glu Cys Leu His Phe Leu
 355 360 365

Ile Lys Arg Tyr Pro Asn Gly Pro Val Ser Ser His Leu Gln Lys Leu
 370 375 380

Glu Thr Gly Ser Arg Val His Trp Ser Ala Pro Arg Gly Ser Phe Gln
 385 390 395 400

Leu Ser Asp Leu Thr Ala His Arg Asn Ile Leu Leu Leu Ala Ala Gly
 405 410 415

Ser Gly Leu Thr Pro Ile Leu Ser Leu Ile Gln Pro Ile Leu Lys Arg
 420 425 430

Asn Thr Asn Arg Ile Glu Ser Leu Gln Leu Leu Tyr Phe Asn Lys Thr
 435 440 445

Asn Glu Asp Ile Trp Leu Lys Glu Lys Leu His Glu Leu His Thr Asp
450 455 460

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

Pro Gln Arg Ile Ala Leu Glu Leu Leu Ala Pro Leu Phe Gln Lys Asn
485 490 495

Gln Pro Glu Arg Cys Thr Tyr Val Leu Ile Cys Gly Pro Ser Gly Phe
500 505 510

Asn Thr Ala Ala Leu Asp Ile Leu Ser Gln Leu Asp Val Lys Ala Asn
515 520 525

Gln Ile His Val Phe Arg Gly
530 535

<210> 113
<211> 521
<212> PRT
<213> Homo sapiens

<400> 113

Met Leu Asn Val Pro Ser Gln Ser Phe Pro Ala Pro Arg Ser Gln Gln
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Arg Val Ala Ser Gly Gly Arg Ser Lys Val Pro Leu Lys Gln Gly Arg
20 25 30

Ser Leu Met Asp Trp Ile Arg Leu Thr Lys Ser Gly Lys Asp Leu Thr
35 40 45

Gly Leu Lys Gly Arg Leu Ile Glu Val Thr Glu Glu Glu Leu Lys Lys
50 55 60

His Asn Lys Lys Asp Asp Cys Trp Ile Cys Ile Arg Gly Phe Val Tyr
65 70 75 80

Asn Val Ser Pro Tyr Met Glu Tyr His Pro Gly Gly Glu Asp Glu Leu
85 90 95

Met Arg Ala Ala Gly Ser Asp Gly Thr Glu Leu Phe Asp Gln Val His
100 105 110

Arg Trp Val Asn Tyr Glu Ser Met Leu Lys Glu Cys Leu Val Gly Arg
115 120 125

Met Ala Ile Lys Pro Ala Val Leu Lys Asp Tyr Arg Glu Glu Glu Lys
130 135 140

Lys Val Leu Asn Gly Met Leu Pro Lys Ser Gln Val Thr Asp Thr Leu
 145 150 155 160

Ala Lys Glu Gly Pro Ser Tyr Pro Ser Tyr Asp Trp Phe Gln Thr Asp
 165 170 175

Ser Leu Val Thr Ile Ala Ile Tyr Thr Lys Gln Lys Asp Ile Asn Leu
 180 185 190

Asp Ser Ile Ile Val Asp His Gln Asn Asp Ser Phe Arg Ala Glu Thr
 195 200 205

Ile Ile Lys Asp Cys Leu Tyr Leu Ile His Ile Gly Leu Ser His Glu
 210 215 220

Val Gln Glu Asp Phe Ser Val Arg Val Val Glu Ser Val Gly Lys Ile
 225 230 235 240

Glu Ile Val Leu Gln Lys Lys Glu Asn Thr Ser Trp Asp Phe Leu Gly
 245 250 255

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

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

Asp Thr Arg Leu Phe Cys Leu Met Leu Pro Pro Ser Thr His Leu Gln
 290 295 300

Val Pro Ile Gly Gln His Val Tyr Leu Lys Leu Pro Ile Thr Gly Thr
 305 310 315 320

Glu Ile Val Lys Pro Tyr Thr Pro Val Ser Gly Ser Leu Leu Ser Glu
 325 330 335

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

Lys Ile Tyr Pro Thr Gly Leu Phe Thr Pro Glu Leu Asp Arg Leu Gln
 355 360 365

Ile Gly Asp Phe Val Ser Val Ser Ser Pro Glu Gly Asn Phe Lys Ile
 370 375 380

Ser Lys Phe Gln Glu Leu Glu Asp Leu Phe Leu Leu Ala Ala Gly Thr
 385 390 395 400

Gly Phe Thr Pro Met Val Lys Ile Leu Asn Tyr Ala Leu Thr Asp Ile
405 410 415

Pro Ser Leu Arg Lys Val Lys Leu Met Phe Phe Asn Lys Thr Glu Asp
420 425 430

Asp Ile Ile Trp Arg Ser Gln Leu Glu Lys Leu Ala Phe Lys Asp Lys
435 440 445

Arg Leu Asp Val Glu Phe Val Leu Ser Ala Pro Ile Ser Glu Trp Asn
450 455 460

Gly Lys Gln Gly His Ile Ser Pro Ala Leu Leu Ser Glu Phe Leu Lys
465 470 475 480

Arg Asn Leu Asp Lys Ser Lys Val Leu Val Cys Ile Cys Gly Pro Val
485 490 495

Pro Phe Thr Glu Gln Gly Val Arg Leu Leu His Asp Leu Asn Phe Ser
500 505 510

Lys Asn Glu Ile His Ser Phe Thr Ala
515 520

<210> 114
<211> 671
<212> PRT
<213> Spodoptera litura

<400> 114

Met Ala Asp Ser Pro Glu Met Glu Gln Lys Pro Thr Ile Ser Asn Thr
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His Arg Val Ser Leu Pro Thr Val Leu Cys Thr Pro Glu Ser Thr Asp
20 25 30

Asp Asn Ser Asp Ile Ser Ile Lys Val Asn Ser Ile Ile Ser Ser Asp
35 40 45

Ser Lys Met Ser Leu Pro Ser Asn Leu Gly Thr Pro Thr Ser Pro Leu
50 55 60

Arg Leu Ser Ser Pro Leu Ser Leu Pro Ser Ser Pro Cys Val Lys Asn
65 70 75 80

Ser Pro Gln Ser Thr Asn Ser Leu Pro Asn Pro Asn Pro Lys Pro Met
85 90 95

Thr Ser Ser Thr Ala Ser Asn Lys Thr Val Val Asn Ser Gly Ser Ala

100

105

110

Thr Gly Asn Pro Arg Asn Lys Cys Ala Leu Gln Pro Gly His Ser Leu
 115 120 125

Met Asp Trp Ile Arg Leu Gly Asn Ser Gly Lys Asp Leu Thr Gly Val
 130 135 140

Gly Gly Arg Met Arg Pro Val Thr Pro Ala Glu Leu Ser Thr His Asn
 145 150 155 160

Thr Thr Asn Asp Ala Trp Leu Ala Ile Arg Gly Arg Val Tyr Asn Ile
 165 170 175

Thr His Tyr Leu Pro Tyr His Pro Gly Gly Pro Glu Glu Leu Met Arg
 180 185 190

Gly Ala Gly Met Asp Ala Thr Gln Leu Phe Asp Lys Val His Pro Trp
 195 200 205

Val Asn Tyr Asp Ser Leu Leu Ala Lys Cys Leu Val Gly Pro Leu Arg
 210 215 220

Phe Asp Leu Pro Asp Ala Glu Glu Leu Phe Asp Thr Ser Asn Pro Ser
 225 230 235 240

Pro Lys Ser Asp Arg Leu Arg Glu Pro Ser Lys Ala Gln Glu Leu Val
 245 250 255

Arg Lys Ser Met Glu Asn Leu Ala Asn Cys Ile Thr Pro Val Arg Lys
 260 265 270

Lys Ile Thr Lys Gly Asp Asp Asn Ser Lys Gly Ser Pro Pro Ser Lys
 275 280 285

Ile Met Gln Ser Leu Val Gln Ser Ala Asp Leu Pro Met Ser Ile Ser
 290 295 300

Arg Arg Ala Ala Ser Ser Pro Val Lys Lys Thr Asp Lys Ser Pro Asp
 305 310 315 320

Ser Pro Leu Pro Leu Arg His Asp Trp Ile Gln Thr Ser Thr Lys Leu
 325 330 335

Thr Ile Ser Val Tyr Thr Gly His Leu Ala Asn Pro Gly Gly Cys Ala
 340 345 350

Arg Ile Thr Glu Gly Phe Leu Leu Ile Glu Val Ala Thr Asn Gly Trp
 355 360 365

Leu Arg Thr Leu Lys Ile Lys Pro Glu Ala Lys Leu Lys Glu Pro Leu
 370 375 380

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

Lys Ala Glu Pro Ser Val Trp Lys Gly Cys Gly Glu Val Thr Leu Gly
 405 410 415

Ala Ala Ser Arg Val Ser Ser Pro Arg Thr Val Glu Cys Arg Val Met
 420 425 430

Glu Val Ser Arg Val Ser His Asp Thr Ser Leu Leu Ser Val Cys Pro
 435 440 445

Arg Ala Gly Pro Val Val Val Pro Leu Gly His His Val Arg Val His
 450 455 460

Arg Arg Val Glu Gly Ser Glu Cys Val Arg Ser Tyr Thr Pro Val Gly
 465 470 475 480

Glu Gly Trp Gly Pro Pro Asp Gly Thr Glu Ile Phe Ser Ala Leu Arg
 485 490 495

Leu Ala Val Lys Arg Tyr Asp Ser Gly Val Leu Ser Pro His Leu Thr
 500 505 510

Ala Leu Lys Val Gly Asp Leu Ile Thr Leu Ser Gly Pro Tyr Gly Asn
 515 520 525

Phe Gln Leu Gln Lys Leu Lys Thr Val Lys Ser Leu Tyr Leu Ile Ala
 530 535 540

Ala Gly Thr Gly Ile Thr Pro Met Leu Gly Leu Ile Lys Phe Met Met
 545 550 555 560

Ser Arg Ser Asn Pro Arg Cys Glu Arg Thr His Leu Ile Phe Phe Asn
 565 570 575

Lys Thr Glu Ala Asp Ile Leu Phe Leu Glu Asn Phe Glu Glu Met Ala
 580 585 590

Lys Glu Asp Asp Arg Leu Lys Ile Thr His Val Leu Ser Asp Ala Ser
 595 600 605

Ser Ser Trp Ser Gly His Lys Gly Arg Ile Arg Asp Glu Leu Leu Thr
 610 615 620

Glu Ile Leu Gly Gln Val Lys Cys Asp Asp Lys Cys Ser His Tyr Ser
625 630 635 640

Cys Leu Cys Gly Pro Thr Glu Phe Thr Tyr Ala Gly Leu Asp Leu Leu
645 650 655

Lys Lys His Gly Phe Lys Asp Asp Cys Ile His Ala Phe Met Gly
660 665 670

<210> 115
<211> 1644
<212> DNA
<213> Drosophila grimshawi

<400> 115
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aacgtccacg tgttccaggg ctag	1644

<210> 116
 <211> 1608
 <212> DNA
 <213> *Drosophila melanogaster*

<400> 116	
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<210> 117
 <211> 1566
 <212> DNA
 <213> Homo sapiens

<400> 117	
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accaagtctg gcaaggacct gaccggcctg aagggccgac tgatcgaggt gaccgaggaa	180
gaactgaaga agcacaacaa gaaggacgac tgctggatct gcatccgagg cttcgtgtac	240
aacgtgtctc cctacatgga ataccatcct ggcgccgagg acgagctgat gcgagccgcc	300
ggatctgacg gcaccgagct gttcgaccag gtgcaccgat gggatgaacta cgagtctatg	360
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aacgactcgt tccgagccga gactatcatc aaggactgcc tgtacctgat ccacatcggc	660
ctgtctcacg aggtgcaaga ggacttctct gtgcgagtggt tcgagtctgt gggcaagatc	720
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aaccataact ctctgattcc ccgaaaggac accggcctgt actaccgaaa gtgccagctg	840
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actcatctgc aggtcccat cggccagcac gtgtacctga agctgcccat caccggaacc	960
gagattgtga agccctatac tcccgtgtct ggctctctgc tgtctgagtt caaggaacc	1020
gtgctgccta acaacaagta catctacttt ctgatcaaga tctacccac cggactgttc	1080
accctgagc tggaccgact gcagatcggc gacttcgtgt ctgtctcttc gcccgagggc	1140
aacttcaaga tctccaagtt ccaagagctt gaggacctgt tctgtctggc cgctggcacc	1200
ggcttcaccc ctatggtgaa gatcctgaac tacgccctga ccgacattcc ctcgtctcga	1260
aaggtgaagc tgatgttctt caacaagacc gaggacgaca tcatctggcg atcccagctc	1320
gagaagctgg ctttaagga caagcgactg gacgtcgagt tcgtcctgtc tgctcccatc	1380
tctgagtgga acggcaagca gggacacatc tctccgctc tgctctccga gttcctgaag	1440
cgaaacctgg acaagtccaa ggtgctgggtg tgcattctgtg gccccgtgcc tttcaccgag	1500
cagggcgtgc gactgctgca cgacctgaac ttctctaaga acgagatcca ctctttcacc	1560

<210> 118

<211> 2016

<212> DNA

<213> Spodoptera litura

<400> 118

atggccgact ctcccgagat ggaacagaag cccaccatct ctaacaccca ccgagtgtct	60
ctgcccaccg tgctgtgcac ccctgagtct accgacgaca actctgacat ctctatcaag	120
gtgaactcta tcatctcttc tgactctaag atgtcgctgc cctctaacct gggaaccct	180
acctctcctc tgcgactgtc gtcgcccctc tctctgccct cttcgccctg cgtgaagaac	240
tctccccagt ctaccaactc tctgcctaac cctaaccctc agcctatgac ctcttctacc	300
gcctctaaca agaccgtggt gaactccggc tctgccactg gcaaccctcg aaacaagtgc	360
gctctgcagc ccggccactc tctgatggac tggatccgac tgggcaactc tggcaaggac	420
ctgaccggcg tcggcggacg aatgcgaccc gtgactcccg ccgagctgtc taccacaac	480
accaccaacg acgcctgggt ggccatccga ggccgagtgt acaacatcac ccactacctg	540
ccttaccatc ctggcggacc cgaggaactg atgcgaggcg ccggaatgga cgctaccag	600
ctgttcgaca aggtgcaccc ttgggtgaac tacgactctc tgctggccaa gtgcctggtg	660
ggaccctgc gattcgacct gcctgacgct gaggaactgt ttgacacttc taaccctcg	720
cctaagtctg accgactgcg agagccctct aaggcccaag agctggtgcg aaagtctatg	780
gaaaacctgg ccaactgcat caccctgtg cgaaagaaga tcaccaaggg cgacgataac	840
tctaagggtc cgctctcttc gaagatcatg cagtctctgg tgcagtctgc tgacctgcct	900
atgtctatct ctcgacgagc cgcttctctg cccgtgaaga agaccgacaa gtctcctgac	960
tctcccctgc ctctccgaca cgactggatt cagacctcta ccaagctgac catctctgtg	1020
tacaccggcc acctggctaa ccccggtggc tgcgcccga ttaccgaggg cttcctgctg	1080
atcgaggtcg ccaccaacgg ctggctgcga accctgaaga tcaagcccga ggccaagctg	1140
aaggaacccc tgcagctgcg agtggtcgcc gagtctggca agatcgagat caccgtcttg	1200
aaggctgagc cctctgtgtg gaagggtgc ggcgagggtga ccctgggagc cgctctcga	1260
gtgtcctcgc ctcgaaccgt cgagtgccga gtgatggaag tgtcccagat gtcccacgac	1320
acctcgctgc tgtctgtgtg tccccgagct ggccccgtgg tggcgcccct gggccaccac	1380
gtgcgagtgc accgacgagt cgagggtctt gagtgcgtgc gatcttacac ccctgtcggc	1440
gaaggctggg gccctcctga cggcaccgag atcttctcgg ccctgcgact ggccgtgaag	1500
cgatacgact ctggcgtgct gtctccccac ctgactgccc tgaagggtggg cgacctgatt	1560
acctgtctg gccctacgg caacttcag ctgcaaaagc tcaagactgt gaagtctctg	1620
tacctgattg ccgccggaac cggaatcacc cctatgctgg gcctgatcaa gttcatgatg	1680

tctcgatcta accctcgatg cgagcgaacc cacctgattt tcttcaacaa gactgaggcc 1740
gacatcctgt tcctcgagaa cttcgaggaa atggccaagg aggacgaccg actgaagatt 1800
accacagtgc tgtccgacgc ctcttcttct tggctctggcc acaagggacg aatccgagat 1860
gagctgctga ccgagatcct cggacaggtg aagtgcgacg acaagtgtc tcactactct 1920
tgcctgtgcg gccctaccga gtttacctac gccggcctgg acctgctgaa gaagcacggc 1980
ttcaaggacg actgcatcca cgccttcatg ggctag 2016

