

SEQUENZPROTOKOLL

<110> BASF SE

<120> Verfahren zur enzymkatalysierten Hydrolyse von
Polyacrylsäureestern

<130> M/47360-EP

<160> 59

<170> PatentIn version 3.3

<210> 1

<211> 392

<212> PRT

<213> Burkholderia gladioli

<400> 1

Met Thr Ala Ala Ser Leu Asp Pro Thr Ala Phe Ser Leu Asp Ala Ala
1 5 10 15

Ser Leu Ala Ala Arg Leu Asp Ala Val Phe Asp Gln Ala Leu Arg Glu
20 25 30

Arg Arg Leu Val Gly Ala Val Ala Ile Val Ala Arg His Gly Glu Ile
35 40 45

Leu Tyr Arg Arg Ala Gln Gly Leu Ala Asp Arg Glu Ala Gly Arg Pro
50 55 60

Met Arg Glu Asp Thr Leu Phe Arg Leu Ala Ser Val Thr Lys Pro Ile
65 70 75 80

Val Ala Leu Ala Val Leu Arg Leu Val Ala Arg Gly Glu Leu Ala Leu
85 90 95

Asp Ala Pro Val Thr Arg Trp Leu Pro Glu Phe Arg Pro Arg Leu Ala
100 105 110

Asp Gly Ser Glu Pro Leu Val Thr Ile His His Leu Leu Thr His Thr
115 120 125

Ser Gly Leu Gly Tyr Trp Leu Leu Glu Gly Ala Gly Ser Val Tyr Asp
130 135 140

Arg Leu Gly Ile Ser Asp Gly Ile Asp Leu Arg Asp Phe Asp Leu Asp
145 150 155 160

Glu Asn Leu Arg Arg Leu Ala Ser Ala Pro Leu Ser Phe Ala Pro Gly

165

170

175

Ser Gly Trp Gln Tyr Ser Leu Ala Leu Asp Val Leu Gly Ala Val Val
 180 185 190

Glu Arg Ala Thr Gly Gln Pro Leu Ala Ala Ala Val Asp Ala Leu Val
 195 200 205

Ala Gln Pro Leu Gly Met Arg Asp Cys Gly Phe Val Ser Ala Glu Pro
 210 215 220

Glu Arg Phe Ala Val Pro Tyr His Asp Gly Gln Pro Glu Pro Val Arg
 225 230 235 240

Met Arg Asp Gly Ile Glu Val Pro Leu Pro Glu Gly His Gly Ala Ala
 245 250 255

Val Arg Phe Ala Pro Ser Arg Val Phe Glu Pro Gly Ala Tyr Pro Ser
 260 265 270

Gly Gly Ala Gly Met Tyr Gly Ser Ala Asp Asp Val Leu Arg Ala Leu
 275 280 285

Glu Ala Ile Arg Ala Asn Pro Gly Phe Leu Pro Glu Thr Leu Ala Asp
 290 295 300

Ala Ala Arg Arg Asp Gln Ala Gly Val Gly Ala Glu Thr Arg Gly Pro
 305 310 315 320

Gly Trp Gly Phe Gly Tyr Leu Ser Ala Val Leu Asp Asp Pro Ala Ala
 325 330 335

Ala Gly Thr Pro Gln His Ala Gly Thr Leu Gln Trp Gly Gly Val Tyr
 340 345 350

Gly His Ser Trp Phe Val Asp Arg Ala Leu Gly Leu Ser Val Leu Leu
 355 360 365

Leu Thr Asn Thr Ala Tyr Glu Gly Met Ser Gly Pro Leu Thr Ile Ala
 370 375 380

Leu Arg Asp Ala Val Tyr Ala Arg
 385 390

<210> 2

<211> 298

<212> PRT
<213> Burkholderia gladioli

<400> 2

Met Asn His Pro Asp Ile Asp Thr His Ser Arg Asn Ala Ala Ala Pro
1 5 10 15

Leu Pro Phe Val Leu Val His Gly Ala Trp His Gly Ala Trp Ala Tyr
20 25 30

Glu Arg Leu Gly Ala Ala Leu Ala Ala Arg Gly His Ala Ser Val Ala
35 40 45

His Asp Leu Pro Ala His Gly Ile Asn Ala Arg Tyr Pro Ala Ala Phe
50 55 60

Trp Gln Gly Asp Ala Gln Ala Leu Ala Gln Glu Pro Ser Pro Val Ala
65 70 75 80

Ala Thr Thr Leu Asp Asp Tyr Thr Gly Gln Val Leu Arg Ala Ile Asp
85 90 95

Ala Ala Cys Ala Leu Gly His Pro Arg Val Val Leu Val Gly His Ser
100 105 110

Met Gly Gly Val Ala Ile Thr Ala Ala Ala Glu Arg Ala Pro Glu Arg
115 120 125

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

Pro Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn His Gly Glu Met Leu
145 150 155 160