<210> 119
<211> 608
<212> PRT
<213> Yarrowia lipolytica

<400> 119

Met Ser Asp Asp Lys His Thr Phe Asp Phe Ile Ile Val Gly Gly Gly
1 5 10 15

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

Gly Lys Lys Leu Lys Val Leu Leu Leu Glu Ser Gly Pro Ser Ser Glu
35 40 45

Gly Val Asp Asp Ile Arg Cys Pro Gly Asn Trp Val Asn Thr Ile His
50 55 60

Ser Glu Tyr Asp Trp Ser Tyr Glu Val Asp Glu Pro Tyr Leu Ser Thr
65 70 75 80

Asp Gly Glu Glu Arg Arg Leu Cys Gly Ile Pro Arg Gly His Cys Leu
85 90 95

Gly Gly Ser Ser Cys Leu Asn Thr Ser Phe Val Ile Arg Gly Thr Arg
100 105 110

Gly Asp Phe Asp Arg Ile Glu Glu Glu Thr Gly Ala Lys Gly Trp Gly
115 120 125

Trp Asp Asp Leu Phe Pro Tyr Phe Arg Lys His Glu Cys Tyr Val Pro
130 135 140

Gln Gly Ser Ala His Glu Pro Lys Leu Ile Asp Phe Asp Thr Tyr Asp
145 150 155 160

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

Asp Tyr Ala Pro Ile Ser Lys Lys Phe Ser Glu Ser Leu Ala Ser Phe

180

185

190

Gly Tyr Pro Tyr Asn Pro Glu Ile Phe Val Asn Gly Gly Ala Pro Gln
 195 200 205

Gly Trp Gly His Val Val Arg Ser Thr Ser Asn Gly Val Arg Ser Thr
 210 215 220

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

Gly His Ala Val Thr Lys Ile Leu Phe Glu Lys Ile Gly Gly Lys Gln
 245 250 255

Thr Ala Val Gly Val Glu Thr Tyr Asn Arg Ala Ala Glu Glu Ala Gly
 260 265 270

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

Ala Ser Pro Gln Leu Leu Met Val Ser Gly Val Gly Pro Lys Lys Glu
 290 295 300

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

Gly Lys Asn Leu Gln Asp His Leu Ile Cys Gly Ile Phe Val Glu Ile
 325 330 335

Lys Glu Pro Gly Tyr Thr Arg Asp His Gln Phe Phe Asp Asp Glu Gly
 340 345 350

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

Ser Asn Pro Pro Gln Gly Ile Phe Ser Tyr Gly Arg Ile Asp Asn Leu
 370 375 380

Leu Lys Asp Asp Pro Val Trp Lys Glu Ala Cys Glu Lys Gln Lys Ala
 385 390 395 400

Leu Asn Pro Arg Arg Asp Pro Met Gly Asn Asp Pro Ser Gln Pro His
 405 410 415

Phe Glu Ile Trp Asn Ala Glu Leu Tyr Ile Glu Leu Glu Met Thr Gln
 420 425 430

Ala Pro Asp Glu Gly Gln Ser Val Met Thr Val Ile Gly Glu Ile Leu
 435 440 445

Pro Pro Arg Ser Lys Gly Tyr Val Lys Leu Leu Ser Pro Asp Pro Met
 450 455 460

Glu Asn Pro Glu Ile Val His Asn Tyr Leu Gln Asp Pro Val Asp Ala
 465 470 475 480

Arg Val Phe Ala Ala Ile Met Lys His Ala Ala Asp Val Ala Thr Asn
 485 490 495

Gly Ala Gly Thr Lys Asp Leu Val Lys Ala Arg Trp Pro Pro Glu Ser
 500 505 510

Lys Pro Phe Glu Glu Met Ser Glu Glu Trp Glu Thr Tyr Val Arg Asp
 515 520 525

Lys Ser His Thr Cys Phe His Pro Cys Gly Thr Val Lys Leu Gly Gly
 530 535 540

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

Val Asp Gly Leu Arg Val Ala Asp Val Ser Val Leu Pro Arg Val Pro
 565 570 575

Asn Gly His Thr Gln Ala Phe Ala Tyr Ala Val Gly Glu Lys Ala Ala
 580 585 590

Asp Leu Ile Leu Ala Asp Ile Ala Gly Lys Asp Leu Arg Pro Arg Ile
 595 600 605

<210> 120
 <211> 720
 <212> PRT
 <213> Yarrowia lipolytica

<400> 120

Met Ser Glu Thr Asp His Leu Leu Ala Ala Glu Pro Val Ala Glu Tyr
 1 5 10 15

Pro Gln Tyr Thr Pro Trp Pro Asn Ser Arg Lys Ser Val Asp Thr Glu
 20 25 30

Phe Ser Ala Thr Ser Trp Ile Tyr Asp Leu Val Leu Trp Ile Phe Thr
 35 40 45

Ala Cys Phe Asp Ile Phe Phe Arg Glu Ile Arg Pro Arg Gly Ala Phe
 50 55 60

Arg Ile Pro Arg Lys Gly Pro Val Leu Phe Val Ala Ala Pro His Ala
65 70 75 80

Asn Gln Phe Val Asp Pro Val Ile Leu Met Asn Gln Val Lys Gln Glu
85 90 95

Ala Gly Arg Arg Ile Ser Phe Leu Val Ala Glu Lys Ser Met Arg Arg
100 105 110

Ala Ala Val Gly Arg Met Ala Arg Ser Met Asn Ser Ile Pro Val Val
115 120 125

Arg Ala Gln Asp Asn Ala Lys Lys Gly Glu Gly Lys Ile Tyr Val Asp
130 135 140

Ala Glu Asp Pro Thr Lys Ile His Gly Ile Gly Thr Gln Phe Thr Lys
145 150 155 160

Gln Cys Glu Val Arg Gly Leu Val Val Cys Ser Ser Ser Val Gly Ser
165 170 175

Ile Asp Val Ala Glu Ile Val Ser Asp Thr Leu Leu Ile Ala Arg Lys
180 185 190

Glu Phe Lys Gly Pro Lys Ala Lys Glu Ala Leu Lys Glu Ser Asn Gly
195 200 205

Gly Ile Thr Tyr Lys Tyr Ala Asp Tyr Val Asn Gln Ala Thr Val Tyr
210 215 220

Arg Ser Val Phe Asp Lys Leu His His Gly Gly Cys Val Gly Ile Phe
225 230 235 240

Pro Glu Gly Gly Ser His Asp Arg Thr Glu Leu Leu Pro Leu Lys Ala
245 250 255

Gly Val Ala Ile Met Ala Leu Gly Ala Leu Ala Glu Asp Pro Ser Cys
260 265 270

Gly Val Arg Ile Val Pro Cys Gly Leu Asn Tyr Phe His Ala His Lys
275 280 285

Phe Arg Ser Arg Ala Val Val Glu Phe Gly Ser Pro Ile Ala Ile Pro
290 295 300

Pro Asp Leu Val Glu Lys Tyr Lys Ala Gly Gly Glu Ala Lys Arg Glu
305 310 315 320

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

325

330

335

Thr Val Gln Val Gln Asp Phe Asp Thr Leu Met Leu Ile Gln Ala Ile
 340 345 350

Arg Arg Leu Tyr Arg Pro Pro Gly Lys Lys Ile Pro Leu Pro Met Val
 355 360 365

Val Glu Leu Asn Arg Arg Leu Val Tyr Ala Tyr Asn His Tyr Lys Asp
 370 375 380

Asp Pro Arg Ile Glu Glu Met Lys Gln Glu Ile Arg Lys Tyr Asn Lys
 385 390 395 400

Phe Leu Gln Ala Met Gly Leu Lys Asp His Gln Val Glu Lys Ala Arg
 405 410 415

Ile Ser Lys Ile Glu Ile Leu Gly Arg Leu Leu Tyr Arg Ser Ile Lys
 420 425 430

Leu Val Phe Leu Ser Ile Gly Cys Leu Pro Gly Leu Leu Leu Phe Ser
 435 440 445

Pro Ile Phe Ile Ile Ser Lys Ser Ile Ser Lys Thr Lys Ala Lys Glu
 450 455 460

Ala Leu Lys Ala Ser Ser Val Lys Ile Lys Ala Asn Asp Val Val Ala
 465 470 475 480

Thr Trp Lys Val Leu Val Ala Met Gly Leu Thr Pro Val Leu Tyr Ile
 485 490 495

Leu Tyr Ser Leu Val Gly Ser Val Val Ile Arg Lys Leu Asp Leu Ile
 500 505 510

Ser Trp Phe Pro Thr Ile Leu Leu Pro Gly Leu Val Leu Ser Ile Ile
 515 520 525

Ile Thr Thr Ser Tyr Ala Ala Leu Ala Met Gly Glu Ala Gly Met Asp
 530 535 540

Ile Phe Lys Ser Leu Arg Pro Leu Ala Leu Ala Leu Asn Pro Ser Thr
 545 550 555 560

Lys Asn Ser Leu Leu Lys Leu Gln Asn Glu Arg Lys Arg Leu Val Leu
 565 570 575

Lys Ser Ser Glu Leu Val Thr Ser Leu Gly Pro Glu Leu Phe Pro Asp
 580 585 590

Phe Pro Glu Asn Ser Ile Leu Gln Gly Ser Asp Lys Phe Glu Asp Glu
 595 600 605

Glu Asn Tyr Glu Asn Glu Lys Arg Ser His Ser Arg Ser Thr Ser Ala
 610 615 620

Thr Ser Leu Ser Ala Met Ser Glu Gly Asp Gly Asp Glu Leu Val Arg
 625 630 635 640

Glu Val Arg Lys Gly Ala Ser Tyr Phe Pro Val Ser Thr Ile Ser Glu
 645 650 655

Asp Glu Asp Gln Ala Ile Ser Arg Val Gly Ser Glu Ala Ser Leu Ala
 660 665 670

Asp Ile Pro Leu Phe Gly Met Ser Arg Ser Gln Ser Gly Ala Ser Leu
 675 680 685

Ser Glu Ala Ser Thr His Gly Ser Ser Thr Gly Ala Asp Ala Glu Glu
 690 695 700

Ala Lys Thr Glu Val Thr Arg Arg Ile Ala Leu Ala Met Glu Glu Lys
 705 710 715 720

<210> 121
 <211> 518
 <212> PRT
 <213> *Yarrowia lipolytica*

<400> 121

Met Ser Thr Phe Asp Trp Glu Ser Ile Val Pro Ala Thr Pro Leu Asp
 1 5 10 15

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

Lys Thr Leu Asp Leu Asn Tyr Arg Leu Asp Gln Ile Arg Asn Leu His
 35 40 45

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

Asp Leu Gly Arg Pro Lys His Glu Thr Asp Leu Cys Glu Val Gly Phe
 65 70 75 80

Leu Trp Gly Glu Phe Asn Asn Val Val Ala Asn Leu Lys Lys Trp Ala
 85 90 95

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

Lys Ile Arg Lys Arg Pro Leu Gly Asn Val Leu Ile Ile Ser Pro Trp
115 120 125

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

Ala Gly Asn Thr Val Ala Val Lys Phe Ser Glu Met Ala Pro His Thr
145 150 155 160

Ser Lys Ile Val Gly Asp Leu Cys Thr Lys Ala Leu Asp Pro Asp Val
165 170 175

Phe Gln Ala Ile Gln Gly Gly Val Pro Val Val Thr Lys Thr Leu Glu
180 185 190

Gln Lys Phe Asp Lys Ile Met Tyr Gly Asn His Thr Val Gly Lys Ile
195 200 205

Ile Ala Thr Ala Ala Asn Lys Tyr Leu Thr Pro Val Ile Leu Glu Leu
210 215 220

Gly Gly Lys Ser Pro Val Phe Val Thr Lys Asn Cys Lys Asn Ile Lys
225 230 235 240

Leu Ala Ala Lys Arg Ala Leu Trp Gly Lys Val Val Asn Ala Gly Gln
245 250 255

Thr Cys Val Ala Pro Asp Tyr Val Ile Val Glu Pro Glu Val Glu Gln
260 265 270

Glu Phe Ile Asp Ala Cys Lys Tyr Trp Ile Asn Glu Phe Tyr Ser Gly
275 280 285

Lys Ile Asp Gln Tyr Asn Pro Asp Phe Ala Lys Ile Ala Thr Pro Asn
290 295 300

His Trp Asn Arg Leu Thr Ser Met Leu Ser Lys Ser Lys Gly Glu Ile
305 310 315 320

Ile Thr Gly Gly Asn Thr Asp Glu Lys Thr Arg Phe Ile Ala Pro Thr
325 330 335

Val Val Ala Lys Val Pro Asp Asn Asp Ser Leu Met Glu Asp Glu Ile
340 345 350

Phe Gly Pro Leu Leu Pro Ile Leu Thr Ala Arg Ser Val Glu Glu Gly

355

360

365

Ile Lys Tyr Val His Glu Asn His Asp Thr Pro Leu Ala Met Tyr Val
370 375 380

Phe Thr Asp Lys Ala Ser Glu Gly Asp Tyr Ile Gln Ser Gln Ile Asn
385 390 395 400

Ser Gly Gly Leu Ile Phe Asn Asp Thr Leu Ile His Val Gly Cys Val
405 410 415

Gln Ala Pro Phe Gly Gly Val Gly Met Ser Gly Tyr Gly Ala Tyr His
420 425 430

Gly Glu Asp Ser Phe Leu Ala Phe Thr His Arg Gln Thr Tyr Leu Asn
435 440 445

Gln Pro Lys Leu Leu Glu Pro Leu Gln Asp Val Arg Tyr Ala Pro Tyr
450 455 460

Thr Lys Thr Lys Arg Ser Met Val Lys Asn Leu Leu Leu Val Gly Pro
465 470 475 480

Ile Phe Pro Arg Thr Gly Ser Val Tyr Pro Asn Val Leu Ile Arg Ile
485 490 495

Phe Arg Lys Ile Trp Phe Trp Val Leu Ile Val Ala Ile Gly Ala Ala
500 505 510

Gly Ala Lys Ala Leu Leu
515

<210> 122

<211> 529

<212> PRT

<213> Yarrowia lipolytica

<400> 122

Met Thr Thr Thr Ala Thr Glu Thr Pro Thr Thr Asn Val Thr Pro Thr
1 5 10 15

Thr Ser Leu Pro Lys Glu Thr Ala Ser Pro Gly Gly Thr Ala Ser Val
20 25 30

Asn Thr Ser Phe Asp Trp Glu Ser Ile Cys Gly Lys Thr Pro Leu Glu
35 40 45

Glu Ile Glu Ser Asp Ile Ser Arg Leu Lys Lys Thr Phe Arg Ser Gly
50 55 60

Lys Thr Leu Asp Leu Asp Tyr Arg Leu Asp Gln Ile Arg Asn Leu Ala
 65 70 75 80

Tyr Ala Ile Arg Asp Asn Glu Asn Lys Ile Arg Asp Ala Ile Lys Ala
 85 90 95

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

Gln Met Gly Glu Phe Asn Tyr Val Val Lys Asn Leu Pro Lys Trp Val
 115 120 125

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

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

Trp Asn Tyr Pro Leu Ile Leu Ala Val Ser Pro Val Leu Gly Ala Ile
 165 170 175

Ala Ala Gly Asn Thr Val Ala Leu Lys Met Ser Glu Met Ser Pro Asn
 180 185 190

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

Leu Phe Gln Cys Phe Phe Gly Gly Val Pro Glu Thr Thr Glu Ile Leu
 210 215 220

Lys His Arg Trp Asp Lys Ile Met Tyr Thr Gly Asn Gly Lys Val Gly
 225 230 235 240

Arg Ile Ile Cys Glu Ala Ala Asn Lys Tyr Leu Thr Pro Val Glu Leu
 245 250 255

Glu Leu Gly Gly Lys Ser Pro Val Phe Val Thr Lys His Cys Ser Asn
 260 265 270

Leu Glu Met Ala Ala Arg Arg Ile Ile Trp Gly Lys Phe Val Asn Gly
 275 280 285

Gly Gln Thr Cys Val Ala Pro Asp Tyr Val Leu Val Cys Pro Glu Val
 290 295 300

His Asp Lys Phe Val Ala Ala Cys Gln Lys Val Leu Asp Lys Phe Tyr
 305 310 315 320

Pro Asn Asn Ser Ala Glu Ser Glu Met Ala His Ile Ala Thr Pro Leu
325 330 335

His Tyr Glu Arg Leu Thr Gly Leu Leu Asn Ser Thr Arg Gly Lys Val
340 345 350

Val Ala Gly Gly Thr Phe Asn Ser Ala Thr Arg Phe Ile Ala Pro Thr
355 360 365

Ile Val Asp Gly Val Asp Ala Asn Asp Ser Leu Met Gln Gly Glu Leu
370 375 380

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

Cys Asn Phe Val Leu Glu His His Pro Thr Pro Leu Ala Glu Tyr Ile
405 410 415

Phe Ser Asp Asn Asn Ser Glu Ile Asp Tyr Ile Arg Asp Arg Val Ser
420 425 430

Ser Gly Gly Leu Val Ile Asn Asp Thr Leu Ile His Val Gly Cys Val
435 440 445

Gln Ala Pro Phe Gly Gly Val Gly Asp Ser Gly Asn Gly Gly Tyr His
450 455 460

Gly Lys His Thr Phe Asp Leu Phe Ser His Ser Gln Thr Val Leu Arg
465 470 475 480

Gln Pro Gly Trp Val Glu Met Leu Gln Lys Lys Arg Tyr Pro Pro Tyr
485 490 495

Asn Lys Ser Asn Glu Lys Phe Val Arg Arg Met Val Val Pro Ser Pro
500 505 510

Gly Phe Pro Arg Glu Gly Asp Val Arg Gly Phe Trp Ser Arg Leu Phe
515 520 525

Asn

<210> 123
<211> 377
<212> PRT
<213> Yarrowia lipolytica

<400> 123

Met Trp Gly Ser Ser His Ala Phe Ala Gly Glu Ser Asp Leu Thr Leu
1 5 10 15

Gln Leu His Thr Arg Ser Asn Met Ser Asp Asn Thr Thr Ile Lys Lys
 20 25 30

Pro Ile Arg Pro Lys Pro Ile Arg Thr Glu Arg Leu Pro Tyr Ala Gly
 35 40 45

Ala Ala Glu Ile Ile Arg Ala Asn Gln Lys Asp His Tyr Phe Glu Ser
 50 55 60

Val Leu Glu Gln His Leu Val Thr Phe Leu Gln Lys Trp Lys Gly Val
 65 70 75 80

Arg Phe Ile His Gln Tyr Lys Glu Glu Leu Glu Thr Ala Ser Lys Phe
 85 90 95

Ala Tyr Leu Gly Leu Cys Thr Leu Val Gly Ser Lys Thr Leu Gly Glu
 100 105 110

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

Gly Val Val Arg Arg Phe Gly Tyr Val Leu Ser Asn Thr Leu Phe Pro
 130 135 140

Tyr Leu Phe Val Arg Tyr Met Gly Lys Leu Arg Ala Lys Leu Met Arg
 145 150 155 160

Glu Tyr Pro His Leu Val Glu Tyr Asp Glu Asp Glu Pro Val Pro Ser
 165 170 175

Pro Glu Thr Trp Lys Glu Arg Val Ile Lys Thr Phe Val Asn Lys Phe
 180 185 190

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

Phe Tyr Val Tyr Gly Ser Tyr Tyr Gln Leu Ser Lys Arg Ile Trp Gly
 210 215 220

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

Gly Tyr Glu Met Leu Gly Leu Leu Ile Phe Ala Arg Phe Ala Thr Ser
 245 250 255

Phe Val Gln Thr Gly Arg Glu Tyr Leu Gly Ala Leu Leu Glu Lys Ser
 260 265 270

Val Glu Lys Glu Ala Gly Glu Lys Glu Asp Glu Lys Glu Ala Val Val
275 280 285

Pro Lys Lys Lys Ser Ser Ile Pro Phe Ile Glu Asp Thr Glu Gly Glu
290 295 300

Thr Glu Asp Lys Ile Asp Leu Glu Asp Pro Arg Gln Leu Lys Phe Ile
305 310 315 320

Pro Glu Ala Ser Arg Ala Cys Thr Leu Cys Leu Ser Tyr Ile Ser Ala
325 330 335

Pro Ala Cys Thr Pro Cys Gly His Phe Phe Cys Trp Asp Cys Ile Ser
340 345 350

Glu Trp Val Arg Glu Lys Pro Glu Cys Pro Leu Cys Arg Gln Gly Val
355 360 365

Arg Glu Gln Asn Leu Leu Pro Ile Arg
370 375

<210> 124
<211> 679
<212> PRT
<213> Cydia pomonella

<400> 124

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

Leu Lys Ile Ser Leu Pro Thr Val Leu Cys Thr Pro Glu Ser Ser Glu
20 25 30

Asn Ser Asp Ile Leu Cys Lys Thr Lys Thr Phe Ile Ser Ser Glu Ser
35 40 45

Lys Leu Ser Leu Pro Ser Asn Leu Gly Thr Pro Thr Ser Pro Leu Arg
50 55 60

Leu Ser Ser Pro Leu Ser Leu Pro Thr Ser Pro Thr Pro Tyr Met Lys
65 70 75 80

Ile Thr Gln Pro Gln Pro Glu Lys Thr Val Ala Ala Thr Gln Met Asn
85 90 95

Ser Pro Pro Thr Thr Ile Val Gln Gln Thr Gly Pro Lys Gln Pro Leu
100 105 110

Val Asn Thr Gly Ser Ala Thr Gly Asn Pro Arg Asn Lys Cys Ala Leu

115

120

125

Gln Pro Gly His Ser Leu Met Asp Trp Ile Arg Leu Gly Asn Ser Gly
 130 135 140

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

Glu Leu Ala Ala His Asn Thr Arg Asn Asp Ala Trp Leu Ala Ile Arg
 165 170 175

Gly Arg Val Tyr Asn Ile Thr His Tyr Leu Pro Tyr His Pro Gly Gly
 180 185 190

Pro Glu Glu Leu Met Arg Gly Ala Gly Ile Asp Ala Thr Gln Leu Phe
 195 200 205

Asp Lys Val His Pro Trp Val Asn Tyr Asp Ser Leu Leu Ala Lys Cys
 210 215 220

Leu Val Gly Pro Leu Arg Leu Asp Arg Pro Asp Ala Glu Glu Leu Phe
 225 230 235 240

Gly Pro Ser Thr Pro Ser Pro Lys Ser Glu Asn Arg Leu Arg Glu Pro
 245 250 255

Ser Lys Ala Gln Glu Leu Val Arg Lys Ser Met Glu Asn Leu Ala Asn
 260 265 270

Cys Ile Thr Pro Val Arg Lys Lys Met Ser Ala Lys Ser Glu Glu Asn
 275 280 285

Ile Lys Gly Ser Pro Pro Ser Lys Ile Met Gln Ser Leu Ile Gln Ser
 290 295 300

Ser Asp Leu Pro Val Ser Ile Ser Arg Arg Ala Ala Ala Ser Pro Val
 305 310 315 320

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

Trp Ile Gln Thr Ser Thr Lys Leu Thr Leu Ser Ile Tyr Thr Gly Pro
 340 345 350

Leu Ala Asn Pro Gly Gly Cys Ala Arg Ile Ile Glu Gly Ile Leu Phe
 355 360 365

Val Glu Val Ala Thr Asn Gly Trp Val Arg Thr Leu Lys Leu Val Pro
 370 375 380

Glu Ala Lys Leu Leu Glu Ser Leu Gln Leu Arg Val Phe Ala Glu Ser
 385 390 395 400

Gly Lys Ile Glu Val Thr Ala His Lys Ala Glu Pro Gly Val Trp Lys
 405 410 415

Thr Cys Gly Glu Ala Met Ala Gly Ala Ala Ser Arg Val Ser Thr Pro
 420 425 430

Arg Ser Val Ser Cys Arg Val Ala Arg Met Leu Arg Val Ser His Asp
 435 440 445

Thr Val Leu Leu Ser Leu Ala Ala Pro Ala Gln Ala Leu Val Ala Pro
 450 455 460

Leu Gly His His Val Arg Val His Arg Thr Ile Ser Asp Val Glu Cys
 465 470 475 480

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

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

Leu Ser Pro Tyr Leu Thr Ala Leu Gln Pro Gly Asp Glu Val Thr Val
 515 520 525

Ser Gly Pro Tyr Gly Asn Phe Gln Leu His Thr Leu Lys Gly Val Lys
 530 535 540

Glu Ile Tyr Phe Val Ala Ala Gly Thr Gly Ile Thr Pro Met Leu Gly
 545 550 555 560

Leu Leu Lys Phe Met Leu Pro Arg Ser Asn Pro Arg Cys Glu Arg Ile
 565 570 575

His Leu Leu Phe Phe Asn Lys Thr Glu Glu Asp Ile Leu Phe Arg Glu
 580 585 590

Asn Phe Glu Glu Ile Ala Arg Glu Asp Asp Arg Phe Thr Val Thr His
 595 600 605

Val Leu Ser Asp Ala Gly Pro Ser Trp Ser Gly His Lys Gly Arg Val
 610 615 620

Thr Thr Asn Leu Leu Thr Gln Val Ile Gly Lys Ser Phe Leu Lys Cys
 625 630 635 640

Arg Asp Gln Cys Thr His Phe Ala Cys Val Cys Gly Pro Thr Glu Phe
645 650 655

Thr His Thr Ala Ile Asp Leu Leu Lys Lys Leu Asp Met Lys Asp Ser
660 665 670

Cys Ile His Ala Phe Met Gly
675

<210> 125
<211> 2040
<212> DNA
<213> Cydia pomonella

<400> 125
atggccgact ctccacctga ggacaacacc cctactcgaa acggctctct gaagatctct 60
ctgcccaccg tgctgtgcac ccctgagtc tctgagaact ctgacatcct gtgcaagacc 120
aagaccttca tctcttctga gtctaagctg tctctgccct ctaacctggg aacctctacc 180
tctcctctgc gactctcttc tcccctgtcg ctgcccacct ctcctacacc ttacatgaag 240
atcaccagc ctcagcctga aaagaccgtg gccgccactc agatgaactc cccacctacc 300
accatcgtgc agcagaccgg acctaagcag cccctgggtga acaccggctc tgccactggc 360
aaccctcgaa acaagtgcgc tctgcagccc ggccactctc tgatggactg gatccgactg 420
ggcaactctg gcaaggacct gaccggcgctc ggccggacgaa tgcgaccctg gtctcccgac 480
gagctggccg ctcaacaac ccgaaacgac gcctggctgg ccatccgagg ccgagtgtac 540
aacatcacc actacctgcc ttaccatcct ggccggaccg aggaactgat gcgaggcgcc 600
ggaatcgacg ctaccagct gttcgacaag gtgcaccctt gggatgaacta cgactctctg 660
ctggccaagt gcctgggtggg acccctgcga ctggaccgac ctgacgctga ggaactgttc 720
ggcccctcta ctccctcgcc taagtctgag aaccgactgc gagagccctc taaggcccaa 780
gagctggtgc gaaagtctat ggaaaacctg gccaaactgca tcaccctgt gcgaaagaag 840
atgtctgcca agtctgagga aaacatcaag ggatctccac cttctaagat catgcagtct 900
ctgattcagt cctccgacct gcctgtgtct atttctcgac gagccgccgc ttctcccgtc 960
aagacctcg agaagtctga tatcgcccct tcgcctctgc gattcgactg gattcagacc 1020
tctaccaagc tgacctgtc tatctacacc ggacctctgg ctaaccccg tggtgctgcc 1080
cgaatcatcg agggcatcct gttcgtcgag gtcgccacca acggctgggt gcgaaccctg 1140
aagctggtgc ccgaggccaa gctgctcgag tctctgcagc tgcgagtgtt cgccgagtct 1200
ggcaagatcg aggtgactgc ccacaaggct gagcccgcg tgtggaagac ctgcggcgag 1260
gccatggctg gcgctgcctc tcgagtgtct acccctcgat ctgtgtcttg ccgagtggcc 1320
cgaatgctgc gagtctcca cgacaccgtc ctgctgtccc tggctgctcc cgctcaggcc 1380

ctggtggctc ccctgggcca ccacgtgcga gtgcaccgaa ccatctctga cgtcgagtgc 1440
 gtgcgatctt acaccctgt cggcgaaggc tggggacccg acgccgagcg agactctgcc 1500
 atccacctgg ccgtgaaggg ctacgacacc ggcgctctgt ctccctacct gactgccctg 1560
 cagcctggcg acgaggtgac cgtgtctggc ccctacggca acttccagct gcacaccctg 1620
 aagggcgtga aggaaatcta cttcgtcgcc gctggcaccg gaatcacccc tatgctgggc 1680
 ctgctgaagt tcatgctgcc ccgatctaac cctcgatgcg agcgaatcca cctcctgttc 1740
 ttcaacaaga ccgaagagga cattctgttc cgagagaact tcgaggaaat cgcccgagag 1800
 gacgaccgat tcaccgtgac tcacgtgctg tctgacgctg gccctcttg gtctggccac 1860
 aagggacgag tgaccaccaa cctgctgacc caggtgatcg gcaagtcttt cctgaagtgc 1920
 cgagatcagt gacccactt cgcctgcgtg tgcggcccca ccgagtttac ccacaccgcc 1980
 atcgacctgc tcaagaagct ggacatgaag gactcttgca tccacgcctt catgggctag 2040

<210> 126
 <211> 346
 <212> PRT
 <213> Antheraea pernyi

<400> 126

Met Ala Pro Cys Thr Glu Lys Glu Asp Glu Leu Ile Thr Cys Glu Gly
 1 5 10 15

Ser Ile Glu Lys Leu Ile Ala Pro Gln Ala Asn Lys Arg Lys His Gln
 20 25 30

Ile Val Tyr Met Asn Leu Phe Thr Phe Gly Tyr Trp Tyr Ile Ala Gly
 35 40 45

Leu Tyr Gly Leu Tyr Leu Phe Phe Thr Ser Thr Lys Trp Ser Thr Ile
 50 55 60

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

Gly Ala His Arg Leu Trp Ala His Lys Cys Phe Lys Ala Lys Leu Pro
 85 90 95

Leu Gln Ile Ile Leu Met Ile Leu Asn Thr Leu Ala Phe Gln Asn Thr
 100 105 110

Ala Ile Thr Trp Val Arg Asp His Arg Met His His Lys Phe Thr Asp
 115 120 125

Thr Asp Ala Asp Pro His Asn Ala Thr Arg Gly Phe Phe Phe Ser His
 130 135 140

Val Gly Trp Leu Leu Val Lys Lys His Pro Glu Leu Met Lys Arg Ser
145 150 155 160

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

Gln Lys Lys Tyr Ala Phe Pro Leu Val Ala Thr Phe Thr Phe Ile Leu
180 185 190

Pro Thr Val Val Pro Ile Tyr Phe Trp Asp Glu Ser Leu Asn Asn Ala
195 200 205

Trp His Ala Thr Val Phe Arg Tyr Ala Tyr Asn Leu Asn Ile Thr Phe
210 215 220

Leu Val Asn Ser Ala Ala His Met Trp Gly Tyr Arg Pro Tyr Asp Lys
225 230 235 240

Asn Ile Gln Pro Thr Gln Asn Ile Phe Thr Thr Leu Cys Thr Phe Gly
245 250 255

Glu Gly Phe His Asn Tyr His His Thr Phe Pro Trp Asp Tyr Arg Ala
260 265 270

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

Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Val Pro Ala
290 295 300

Asp Ile Val Asn Ser Arg Ala Lys Arg Thr Gly Asp Gly Thr Asp Leu
305 310 315 320

Trp Gly Gly Asn His Lys His Thr Leu Asp Glu Lys Glu Asn Arg Glu
325 330 335

Leu Asp Asp Tyr Val His Lys Ser Ala Phe
340 345

<210> 127
<211> 329
<212> PRT
<213> *Argyrotaenia velutinana*

<400> 127

Met Ala Pro Asn Ala Glu Asp Ile Glu Thr Asn Met Pro Glu Thr Glu
1 5 10 15

Glu Asn Trp Glu Thr Leu Val Ala Pro Gln Ala Ala Pro Arg Lys Tyr

20

25

30

Gln Ile Val Tyr Lys Ser Leu Leu Thr Phe Gly Tyr Gly His Leu Ala
 35 40 45

Gly Leu Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp Gln Thr
 50 55 60

Ile Gly Leu Ala Ile Ile Leu His Ala Met Ala Ile Leu Gly Ile Thr
 65 70 75 80

Ala Gly Ala His Arg Leu Trp Thr His Arg Ala Tyr Lys Ala Thr Val
 85 90 95

Pro Leu Gln Ile Ile Leu Ile Ile Phe Asn Ser Leu Ser Phe Gln Asn
 100 105 110

Ser Ala Phe Thr Trp Ile Arg Asp His Arg Leu His His Lys Tyr Ser
 115 120 125

Asp Thr Asp Gly Asp Pro His Asn Ala Thr Arg Gly Phe Phe Tyr Ser
 130 135 140

His Ile Gly Trp Leu Leu Val Arg Lys His Pro Glu Val Met Lys Arg
 145 150 155 160

Gly Arg Met Thr Glu Met Ser Asp Ile Tyr Ser Asn Pro Ile Ile Met
 165 170 175

Phe Gln Lys Asn Tyr Ala Ile Pro Phe Ile Gly Thr Val Cys Phe Val
 180 185 190

Leu Pro Thr Ile Ile Pro Met Tyr Phe Trp Gly Glu Thr Leu Asn Asn
 195 200 205

Ala Trp His Ile Thr Val Leu Arg Tyr Ile Phe Ser Leu Asn Cys Ile
 210 215 220

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

Lys Asn Ile Leu Pro Ala Glu Asn Lys Ala Ala Ser Ile Ala Ser Phe
 245 250 255

Gly Glu Ala Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg
 260 265 270

Ala Ser Glu Leu Gly Asn Ile Thr Met Asn Trp Thr Ile Tyr Phe Ile
 275 280 285

Asp Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Ala Ser
 290 295 300

Asp Glu Thr Ile Lys Ser Arg Ile Lys Arg Thr Gly Asp Gly Thr Asp
 305 310 315 320

Phe Ser Gly Gln Gln Ile Tyr Ala Arg
 325

<210> 128
 <211> 351
 <212> PRT
 <213> Bombus lapidarius

<400> 128

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

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

Phe Lys Thr Gln Ile Val Trp Arg Asn Val Ile Ile Phe Thr Tyr Leu
 35 40 45

His Ile Ser Ala Val Tyr Gly Leu Tyr Leu Ala Phe Thr Ser Ala Lys
 50 55 60

Trp Ala Thr Leu Leu Phe Ala Phe Phe Leu His Val Tyr Ser Ala Leu
 65 70 75 80

Gly Ile Thr Ala Gly Ala His Arg Leu Trp Ala His Arg Ser Tyr Lys
 85 90 95

Ala Lys Trp Pro Met Gln Leu Ile Leu Ile Ile Gly Asn Thr Ile Ala
 100 105 110

Phe Gln Asp Ser Ala Ile Asp Trp Ala Arg Asp His Arg Leu His His
 115 120 125

Lys Tyr Ser Glu Thr Asn Ala Asp Pro His Asn Ala Lys Arg Gly Phe
 130 135 140

Phe Phe Ala His Ile Gly Trp Leu Leu Cys Lys Lys His Pro Asp Ile
 145 150 155 160

Arg Ala Lys Gly Lys Gly Ile Asp Met Ser Asp Leu Lys Asn Asn Pro
 165 170 175

Ile Leu Thr Phe Gln Lys Lys Tyr Tyr Thr Ile Leu Met Pro Leu Leu
180 185 190

Cys Phe Ile Val Pro Thr Met Ile Pro Val Tyr Cys Trp Asn Glu Thr
195 200 205

Trp Gly Asn Gly Tyr Phe Ile Pro Ala Ile Leu Arg Tyr Val Tyr Thr
210 215 220

Leu Asn Met Thr Trp Leu Val Asn Ser Ala Ala His Met Phe Gly Asn
225 230 235 240

Lys Pro Tyr Asp Lys Tyr Ile Asn Pro Val Glu Asn Lys Met Val Ala
245 250 255

Ile Thr Ala Leu Gly Glu Gly Trp His Asn Tyr His His Val Phe Pro
260 265 270

Trp Asp Tyr Lys Thr Ala Glu Leu Gly Asn Tyr Lys Val Asn Val Thr
275 280 285

Thr Leu Phe Ile Asp Val Cys Ser Lys Leu Gly Leu Ala Tyr Asp Met
290 295 300

Lys Ile Val Pro Gln Asp Leu Val Gln Lys Arg Val Glu Arg Thr Gly
305 310 315 320

Asp Gly Ser His Asn Val Trp Gly Trp Gly Asp Lys Asp Gln Thr Gln
325 330 335

Gln Asp Arg Asp Val Thr Met Val Val Asn Leu Lys Lys Asp His
340 345 350

<210> 129
<211> 339
<212> PRT
<213> Bombyx mori

<400> 129

Met Glu Ala Lys Gln Asn Asn Leu Ala Pro Thr Leu Glu Glu Glu Ala
1 5 10 15

Gln Phe Glu Lys Leu Ile Ala Pro Gln Ala Ser Asp Arg Lys His Glu
20 25 30

Ile Ile Tyr Ala Asn Leu Ile Thr Phe Ala Tyr Gly His Ile Ser Ala
35 40 45

Leu Tyr Gly Leu Tyr Leu Cys Phe Ser Ser Ala Lys Trp Ala Thr Ile
50 55 60

Ile Met Ala Tyr Val Ile Leu Ile Ala Ala Glu Val Gly Val Thr Ala
 65 70 75 80

Gly Ala His Arg Leu Trp Thr His Arg Ala Tyr Lys Ala Lys Arg Pro
 85 90 95

Leu Gln Ile Ile Leu Met Val Met Asn Ser Phe Ala Phe Gln Asn Ser
 100 105 110

Ala Ile Thr Trp Ile Arg Asp His Arg Met His His Arg Tyr Ser Asp
 115 120 125

Thr Asp Ala Asp Pro His Asn Ala Thr Arg Gly Phe Phe Tyr Ser His
 130 135 140

Ile Gly Trp Leu Leu Val Arg Lys His Pro Glu Val Lys Arg Arg Gly
 145 150 155 160

Lys Thr Ile Asp Met Ser Asp Ile Tyr Ser Asn Pro Val Leu Val Phe
 165 170 175

Gln Lys Lys Tyr Ala Ile Pro Phe Ile Gly Ala Val Cys Phe Val Ile
 180 185 190

Pro Thr Leu Val Pro Ile Tyr Phe Trp Gly Glu Thr Leu Thr Asn Ala
 195 200 205

Trp His Ile Thr Leu Leu Arg Tyr Ile Ile Ser Leu His Val Thr Phe
 210 215 220

Leu Val Asn Ser Ala Ala His Leu Trp Gly Thr Arg Ala Tyr Asp Lys
 225 230 235 240

Arg Ile Phe Pro Ala Gln Asn Leu Ile Val Ser Leu Leu Ala Val Gly
 245 250 255

Glu Gly Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg Thr
 260 265 270

Ala Glu Leu Gly Asn Asn Tyr Leu Asn Leu Thr Thr Lys Phe Ile Asp
 275 280 285

Phe Phe Ala Trp Leu Gly Trp Ala Tyr Asp Leu Lys Ser Val Pro Asp
 290 295 300

Ser Ala Val Gln Ser Arg Ala Ala Arg Thr Gly Asp Gly Thr Asn Ser
 305 310 315 320

Trp Gly Trp Pro Glu Glu Asp Ala Asn Glu Asp Ile Leu Lys Gln Thr
325 330 335

Pro Pro Leu

<210> 130
<211> 345
<212> PRT
<213> Chilo supprealis

<400> 130

Met Ala Pro Asn Ser Ile Gln Asn Asp Glu Gly Leu Gly Val Glu Val
1 5 10 15

Gln Pro Glu Ser Leu Thr Pro Pro Lys Leu Thr Gln Ile Arg His Lys
20 25 30

Ile Leu Tyr Val Asn Leu Thr Tyr Phe Leu Tyr Trp His Leu Ala Ala
35 40 45

Pro Tyr Gly Ile Tyr Leu Cys Phe Thr Ser Val Lys Trp Glu Thr Ile
50 55 60

Ile Phe Gly Phe Val Val Phe Leu Ala Ala Glu Leu Gly Val Thr Ala
65 70 75 80

Gly Ala His Arg Leu Trp Ser His Lys Ser Tyr Lys Ala Lys Arg Pro
85 90 95

Leu Glu Ile Ile Leu Met Leu Phe Asn Ser Met Ala Phe Gln Asn Ser
100 105 110

Ile Ile His Trp Ala Arg Asp His Arg Leu His His Lys Tyr Cys Asp
115 120 125

Thr Asp Ala Asp Pro Tyr Asn Ala Ser Arg Gly Phe Phe Tyr Ser His
130 135 140

Val Gly Trp Leu Leu Thr Lys Lys Asn Lys Glu Val Leu Lys Arg Gly
145 150 155 160

Lys Thr Ile Asp Ala Ser Asp Leu Phe Asn Asn Pro Val Leu Gln Phe
165 170 175

Gln Lys Lys Tyr Ala Ile Pro Val Phe Ala Leu Cys Cys Phe Ile Leu
180 185 190

Pro Thr Ala Ile Pro Met Tyr Val Trp Gly Glu Thr Leu Asn Asn Ser

195

200

205

Trp His Ala Asn Leu Leu Arg Tyr Thr Ile Asn Leu Asn Val Thr Phe
 210 215 220

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

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

Glu Gly Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Lys Thr
 260 265 270

Ala Glu Leu Gly Asn Asn Lys Leu Asn Val Thr Thr Trp Phe Ile Asn
 275 280 285

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

Glu Ile Val Arg Ala Arg Ala Met Arg Thr Gly Asp Gly Lys Asp Leu
 305 310 315 320

Trp Gly Trp Asn Asp Lys Asp Ile Thr Asp Met Asp Lys Glu His Thr
 325 330 335

Asp Ile Leu Tyr Ser Lys Thr Glu Asp
 340 345

<210> 131
 <211> 374
 <212> PRT
 <213> *Drosophila ananassae*

<400> 131

Met Pro Pro Asn Ser Lys Glu Ser Thr Asp Lys Cys Thr Gly Leu Ala
 1 5 10 15

Ser Glu Val Pro Gly Thr Val Asp Asp Gly Ser Ser Lys Gln Thr Gly
 20 25 30

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

Ser Thr Val Glu Phe Lys Arg Ala Glu Lys Arg Lys Leu Glu Leu Val
 50 55 60

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

Gly Gly Tyr Leu Met Phe Thr Gln Ala Lys Leu Ala Thr Thr Ile Phe
 85 90 95

Ala Ala Gly Leu Tyr Ile Cys Gly Met Leu Gly Ile Thr Gly Gly Ala
 100 105 110

His Arg Leu Trp Ala His Arg Ser Tyr Lys Ala Lys Trp Pro Leu Arg
 115 120 125

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

His Trp Ala Arg Asp His Arg Val His His Lys Phe Ser Glu Thr Asp
 145 150 155 160

Ala Asp Pro His Asn Ala Thr Arg Gly Phe Phe Phe Ser His Val Gly
 165 170 175

Trp Leu Leu Thr Lys Lys His Pro Asp Val Lys Ala Lys Gly Lys Ile
 180 185 190

Leu Asp Leu Ser Asp Leu His Ala Asp Pro Ile Leu Met Phe Gln Lys
 195 200 205

Lys His Tyr Phe Val Leu Met Pro Leu Ala Cys Phe Ile Leu Pro Thr
 210 215 220

Ile Ile Pro Val Leu Cys Trp Asn Glu Ser Leu Thr Cys Gly Trp Leu
 225 230 235 240

Val Ala Thr Met Phe Arg Trp Cys Phe Gln Leu Asn Met Thr Trp Leu
 245 250 255

Val Asn Ser Ala Ala His Lys Phe Gly Gly Arg Pro Tyr Asp Lys Asn
 260 265 270

Met Asn Pro Ser Glu Asn Ala Tyr Val Ala Thr Met Thr Phe Gly Glu
 275 280 285

Gly Trp His Asn Tyr His His Val Phe Pro Trp Asp Tyr Lys Thr Ser
 290 295 300

Glu Trp Gly Asn Arg Leu Asn Met Thr Ala Arg Phe Ile Asp Leu Phe
 305 310 315 320

Ala Lys Ile Gly Trp Ala Tyr Asp Leu Lys Ser Val Ala Pro Asp Thr
 325 330 335

Val Lys Arg Arg Val Trp Arg Thr Gly Asp Gly Ser His Glu Leu Trp
340 345 350

Gly Trp Gly Asp Lys Asp Leu Thr Pro Glu Asp Ala Lys Asp Val Leu
355 360 365

Phe Val Asp Lys Met Asn
370

<210> 132
<211> 344
<212> PRT
<213> Diatraea saccharalis

<400> 132

Met Ala Pro Asn Leu Ile Lys Asn Glu Gly Ala Phe Asp Val Asp Ile
1 5 10 15

Lys Pro Asp Glu Leu Gln Pro Pro Lys Leu Ser Lys Ile Lys His Lys
20 25 30

Ile Leu Tyr Val Asn Leu Ile Tyr Phe Leu Tyr Trp His Leu Ala Ala
35 40 45

Pro Tyr Gly Leu Tyr Leu Cys Cys Thr Ser Ala Lys Trp Ala Thr Ile
50 55 60

Ile Phe Ala Phe Val Met Phe Leu Ala Ala Glu Leu Gly Ile Thr Ala
65 70 75 80

Gly Ala His Arg Leu Trp Ser His Lys Ser Tyr Lys Ala Lys Leu Pro
85 90 95

Leu Glu Ile Ile Leu Met Leu Phe Asn Ser Ile Ala Phe Gln Asn Ser
100 105 110

Ile Ile His Trp Ala Arg Asp His Arg Leu His His Lys Tyr Ser Asp
115 120 125

Thr Asp Ala Asp Pro His Asn Ala Ser Arg Gly Phe Phe Tyr Ser His
130 135 140

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

Lys Asn Ile Asp Val Ser Asp Leu Tyr Asn Asn Pro Val Leu Gln Phe
165 170 175

Gln Arg Lys Tyr Ala Val Pro Val Phe Ala Ser Phe Cys Phe Ile Leu
180 185 190

Pro Thr Leu Ile Pro Met Tyr Leu Trp Gly Glu Ser Phe Lys Asn Ser
 195 200 205
 Trp Tyr Val Asn Leu Leu Arg Tyr Val Ile Asn Leu Asn Val Thr Phe
 210 215 220
 Leu Val Asn Ser Ala Ala His Lys Trp Gly Tyr Lys Pro Tyr Glu Lys
 225 230 235 240
 Asn Ile Asn Pro Ala Gln Asn Val Tyr Val Ser Phe Ala Thr Leu Gly
 245 250 255
 Glu Gly Phe His Asn Tyr His His Ile Phe Pro Trp Asp Tyr Lys Thr
 260 265 270
 Ala Glu Leu Gly Asn Asn Lys Leu Asn Val Thr Thr Trp Phe Ile Asn
 275 280 285
 Phe Phe Ala Lys Ile Gly Trp Ala Tyr Asp Leu Lys Thr Val Ser Asn
 290 295 300
 Glu Met Val Arg Ala Arg Ala Met Arg Thr Gly Asp Gly Asn Asp Leu
 305 310 315 320
 Trp Gly Trp Asp Asp Glu Asp Ile Thr Asp Lys Asp Lys Glu His Thr
 325 330 335
 Asp Ile Leu Asn Gly Lys Thr Asp
 340
 <210> 133
 <211> 358
 <212> PRT
 <213> Drosophila yakuba
 <400> 133
 Met Ala Pro Tyr Glu Pro Ser Ser Asn Ser Ser Lys Gln Thr Gly Val
 1 5 10 15
 Leu Phe Glu Gly Asp Ala Glu Thr Ala Asp Gly Asp Leu Thr Ser Asp
 20 25 30
 Arg Phe Gln Leu Lys Arg Ala Glu Asn Arg Arg Leu Asp Leu Val Trp
 35 40 45
 Arg Asn Ile Ile Leu Phe Ala Leu Val His Leu Ser Ala Leu Tyr Gly
 50 55 60

Leu Tyr Ser Ile Phe Thr Lys Ala Lys Leu Ala Thr Thr Leu Phe Ala
65 70 75 80

Ala Gly Leu Tyr Ile Ile Gly Met Leu Gly Val Thr Ala Gly Ala His
85 90 95

Arg Leu Trp Ala His Arg Thr Tyr Lys Ala Lys Trp Pro Leu Arg Leu
100 105 110

Ile Leu Val Ile Phe Asn Thr Val Ala Phe Gln Asp Ala Ala Tyr His
115 120 125

Trp Ala Arg Asp His Arg Val His His Lys Tyr Ser Glu Thr Asp Ala
130 135 140

Asp Pro His Asn Ala Thr Arg Gly Phe Phe Phe Ser His Val Gly Trp
145 150 155 160

Leu Leu Cys Lys Lys His Pro Asp Ile Lys Glu Lys Gly Lys Gly Leu
165 170 175

Asp Leu Ser Asp Leu Arg Ala Asp Pro Ile Leu Met Phe Gln Arg Lys
180 185 190

His Tyr Tyr Ile Leu Met Pro Leu Ala Cys Phe Val Leu Pro Thr Val
195 200 205

Ile Pro Met Val Tyr Trp Asn Glu Thr Leu Ala Ser Ser Trp Phe Val
210 215 220

Ala Ser Met Phe Arg Trp Cys Phe Gln Leu Asn Met Thr Trp Leu Val
225 230 235 240

Asn Ser Ala Ala His Gln Phe Gly Asn Arg Pro Tyr Asp Lys Thr Met
245 250 255

Asn Pro Thr Gln Asn Ala Tyr Val Ser Ala Phe Thr Phe Gly Glu Gly
260 265 270

Trp His Asn Tyr His His Ser Phe Pro Trp Asp Tyr Lys Thr Ala Glu
275 280 285

Trp Gly Arg Tyr Ser Leu Asn Ile Thr Thr Ala Phe Ile Asp Met Phe
290 295 300

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

Ile Gln Arg Arg Val Leu Arg Thr Gly Asp Gly Ser His Glu Leu Trp

325

330

335

Gly Trp Gly Asp Lys Asp Leu Thr Pro Glu Asp Ala Arg Asn Val Leu
 340 345 350

Phe Val Asp Lys Arg Ser
 355

<210> 134

<211> 342

<212> PRT

<213> Cadra cautella

<400> 134

Met Val Pro Tyr Lys Gly Ser Ser Thr Val Leu Thr Glu Asp Gln Pro
 1 5 10 15

Gln Phe Glu Lys Leu Val Ala Pro Gln Ala Gly Pro Arg Lys Tyr Glu
 20 25 30

Ile Val Tyr Arg Asn Leu Ile Thr Phe Gly Tyr Trp His Leu Ala Ala
 35 40 45

Ile Tyr Gly Leu Tyr Leu Cys Phe Thr Thr Ala Lys Trp Ala Thr Ile
 50 55 60

Ile Phe Ala Leu Phe Leu Tyr Thr Ile Ala Glu Ile Gly Ile Thr Ala
 65 70 75 80

Gly Ala His Arg Leu Trp Thr His Arg Ala Tyr Lys Ala Lys Leu Pro
 85 90 95

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

Ala Leu Thr Trp Cys Arg Asp His Arg Met His His Arg Tyr Ser Asp
 115 120 125

Thr Asp Ala Asp Pro His Asn Ala Thr Arg Gly Phe Phe Tyr Ser His
 130 135 140

Val Gly Trp Leu Leu Val Lys Lys His Pro Glu Val Lys Ala Arg Gly
 145 150 155 160

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

Gln Lys Lys Tyr Ala Val Pro Val Val Gly Thr Leu Cys Phe Leu Met
 180 185 190

Pro Thr Phe Val Pro Val Tyr Phe Trp Gly Glu Thr Ile Ser Thr Ala
195 200 205

Trp His Ile Asn Phe Leu Arg Tyr Val Met Asn Leu Asn Met Thr Phe
210 215 220

Leu Val Asn Ser Ala Ala His Met Phe Gly Asn Lys Pro Tyr Asp Arg
225 230 235 240

Thr Leu Val Pro Val Gln Asn Val Ala Val Ser Phe Ala Thr Phe Gly
245 250 255

Glu Gly Phe His Asn Tyr His His Thr Tyr Pro Trp Asp Tyr Arg Thr
260 265 270

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

Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys Thr Ile Pro Gln
290 295 300