Ala Ser Leu Ile Cys Ala Ser Pro Arg Ala Ile Gly Ala Leu Arg Ile
165 170 175

Asn Pro Ala Ser Arg Asp Ala Ala Tyr Leu Ala Thr Leu Lys Gln Ala
180 185 190

Leu Phe Glu Asp Val Asp Glu Ala Thr Phe Arg Ala Val Thr Arg Leu
195 200 205

Met Ser Ser Asp Val Pro Thr Ala Pro Phe Ala Thr Pro Ile Ala Thr
210 215 220

Thr Ala Glu Arg Trp Gly Ser Ile Ala Arg His Tyr Val Thr Cys Ala
225 230 235 240

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

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

Ser Ser His Ser Pro Phe Leu Ser Gln Pro Asp Thr Leu Ala Glu Leu
275 280 285

Leu Thr Gly Ile Ala Arg Asn Thr Ala Ile
290 295

<210> 3
<211> 392
<212> PRT
<213> Artificial

<220>
<223> abgeleitet von SEQ ID NO:1; iinterne Bezeichnung: N27

<220>
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<222> (17)..(17)
<223> Serin 17 des Wildtyps (SEQ ID NO:1) durch Leucin ersetzt

<220>
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<222> (132)..(132)
<223> Glycin 132 des Wildtyps (SEQ ID NO:1) durch Serin ersetzt

<220>
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<222> (251)..(251)
<223> Glutaminsäure 251 des Wildtyps (SEQ ID NO:1) durch Glycin
ersetzt

<220>
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<222> (311)..(311)
<223> Alanin 311 des Wildtyps (SEQ ID NO:1) durch Valin ersetzt

<220>
<221> MISC_FEATURE
<222> (316)..(316)
<223> Glutaminsäure 316 des Wildtyps (SEQ ID NO:1) durch Lysin ersetzt

<400> 3

Met Thr Ala Ala Ser Leu Asp Pro Thr Ala Phe Ser Leu Asp Ala Ala
1 5 10 15

Leu Leu Ala Ala Arg Leu Asp Ala Val Phe Asp Gln Ala Leu Arg Glu
20 25 30

Arg Arg Leu Val Gly Ala Val Ala Ile Val Ala Arg His Gly Glu Ile
35 40 45

Leu Tyr Arg Arg Ala Gln Gly Leu Ala Asp Arg Glu Ala Gly Arg Pro
50 55 60

Met Arg Glu Asp Thr Leu Phe Arg Leu Ala Ser Val Thr Lys Pro Ile
65 70 75 80

Val Ala Leu Ala Val Leu Arg Leu Val Ala Arg Gly Glu Leu Ala Leu
85 90 95

Asp Ala Pro Val Thr Arg Trp Leu Pro Glu Phe Arg Pro Arg Leu Ala
100 105 110

Asp Gly Ser Glu Pro Leu Val Thr Ile His His Leu Leu Thr His Thr
115 120 125

Ser Gly Leu Ser Tyr Trp Leu Leu Glu Gly Ala Gly Ser Val Tyr Asp
130 135 140

Arg Leu Gly Ile Ser Asp Gly Ile Asp Leu Arg Asp Phe Asp Leu Asp
145 150 155 160

Glu Asn Leu Arg Arg Leu Ala Ser Ala Pro Leu Ser Phe Ala Pro Gly
165 170 175

Ser Gly Trp Gln Tyr Ser Leu Ala Leu Asp Val Leu Gly Ala Val Val
180 185 190

Glu Arg Ala Thr Gly Gln Pro Leu Ala Ala Ala Val Asp Ala Leu Val
195 200 205

Ala Gln Pro Leu Gly Met Arg Asp Cys Gly Phe Val Ser Ala Glu Pro
210 215 220

Glu Arg Phe Ala Val Pro Tyr His Asp Gly Gln Pro Glu Pro Val Arg
225 230 235 240

Met Arg Asp Gly Ile Glu Val Pro Leu Pro Gly Gly His Gly Ala Ala
245 250 255

Val Arg Phe Ala Pro Ser Arg Val Phe Glu Pro Gly Ala Tyr Pro Ser

260

265

270

Gly Gly Ala Gly Met Tyr Gly Ser Ala Asp Asp Val Leu Arg Ala Leu
275 280 285

Glu Ala Ile Arg Ala Asn Pro Gly Phe Leu Pro Glu Thr Leu Ala Asp
290 295 300

Ala Ala Arg Arg Asp Gln Val Gly Val Gly Ala Lys Thr Arg Gly Pro
305 310 315 320

Gly Trp Gly Phe Gly Tyr Leu Ser Ala Val Leu Asp Asp Pro Ala Ala
325 330 335

Ala Gly Thr Pro Gln His Ala Gly Thr Leu Gln Trp Gly Gly Val Tyr
340 345 350

Gly His Ser Trp Phe Val Asp Arg Ala Leu Gly Leu Ser Val Leu Leu
355 360 365

Leu Thr Asn Thr Ala Tyr Glu Gly Met Ser Gly Pro Leu Thr Ile Ala
370 375 380

Leu Arg Asp Ala Val Tyr Ala Arg
385 390

<210> 4
<211> 392
<212> PRT
<213> Artificial

<220>
<223> abgeleitet von SEQ ID NO:1; interne Bezeichnung NJ70

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Prolin 8 des Wildtyps (SEQ ID NO:1) durch Leucin ersetzt