Asp Ala Ile Glu Lys Arg Met Ile Arg Thr Gly Asp Gly Thr Asp Met
305 310 315 320

Trp Gly Phe Gly Glu Lys Arg Phe Arg Lys Glu Val Asp Asn Ser Asn
325 330 335

Glu Thr Tyr Ser Asp Phe
340

<210> 135
<211> 350
<212> PRT
<213> Lobesia botrana

<400> 135

Met Val Pro Arg Leu Glu Val Asn Thr Gly Val Lys Thr Val Asp Glu
1 5 10 15

Glu Gln Leu Pro Ser Arg Asp Glu Asn Lys Pro Arg Ile Ser Lys Leu
20 25 30

Val Lys Ile Asn Ile Val Ser Phe Gly Tyr Leu His Ile Ala Ala Leu
35 40 45

Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp Ala Thr Ile Gly
50 55 60

Leu Ala Phe Phe Leu Leu Val Val Gly Glu Ile Gly Ile Thr Ala Gly

65		70		75		80	
Ala His Arg Leu Trp Ser His Arg Thr Tyr Lys Ala Asn Arg Ala Leu	85			90		95	
Glu Ile Leu Leu Ile Ile Met Asn Ser Val Ala Phe Gln Asn Ser Ala	100			105		110	
Ile His Trp Ile Arg Asp His Arg Leu His His Lys Tyr Ser Asp Thr	115			120		125	
Asn Ala Asp Pro His Asn Ala Ser Arg Gly Phe Phe Tyr Ser His Ile	130			135		140	
Gly Trp Leu Leu Val Arg Lys His Ser Asp Val Ile Asn Lys Gly Lys	145			150		155	160
Met Ile Asp Met Ser Asp Ile Tyr Asn Asn Pro Val Leu Thr Phe Gln	165			170		175	
Lys Lys Tyr Ala Ile Pro Phe Ile Gly Thr Ile Cys Phe Gly Leu Pro	180			185		190	
Thr Leu Ile Pro Met Tyr Cys Trp Gly Glu Ser Leu Asn Asn Ala Trp	195			200		205	
His Ile Asn Ile Met Arg Tyr Val Leu Cys Leu Asn Ile Thr Phe Leu	210			215		220	
Val Asn Ser Ala Ala His Phe Phe Gly Gln Lys Pro Tyr Asp Lys Asn	225			230		235	240
Ile Leu Pro Gly Gln Asn Ile Leu Val Ser Ile Leu Ala Val Gly Glu	245			250		255	
Gly Phe His Asn Tyr His His Val Phe Pro Trp Asp Tyr Arg Thr Ala	260			265		270	
Glu Leu Gly Asn Asn Met Leu Asn Leu Thr Thr Lys Phe Ile Asp Phe	275			280		285	
Phe Ala Trp Leu Gly Trp Ala Tyr Glu Leu Lys Thr Val Ser Thr Asn	290			295		300	
Ala Ile Asp Leu Arg Ala Lys Arg Thr Gly Asp Gly Thr Asn Leu Trp	305			310		315	320
Gly Trp Gly Asp Lys His Met Thr Gln Glu Glu Ile Glu Ala Ser Asp	325			330		335	

Ile Leu Phe Val Asn Lys Glu Asn Glu Lys Thr His Arg His
340 345 350

<210> 136
<211> 367
<212> PRT
<213> Ostrinia furnacalis

<400> 136

Met Ala Asp Ile Asp Ala Thr Asn His Tyr Asp Leu Gln Asp Lys Ser
1 5 10 15

Glu Asp Asp Lys Pro Glu Asp Thr Glu Gly Glu Leu Thr Ile Val Gly
20 25 30

Thr Asp Tyr Ser Tyr Thr His Arg Ile Ile Trp Pro Ile Val Met Val
35 40 45

Tyr Val Val Met His Ile Gly Ala Ile Thr Gly Leu Leu Leu Val Leu
50 55 60

Gly Gly Asn Val Lys Ile Ala Ser Ile Ile Trp Ala Val Phe Tyr Ser
65 70 75 80

Leu Val Ala Thr Glu Gly Ala His Met Gly Ala His Arg Cys Phe Ser
85 90 95

His Arg Ala Phe Lys Ala Lys Pro Leu Leu Lys Val Ile Leu Leu Ile
100 105 110

Met Gln Thr Ile Ser Gly Gln His Ser Thr Tyr Ile Trp Cys Arg Asp
115 120 125

His Arg Gln His His Arg Tyr Ser Asp Thr Asp Gly Asp Pro His Asn
130 135 140

Ser Lys Arg Gly Met Phe Tyr Cys His Val Gly Trp Leu Met Thr Ser
145 150 155 160

Arg His Pro Leu Cys Lys Lys Leu Arg Lys Thr Ile Asp Met Ser Asp
165 170 175

Leu Gln Gln Asp Pro Leu Val Met Phe Gln Tyr Arg Tyr Phe Arg Ser
180 185 190

Leu Phe Phe Thr Phe Gly Phe Leu Leu Pro Val Trp Val Pro Met His
195 200 205

Phe Phe Gln Glu Ser Phe Thr Asn Ala Val Phe Val Cys Phe Phe Leu
210 215 220

Arg Tyr Val Tyr Ala Leu His Val Thr Tyr Phe Ile Asn Ser Leu Ala
225 230 235 240

His Lys Tyr Gly Thr Arg Pro Tyr Asp Lys Thr Ile Gln Pro Val Glu
245 250 255

Thr Trp Phe Val Ser Leu Leu Ser Leu Gly Glu Gly Trp His Asn Tyr
260 265 270

His His Ala Tyr Pro Trp Asp Tyr Lys Ala Ala Glu Ile Gly Met Pro
275 280 285

Leu Asn Ser Thr Ala Ser Leu Ile Arg Leu Cys Ala Ser Leu Gly Leu
290 295 300

Ala Tyr Asp Leu Lys Ser Val Asp Pro Glu Thr Leu Asn Lys Arg Ile
305 310 315 320

Met Asn Lys Gly Asp Gly Thr Tyr Glu Val Lys Tyr Leu Gln Glu His
325 330 335

Val Thr Ala Ile Gly Pro Leu His Pro Leu Asn Pro Ser Tyr Arg Gly
340 345 350

Thr Cys Pro Asp Pro Glu Ile Lys Leu Lys Val Arg Met Lys Pro
355 360 365

<210> 137
<211> 344
<212> PRT
<213> Plodia interpunctella

<400> 137

Met Val Pro Asn Lys Gly Ser Ser Val Val Leu Thr Glu Asn Ala Glu
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Pro Gln Phe Lys Lys Leu Val Ala Pro Gln Ala Gly Pro Arg Lys Tyr
20 25 30

Gln Ile Val Tyr Arg Asn Leu Leu Thr Phe Gly Tyr Trp His Leu Ser
35 40 45

Ala Ile Tyr Gly Leu Tyr Leu Cys Phe Thr Ser Ala Lys Trp Ala Thr
50 55 60

Ile Ile Phe Ala Phe Phe Leu Tyr Met Phe Ala Glu Ile Gly Ile Thr
65 70 75 80

Ala Gly Ala His Arg Leu Trp Thr His Arg Ala Tyr Lys Ala Lys Leu
 85 90 95

Pro Leu Gln Ile Leu Leu Ile Ile Met Asn Ser Ile Ala Phe Gln Asp
 100 105 110

Thr Ala Leu Thr Trp Cys Arg Asp His Arg Met His His Arg Tyr Ser
 115 120 125

Asp Thr Asp Ala Asp Pro His Asn Ala Thr Arg Gly Phe Phe Tyr Ser
 130 135 140

His Val Gly Trp Leu Leu Val Lys Lys His Pro Glu Val Lys Thr Arg
 145 150 155 160

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

Phe Gln Lys Lys Tyr Ala Ile Pro Phe Val Gly Thr Leu Cys Phe Leu
 180 185 190

Met Pro Thr Phe Val Pro Val Tyr Phe Trp Gly Glu Ser Ile Ser Thr
 195 200 205

Ala Trp His Ile Asn Leu Leu Arg Tyr Val Thr Asn Leu Asn Val Thr
 210 215 220

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

Arg Thr Leu Ala Ser Val Gln Asn Ile Pro Val Ser Ile Ala Thr Phe
 245 250 255

Gly Glu Gly Phe His Asn Tyr His His Thr Tyr Pro Trp Asp Tyr Arg
 260 265 270

Thr Ala Glu Leu Gly Asn Asn Arg Leu Asn Val Thr Thr Lys Phe Ile
 275 280 285

Asp Phe Phe Ala Trp Leu Gly Trp Ala Tyr Asp Leu Lys Thr Val Pro
 290 295 300

Gln Glu Ala Val Glu Lys Arg Met Ala Arg Thr Gly Asp Gly Thr Asp
 305 310 315 320

Leu Trp Gly Tyr Gly Glu Lys Lys Pro Val Lys Asp Val Lys Asp Asn
 325 330 335

Ser Asp Glu Thr Tyr Tyr Asp Phe
340

<210> 138

<211> 320

<212> PRT

<213> Tribolium castaneum

<400> 138

Met Ser Thr Leu Glu Thr Gln Val Gln Ile Val Trp Arg Asn Val Ile
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Leu Phe Ile Tyr Leu His Val Ala Ala Ile Tyr Gly Leu Tyr Phe Thr
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Phe Thr Ala Ala Lys Trp Pro Thr Ile Leu Phe Thr Tyr Phe Leu Thr
35 40 45

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

His Arg Ser Tyr Lys Ala Lys Leu Pro Leu Arg Ile Leu Leu Cys Ile
65 70 75 80

Tyr Gln Thr His Cys Leu Gln Asn His Ile Tyr Glu Trp Val Arg Asp
85 90 95

His Arg Ala His His Lys Phe Ser Asp Thr Asp Ala Asp Pro His Asn
100 105 110

Ser Thr Arg Gly Phe Phe Phe Ser His Met Gly Trp Leu Leu Val Arg
115 120 125

Lys His Pro Gln Val Lys Ile Lys Gly Lys Leu Ile Asp Leu Ser Asp
130 135 140

Leu Glu Glu Asp Gln Val Val Met Phe Gln Lys Lys Tyr Tyr Leu Ile
145 150 155 160

Leu Ala Pro Phe Phe Ala Phe Leu Leu Pro Ala Trp Val Pro Trp Tyr
165 170 175

Phe Trp Gly Glu Asp Leu His Val Ser Trp Cys Val Ala Ser Met Leu
180 185 190

Arg Tyr Ala Leu Ser Leu His Gly Thr Trp Leu Val Asn Ser Ala Ala
195 200 205

His Met Trp Gly Thr Arg Pro Tyr Asp Arg Asn Ile Lys Ala Thr Glu

210

215

220

Thr Lys Val Val Ser Tyr Ile Thr Asn Gly Glu Arg Phe His Asn Tyr
 225 230 235 240

His His Thr Phe Pro Trp Asp Tyr Lys Ala Ala Glu Leu Gly Ser Tyr
 245 250 255

Trp Gly Asn Trp Ser Thr Ala Phe Ile Asp Phe Met Ala Lys Ile Gly
 260 265 270

Trp Ala Tyr Asp Leu Lys Ile Ile Pro Pro Glu Leu Val Glu Lys Arg
 275 280 285

Ala Lys Arg Thr Gly Glu Cys Thr His Lys Val Trp Gly Trp Gly Asp
 290 295 300

Lys Asp Ile Asp Lys Glu Glu Ile Glu Ile Val Glu Arg Asn Arg Gly
 305 310 315 320

<210> 139

<211> 352

<212> PRT

<213> Yponomeuta padella

<400> 139

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

Ile Ser Leu Leu Tyr Gly Ala Tyr Leu Met Phe Thr Phe Ala Lys Trp
 50 55 60

Gln Thr Ile Val Phe Ala His Val Met Ile Ile Leu Ser Gly Phe Gly
 65 70 75 80

Ile Thr Ala Gly Ala His Arg Leu Trp Ala His Arg Thr Tyr Lys Ala
 85 90 95

Lys Met Pro Leu Gln Ile Leu Leu Met Leu Leu Asn Thr Leu Ala Phe
 100 105 110

Gln Asn Thr Ala Met Asp Trp Val Arg Asp His Arg Leu His His Lys
 115 120 125

Tyr Ser Asp Thr Asp Ala Asp Pro His Asn Ala Thr Arg Gly Phe Phe
130 135 140

Tyr Ser His Val Gly Trp Leu Leu Val Arg Lys His Lys Glu Val Lys
145 150 155 160

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

Leu Ser Phe Gln Lys Lys Tyr Ala Ile Pro Leu Val Ser Leu Val Thr
180 185 190

Phe Val Met Pro Thr Val Ile Pro Met Tyr Phe Trp Gly Glu Thr Leu
195 200 205

Asn Asn Ala Trp His Val Ala Thr Leu Tyr Arg Tyr Val Phe Val Leu
210 215 220

Asn Val Thr Phe Leu Val Asn Ser Ala Ala His Tyr Trp Gly Cys Lys
225 230 235 240

Pro Tyr Glu Lys Ser Ile Leu Pro Ser Gln Asn His Phe Val Ser Leu
245 250 255

Phe Ala Leu Gly Glu Gly Phe His Asn Tyr His His Val Phe Pro Trp
260 265 270

Asp Tyr Arg Thr Ala Glu Leu Gly Asn Asn Thr Leu Asn Pro Thr Thr
275 280 285

Lys Phe Ile Asp Phe Phe Ala Trp Ile Gly Trp Ala Tyr Asp Leu Lys
290 295 300

Ala Val Pro Asp Asp Met Ile Asn Asn Arg Lys Ser Arg Thr Gly Asp
305 310 315 320

Gly Ser Ser Leu Trp Gly Trp Gly Asp Lys Asp Gln Pro Lys Glu Glu
325 330 335

Met Asn Ala Ala Ile Ile Lys Tyr Pro Asp Glu Asn Asp Lys Asp Lys
340 345 350

<210> 140
<211> 1041
<212> DNA
<213> Antheraea pernyi

<400> 140
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tgggtacta ttatcctgaa catcttcctg atcattgcct ctggcctggg catcaccgtg	240
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cgaatgcacc acaagttcac cgacaccgac gctgaccctc acaacgctac ccgaggcttc	420
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accgtgcctg ccgacatcgt gaactctcga gccaaagcga ccggcgacgg caccgacctc	960
tggggcggca accacaagca caccctggat gagaaggaaa accgagagct ggacgactac	1020
gtgcacaagt ctgcctttta g	1041

<210> 141
 <211> 990
 <212> DNA
 <213> *Argyrotaenia velutinana*

<400> 141	
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aagtggcaga ctattggtct tgccattatt ctccatgcta tggccattct cggaatcact	240
gcaggagccc acagactgtg gaccaccga gcttacaagg ctactgtgcc tctgcaaadc	300
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catgcctcc accacaagta cagcgacacc gatggtgatc ctcaaatgc gacgagaggt	420
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<210> 142
 <211> 1056
 <212> DNA
 <213> *Bombus lapidarius*

<400> 142	
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cccgtgtact gctggaacga aacctggggc aacggctact tcatccccgc catcctgcga	660
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<210> 143
 <211> 1020
 <212> DNA
 <213> *Bombyx mori*

<400> 143	
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ttcgcttatg gccacatctc tgccctgtac ggcctgtatc tgtgctttag ctccgccaag	180

tgggccacaa tcatcatggc ctacgtgatc ctgatcgcag cagaagtggg agtgaccgca	240
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ctgatggtca tgaactcctt cgcctttcag aattctgcc tcatatggat cagggaccac	360
cgcatgcacc acaggtactc tgacaccgat gccgaccac acaacgccac acgcggcttc	420
ttttatagcc acatcggatg gctgctgggtg cggaagcacc cagaggtgaa gcggagaggc	480
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aatctgacca caaagtttat cgacttcttt gcctggctgg gctgggccta tgatctgaag	900
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<210> 144
 <211> 1038
 <212> DNA
 <213> Chilo supprealis

<400> 144	
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ttcctgtact ggcacctggc tgctccctac ggcatctacc tgtgcttcac ctctgtgaag	180
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ggcgcccaca gactgtggtc ccacaagtct tacaaggcca agcgaccctc cgagatcatc	300
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accgtgtcta acgagatcgt gcgagcccg gccatgcgaa ccggcgacgg caaggacctg	960
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<210> 145
 <211> 1125
 <212> DNA
 <213> *Drosophila ananassae*

<400> 145	
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<210> 146
 <211> 1035
 <212> DNA
 <213> *Diatraea saccharalis*

<400> 146	
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accgtgtcta acgagatggt gcgagcccga gccatgcgaa ccggcgacgg caacgacctg	960
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 <212> DNA
 <213> Drosophila yakuba

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gccctgtacg gcctgtactc tatcttcacc aaggccaagc tggccaccac tctgttcgct	240
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<210> 148
 <211> 1029
 <212> DNA
 <213> Cadra cautella

<400> 148	
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ttcggctact ggcacctggc cgccatctac ggcctgtacc tgtgcttcac caccgccaag	180
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<210> 149
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 <212> DNA
 <213> Lobesia botrana

<400> 149	
atggtgcccc gcctagaagt aaatactggg gtgaaaacag tggatgaaga gcaattgccg	60
tcaagggatg agaacaaacc gagaataagc aaactagtaa aaataaacat agtcagcttt	120
ggatatctac atatagctgc actttatgga ttatatattat gcttcacatc ggctaaatgg	180
gctacaattg ggctcgcttt ctttttgctg gtcgtcgggtg aaatcgcat cacggcaggc	240

gcccacaggt tatggtccca cagaacctac aaagccaaca gggcgtaga aatattactc	300
atcattatga actccgtggc cttccaaaac tcggccatcc actggattcg ggaccacaga	360
ttacaccata aatacagcga cactaatgcc gacccccaca atgcatccag aggatttttc	420
tattcacata taggctgggt gctagtcagg aaacactctg acgtcataaa caaaggaaag	480
atgattgaca tgtctgatat atacaacaat ccagttttaa cattccaaaa gaaatatgcc	540
attcccttca tcggcaccat atgcttcggg ctacctacc tgataccgat gtactgctgg	600
ggagagtctc tgaacaacgc ttggcacatc aacataatgc gatatgtcct gtgcctcaac	660
attactttcc tagtgaacag tgccgcgcat ttcttcggtc agaaaccgta tgacaagaac	720
attttaccgg gacagaatat acttgtttca atactcgctg ttggcgaagg atttcataat	780
taccaccagc tctttccgtg ggactatcgc acggcagaac taggcaacaa catgttgaac	840
ttaacaacga agtttataga cttcttcgct tggcctgggt gggcgtaga gttaaaaact	900
gtttcaacta atgcgattga tttaagagct aagaggactg gcgacggaac caacttgttg	960
ggttggggcg acaagcatat gacgcaagaa gaaattgagg ctagtgacat tttgtttgtt	1020
aacaaagaaa acgagaaaac tcataggcat taa	1053

<210> 150
 <211> 1104
 <212> DNA
 <213> *Ostrinia furnacalis*

<400> 150	
atggccgaca tcgacgccac caaccactac gacctgcagg acaagtctga ggacgacaag	60
cccgaggaca ccgagggcga gctgaccatc gtgggcaccg actactctta caccaccga	120
atcatctggc ccatcgtgat ggtgtacgtg gtgatgcaca tcggcgccat caccggcctg	180
ctgctgggtg tcggcggcaa cgtgaagatc gcctctatca tctgggccgt gttctactct	240
ctgggtggcca ctgagggcgc ccacatggga gccaccgat gcttctctca ccgagccttc	300
aaggctaagc ccctgctgaa ggtgatcctg ctgatcatgc agaccatctc tggccagcac	360
tctacctaca tctggtgccg agatcaccga cagcaccacc gatactccga caccgacggt	420
gaccctcaca actctaagcg aggcatgttc tactgccacg tcggctggct gatgacctct	480
cgacaccctc tgtgcaagaa gctgcgaaag accatcgaca tgtctgacct gcagcaggac	540
cctctggtga tgttccagta ccgatacttt cgatctctgt tcttcacctt cggctttctg	600
ctgcccgtgt gggcgcctat gcacttcttc caagagtctt tcaccaacgc cgtgttcgtg	660
tgcttcttcc tgcgatacgt gtacgccctg cacgtgacct acttcatcaa ctccctggct	720
cacaagtacg gcacccgacc ttacgacaag accattcagc ccgtggaaac ctggttcgtg	780
tctctgctgt ctctcggcga aggctggcac aactaccacc acgcttacc ctgggactac	840
aaggccgccg agatcggcat gccctgaac tctaccgct ctctgatccg actgtgcgcc	900

tctctcggcc tggcttacga cctgaagtct gtggaccccg agactctgaa caagcgaatc	960
atgaacaagg gcgacggcac ctacgaggtg aagtacctgc aagagcacgt caccgccatc	1020
ggaccctcgc atcctctgaa cccctcttac cgaggcacct gtcctgatcc tgagatcaag	1080
ctgaaggtcc gaatgaagcc ctag	1104

<210> 151
 <211> 1035
 <212> DNA
 <213> *Plodia interpunctella*

<400> 151	
atggtgcccc acaagggatc ttctgtggtg ctgaccgaga acgctgagcc ccagttcaag	60
aagctggtcg ctccccaggc tggaccccg aagtaccaga tcgtgtaccg aaacctgctg	120
accttcggct actggcacct gtctgccatc tacggcctgt acctgtgctt cacctctgcc	180
aagtgggcta ctattatctt cgccttcttc ctgtacatgt tcgccgagat cggcatcacc	240
gctggcgccc accgactgtg gaccacccga gcctacaagg ccaagctgcc cctgcagatc	300
ctgctgatca tcatgaactc tatcgcttc caggacaccg ctctgacctg gtgccgagat	360
caccgaatgc accaccgata ctctgacacc gacgctgacc ctcaaacgc taccgaggc	420
ttcttctact ctacgtcgg ctggctgctg gtgaagaagc acccgaggt caagaccga	480
ggcaagtaca ttcccctgga cgacctgca aacaacccg tgctgcgatt ccagaagaag	540
tacgctatcc ccttcgtggg caccctgtgc tttctgatgc ccaccttcgt gcccggtac	600
ttctggggcg agtctatctc taccgcctgg cacatcaacc tgctgcgata cgtgaccaac	660
ctgaacgtga ctttctggt gaactctgcc gtcacctga tcggcaaca gccctacgac	720
cgaactctgg cctctgtgca gaacatcccc gtgtctatcg ccaccttcgg cgagggttc	780
cacaactacc accacactta cccctgggac taccgaaccg ccgagctggg caacaaccga	840
ctgaacgtca ctaccaagtt catcgacttt ttgcctggc tcggctgggc ctacgacctc	900
aagaccgtgc ctcaagaggc cgtcgagaag cgaatggccc gaaccggcga cggcaccgac	960
ctgtggggct acggcgaaaa gaagcccgtc aaggacgtta aggacaactc tgacgagact	1020
tactacgact tttag	1035

<210> 152
 <211> 963
 <212> DNA
 <213> *Tribolium castaneum*

<400> 152	
atgtctaccc tcgagactca ggtgcagatc gtgtggcgaa acgtgaccc gttcatctac	60
ctgcacgtgg ccgccatcta cggcctgtac ttacacttca ccgccgcaa gtggccact	120
atcctgttta cctacttcct gaccatcatc tctaccaag gcaccggcgc tggcgtgcac	180

cgactgtggt cccaccgatc ttacaaggcc aagctgcccc tgcgaatcct gctgtgcatc	240
taccagactc actgcctgca gaaccacatc tacgagtggg tgcgagatca tcgagcccac	300
cacaagttct ctgacaccga cgctgaccct cacaactcta cccgaggctt cttctttctt	360
cacatgggct ggctgctggt gcgaaagcac cctcagggtga agattaaggg caagctgatc	420
gacctgtctg acctggaaga ggaccagggtg gtgatgttcc agaagaagta ctacctgatt	480
ctggctccct tcttcgcctt cctgctgcct gcctgggtgc cctggtactt ctggggcgaa	540
gatctgcacg tgtcttggtg cgtggcctct atgctgcgat acgccctgtc tctgcacggc	600
acctggctgg tgaactctgc cgctcacatg tggggcaccg gaccttacga ccgaaacatc	660
aaggccaccg agactaaggt ggtgtcttac atcaccaacg gcgagcgatt ccacaactac	720
caccacacat tcccttgga ctacaaggcc gccgagctgg gctcttactg gggcaactgg	780
tctaccgcct tcatcgactt catggccaag atcggctggg cctacgacct gaagatcatc	840
cctcctgagc tggctcgagaa gcgagccaag cgaaccggcg agtgcacca caaggtgtgg	900
ggctggggcg acaaggacat cgacaaggaa gagatcgaga ttgtcgagcg aaaccgaggc	960
taa	963

<210> 153
 <211> 1059
 <212> DNA
 <213> Yponomeuta padella

<400> 153	
atgcctccaa actctgccaa ctctgagccc ctgctgcacg acgaggtgaa ggaagaacag	60
ctcgagaagc tgggtggctcc ccaggctgga ccccgaaagt tccagatcgt gtaccccaac	120
ctgatcacct tcggctacgg ccacatctct ctgctgtacg gcgcctacct gatgttcacc	180
ttcgccaagt ggcagaccat cgtgttcgcc cacgtgatga tcattctgtc tggcttcggc	240
atcacgcgtg gcgcccaccg actgtgggct caccgaacct acaaggccaa gatgcccctg	300
cagatcctgc tgatgtgctg gaacaccctg gccttcaga acaccgcat ggactgggtg	360
cgagatcacc gactgcacca caagtactct gacaccgacg ctgaccctca caacgctacc	420
cgaggcttct tctactctca cgtcggctgg ctgctggtgc gaaagcacia ggaagtgaag	480
cgacgaggca agctgatcga cctgtctgac atcgagaaca acccgtgct gtctttccag	540
aagaagtacg ctattcccct ggtgtctctg gtgaccttcg tgatgccac cgtgattcct	600
atgtacttct ggggcgagac tctgaacaac gcctggcacg tggctaccct gtaccgatac	660
gtgttcgtgc tgaacgtgac cttcctgggtg aactctgccg ctactactg gggctgcaag	720
ccctacgaga agtctattct gccctctcag aaccacttcg tgtctctgtt cgccctcggc	780
gagggattcc acaactacca ccacgtgttc ccttgggact accgaaccgc cgagctgggc	840
aacaacactc tgaacccac taccaagttc atcgactttt tcgcctggat cggctgggcc	900

tacgacctga aggctgtgcc cgacgacatg atcaacaacc gaaagtctcg aaccggcgac 960
 ggatcttctc tgtggggctg gggcgacaag gaccagccta aggaagagat gaacgccgcc 1020
 atcatcaagt accccgacga gaacgacaag gataagtag 1059

<210> 154
 <211> 543
 <212> PRT
 <213> Amyelois transitella

<400> 154

Met Ala Ala Lys Cys Glu Ile Gly Val Ser Gln Phe Phe Ala Gly Lys
 1 5 10 15

His Val Phe Ile Thr Gly Ala Thr Gly Phe Met Gly Lys Val Leu Val
 20 25 30

Glu Arg Leu Leu Ser Thr Cys Ala Asp Val Gly Arg Ile Tyr Leu Leu
 35 40 45

Met Arg Ser Lys Lys Asp His Ser Pro Glu Gln Arg Leu Gln Glu Leu
 50 55 60

Lys Ala Ser Gln Ala Phe Asp Asn Leu Arg Gln Ser Gln Pro Ser Gln
 65 70 75 80

Leu Glu Lys Leu Arg Ile Val Ala Gly Asp Ile Met Leu Pro Gly Leu
 85 90 95

Gly Ile Ser Gln Glu Gly Leu Glu Asp Leu Gln Glu Val Ser Val Val
 100 105 110

Phe His Ser Ala Ala Thr Val Lys Phe Asn Glu Ala Leu Lys Ile Ala
 115 120 125

Ile Glu Gln Asn Leu Met Ser Val Ile Arg Leu Leu Glu Ile Cys Asp
 130 135 140

Arg Leu Pro His Met Gln Ala Phe Val His Val Ser Thr Ala Tyr Ser
 145 150 155 160

Asn Pro Glu Leu Ser Thr Val Glu Glu Arg Val Tyr Pro Pro Pro Val
 165 170 175

Pro Leu Asp Tyr Leu Leu Asp Leu Ala Ala Glu Asp Ser Pro Leu Leu
 180 185 190

Asp Asn Val Glu Ser Phe Ile Ser Pro Lys Pro Asn Ser Tyr Thr Phe
 195 200 205

Thr Lys Ala Met Ala Glu Ala Ala Val Gln Arg His Gly Cys Gln Tyr
 210 215 220

Tyr Pro Ile Ala Ile Val Arg Pro Thr Ile Val Ile Ser Ser Leu Lys
 225 230 235 240

His Pro Phe Pro Gly Trp Leu Glu Asn Ala Asn Gly Pro Thr Gly Val
 245 250 255

Ile Phe Gly Ala Gly Arg Gly Leu Leu Arg Val Phe Arg Cys Arg Gln
 260 265 270

Ser Ala Leu Ala Asp Leu Leu Pro Val Asp Ile Gly Ile Asp Thr Leu
 275 280 285

Ile Ala Ala Ala Trp Glu Val Ala Ser Asp Arg Pro Pro Ser Pro Arg
 290 295 300

Val Tyr Asn Cys Ser Ile Ser Glu Asn Pro Thr Thr Trp Gly Asp Leu
 305 310 315 320

Lys Arg Ala Ile Asn Leu His Thr Arg Ser Gln Pro Gln Cys Gly Ala
 325 330 335

Val Trp Tyr Pro Gly Leu His Thr Ala Glu Asn Gly Phe Leu Tyr Lys
 340 345 350

Ile Leu Glu Val Leu Leu Gln Thr Thr Pro Leu Tyr Ile Gly Glu Ile
 355 360 365

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

Val Ser Thr Gln Met Lys Asn Met Gln Asn Ala Met Lys Tyr Phe Ala
 385 390 395 400

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

Arg Met Ser Asp Val Asp Lys Arg Ile Tyr Asn Leu Asp Pro Cys Ser
 420 425 430

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

Tyr Leu Leu Arg Glu Lys Glu Leu Asp Gln Pro Ala Ala Lys Lys Arg
 450 455 460

Leu Lys Lys Leu Tyr Tyr Leu His Tyr Gly Leu Ser Val Phe Met Pro
465 470 475 480

Phe Leu Leu Phe Arg Ala Phe Val Arg Arg Lys His Arg Gln Asn Ile
485 490 495

Leu Glu Val Leu Phe Ala Ile Leu Ser Ile Phe Asn Ala Ile Phe Arg
500 505 510

Arg Ser Thr Gln Asn Ile Leu Tyr Ile Tyr Lys Val Ser Leu Thr Phe
515 520 525

Leu Asn Asp Asn Val Phe Leu Asn Lys Val Phe Asn Glu Ser Ser
530 535 540

<210> 155
<211> 521
<212> PRT
<213> Amyelois transitella

<400> 155

Met Val Ala Arg Arg Glu Ser Val Ser Ala Pro Val Ile Pro Gln Phe
1 5 10 15

Tyr Ala Gly Arg Ser Ile Phe Ile Thr Gly Ala Thr Gly Phe Met Gly
20 25 30

Lys Val Leu Ile Glu Arg Ile Leu Ala Thr Cys Pro Asp Val Asp Arg
35 40 45

Leu Tyr Leu Leu Val Arg His Lys Lys Glu Val Thr Pro Glu Arg Arg
50 55 60

Leu Gln Gln Leu Ile Glu Ser Pro Val Phe Asp Pro Ile Arg Ala Ser
65 70 75 80

Asn Pro Ser Gln Leu Asp Lys Leu Ser Met Leu Ala Gly Asp Ile Thr
85 90 95

Arg Pro Asp Leu Gly Met Thr Gln Glu Ser Leu Met Arg Leu Gln Glu
100 105 110

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

Met Met Met Ala Val Glu Gln Asn Val Leu Ser Val Ile Arg Leu Leu
130 135 140

Glu Ile Cys Asp Arg Leu Pro Lys Met Gln Ala Phe Val His Val Ser
145 150 155 160

Thr Ala Tyr Ser Asn Ala Glu Leu Ser Glu Val Glu Glu His Val Tyr
 165 170 175

Pro Pro Lys Val Pro Leu Glu Lys Leu Leu Ala Ile Ala Glu Ser Val
 180 185 190

Pro Asp Glu Leu Met Thr Glu Ile Thr Pro Lys Phe Ile Ala Pro Lys
 195 200 205

Pro Asn Thr Tyr Thr Phe Thr Lys Ser Met Ala Glu His Val Val Gln
 210 215 220

Gln His Gly Asn Lys Gly Tyr Pro Val Ala Ile Phe Arg Pro Thr Ile
 225 230 235 240

Val Ile Ser Ser Val Lys His Pro Phe Pro Gly Trp Ile Glu Asn Leu
 245 250 255

Asn Gly Pro Ser Gly Val Val Ala Ala Ala Gly Lys Gly Leu Leu His
 260 265 270

Val Phe Cys Cys Arg Gly Asp Ala His Ala Asp Met Leu Pro Val Asp
 275 280 285

Val Ala Ile Asp Thr Leu Ile Ala Ala Ala Trp Glu Thr Ala Ile Asp
 290 295 300

Lys Pro Asn Glu Ala Arg Val Tyr Asn Cys Thr Thr Arg Glu Asn Pro
 305 310 315 320

Thr Lys Trp Ile Asp Phe Glu His Ala Leu Arg Lys Tyr Leu Val Glu
 325 330 335

Tyr Pro Leu Asp Lys Ala Phe Trp Tyr Pro Ser Gly Ala Ala Ile Asp
 340 345 350

Asn Thr Tyr Ala Gln Lys Ala Met Glu Leu Phe Thr Gln Thr Val Pro
 355 360 365

Leu His Ile Val Ala Tyr Thr Val Arg Leu Leu Gly Ile Lys Met Gln
 370 375 380

Met Asn Leu Ile Thr Val Ser His Arg Leu Gln Ala Met Asn Lys Val
 385 390 395 400

Leu Lys Phe Phe Ala Gln Arg Glu Trp Val Phe His Asn Glu Asn Val
 405 410 415

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

Leu Asp Pro Lys Ser Phe Asn Trp Asp Glu His Tyr Cys Asn Phe Ile
435 440 445

Lys Gly Thr Arg Lys Tyr Leu Leu Lys Glu Lys Glu Gln Asp Leu Glu
450 455 460

Glu Ala Arg Lys His Val Arg Arg Met Phe Tyr Val His Tyr Ser Val
465 470 475 480

Leu Leu Phe Val Val Val Leu Leu Leu Arg Phe Ala Leu Asn Asn Asn
485 490 495

Phe Val Arg Gln Phe Ile Tyr Gly Val Val Arg Thr Leu Thr Ala Ala
500 505 510

Phe Gly Ala Val Phe Ser Lys Ile Val
515 520

<210> 156
<211> 523
<212> PRT
<213> Amyelois transitella

<400> 156

Met Ala Ser Cys Val Gly Gly Ala Phe His Ala Gln Glu Tyr Leu Pro
1 5 10 15

Val Ala Asp Phe Tyr Ala Asp Lys Ser Ile Phe Val Thr Gly Gly Thr
20 25 30

Gly Phe Met Gly Lys Val Leu Val Glu Lys Leu Leu Arg Ser Cys Pro
35 40 45

Lys Ile Lys Lys Ile Tyr Leu Leu Met Arg Pro Lys Arg Gly Gln Asp
50 55 60

Val Ser Ser Arg Leu Thr Glu Leu Thr Gln Ser Pro Leu Phe Glu Thr
65 70 75 80

Leu Arg Lys Glu Arg Pro Ser Glu Leu Ser Lys Ile Val Pro Ile Val
85 90 95

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

Met Leu Cys Gln Lys Val Ser Val Val Phe His Ser Ala Ala Thr Val

115

120

125

Lys Phe Asp Glu Lys Leu Lys Leu Ser Val Thr Ile Asn Met Leu Gly
 130 135 140

Thr Gln Gln Leu Val Gln Leu Cys His Arg Met Leu Gly Leu Glu Ala
 145 150 155 160

Leu Val His Val Ser Thr Ala Tyr Cys Asn Cys Glu Arg Glu Arg Val
 165 170 175

Glu Glu Thr Val Tyr Ala Pro Pro Ala His Pro Glu His Val Val Thr
 180 185 190

Leu Val Gln Thr Leu Pro Asp Asp Leu Val Asp Arg Ile Thr Pro Asp
 195 200 205

Leu Val Gly Asp Arg Pro Asn Thr Tyr Thr Phe Thr Lys Ala Leu Ala
 210 215 220

Glu Asp Met Leu Ile Lys Glu Cys Gly Asn Leu Pro Val Ala Ile Val
 225 230 235 240

Arg Pro Ser Ile Val Leu Ser Ser Leu Arg Glu Pro Val Lys Gly Trp
 245 250 255

Val Asp Asn Trp Asn Gly Pro Asn Gly Ile Ile Ala Ala Val Gly Lys
 260 265 270

Gly Val Phe Arg Ser Met Leu Gly Thr Gly Ala Arg Val Ala Asp Leu
 275 280 285

Val Pro Val Asp Thr Val Ile Asn Leu Met Ile Val Cys Ala Trp Arg
 290 295 300

Thr His Leu Arg Arg Gly Glu Gly Val Val Val Tyr Asn Cys Cys Thr
 305 310 315 320

Gly Gln Gln Asn Pro Ile Thr Trp Gln Arg Phe Val Lys Thr Ser Phe
 325 330 335

Lys Tyr Met Arg Lys His Pro Phe Ser Glu Val Val Trp Phe Pro Gly
 340 345 350

Gly Asp Ile Thr Asn Asn Arg Leu Lys His Asn Ile Leu Ser Leu Leu
 355 360 365

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

Gly Asn Lys Pro Val Met Val Arg Val Gln Asn Lys Leu Glu Lys Ala
 385 390 395 400

Ala Ala Cys Leu Glu Tyr Phe Thr Thr Arg Gln Trp Ala Phe Ser Asp
 405 410 415

Asp Asn Val Gln Ala Leu Cys Ser Ala Leu Ser Val Glu Asp Arg Arg
 420 425 430

Ile Phe Asp Phe Asn Val Arg Asn Ile Asp Trp Asp Ala Tyr Ile Glu
 435 440 445

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

Thr Leu Pro Lys Ser Arg Ala Leu Leu Arg Arg Leu His Ile Val His
 465 470 475 480

Thr Leu Thr Gln Val Thr Thr Val Phe Leu Leu Trp Arg Phe Leu Phe
 485 490 495

Ser Gln Ser Ser Thr Leu Arg Ser Ile Trp Arg Arg Ile Leu Glu Phe
 500 505 510

Ile Thr Arg Ile Phe Arg Leu Leu Ala Ile Ala
 515 520

<210> 157
 <211> 461
 <212> PRT
 <213> Chrysodeixis includens

<400> 157

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

Gln His Glu Ser Ile Ala Asp Phe Tyr Ala Gly Lys Ser Val Phe Ile
 20 25 30

Thr Gly Val Thr Gly Phe Leu Gly Lys Ala Tyr Leu Glu Lys Leu Leu
 35 40 45

Tyr Ser Cys Lys Asp Ile Asp Lys Val Phe Val Leu Ile Arg Asn Lys
 50 55 60

Arg Gly Asp Asp Val Gly Lys Arg Ile Glu Lys Leu Leu Asp Ser Ser
 65 70 75 80

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

Thr Pro Val Tyr Gly Asp Ile Asp Lys Ser Glu Leu Gly Leu Ser Leu
100 105 110

Ala Asp Gln Glu Arg Leu Ile Lys Glu Val Ser Val Val Phe His Val
115 120 125

Ala Ala Ser Val Asn Leu Asp Ala Asp Leu Lys Thr Ser Leu Val Thr
130 135 140

Asn Tyr Phe Gly Thr Thr His Val Leu Lys Leu Cys His Arg Met Lys
145 150 155 160

Lys Leu Lys Val Phe Val Tyr Val Ser Thr Ala Tyr Cys Asn Thr Thr
165 170 175

Val Lys Val Leu Glu Glu Lys Val Tyr Pro Leu Pro Val Glu Leu Asp
180 185 190

Glu Val Val Lys Ile Met Glu Gln Pro His Leu Asp Ser Asn Arg Val
195 200 205

Lys Lys Leu Leu Asn Gly Arg Pro Asn Thr Tyr Ala Leu Ser Lys Ala
210 215 220

Leu Ala Glu His Tyr Ile Ala Glu Asn His Gly Asp Ile Pro Val Ile
225 230 235 240

Phe Ile Arg Pro Ser Ile Val Thr Ser Ser Ala Arg Glu Pro Ala Pro
245 250 255

Gly Trp Ala Asp Ser Phe Gln Gly Ala Thr Ala Leu Ile Thr Ala Cys
260 265 270

Trp Lys Arg Val Asn Arg Val Ile Tyr Gly Asn Gly Asp Asn Ile Ile
275 280 285

Asp Leu Ile Pro Val Asp Tyr Val Ser Asn Leu Ser Ile Val Ala Ala
290 295 300

Ala Lys Val Lys Ser Thr Thr Glu Ile Ala Val Tyr Asn Ser Cys Thr
305 310 315 320

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

Arg Val Asn Thr Glu Asn Lys Gln Gly Ser Ile Phe Leu Pro Thr Ile

340

345

350

Phe Phe Thr Ser Ser Trp Leu Phe Val Ile Met Leu Thr Phe Val Leu
 355 360 365

Gln Leu Leu Pro Ser Phe Ile Ala Asp Leu Phe Leu Tyr Ile Thr Gly
 370 375 380

Asn Lys Pro Met Tyr Met Lys Ile Gln Ser Lys Val Leu His Gly Arg
 385 390 395 400

His Ile Leu Asn Tyr Tyr Thr Asn Asp Ser Trp Val Phe Lys Ser Asp
 405 410 415

Ser Ser Gln Arg Leu Gln Asp Ser Leu Ser Pro Ala Asp Lys Arg Leu
 420 425 430

Phe Pro Cys Cys Pro Ser Asp Ile Lys Trp Asp Glu Tyr Phe Asn Thr
 435 440 445

Tyr Phe Cys Gly Ile Asp Asn Tyr Leu Leu Lys Arg Lys
 450 455 460

<210> 158

<211> 522

<212> PRT

<213> Cydia pomonella

<400> 158

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

Ala Gly Arg Ser Val Leu Ile Thr Gly Ala Thr Gly Phe Val Gly Lys
 20 25 30

Val Leu Val Glu Arg Leu Leu Ser Thr Cys Pro Asp Ile Ser Thr Leu
 35 40 45

His Leu Leu Leu Arg Val Lys Lys Gly Ala Thr Pro Ser Glu Arg Leu
 50 55 60

Lys Glu Leu Lys Glu Ser Gln Val Phe Asp Val Val Arg Gln Arg Asn
 65 70 75 80

Pro Ser Gln Leu Asp Lys Leu Arg Val Leu Glu Gly Asp Val Ala Ala
 85 90 95

Pro Gly Leu Gly Leu Ala Ala Asp Ala Ala Leu Thr Leu Gln Asp Val
 100 105 110

Ser Val Val Phe His Ser Ala Ala Thr Leu Lys Phe Asp Glu Glu Leu
 115 120 125

Arg Lys Ala Val Asp Gln Asn Val Arg Ser Val Met Arg Leu Leu Glu
 130 135 140

Leu Cys Asp Lys Leu Pro Asn Met Gln Ala Phe Ile His Val Ser Thr
 145 150 155 160

Ala Tyr Ser Asn Ala Glu Leu Ser Ser Val Glu Glu Arg Val Tyr Pro
 165 170 175

Pro Pro Ala Pro Leu Glu Ala Val Leu Ala Leu Thr Asp His Val Pro
 180 185 190

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

Asn Thr Tyr Thr Phe Thr Lys Ala Leu Ala Glu Thr Val Val Glu Arg
 210 215 220

His Gly Asn Thr Gly Tyr Pro Ile Ser Ile Phe Arg Pro Thr Ile Val
 225 230 235 240

Ile Ser Ala Gln Lys His Pro Phe Pro Gly Trp Ile Glu Asn Phe Asn
 245 250 255

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

Phe Pro Thr Lys Cys Gly Val His Thr Asp Phe Leu Pro Val Asp Ile
 275 280 285

Ala Val Asp Thr Leu Ile Ala Val Ala Trp Glu Thr Ala Val Asp His
 290 295 300

Ser Lys Glu Val Arg Val Tyr Asn Cys Ser Thr Gly Ala Asn Pro Thr
 305 310 315 320

Thr Phe Glu Asp Phe Glu Arg Asn Leu Arg Arg Glu Thr Thr Arg His
 325 330 335

Pro Leu Asp Gly Ala Leu Trp Tyr Pro Ser Gly Thr Ala Val Gln Thr
 340 345 350

Lys Trp Ala Arg Thr Leu Leu Glu Phe Leu Leu Gln Thr Val Pro Leu
 355 360 365

His Leu Ala Glu Tyr Thr Ala Arg Met Ile Gly Leu Lys Thr Pro Val
370 375 380

Asn Leu Ile Thr Ala Asn Lys Arg Leu Thr Ala Met Thr Asp Ala Leu
385 390 395 400

Glu Phe Phe Ala Thr Arg Glu Phe Asn Phe Glu Cys Glu Arg Val Arg
405 410 415

Ala Leu His His Arg Leu Ser Pro Glu Asp Lys Lys Ile Tyr Asn Leu
420 425 430

Asp Val Met Ser Ile Asn Trp Asp Asp His Tyr Ala Asp Phe Val Lys
435 440 445

Gly Thr Arg Lys Tyr Leu Leu Asn Glu Lys Glu Gln Asp Leu Glu Lys
450 455 460

Ala Arg Arg His Met His Lys Met Trp Phe Leu His Lys Val Leu Lys
465 470 475 480

Leu Val Thr Leu Leu Leu Phe Leu Arg Ile Leu Val Gln Asn Arg Tyr
485 490 495

Ala Arg Ser Phe Val Tyr Gly Thr Leu Arg Leu Leu Leu Ser Leu Phe
500 505 510

Gly Ala Val Tyr His Arg Leu Val His Ala
515 520

<210> 159
<211> 512
<212> PRT
<213> Marinobacter algicola

<400> 159

Met Ala Thr Gln Gln Gln Gln Asn Gly Ala Ser Ala Ser Gly Val Leu
1 5 10 15

Glu Gln Leu Arg Gly Lys His Val Leu Ile Thr Gly Thr Thr Gly Phe
20 25 30

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

Gly Gly Ile His Leu Leu Ile Arg Gly Asn Lys Arg His Pro Ala Ala
50 55 60

Arg Glu Arg Phe Leu Asn Glu Ile Ala Ser Ser Ser Val Phe Glu Arg
65 70 75 80

Leu Arg His Asp Asp Asn Glu Ala Phe Glu Thr Phe Leu Glu Glu Arg
 85 90 95

Val His Cys Ile Thr Gly Glu Val Thr Glu Ser Arg Phe Gly Leu Thr
 100 105 110

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

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

Ile Asn Thr Leu Cys Leu Glu Asn Val Ala Ala Leu Ala Glu Leu Asn
 145 150 155 160

Ser Ala Met Ala Val Ile Gln Val Ser Thr Cys Tyr Val Asn Gly Lys
 165 170 175

Asn Ser Gly Gln Ile Thr Glu Ser Val Ile Lys Pro Ala Gly Glu Ser
 180 185 190

Ile Pro Arg Ser Thr Asp Gly Tyr Tyr Glu Ile Glu Glu Leu Val His
 195 200 205

Leu Leu Gln Asp Lys Ile Ser Asp Val Lys Ala Arg Tyr Ser Gly Lys
 210 215 220

Val Leu Glu Lys Lys Leu Val Asp Leu Gly Ile Arg Glu Ala Asn Asn
 225 230 235 240

Tyr Gly Trp Ser Asp Thr Tyr Thr Phe Thr Lys Trp Leu Gly Glu Gln
 245 250 255

Leu Leu Met Lys Ala Leu Ser Gly Arg Ser Leu Thr Ile Val Arg Pro
 260 265 270

Ser Ile Ile Glu Ser Ala Leu Glu Glu Pro Ser Pro Gly Trp Ile Glu
 275 280 285

Gly Val Lys Val Ala Asp Ala Ile Ile Leu Ala Tyr Ala Arg Glu Lys
 290 295 300

Val Ser Leu Phe Pro Gly Lys Arg Ser Gly Ile Ile Asp Val Ile Pro
 305 310 315 320

Val Asp Leu Val Ala Asn Ser Ile Ile Leu Ser Leu Ala Glu Ala Leu
 325 330 335

Ser Gly Ser Gly Gln Arg Arg Ile Tyr Gln Cys Cys Ser Gly Gly Ser
340 345 350

Asn Pro Ile Ser Leu Gly Lys Phe Ile Asp Tyr Leu Met Ala Glu Ala
355 360 365

Lys Thr Asn Tyr Ala Ala Tyr Asp Gln Leu Phe Tyr Arg Arg Pro Thr
370 375 380

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

Gly Met Arg Val Pro Leu Ser Ile Ala Gly Lys Ala Met Arg Leu Ala
405 410 415

Gly Gln Asn Arg Glu Leu Lys Val Leu Lys Asn Leu Asp Thr Thr Arg
420 425 430

Ser Leu Ala Thr Ile Phe Gly Phe Tyr Thr Ala Pro Asp Tyr Ile Phe
435 440 445

Arg Asn Asp Ser Leu Met Ala Leu Ala Ser Arg Met Gly Glu Leu Asp
450 455 460

Arg Val Leu Phe Pro Val Asp Ala Arg Gln Ile Asp Trp Gln Leu Tyr
465 470 475 480

Leu Cys Lys Ile His Leu Gly Gly Leu Asn Arg Tyr Ala Leu Lys Glu
485 490 495

Arg Lys Leu Tyr Ser Leu Arg Ala Ala Asp Thr Arg Lys Lys Ala Ala
500 505 510

<210> 160
<211> 522
<212> PRT
<213> Manducta sexta

<400> 160

Met Val Pro Arg Pro Val Ser Pro Tyr Ala Arg Glu Pro Gln Ile Pro
1 5 10 15

Gln Phe Tyr Ala Gly Lys Cys Ile Phe Ile Thr Gly Ala Thr Gly Phe
20 25 30

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

Gly Lys Leu Tyr Leu Leu Met Arg Gln Lys Arg Glu Val Ser Pro Glu

50

55

60

Lys Arg Leu Ser Gln Leu Lys Gln Ser Gln Val Phe Asp Asn Ile Arg
65 70 75 80

Glu Lys Cys Pro Ser Gln Leu Asp Lys Leu Tyr Ile Ile His Gly Asp
85 90 95

Thr Thr Glu Pro Asn Leu Gly Ile Ser Leu Asp Ser Met Ser Leu Leu
100 105 110

Asn Glu Val Ser Ile Val Phe His Gly Ala Ala Thr Leu Lys Phe Asp
115 120 125

Glu Val Leu Gly Lys Ser Val Asp Gln Asn Val Arg Ser Val Met Arg
130 135 140

Leu Leu Asp Ile Cys Asp Arg Leu Pro Asn Ile Gln Ala Phe Ile His
145 150 155 160

Val Ser Thr Ala Tyr Cys Asn Ala Asp Leu Ile Thr Val Glu Glu Lys
165 170 175

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

Ser Val Pro Asp Glu Leu Met Ala Glu Ile Thr Asp Lys Phe Ile Ala
195 200 205

Pro Lys Pro Asn Thr Tyr Thr Phe Thr Lys Ala Leu Ala Glu Asn Ala
210 215 220

Val Glu Gln His Arg Asn Arg Gly Tyr Pro Val Ala Ile Phe Arg Pro
225 230 235 240

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

Asn Leu Asn Gly Pro Ser Gly Val Val Val Gly Ala Gly Lys Gly Leu
260 265 270

Leu His Val Phe Cys Cys Lys Asn Ser Ala Lys Ala Asp Leu Leu Pro
275 280 285

Val Asp Ile Ala Ile Asp Thr Leu Ile Ala Val Ala Trp Glu Thr Ala
290 295 300

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

Asn Pro Val Thr Trp Arg Glu Phe Glu Thr Thr Ile Arg Arg Glu Leu
325 330 335

Arg Ile His Pro Phe Asp Lys Ala Phe Trp Tyr Pro Ser Gly Thr Val
340 345 350

Ile Glu Ser Lys Tyr Leu Gln Lys Ala Ile Ala Leu Leu Thr Gln Thr
355 360 365

Leu Pro Leu His Leu Ala Glu Tyr Thr Val Arg Leu Phe Gly Ile Lys
370 375 380

Thr Arg Leu Ser Phe Ile Thr Val Asn Gln Arg Leu Cys Ala Met Ser
385 390 395 400

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

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

Tyr Asn Leu Asp Pro Gln Thr Ile Asn Trp Thr Glu His Phe Ile Asn
435 440 445

Phe Val Lys Gly Thr Arg Lys Tyr Leu Leu Lys Glu Lys Asp Gln Asp
450 455 460

Ile Gly Glu Ala Lys Arg His Ile Arg Arg Met Tyr Tyr Val His His
465 470 475 480

Gly Phe Ile Leu Phe Leu Leu Val Leu Val Phe Arg Tyr Ala Met Gln
485 490 495

Asn Pro Ile Ile Arg Ser Ile Val Tyr Gly Thr Leu Lys Leu Leu Phe
500 505 510

Ser Ala Phe Asn Ala Ala Tyr Gly Arg Ile
515 520

<210> 161
<211> 462
<212> PRT
<213> Ostrinia furnacalis

<400> 161

Met Ser Ala Asn Thr Met Glu Thr Asp Glu Gln Phe Thr Tyr Asn Ser
1 5 10 15

Pro Ile Val Asn Phe Tyr Ser Gly Lys Ser Val Phe Val Thr Gly Ala
20 25 30

Thr Gly Phe Leu Gly Thr Val Leu Val Glu Lys Leu Leu Phe Ser Cys
35 40 45

Lys Gly Ile Asn Asn Ile Tyr Ile Leu Ile Lys Gln Thr Glu Asp Leu
50 55 60

Thr Ile Glu Ala Arg Ile Leu Asn Tyr Leu Asn Ser Lys Ala Phe His
65 70 75 80

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

Cys Gly Asn Leu Glu Asp Lys Asn Leu Gly Ile Ser Asp Ser Asp Met
100 105 110

Lys Thr Leu Leu Glu Glu Val Ser Ile Val Phe His Val Ala Ala Lys
115 120 125

Leu Ile Phe Lys Met Ser Leu Thr Ala Ala Val Asn Ile Asn Thr Lys
130 135 140

Pro Thr Glu Gln Leu Ile Ala Ile Cys Lys Lys Met Arg Arg Asn Pro
145 150 155 160

Ile Phe Ile Tyr Val Ser Ser Ala Tyr Ser Asn Val Asn Glu Gln Ile
165 170 175

Ile Asp Glu Lys Val Tyr Ser Thr Gly Val Pro Leu Glu Thr Ile Tyr
180 185 190

Asp Thr Leu Asp Ala Lys Asn Thr Arg Leu Met Asp Ile Phe Leu Asp
195 200 205

Lys Arg Pro Asn Thr Tyr Thr Tyr Ser Lys Ala Leu Ala Glu Val Val
210 215 220

Val Glu Lys Glu Phe Asp Glu Ser Ala Ala Ile Val Arg Pro Ser Ile
225 230 235 240

Ile Ala Ser Ser Ile Arg Glu Pro Ile Pro Gly Trp Leu Ser Gly Ser
245 250 255

His Gly Phe Pro Arg Val Val Glu Ala Ala Cys Lys Gly Leu Leu Leu
260 265 270

Arg Trp His Gly Asp Gly Thr Val Ala Phe Asp Val Ile Pro Val Asp

275

280

285

His Val Ala Asn Leu Ile Ile Ala Ala Ala Trp Glu Ser Asn Glu Arg
 290 295 300

Arg Leu Met Gly Asn Lys Gly Val Lys Val Tyr Asn Cys Cys Ser Gly
 305 310 315 320

Leu Arg Asn Pro Ile Asp Val Ser Thr Val Met Asn Thr Cys Ile Lys
 325 330 335

Tyr Arg Lys Tyr Phe Gly Thr Arg Thr Met Ser Ile Ile Thr Pro Arg
 340 345 350

Phe Ile Met Lys Lys Asn Tyr Phe Leu Tyr Lys Leu Leu Tyr Phe Thr
 355 360 365

Tyr His Thr Ile Pro Ala Ala Ile Ile Asp Gly Phe Phe Trp Leu Thr
 370 375 380

Gly Arg Thr Pro Met Met Leu Asn Thr Leu His Lys Leu Arg Lys Leu
 385 390 395 400

Ser Ser Val Leu Glu Tyr Phe Thr Leu His Gln Phe Leu Phe Leu Asp
 405 410 415

Ser Asn Val Arg Gly Leu Leu Arg Arg Met Glu Ser Thr Asp Arg Gln
 420 425 430

Thr Phe Asn Phe Asp Val Thr Glu Ile Glu Trp Glu Pro Tyr Leu Gln
 435 440 445

Asn Phe Val Arg Gly Ile Ala Asn Asn Tyr Asn Tyr Ser Met
 450 455 460

<210> 162

<211> 535

<212> PRT

<213> Plodia interpunctella

<400> 162

Met Arg Leu Val Pro Ser Ala Leu Asp Val Val Leu Ala Ala Glu Arg
 1 5 10 15

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

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

Phe Leu Gly Lys Gln Leu Ile Glu Lys Leu Phe Arg Thr Cys Asp Val
 50 55 60

Lys Lys Leu Tyr Ile Leu Leu Arg Ala Lys Lys Gly Lys Ser Ile Gly
 65 70 75 80

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

Glu Thr Arg Pro Trp Phe Ala Asp Arg Ile Glu Ala Val Glu Gly Asp
 100 105 110

Ile Ala Ser Tyr Arg Leu Gly Val Ala Asp His Met Trp Asp Arg Leu
 115 120 125

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

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

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

His Ile Ser Thr Ala Tyr Asn Gln Ala Leu Lys Asn Asn Val Ser Cys
 180 185 190

Asp Ile Leu Glu Glu Phe Pro Lys Ala Pro Leu Ser Pro Thr Thr Leu
 195 200 205

Val Asp Leu Ala Asn Arg Thr Glu Thr Lys Val Leu Asp Glu Met Phe
 210 215 220

His Lys Tyr Leu Ala Pro Glu Tyr Pro Asn Thr Tyr Ala Tyr Thr Lys
 225 230 235 240

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

Cys Val Val Arg Pro Ser Ile Val Ile Pro Ala Tyr Thr Glu Pro Ser
 260 265 270

Ala Gly Trp Val Asp Lys Asn Ser Ile Tyr Gly Ala Ser Gly Ile Ile
 275 280 285

Met Gly Leu Gly Leu Gly Val Ile His Thr Leu Ile Ser Asp Pro Asp
 290 295 300

Ile Lys Ile Asp Ile Ile Pro Val Asp Ile Val Asn Asn Ala Val Ile
305 310 315 320

Val Ala Gly Trp Glu Thr Ala Arg Arg Arg Glu Gln Gly Glu Thr Asp
325 330 335

Thr Lys Ile Tyr Thr Val Gly Ser Ser Asn Arg Asn His Ile Thr Trp
340 345 350

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

Ser Gln Ala Val Trp Tyr Ala Phe Ala Val Gln Thr Lys Ser Lys His
370 375 380

Leu Tyr Leu Ala Leu Ala Trp Leu Leu His Phe Ile Pro Gly Tyr Ile
385 390 395 400

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

Ile Tyr Arg Leu Leu Asn Thr Met Ala Thr Ile Phe Ser Phe Phe Thr
420 425 430

Leu Arg Gly Trp Asn Phe Lys Asp Asp Asn Leu Leu Gln Leu Tyr Lys
435 440 445

Ser Leu Ser Lys Thr Asp Gln Gln Ile Phe Asn Met Asp Ile Ala Thr
450 455 460

Leu Asp Met Lys Glu Val Ile Tyr Leu Trp His Ile Gly Leu Arg Arg
465 470 475 480

Phe Tyr Leu Lys Asp Lys Leu Asn Asp Gln Glu Lys Ser Met Lys Lys
485 490 495

Gln Phe Phe Leu Arg Ile Ile Thr Tyr Thr Phe Ile Pro Ile Tyr Leu
500 505 510

Tyr Phe Leu Phe Lys Ile Ser Cys Phe Val Phe Tyr Gly Leu Tyr Tyr
515 520 525

Leu Ile Phe Ser Tyr Leu Ile
530 535

<210> 163
<211> 531
<212> PRT
<213> Plodia interpunctella

<400> 163

Met Thr Val Asn Thr Arg Pro Ser Thr Asn Met Glu Ser Asn Ile Ile
1 5 10 15

Ser Glu Arg Asn Tyr Val Arg Asp Cys Thr Gly Ile Asp Val Asn Met
20 25 30

Asn Glu Lys Arg Leu Thr Ser Val Gln Gln Phe Tyr Asn Gly Lys Asn
35 40 45

Val Leu Ile Thr Gly Ala Thr Gly Phe Leu Gly Lys Ile Leu Val Glu
50 55 60

Lys Leu Leu Arg Cys Cys Pro Gly Val Glu Asn Leu Tyr Leu Leu Val
65 70 75 80

Arg Gln Lys Lys Gly Lys Asp Ile Tyr Thr Arg Ile Asp Glu Ile Phe
85 90 95

Asp Asp Pro Val Phe Asp Leu Leu Lys Glu Gln His Pro Lys Phe Arg
100 105 110

His Lys Val Val Val Val Pro Ala Asp Cys Glu Val Ala Gly Leu Gly
115 120 125

Leu Thr Leu Thr Asp Arg Gln Met Leu Thr Glu Lys Val Asn Ile Ile
130 135 140

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

Leu Asn Thr Asn Val Arg Ala Pro Leu His Leu Leu Arg Leu Ala Arg
165 170 175

Asp Met Lys Asp Leu Asp Val Leu Met His Ile Ser Thr Ala Tyr Ser
180 185 190

Asn Ser His Leu Pro His Ile Glu Glu Arg Phe Tyr Pro Cys Glu Ala
195 200 205

Asp Cys Glu Gln Leu His Arg Met Ile Asp Lys Leu Thr Asp Gly Glu
210 215 220

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

Thr Phe Thr Lys Ala Leu Ala Glu Lys Glu Leu Arg Glu Asn Ala Gly
245 250 255

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

Lys Glu Pro Ile Asn Asn Trp Leu Asp Asn Met Tyr Gly Pro Thr Gly
 275 280 285

Val Ala Val Gly Thr Ala Thr Gly Ile Leu Arg Thr Leu Gln Cys Asp
 290 295 300

Pro Asn Val Thr Ala Asp Leu Val Pro Val Asp His Val Val Asn Cys
 305 310 315 320

Leu Val Val Ala Ala Gln Lys Val Asn Ala Ala Tyr Gln Thr Ser Thr
 325 330 335

Pro Pro Arg Glu Pro Pro Ile Phe Asn Tyr Val Ser Ser Thr Glu Asn
 340 345 350

Arg Met Thr Trp Gly Asp Phe Met Arg Gln Asn Ile Ala Arg Leu Asp
 355 360 365

Lys Thr Pro Phe Ser Asn Ala Ile Trp Tyr Leu Ser Leu Arg Leu Thr
 370 375 380

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

Pro Ala Ala Leu Ala Asp Ala Leu Ala Phe Cys Leu Gly Lys Lys Pro
 405 410 415

Lys Met Leu Lys Val Tyr Arg Lys Val His Lys Leu Ser Ser Val Leu
 420 425 430

Ser Tyr Phe Cys Thr Thr Glu Leu Thr Phe Cys Asn Arg Asn Thr Arg
 435 440 445

Gln Leu Trp Glu Ser Thr Ser Asp Glu Asp Lys Lys Ile Phe Pro Phe
 450 455 460

Ser Met Arg Asp Val Asn Trp Asp Glu Phe Phe Glu Glu Tyr Ile Val
 465 470 475 480

Gly Met Arg Arg His Leu Phe Lys Asp Gly Asp Asp Thr Leu Pro Gln
 485 490 495

Ala Arg Ile Lys Trp Lys Arg Leu Tyr Tyr Leu His Gln Ile Val Lys
 500 505 510

Ile Leu Phe Cys Ala Leu Ala Val Tyr Ala Leu Trp Ser Ile Phe Leu
515 520 525

Arg Leu Trp
530

<210> 164
<211> 459
<212> PRT
<213> Spodoptera exigua

<400> 164

Met Thr Tyr Arg Gln Ile Asn Glu Phe Asp Ala Glu Lys Phe Thr Ala
1 5 10 15

Ala Ala Val Pro Thr Ser Tyr Val Ser Val Pro Asp Phe Tyr Ala Gly
20 25 30

Lys Ser Ile Phe Ile Thr Gly Gly Thr Gly Phe Leu Gly Lys Val Phe
35 40 45

Leu Glu Lys Leu Leu Tyr Ser Cys Lys Asp Val Glu Thr Val Tyr Ile
50 55 60

Leu Ile Arg Glu Lys Lys Gly Lys Thr Pro Gln Gln Arg Val Glu Asp
65 70 75 80

Leu Phe Asn Lys Pro Ile Phe Ser Arg Leu Lys Gln Lys Asp Ser Gln
85 90 95

Cys Met Lys Lys Val Thr Ala Ile Ile Gly Asp Leu Ser Glu Pro Gly
100 105 110

Leu Gly Ile Ser Lys Asp Asp Glu Glu Leu Leu Leu Gln Lys Val Ser
115 120 125

Val Val Phe His Val Ala Ala Asn Val Gln Phe Tyr Lys Glu Phe Lys
130 135 140

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

Cys Gln Arg Ile Lys Asp Ile Lys Ala Phe Val His Ile Ser Thr Ala
165 170 175

Tyr Cys His Thr Asp Gln Lys Val Leu Glu Glu Arg Ile Tyr Pro Pro
180 185 190

Pro Ala Glu Leu Ser Glu Val Leu Lys Phe Leu Gln Gln Pro Gln His
195 200 205

Asp Lys Lys Gln Ile Lys Glu Leu Phe Lys Lys Gln Pro Asn Ser Tyr
 210 215 220

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

Arg Val Pro Thr Ile Ile Ile Arg Pro Ser Ile Ile Ser Ala Ser Leu
 245 250 255

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

Leu Ile Thr Ala Ser Tyr Asn Gly Ala Asn Arg Val Leu Leu Gly Glu
 275 280 285

Gly Gly Asn Phe Leu Asp Leu Ile Pro Val Asp Phe Val Ala Asn Leu
 290 295 300

Ala Ile Val Ala Ala Ala Lys Cys Thr Ser Ser Leu Lys Val Tyr Asn
 305 310 315 320

Cys Cys Ser Ser Gly Cys Asn Pro Leu Thr Leu Lys Gln Leu Val Ser
 325 330 335

His Met Asn Asn Val Gly Phe Asp Lys Asn Val Ser Ile Ile Phe Thr
 340 345 350

Asn Asn Lys Ala Ser Leu Ser Thr Leu Thr Phe Phe Leu Gln Thr Thr
 355 360 365

Pro Ser Phe Thr Ala Asp Met Phe Leu Arg Val Thr Gly Lys Ser Pro
 370 375 380

Arg Tyr Met Lys Ile Gln Ser Lys Leu Thr Ile Ala Arg Asn Ala Leu
 385 390 395 400

Asn Phe Phe Thr Cys His Ser Trp Val Met Lys Ala Asp Asn Ser Arg
 405 410 415

Arg Leu Tyr Ala Ser Leu Ser Leu His Asp Arg His Thr Phe Pro Cys
 420 425 430

Asp Pro Thr Asp Ile Asp Trp Lys Lys Tyr Ile Thr Ile Tyr Ile Glu
 435 440 445

Gly Ile Asn Gln Phe Leu Met Lys Lys Arg Ser
 450 455

<210> 165
<211> 520
<212> PRT
<213> Spodoptera exigua

<400> 165

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

Glu Tyr Phe Ala Gly Arg Glu Val Leu Ile Thr Gly Ala Thr Gly Phe
20 25 30

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

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

Lys Arg Leu Ala Leu Leu Lys Gln Ser Gln Val Phe Asp Val Val Arg
65 70 75 80

Glu Arg Cys Pro Gln Gln Leu Asp Lys Leu Cys Met Val Pro Gly Asp
85 90 95

Val Thr Lys Arg Arg Phe Gly Phe Asp Gln Ser Ala Leu Asn Gln Leu
100 105 110

Asn Gln Val Ser Val Val Phe His Ser Ala Ala Thr Leu Lys Phe Asp
115 120 125

Glu Pro Leu Ser Val Ala Ala Glu Gln Asn Val Arg Pro Val Leu Thr
130 135 140

Leu Met Asp Ile Cys Asp Gln Leu Pro Asn Met Gln Val Leu Val His
145 150 155 160

Val Ser Thr Ala Tyr Ser Asn Ala Glu Leu Ala Glu Val Glu Glu Arg
165 170 175

Val Tyr Pro Ala Pro Val Thr Pro Glu His Leu Leu Ala Leu Val Asp
180 185 190

Ala Leu Pro Ala Ser Met Leu Gln Glu Ile Thr Pro Arg Leu Ile Ala
195 200 205

Pro Lys Pro Asn Thr Tyr Thr Phe Thr Lys Ala Val Ala Glu Ser Ala
210 215 220

Val Ser Glu Arg Ala Val Thr Ala Arg Tyr Ala Cys Ala Ile Phe Arg

225		230		235		240
Pro Thr Ile Val Val Ser Ser Leu Arg His Pro Phe Pro Gly Trp Ile						
	245			250		255
Glu Asn Leu Asn Gly Pro Ser Gly Val Val Ala Gly Ala Gly Lys Gly						
	260		265		270	
Leu Leu Arg Val Leu Arg Cys Gly Ala Gln Arg Arg Ala Asp Met Met						
	275		280		285	
Pro Val Asp Ile Cys Ile Asp Thr Leu Ile Ala Val Ala Trp Glu Thr						
	290		295		300	
Gly Ile Asp Asn Leu Arg Glu Ala Arg Val Tyr Gln Cys Ala Ser Ser						
305		310		315		320
Ser His Ala Ala Thr Trp Gly Gln Phe Arg Glu Arg Met Leu Arg Leu						
	325		330		335	
Val Arg Glu His Pro Phe Asp Asn Val Leu Trp Tyr Pro Tyr Gly Val						
	340		345		350	
Ile Cys Glu Asn Thr Val Val Gln Lys Val Leu Glu Ala Val Leu Gln						
	355		360		365	
Thr Ala Pro Leu Cys Val Ala His Cys Val Ala Arg Ala Cys Gly Leu						
	370		375		380	
Lys Gln Lys Pro Ser Leu Trp Thr Ala Cys Lys Arg Leu Gln Ala Met						
385		390		395		400
Asn Gln Ala Leu Gln Phe Phe Ala Thr Arg His Trp Ser Phe Arg Thr						
	405		410		415	
Thr Arg Val Gln Gln Leu Ala His Arg Leu His Pro Asp Asp Gln Lys						
	420		425		430	
Leu Tyr Asn Leu Arg Pro Glu Thr Ile Asp Trp Glu Gln His Cys Val						
	435		440		445	
Asp Phe Val Lys Gly Ala Arg Arg Tyr Leu Leu Arg Glu Arg Asp Asp						
	450		455		460	
Asp Ile His Ala Ala Arg Arg Arg Met Arg Ile Leu Tyr Leu Ile His						
465		470		475		480
Lys Ala Thr Leu Leu Phe Ala Ile Phe Thr Met Cys Arg Leu Thr Ile						
	485		490		495	

Arg Thr Ala Pro Ala Ile Leu Trp Gly Val Ala Ala Leu Thr Arg Gln
 500 505 510

Arg Asn Lys Ser Ala Leu Leu Ser
 515 520

<210> 166
 <211> 526
 <212> PRT
 <213> Trichoplusia ni

<400> 166

Met Ala Ser Cys Leu Ser Gly Gly His Tyr Val Pro Gly Ser Gln Glu
 1 5 10 15

Tyr Val Pro Val Ala Glu Phe Tyr Ala Asp Lys Ser Val Phe Val Thr
 20 25 30

Gly Gly Thr Gly Phe Met Gly Lys Val Leu Val Glu Lys Leu Leu Arg
 35 40 45

Ser Cys Pro Lys Ile Lys Lys Ile Tyr Leu Leu Met Arg Pro Lys Arg
 50 55 60

Gly Gln Asp Val Ala Ser Arg Leu Thr Glu Leu Thr Gln Ser Pro Leu
 65 70 75 80

Phe Glu Thr Leu Arg Arg Glu Arg Pro Gln Glu Leu Asn Lys Ile Val
 85 90 95

Pro Ile Val Gly Asp Ile Thr Glu Pro Glu Leu Gly Ile Ser Ala Ala
 100 105 110

Asp Gln Thr Met Leu Cys Gln Lys Val Ser Val Val Phe His Ser Ala
 115 120 125

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

Met Leu Gly Thr Gln Gln Leu Val Gln Leu Cys His Arg Met Leu Ser
 145 150 155 160

Leu Glu Ala Leu Val His Val Ser Thr Ala Tyr Cys Asn Cys Glu Arg
 165 170 175

Glu Arg Val Glu Glu Thr Val Tyr Ala Pro Pro Ala His Pro Glu His
 180 185 190

Val Val Thr Leu Val Gln Thr Leu Pro Asp Glu Leu Val Asp Arg Ile
195 200 205

Thr Pro Asp Leu Val Gly Asp Arg Pro Asn Thr Tyr Thr Phe Thr Lys
210 215 220

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

Ser Ile Val Arg Pro Ser Ile Val Leu Ser Ser Leu Arg Glu Pro Val
245 250 255

Lys Gly Trp Val Asp Asn Trp Asn Gly Pro Asn Gly Ile Ile Ala Ala
260 265 270

Val Gly Lys Gly Ile Phe Arg Thr Met Leu Gly Thr Gly Thr Lys Val
275 280 285

Ala Asp Leu Val Pro Val Asp Thr Val Ile Asn Leu Met Ile Val Cys
290 295 300

Ala Trp Arg Thr His Leu Arg Arg Gly Glu Gly Val Val Val Tyr Asn
305 310 315 320

Cys Cys Thr Gly Gln Gln Asn Pro Ile Thr Trp Gln Arg Phe Val Lys
325 330 335

Thr Ser Phe Lys Tyr Met Arg Lys His Pro Phe Asn Glu Val Val Trp
340 345 350

Tyr Pro Gly Gly Asp Ile Thr Ser Asn Arg Leu Trp His Gly Ala Leu
355 360 365

Ser Leu Leu Gln His Arg Ala Pro Ala Ala Leu Met Asp Leu Ala Ala
370 375 380

Ser Ala Ser Gly Lys Lys Pro Met Met Val Arg Val Gln Asn Lys Leu
385 390 395 400

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

Phe Ala Asp Asp Asn Val Gln Ala Leu Cys Ser Ser Leu Ser Pro Glu
420 425 430

Asp Arg Arg Thr Phe Asp Phe Asn Val Arg Asn Ile Asn Trp Asp Ala
435 440 445

Tyr Ile Glu Ser Tyr Val Leu Gly Ile Arg Arg Phe Leu Phe Lys Glu

450

455

460

Ser Pro Asp Thr Leu Pro Gln Ser Arg Ala Val Leu Arg Arg Leu His
 465 470 475 480

Ile Val His Ile Leu Thr Gln Val Ala Thr Val Phe Phe Leu Trp Arg
 485 490 495

Phe Leu Phe Ser Arg Ser Asn Ala Leu Arg Asn Leu Trp Arg Arg Val
 500 505 510

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

<210> 167

<211> 449

<212> PRT

<213> Yponomeuta rorellus

<400> 167

Met Val Gln Leu Lys Glu Asp Ser Val Ala Ala Phe Tyr Ala Glu Lys
 1 5 10 15

Ser Ile Phe Ile Thr Gly Gly Thr Gly Phe Leu Gly Lys Val Leu Ile
 20 25 30

Glu Lys Leu Leu Tyr Ser Cys Lys Ala Val Asp Gln Ile Tyr Val Leu
 35 40 45

Ile Arg Lys Lys Lys Asp Gln Thr Pro Ser Glu Arg Ile Ala Gln Leu
 50 55 60

Leu Glu Ser Glu Leu Phe Ser Arg Leu Arg Lys Asp Asp Pro Ser Ala
 65 70 75 80

Leu Lys Lys Val Val Pro Val Val Gly Asp Leu Thr Met Pro Asn Leu
 85 90 95

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

Ile Phe His Val Ala Ala Thr Val Lys Phe Asn Glu Arg Met Lys Asn
 115 120 125

Ala Leu Val Asn Asn Val Glu Ala Thr Arg Glu Val Ile Asn Leu Cys
 130 135 140

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

Ser Asn Thr Asp Gln Lys Val Val Glu Glu Arg Val Tyr Pro Pro Pro
 165 170 175

Ala Pro Leu Ser Glu Val Tyr Ala Phe Val Lys Asn Tyr Gly Asp Asp
 180 185 190

Met Asp Ile Ile Gln Asn Leu Leu Asn Gly Arg Pro Asn Thr Tyr Thr
 195 200 205

Tyr Thr Lys Ala Leu Ala Glu Asp Ile Val Leu Lys Glu His Gly Gly
 210 215 220

Ile Pro Thr Ala Ile Ile Arg Pro Ser Ile Val Leu Ser Val Leu Lys
 225 230 235 240

Glu Pro Ile Pro Gly Trp Leu Asp Asn Trp Asn Gly Pro Thr Gly Leu
 245 250 255

Leu His Ala Ser Ser Gln Gly Val His Cys Ser Met Leu Gly Ser Gly
 260 265 270

Ser Asn Val Ala Asp Leu Ile Pro Val Asp Ile Val Thr Asn Leu Met
 275 280 285

Ile Val Val Ala Ser Arg Cys Arg Lys Ser Asn Gly Leu Lys Val Tyr
 290 295 300

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

Lys Met Phe Leu Asp Ser Cys Ile Ser Arg Gly Trp Asn Lys Val Pro
 325 330 335

Phe Pro Leu Leu Ile Phe Val Lys Trp Ala Phe Leu Asn Arg Val Leu
 340 345 350

Lys Phe Leu Leu Val Ile Val Pro Phe Phe Leu Ile Asp Val Tyr Leu
 355 360 365

Arg Phe Phe Gly Lys Pro Asn Tyr Met Arg Met Ile Thr Tyr Thr Lys
 370 375 380

Lys Ala Glu Asp Leu Met Thr Phe Phe Thr Ser His Glu Trp Gln Phe
 385 390 395 400

Lys Asp Gly Asn Val Arg Asp Leu Ile Asn Met Met Ser Pro Glu Asp
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Arg Lys Ile Phe Tyr Cys Asp Pro Glu Glu Ile Gln Trp Lys Pro Tyr
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Phe Asp Asp Tyr Cys Val Gly Val Phe Lys Tyr Leu Leu Lys Arg Lys
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Val

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 <212> DNA
 <213> Chrysodeixis includens

<400> 171
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 <211> 1569
 <212> DNA
 <213> Cydia pomonella

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<211> 1009

<212> DNA

<213> *Marinobacter algicola*

<400> 173

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<210> 174
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 <212> DNA
 <213> *Manducta sexta*

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 <211> 1389
 <212> DNA
 <213> *Ostrinia furnacalis*

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<210> 176

<211> 1608

<212> DNA

<213> *Plodia interpunctella*

<400> 176

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gccgtggccg	aagaggccgt	gcgaaccatg	gccggcgacc	tgcttatctg	cgtggtgcga	780
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atctacggcg	cctctggcat	catcatgggc	ctcggcctgg	gcgtgattca	caccctgac	900
tctgaccccg	acatcaagat	cgacatcatc	cccgtggaca	tcgtgaacaa	cgccgtgac	960
gtggccggat	gggagactgc	ccgacgacga	gagcagggcg	agactgacac	caagatctac	1020
accgtgggat	cttctaaccg	aaaccacatc	acctggcgat	ttctgaccaa	cgtgttcgac	1080
aacgagggcc	gaaagcacct	gtcctctcag	gccgtgtggt	acgccttcgc	cgtgcagacc	1140
aagtctaagc	acctctacct	ggctctggcc	tggctgctgc	acttcatccc	cggctacatc	1200
gtggacggcg	tgctgatgat	ccgaggcaag	aagccccagg	tttctaagat	ctaccgactg	1260
ctgaacacta	tggccaccat	cttctcgttc	ttcacctcc	gaggctggaa	cttcaaggac	1320

gacaacctgc tgcagctgta caagtctctg tctaagaccg accagcagat cttcaacatg	1380
gacattgcta ccctggacat gaaggaagtg atctacctct ggcacattgg cctgcgacga	1440
ttctacctga aggacaagct gaacgaccaa gagaagtcta tgaagaagca gttcttcctg	1500
cgaatcatca cctacacctt cattcctatc tacctgtact tcctgttcaa gatctcttgc	1560
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<210> 177
 <211> 1596
 <212> DNA
 <213> *Plodia interpunctella*

<400> 177	
atgaccgtga acacccgacc ttctaccaac atggaatcta acatcatctc tgagcgaaac	60
tacgtgcgag actgcaccgg catcgacgtg aacatgaacg agaagcgact gacctctgtg	120
cagcagttct acaacggcaa gaacgtgctg attaccggcg ctaccggctt cctgggcaag	180
atcctggctg agaagctgct ccgatgctgt cccggcgctg agaacctgta cctgctggtg	240
cgacagaaga agggcaagga catctacacc cgaatcgacg agatcttcga cgaccccgctg	300
ttcgacctgc tgaaggaaca gcacccaag ttccgacaca aggtggtggt ggtccccgcc	360
gactgcgagg tggccggcct gggactgacc ctgaccgacc gacagatgct gaccgagaag	420
gtgaacatca ttttccactc tgccgccacc gtgaagtctg acgagcacct ccgagccgct	480
ctgaacacca acgtgcgagc ccctctgcac ctctgctgac tggcccgaga catgaaggac	540
ctggacgtcc tgatgcacat ctctaccgcc tactctaaact ctcatctgcc ccacatcgag	600
gaacgattct acccctgcga ggccgactgt gagcagctgc accgaatgat cgacaagctg	660
accgacggcg agatcgacgc tctgctgccc accatcctcg gcgcttggcc caacacctac	720
accttcacca aggctctggc cgagaaggaa ctgctgagaga acgccggcga cctgcctgtg	780
ggcatcttcc gacctgccat cgtgacctct acctacaagg aacctatcaa caactggctg	840
gacaacatgt acggccccac tggcgtggcc gtgggcaccg ccaccggaat cctgcgaacc	900
ctgcagtgcg accccaacgt gaccgccgac ctggtgcctg tggaccacgt cgtgaactgc	960
ctggtggtgg ccgctcagaa ggtcaacgcc gcctaccaga cctccacacc tcctcgagag	1020
cctccaatct tcaactacgt gtcctctacc gagaaccgaa tgacctgggg cgacttcatg	1080
agacagaaca ttgcccgact ggacaagacc cttttctcta acgccatctg gtatctgtct	1140
ctgcgactca cccgatctgg cggccgacac cgagtgtact ccctgctgct gcatctgctg	1200
cctgccgctc tggctgacgc cctggccttc tgcctgggaa agaagcccaa gatgctgaag	1260
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actttctgca accgaaacac tcgacagctg tgggagtcta cctctgacga ggacaagaag	1380
attttcccct tctctatgcg ggacgtgaac tgggacgagt tctttgaaga gtacatcgtg	1440

ggcatgcgac gacacctgtt caaggacggt gacgacaccc tgcctcaggc tcgaatcaag	1500
tggaagcgac tctactacct gcaccagatc gtgaagatcc tgttctgtgc cctggccgtg	1560
tacgccctgt ggtctatctt tctgcgactg tggtag	1596

<210> 178
 <211> 1380
 <212> DNA
 <213> Spodoptera exigua

<400> 178	
atgacctacc gacagatcaa cgagttcgac gccgagaagt tcaccgccgc tgctgtgccc	60
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accggattcc tcggcaaggt gttcctcgag aagctgctgt actcttgcaa ggacgtcgag	180
actgtgtaca tcctgatccg agagaagaag ggcaagaccc ctacgcagcg agtcgaggac	240
ctgttcaaca agcccatctt ctgcgactg aagcaaaagg actctcagtg catgaagaag	300
gtgaccgccca tcatcggcga cctgtctgag cccggcctgg gcatctctaa ggacgacgag	360
gaactgctgc tgcaaaaggt gtctgtggtg ttccacgtgg ccgccaacgt gcagttctac	420
aaggaattca aggaaatcat caacaccaac gtcggaggca ccaagtacgt gctgcagctg	480
tgccagcgaa tcaaggacat caaggccttc gtgcacatct ctaccgcta ctgccacacc	540
gaccagaagg tgctggaaga acgaatctac cctcctcctg ccgaactgtc tgagggtgctg	600
aagttcctgc agcagcccca gcacgacaag aagcagatca aggaactgtt taagaagcag	660
cccaactctt acaccttcgc caaggctctg gccgagactt acattgccga gaactgcgga	720
cgagtgccca ccatcatcat tcgacctct attatctctg cctctctgaa ggaaccctg	780
cctggctggg tcgactcttg gaacggcgcc accggcctga tcaccgcctc ttacaacggc	840
gctaaccgag tgctgctcgg cgaaggcggc aacttccttg acctgattcc tgtggacttc	900
gtggccaacc tggccatcgt ggccgctgcc aagtgcacct cttcgctgaa ggtgtacaac	960
tgctgttctt ctggctgcaa ccctctgact ctgaagcagc tgggtgtctca catgaacaac	1020
gtgggcttcg acaagaacgt gtctatcatc tttaaccaaca acaaggcctc tctgtctacc	1080
ctgacattct tcctgcagac cactccttct tttaaccgacg acatgttcct gcgagtgacc	1140
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aacttcttca cctgtcactc ttgggtgatg aaggccgaca actctcgacg actgtacgct	1260
tctctgtctc tgcacgaccg acacactttc cttgcgacc ccaccgacat cgactggaag	1320
aagtacatca ccatctacat cgagggaatc aaccagttcc tgatgaagaa gcgatcttag	1380

<210> 179
 <211> 1563
 <212> DNA
 <213> Spodoptera exigua

<400> 179
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ctgctgtgga cctgtcctga catcggccga ctgcatctgc tgatgcgaca caagcgagat 180
gtggctcccg acaagcgact ggccctgctg aagcagtctc aggtgttcga cgtgggtgcga 240
gaacgatgtc cccagcagct ggacaagctg tgcatgggtgc ccggcgacgt gaccaagcga 300
cgattcggct tcgaccagtc tgccctgaac cagctcaacc aggtgtctgt ggtgttcac 360
tctgccgcca ctctgaagtt cgacgagccc ctgtctgtgg ccgccgagca gaacgtgcga 420
cccgtgctga ccctgatgga catctgcgac cagctgccta acatgcaggt cctgggtgcac 480
gtgtctaccg cctactctaa cgccgagctg gccgaggctg aggaacgagt gtaccccgct 540
cctgtgactc ccgagcacct cctggctctg gtggacgctc tgcccgcctc tatgtgcaa 600
gagatcacc ctcgactgat cgctcccaag cctaacacct acaccttcac caaggccgtg 660
gccgagtctg ccgtgtctga gcgagccgtg accgctcgat acgcctgcgc catcttccga 720
cctaccatcg tgggtgcctc gctgcgacac cccttccag gctggatcga gaacctgaac 780
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gcccagcgac gagccgacat gatgcccgtc gacatctgca tcgacaccct gatcgccgtg 900
gcctgggaga ctggaatcga caacctgcga gaggcccgag tctaccagtg cgcctcttct 960
tctcacgccg ccacctgggg ccagttccga gagcgaatgc tgcgactggc ccgagagcac 1020
cccttcgaca acgtgctgtg gtatccctac ggctgatct gcgagaacac cgtgggtgcaa 1080
aagggtgctg aggccgtgct gcagaccgct cctctgtgcg tggccactg tgtggcccga 1140
gcctgcggcc tgaagcagaa gccctctctc tggaccgcct gtaagcgact gcaggccatg 1200
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gagcgagatg acgacatcca cgctgcccga cgacgaatgc gaatcctgta cctgatccac 1440
aaggctaccc tgctgttcgc cttttcacc atgtgccgac tgaccatccg aactgctccc 1500
gccatcctgt ggggcgtcgc cgctctgacc cgacagcgaa acaagtctgc tctgctgtct 1560
tag 1563

<210> 180
<211> 1581
<212> DNA
<213> Trichoplusia ni

<400> 180
atggcctctt gcctgtctgg cggccactac gtgcccggct ctcaagaata cgtccccgtg 60
gccgagttct acgccgacaa gtctgtgttc gtgaccggcg gcaccggctt catgggcaag 120

gtgctggtcg agaagctgct gcgatcttgc cccaagatca agaagatcta cctgctgatg	180
cgaccaagc gaggccagga cgtggcctct cgactgaccg agctgacca gtctcctctg	240
ttcgagactc tgcgacgaga gcgaccccaa gagctgaaca agatcgtgcc catcgtgggc	300
gacatcaccg agcctgagct gggcatctct gccgccgacc agaccatgct gtgccaaaag	360
gtgtctgtgg tgttccactc cgccgccacc gtgaagtctg acgagaagct caagctgtct	420
gtgaccatca acatgctggg caccagcag ctggtgcagc tgtgccaccg aatgctgtct	480
ctcgaggccc tgggtgcacgt gtctaccgcc tactgcaact gtgagcgaga gcgagtcgag	540
gaaaccgtgt acgcccctcc tgctaccccc gagcacgtgg tgaccctggc ccagactctg	600
cccgacgagc tgggtggaccg aatcacccct gacctgggtg gcgaccgacc taacacctac	660
accttcacca aggctctggc cgaggacatg ctgatcaagg aatctggcaa cctgcctgtg	720
tctatcgtgc gaccctctat tgtgtgtccc tctctcgag agcccgtaa gggctgggtc	780
gacaactgga acggcccaa cggcattcatt gccgccgtcg gcaaggcat cttccgaacc	840
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atgatcgtgt gcgcctggcg aaccacctc cgacgaggcg agggcgctgt ggtgtacaac	960
tgctgcaccg gccagcagaa ccccatcacc tggcagcgat tcgtcaagac ctctttcaag	1020
tacatgcgaa agcaccctt caacgagggt gtgtgggtatc ccggcggaga catcacctct	1080
aaccgactgt ggcacggcgc cctgtctctg ctccagcatc gagcccctgc cgctctgatg	1140
gacctggccg cctctgcctc tggcaagaag cccatgatgg tgcgagtga gaacaagctc	1200
gagaaggccg ctgcctgcct cgagtacttc accactcgac agtgggcctt cgccgacgac	1260
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cgactgctgg ccattgccta g	1581

<210> 181
 <211> 1350
 <212> DNA
 <213> Yponomeuta rorellus

<400> 181	
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actggtggta ctggtttctt gggtaagggt ttgattgaaa agttgttgta ctctgcaag	120
gccgttgatc aaatctacgt ttgatcaga aagaagaagg accaaacccc atctgaaaga	180
attgcccaat tattggaatc cgaattattc tccagattga gaaaggatga tccatccgct	240

ttgaaaaagg ttgttccagt tggttgatgat ttgacatgc ctaatttggg tttgtctgct	300
gctgttgaag atttgattgt ctctaagggt accgttatct tccatgttgc tgctactgtt	360
aagttcaacg aaagaatgaa gaacgccttg gttaacaacg ttgaagctac tagagaagtc	420
atcaacttgt gccatagatt ggaaaagggt gatgccttca ttcattgtttc taccgcttac	480
tctaataccg atcaaaagggt cgttgaagaa agagtttatc caccaccagc tccattgtct	540
gaagtttatg cttttgttaa gaactacggt gacgacatgg atatcatcca aaatttgttg	600
aacggtagac caaacactta cacctacaca aaagctttgg ctgaagatat cgtcttgaaa	660
gaacatggtg gtattccaac cgctattatc agaccatcta tcgttttgtc cgttttaaaa	720
gaacctatcc caggttgggt ggataattgg aatgggtcaa ctggtttgtt gcatgcttct	780
tcacaagggt ttcattgctc tatgttgggt tctggttcta atgttgccga tttgattcca	840
gttgatatcg tcactaactt gatgatcgtt gttgcttcta gatgcagaaa gtctaattgt	900
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aagatgttct tggattcctg tatttctaga ggttgaaca aggttccatt ccctttgttg	1020
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ttcttcttga tcgatgtcta cttgagattt ttcggtaagc caaactacat gagaatgatc	1140
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aaggatggta atgtcagaga cttgatcaac atgatgtctc cagaagatag aaagatcttc	1260
tactgcatc ctgaagaaat tcaatggaag ccatacttcg atgattactg cgttgggtgc	1320
tttaaatact tgttgaagag aaaggtttaa	1350

<210> 182
 <211> 679
 <212> PRT
 <213> Cydia pomonella

<400> 182

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

Leu	Lys	Ile	Ser	Leu	Pro	Thr	Val	Leu	Cys	Thr	Pro	Glu	Ser	Ser	Glu
			20					25					30		

Asn	Ser	Asp	Ile	Leu	Cys	Lys	Thr	Lys	Thr	Phe	Ile	Ser	Ser	Glu	Ser
		35					40					45			

Lys	Leu	Ser	Leu	Pro	Ser	Asn	Leu	Gly	Thr	Pro	Thr	Ser	Pro	Leu	Arg
	50					55					60				

Leu	Ser	Ser	Pro	Leu	Ser	Leu	Pro	Thr	Ser	Pro	Thr	Pro	Tyr	Met	Lys
65					70				75						80

Ile Thr Gln Pro Gln Pro Glu Lys Thr Val Ala Ala Thr Gln Met Asn
 85 90 95

Ser Pro Pro Thr Thr Ile Val Gln Gln Thr Gly Pro Lys Gln Pro Leu
 100 105 110

Val Asn Thr Gly Ser Ala Thr Gly Asn Pro Arg Asn Lys Cys Ala Leu
 115 120 125

Gln Pro Gly His Ser Leu Met Asp Trp Ile Arg Leu Gly Asn Ser Gly
 130 135 140

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

Glu Leu Ala Ala His Asn Thr Arg Asn Asp Ala Trp Leu Ala Ile Arg
 165 170 175

Gly Arg Val Tyr Asn Ile Thr His Tyr Leu Pro Tyr His Pro Gly Gly
 180 185 190

Pro Glu Glu Leu Met Arg Gly Ala Gly Ile Asp Ala Thr Gln Leu Phe
 195 200 205

Asp Lys Val His Pro Trp Val Asn Tyr Asp Ser Leu Leu Ala Lys Cys
 210 215 220

Leu Val Gly Pro Leu Arg Leu Asp Arg Pro Asp Ala Glu Glu Leu Phe
 225 230 235 240

Gly Pro Ser Thr Pro Ser Pro Lys Ser Glu Asn Arg Leu Arg Glu Pro
 245 250 255

Ser Lys Ala Gln Glu Leu Val Arg Lys Ser Met Glu Asn Leu Ala Asn
 260 265 270

Cys Ile Thr Pro Val Arg Lys Lys Met Ser Ala Lys Ser Glu Glu Asn
 275 280 285

Ile Lys Gly Ser Pro Pro Ser Lys Ile Met Gln Ser Leu Ile Gln Ser
 290 295 300

Ser Asp Leu Pro Val Ser Ile Ser Arg Arg Ala Ala Ala Ser Pro Val
 305 310 315 320

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

Trp Ile Gln Thr Ser Thr Lys Leu Thr Leu Ser Ile Tyr Thr Gly Pro
 340 345 350

Leu Ala Asn Pro Gly Gly Cys Ala Arg Ile Ile Glu Gly Ile Leu Phe
 355 360 365

Val Glu Val Ala Thr Asn Gly Trp Val Arg Thr Leu Lys Leu Val Pro
 370 375 380

Glu Ala Lys Leu Leu Glu Ser Leu Gln Leu Arg Val Phe Ala Glu Ser
 385 390 395 400

Gly Lys Ile Glu Val Thr Ala His Lys Ala Glu Pro Gly Val Trp Lys
 405 410 415

Thr Cys Gly Glu Ala Met Ala Gly Ala Ala Ser Arg Val Ser Thr Pro
 420 425 430

Arg Ser Val Ser Cys Arg Val Ala Arg Met Leu Arg Val Ser His Asp
 435 440 445

Thr Val Leu Leu Ser Leu Ala Ala Pro Ala Gln Ala Leu Val Ala Pro
 450 455 460

Leu Gly His His Val Arg Val His Arg Thr Ile Ser Asp Val Glu Cys
 465 470 475 480

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

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

Leu Ser Pro Tyr Leu Thr Ala Leu Gln Pro Gly Asp Glu Val Thr Val
 515 520 525

Ser Gly Pro Tyr Gly Asn Phe Gln Leu His Thr Leu Lys Gly Val Lys
 530 535 540

Glu Ile Tyr Phe Val Ala Ala Gly Thr Gly Ile Thr Pro Met Leu Gly
 545 550 555 560

Leu Leu Lys Phe Met Leu Pro Arg Ser Asn Pro Arg Cys Glu Arg Ile
 565 570 575

His Leu Leu Phe Phe Asn Lys Thr Glu Glu Asp Ile Leu Phe Arg Glu
 580 585 590

Asn Phe Glu Glu Ile Ala Arg Glu Asp Asp Arg Phe Thr Val Thr His
595 600 605

Val Leu Ser Asp Ala Gly Pro Ser Trp Ser Gly His Lys Gly Arg Val
610 615 620

Thr Thr Asn Leu Leu Thr Gln Val Ile Gly Lys Ser Phe Leu Lys Cys
625 630 635 640

Arg Asp Gln Cys Thr His Phe Ala Cys Val Cys Gly Pro Thr Glu Phe
645 650 655

Thr His Thr Ala Ile Asp Leu Leu Lys Lys Leu Asp Met Lys Asp Ser
660 665 670

Cys Ile His Ala Phe Met Gly
675

<210> 183
<211> 669
<212> PRT
<213> *Agrotis segetum*

<400> 183

Met Asn Thr Met Asp Gly Ser Pro Gly Arg Glu Asn Gln Lys Ser Thr
1 5 10 15

Arg Lys Ile Ser Leu Pro Thr Val Leu Cys Thr Pro Glu Pro Ser Asp
20 25 30

Asp Arg Ser Asp Met Lys Val Asn Ser Phe Met Ser Ser Asp Ser Lys
35 40 45

Met Ser Leu Pro Thr Asn Leu Gly Thr Pro Thr Ser Pro Leu Arg Leu
50 55 60

Ser Ser Pro Ile Ser Leu Pro Thr Ser Pro Cys Val Lys Thr Ser Gln
65 70 75 80

Thr Ser Ser Ala Asn Ser Leu Pro Asn Pro Asn Pro Lys Pro Val Thr
85 90 95

Ser Ser Ala Ala Thr Asn Asn Ile Val Asn Ser Gly Ser Ala Thr Gly
100 105 110

Asn Pro Arg Asn Lys Cys Ala Leu Gln Pro Gly His Ser Leu Met Asp
115 120 125

Trp Ile Arg Leu Gly Asn Ser Gly Lys Asp Leu Thr Gly Val Gly Gly
130 135 140

Arg Ile Arg Pro Val Ser Pro Ala Glu Leu Ser Thr His Asn Thr Leu
 145 150 155 160

Asn Asp Ala Trp Leu Ala Ile Arg Gly Arg Val Tyr Asn Ile Thr His
 165 170 175

Tyr Leu Pro Tyr His Pro Gly Gly Pro Glu Glu Leu Met Arg Gly Ala
 180 185 190

Gly Met Asp Ala Thr Gln Leu Phe Asp Lys Val His Pro Trp Val Asn
 195 200 205

Tyr Asp Ser Leu Leu Ala Lys Cys Leu Val Gly Pro Leu Arg Phe Glu
 210 215 220

Leu Pro Asp Ala Glu Glu Leu Phe Asp Thr Ser Asn Pro Ser Pro Lys
 225 230 235 240

Ser Asp Arg Leu Arg Glu Pro Ser Lys Ala Gln Glu Leu Val Arg Lys
 245 250 255

Ser Met Glu Asn Leu Ala Asn Cys Ile Thr Pro Val Arg Lys Lys Ile
 260 265 270

Thr Lys Gly Asp Asp Asn Thr Lys Gly Ser Pro Pro Ser Lys Ile Met
 275 280 285

Gln Ser Leu Val Gln Ser Ala Asp Leu Pro Met Ser Ile Ser Arg Arg
 290 295 300

Ala Ala Ser Ser Pro Val Lys Lys Thr Glu Lys Ser Pro Asp Ser Pro
 305 310 315 320

Leu Pro Leu Arg Tyr Asp Trp Ile Gln Thr Ser Thr Lys Leu Thr Ile
 325 330 335

Tyr Val Tyr Thr Gly His Leu Ala Asn Pro Gly Gly Cys Ala Arg Ile
 340 345 350

Thr Glu Gly Phe Leu Leu Ile Glu Val Ala Thr Asn Gly Trp Leu Arg
 355 360 365

Thr Leu Lys Ile Lys Pro Glu Ala Lys Leu Lys Glu Pro Leu Gln Leu
 370 375 380

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

Asp Pro Ser Val Trp Lys Gly Cys Gly Asp Val Ser Val Gly Val Ala
 405 410 415

Ser His Val Ser Ser Pro Arg Ser Val Glu Cys Arg Val Met Glu Val
 420 425 430

Ser Arg Val Ser His Asp Thr Ser Leu Leu Ser Val Cys Pro Arg Ala
 435 440 445

Gly Pro Val Val Val Pro Leu Gly His His Val Arg Val His Arg Arg
 450 455 460

Ile Glu Gly Thr Glu Cys Ile Arg Ser Tyr Thr Pro Val Gly Glu Gly
 465 470 475 480

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

Val Lys Arg Tyr Asp Ser Gly Ala Leu Ser Pro His Leu Thr Ala Leu
 500 505 510

Lys Val Gly Asp Leu Ile Thr Leu Ser Gly Pro Tyr Gly Asn Phe Gln
 515 520 525

Leu Gln Lys Leu Lys Thr Val Lys Ser Leu Tyr Leu Ile Ala Ala Gly
 530 535 540

Thr Gly Val Thr Pro Met Leu Gly Leu Ile Arg Phe Met Ile Ser Arg
 545 550 555 560

Ser Asn Pro Arg Cys Glu Arg Thr His Leu Leu Phe Phe Asn Lys Thr
 565 570 575

Glu Glu Asp Ile Leu Phe Arg Glu Asn Phe Glu Glu Met Met Lys Glu
 580 585 590

Asp Asp Arg Leu Lys Ile Thr His Val Leu Ser Glu Gly Ser Ser Ser
 595 600 605

Trp Ser Gly His Arg Gly Arg Ile Arg Asp Glu Leu Leu Ala Glu Thr
 610 615 620

Ile Gly Asn Val Lys Cys Asp Asp Lys Cys Ser His Tyr Ala Cys Leu
 625 630 635 640

Cys Gly Pro Thr Glu Phe Thr Tyr Ala Gly Leu Asp Leu Leu Lys Lys
 645 650 655

His Gly Phe Lys Asp Asp Cys Ile His Ala Phe Met Gly
660 665

<210> 184
<211> 578
<212> PRT
<213> Bombus terrestris

<400> 184

Met Lys Lys Ser Leu Ser Lys Asn Gln Arg Lys Ser Asp Asp Thr Glu
1 5 10 15

Thr Lys Asp Ile Arg Gly Lys Met Glu Glu Ile Asp Val Lys Ser Ser
20 25 30

Ser Ser Thr Asn Ser Met Thr Asn Asn Leu Ala Leu Leu Pro Ser Gly
35 40 45

Val Gly Arg Met Lys Gln Leu Gln Gly Ala Lys Met Val Asn Gln Thr
50 55 60

Gly Ser Ser Ser Ser Gly Ser Ala Thr Gly Asn Pro Arg Asn Lys Thr
65 70 75 80

Ala Leu Ala Pro Gly His Ser Leu Met Asp Trp Ile Arg Leu Gly Asn
85 90 95

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

Leu Ser Glu Leu Ala Thr His Asn Lys Gln Asp Asp Ala Trp Ile Ala
115 120 125

Ile Arg Gly Ile Val Phe Asn Val Thr Arg Tyr Met Asp Phe His Pro
130 135 140

Gly Gly Val Asn Glu Leu Met Arg Gly Val Gly Lys Asp Ala Thr Lys
145 150 155 160

Leu Phe Glu Asn Val His Ala Trp Val Asn Tyr Gln Ser Ile Leu Gln
165 170 175

Lys Cys Val Val Gly Arg Leu Ser Arg Gly Ser Val Ser Gly Thr Thr
180 185 190

Ser Ser Pro Thr Glu Asn Pro Val Ser Ser Thr Ser Asn Cys Ser Ser
195 200 205

Ala Thr Leu Asn Leu Ile Thr Ser Cys Thr Thr His Ser Val Ser Gln
210 215 220

Glu Asn Val Ser Asp Ala Ser Ser Leu Asn Ile Lys Met Asp Trp Arg
 225 230 235 240

Gln Thr Ser Asp Ser Leu Thr Leu Ser Tyr Gln Thr Thr Arg Tyr Tyr
 245 250 255

Pro Gly Leu Cys Tyr Gln Leu Ser Arg Ile Asn Asp Ser Lys Leu Met
 260 265 270

Tyr Lys Leu Val Phe Ala Ser Gly Ser Ile Thr His Glu Leu Glu Leu
 275 280 285

Thr Ala Glu Ile Gln Trp Pro Pro Val Cys Ile Lys Asn Phe Glu Thr
 290 295 300

Arg Glu Ile Thr Phe Thr Phe Met Lys Gln Lys Gln Glu Leu Trp Lys
 305 310 315 320

Ser Tyr Gly Glu Gln Met Val Cys Arg Glu Met Asn Arg Asp Asn Arg
 325 330 335

Thr Tyr Arg Glu Tyr Gln Val Leu Thr Asn Lys Gln Leu Ser Lys Leu
 340 345 350

Val His Leu Leu Val Val Arg Ala Lys Asp Phe Leu Gln Ile Val Pro
 355 360 365

Ile Gly Arg His Val Glu Ala Met Leu Asn Val Met Gly Thr Glu Val
 370 375 380

Ser Arg Leu Tyr Thr Pro Val Pro Pro Cys Leu His Pro Asp Asp Met
 385 390 395 400

Ala Pro Asn Tyr Lys Ser Asp Cys Leu Cys Phe Met Ile Lys Lys Tyr
 405 410 415

Pro Asn Gly Ala Leu Ser Pro Ser Ile Thr Ala Leu Gln Ile Gly Glu
 420 425 430

Thr Leu Arg Leu Ser Asn Ala Leu Gly Asp Phe Thr Val Glu Ser Cys
 435 440 445

Asp Gly Tyr Ser Ile Asn His Met Ile Ala Gly Gly Thr Gly Leu Thr
 450 455 460

Ala Met Leu Gly Ile Ile Gln Arg Ala Leu Ala Arg Arg Ser Val Lys
 465 470 475 480

Thr Ile Asn Leu Leu Asn Phe Asn Lys Asp Glu Asp Asn Met Phe Tyr
485 490 495

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

His Ile Leu Ser Gln Ala Gly Asp Ala Trp Thr Gly Arg Arg Gly Thr
515 520 525

Leu Ser Asp Asp Leu Leu Gln Asp Leu Val Gly Thr Ser Asn Pro Asp
530 535 540

Ala Phe Val Tyr Thr Cys Gly Pro Gln Glu Phe Ile Gln Leu Ala Lys
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Asn Ser Leu Gln Lys Leu Asn Trp Lys Pro Phe Gln Met Tyr Glu Phe
565 570 575

Asp Asp

<210> 185
<211> 678
<212> PRT
<213> Lobesia botrana

<400> 185

Met Ala Asp Pro Pro Ala Glu Asp Asn Thr Pro Ser Arg Asn Gly Ser
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20 25 30

Asn Ser Asp Ile Leu Cys Lys Thr Lys Ser Leu Leu Ser Ser Glu Ser
35 40 45

Lys Leu Ser Leu Pro Ser Asn Leu Gly Thr Pro Thr Ser Pro Leu Arg
50 55 60

Leu Ser Ser Pro Leu Ser Leu Pro Ala Ser Pro Thr Pro Phe Met Lys
65 70 75 80

Val Thr Gln Pro Pro Pro Glu Lys Val Thr Ser Gly Gln Met Asn Ser
85 90 95

Pro Pro Ser Thr Ile Val Leu Gln Ser Gly Pro Lys Pro Pro Leu Ala
100 105 110

Asn Thr Gly Ser Ala Thr Gly Asn Pro Arg Asn Lys Cys Ala Leu Gln

115

120

125

Pro Gly His Ser Leu Met Asp Trp Ile Arg Leu Gly Asn Ser Gly Lys
 130 135 140

Asp Leu Thr Gly Val Gly Gly Arg Met Arg Pro Val Ser Pro Asp Glu
 145 150 155 160

Leu Ala Ser His Asn Ser Gln Asn Asp Ala Trp Leu Ala Ile Arg Gly
 165 170 175

Arg Val Tyr Asn Ile Thr His Tyr Leu Pro Tyr His Pro Gly Gly Pro
 180 185 190

Glu Glu Leu Met Arg Gly Ala Gly Ile Asp Ala Thr Gln Leu Phe Asp
 195 200 205

Lys Val His Pro Trp Val Asn Tyr Asp Ser Leu Leu Ala Lys Cys Leu
 210 215 220

Val Gly Pro Leu Arg Leu Glu Arg Pro Asp Ala Glu Glu Leu Phe Gly
 225 230 235 240

Pro Ser Thr Pro Ser Pro Lys Thr Glu Asn Arg Leu Arg Glu Pro Ser
 245 250 255

Lys Ala Gln Glu Leu Val Arg Lys Ser Met Glu Asn Leu Ala Asn Cys
 260 265 270

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

Lys Gly Ser Pro Pro Ser Lys Ile Met Gln Ser Leu Ile Gln Ser Ser
 290 295 300

Asp Leu Pro Val Ser Ile Ser Arg Arg Ala Ala Ala Asn Pro Val Lys
 305 310 315 320

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

Ile Gln Thr Ser Thr Lys Leu Thr Leu Ser Ile Tyr Thr Gly Pro Leu
 340 345 350

Val Asn Pro Gly Val Cys Ala Arg Ile Ile Glu Gly Ile Leu Phe Val
 355 360 365

Glu Val Ala Thr Asn Gly Trp Val Arg Thr Leu Lys Leu Val Pro Glu
 370 375 380

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

Lys Ile Glu Val Val Ala Gln Lys Val Glu Pro Gly Val Trp Lys Gly
 405 410 415

Cys Gly Asp Ala Val Ser Gly Ala Ala Ser His Val Pro Thr Pro Arg
 420 425 430

Ser Val Val Cys Arg Val Ser Arg Val Thr Arg Val Ser His Asp Thr
 435 440 445

Val Leu Leu Ser Leu Ala Thr Pro Ala Gln Ala Leu Val Ala Pro Leu
 450 455 460

Gly His His Val Arg Val His Arg Thr Ile Ser Asp Val Glu Cys Val
 465 470 475 480

Arg Ser Tyr Thr Pro Val Gly Glu Gly Trp Thr Ser Asp Gly Glu Arg
 485 490 495

Asp Ser Ala Ile His Leu Ala Val Lys Gly Tyr Glu Thr Gly Ala Leu
 500 505 510

Ser Pro His Leu Val Ala Leu Gln Pro Asp Asp Glu Val Thr Val Ser
 515 520 525

Gly Pro Tyr Gly Asn Phe Glu Leu Gln Lys Leu Arg Gly Val Lys Glu
 530 535 540

Ile Cys Phe Val Ala Ala Gly Thr Gly Ile Thr Pro Met Leu Gly Leu
 545 550 555 560

Leu Lys Phe Ile Leu Pro Arg Ser Asn Pro Arg Cys Glu Arg Val His
 565 570 575

Leu Leu Phe Phe Asn Lys Thr Glu Glu Asp Ile Leu Phe Arg Gln Asn
 580 585 590

Phe Glu Glu Ile Ala Lys Glu Asp Asp Arg Phe Ser Val Thr His Val
 595 600 605

Leu Ser Asp Ala Ser Ser Ser Trp Ser Gly Arg Arg Gly Arg Ile Thr
 610 615 620

Ser Asp Leu Leu Thr Gln Val Val Gly Lys Asp Ser Leu Lys Cys Arg
 625 630 635 640

Glu Gln Cys Val His Phe Ala Cys Val Cys Gly Pro Thr Asp Phe Thr
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His Thr Thr Ile Asp Leu Leu Lys Lys Leu His Met Lys Asp Ser Cys
660 665 670

Ile His Ala Phe Met Gly
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<210> 186
<211> 2040
<212> DNA
<213> Cydia pomonella

<400> 186
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<210> 187
 <211> 2010
 <212> DNA
 <213> *Agrotis segetum*

<400> 187	
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<210> 188

<211> 1737

<212> DNA

<213> Bombus terrestris

<400> 188

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<210> 189

<211> 2037

<212> DNA

<213> Lobesia botrana

<400> 189

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<210> 190
 <211> 130
 <212> PRT
 <213> Mortierella alpina

<400> 190

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Thr Lys Asp Ser Leu Tyr Leu Ala Ile His Gly Lys Val Tyr Asp Cys
 20 25 30

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

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

Asp Glu Ala Arg Asp Ile Met Ser Lys Leu Leu Val Gly Glu Phe Lys
65 70 75 80

Thr Asp Ser Ser Glu Lys Pro Lys Ala Lys Ser Pro Ser Ser Ser Thr
85 90 95

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

Tyr Val Leu Ala Leu Ala Val Val Ala Gly Cys Val Ile Trp Lys Val
115 120 125

Leu Leu
130

<210> 191
<211> 298
<212> PRT
<213> Mortierella alpina

<400> 191

Met Thr Leu Ser Asn Pro Ala Ile Ala Ala Ala Ser Gly Val Ile Leu
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Ala Gly Ala Tyr Leu Ile Asp Pro Ser Ala Leu Pro Phe Val Ala Ala
20 25 30

Gly Val Ala Ala Thr Trp Ala Arg Val Leu Phe Lys Lys Thr Ala Val
35 40 45

Lys Thr Pro Pro Met Asp Pro Lys Glu Tyr Arg Lys Phe Lys Leu Val
50 55 60

Asp Lys Val His Cys Ser Pro Asn Thr Ala Met Tyr Lys Phe Ala Leu
65 70 75 80

Pro His Glu Asp Asp Leu Leu Asn Leu Pro Ile Gly Gln His Ile Ser
85 90 95

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

Thr Ser Ser Ser Asp Asp Val Gly His Phe Val Leu Cys Ile Lys Ser
115 120 125

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

Asp Ser Ile Asn Ala Arg Gly Pro Lys Gly Gln Phe Ser Tyr Thr Pro

145		150		155		160
Asn Met Cys Arg Ala Ile Gly Met Ile Ala Gly Gly Thr Gly Leu Thr						
	165			170		175
Pro Met Leu Gln Ile Ile Arg Ala Ile Val Lys Asn Pro Glu Asp Lys						
	180			185		190
Thr Gln Val Asn Phe Ile Phe Ala Asn Val Thr Glu Glu Asp Ile Ile						
	195			200		205
Leu Lys Ala Glu Leu Asp Leu Leu Ser Gln Lys His Pro Gln Phe Lys						
	210			215		220
Val Tyr Tyr Val Leu Asn Asn Ala Pro Glu Gly Trp Thr Gly Gly Val						
	225			230		235
Gly Phe Val Asn Ala Asp Met Ile Lys Glu His Met Pro Ala Pro Ala						
	245			250		255
Ala Asp Ile Lys Val Leu Leu Cys Gly Pro Pro Pro Met Val Ser Ala						
	260			265		270
Met Ser Lys Ile Thr Gln Asp Leu Gly Tyr Asp Lys Val Asn Ala Val						
	275			280		285
Ser Lys Leu Pro Asp Gln Val Phe Lys Phe						
	290			295		
<210> 192						
<211> 298						
<212> PRT						
<213> Mortierella alpina						
<400> 192						
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Val Gly Ala Ser Leu Ile Asp Ser Thr Met Ile Pro Phe Val Val Ala						
	20			25		30
Ser Val Gly Ala Leu Leu Ala Cys Leu Phe Phe Lys Lys Gly Thr Leu						
	35			40		45
Arg Leu Pro Pro Leu His Ala Lys Glu Tyr Arg Lys Phe Thr Leu Val						
	50			55		60
Glu Lys Ile Val Leu Ser Pro Asn Thr Ala Thr Tyr Lys Phe Ala Leu						
65	70			75		80

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

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

Thr Ser Gly Ser Glu Asp Leu Gly Tyr Phe Val Leu Cys Ile Lys Ser
 115 120 125

Tyr Pro Gln Gly Asn Ile Ser Gly Met Ile Ser Arg Leu Ala Ile Gly
 130 135 140

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

Asn Met Cys Arg Ala Ile Gly Met Ile Ala Gly Gly Thr Gly Ile Thr
 165 170 175

Pro Met Leu Gln Leu Ile Arg Ser Ile Thr Lys Asn Pro Glu Asp Lys
 180 185 190

Thr Leu Val Thr Leu Leu Phe Ala Asn Val Thr Glu Gln Asp Ile Leu
 195 200 205

Leu Arg Ala Glu Leu Asp Leu Leu Ser Lys Val His Pro Gln Phe Lys
 210 215 220

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

Gly Tyr Ile Asn Ala Glu Met Ile Lys Glu His Leu Pro Ala Pro Ala
 245 250 255

Ala Asp Ile Lys Ile Leu Leu Cys Gly Pro Gln Pro Met Val Ser Ser
 260 265 270

Met Val Lys Ile Thr Gln Asp Leu Gly Tyr Glu Lys Ala Asn Ala Ile
 275 280 285

Ser Lys Pro His Asp Gln Val Phe Lys Phe
 290 295