<220>
<221> MISC_FEATURE
<222> (132)..(132)
<223> Glycin 132 des Wildtyps (SEQ ID NO:1) durch Serin ersetzt

<220>
<221> MISC_FEATURE
<222> (134)..(134)
<223> Tryptophan 134 des Wildtyps (SEQ ID NO:1) durch Arginin ersetzt

<220>
<221> MISC_FEATURE

<222> (155)..(155)
 <223> Arginin155 des Wildtyps (SEQ ID NO:1) durch Cystein ersetzt

 <220>
 <221> MISC_FEATURE
 <222> (251)..(251)
 <223> Glutaminsäure 251 des Wildtyps (SEQ ID NO:1) durch Glycin ersetzt

 <220>
 <221> MISC_FEATURE
 <222> (311)..(311)
 <223> Alanin 311 des Wildtyps (SEQ ID NO:1) durch Valin ersetzt

 <220>
 <221> MISC_FEATURE
 <222> (316)..(316)
 <223> Glutaminsäure 316 des Wildtyps (SEQ ID NO:1) durch Lysin ersetzt

<400> 4

Met Thr Ala Ala Ser Leu Asp Leu Thr Ala Phe Ser Leu Asp Ala Ala
 1 5 10 15

Ser Leu Ala Ala Arg Leu Asp Ala Val Phe Asp Gln Ala Leu Arg Glu
 20 25 30

Arg Arg Leu Val Gly Ala Val Ala Ile Val Ala Arg His Gly Glu Ile
 35 40 45

Leu Tyr Arg Arg Ala Gln Gly Leu Ala Asp Arg Glu Ala Gly Arg Pro
 50 55 60

Met Arg Glu Asp Thr Leu Phe Arg Leu Ala Ser Val Thr Lys Pro Ile
 65 70 75 80

Val Ala Leu Ala Val Leu Arg Leu Val Ala Arg Gly Glu Leu Ala Leu
 85 90 95

Asp Ala Pro Val Thr Arg Trp Leu Pro Glu Phe Arg Pro Arg Leu Ala
 100 105 110

Asp Gly Ser Glu Pro Leu Val Thr Ile His His Leu Leu Thr His Thr
 115 120 125

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

Arg Leu Gly Ile Ser Asp Gly Ile Asp Leu Cys Asp Phe Asp Leu Asp
 145 150 155 160

Glu Asn Leu Arg Arg Leu Ala Ser Ala Pro Leu Ser Phe Ala Pro Gly

165

170

175

Ser Gly Trp Gln Tyr Ser Leu Ala Leu Asp Val Leu Gly Ala Val Val
 180 185 190

Glu Arg Ala Thr Gly Gln Pro Leu Ala Ala Ala Val Asp Ala Leu Val
 195 200 205

Ala Gln Pro Leu Gly Met Arg Asp Cys Gly Phe Val Ser Ala Glu Pro
 210 215 220

Glu Arg Phe Ala Val Pro Tyr His Asp Gly Gln Pro Glu Pro Val Arg
 225 230 235 240

Met Arg Asp Gly Ile Glu Val Pro Leu Pro Gly Gly His Gly Ala Ala
 245 250 255

Val Arg Phe Ala Pro Ser Arg Val Phe Glu Pro Gly Ala Tyr Pro Ser
 260 265 270

Gly Gly Ala Gly Met Tyr Gly Ser Ala Asp Asp Val Leu Arg Ala Leu
 275 280 285

Glu Ala Ile Arg Ala Asn Pro Gly Phe Leu Pro Glu Thr Leu Ala Asp
 290 295 300

Ala Ala Arg Arg Asp Gln Val Gly Val Gly Ala Lys Thr Arg Gly Pro
 305 310 315 320

Gly Trp Gly Phe Gly Tyr Leu Ser Ala Val Leu Asp Asp Pro Ala Ala
 325 330 335

Ala Gly Thr Pro Gln His Ala Gly Thr Leu Gln Trp Gly Gly Val Tyr
 340 345 350

Gly His Ser Trp Phe Val Asp Arg Ala Leu Gly Leu Ser Val Leu Leu
 355 360 365

Leu Thr Asn Thr Ala Tyr Glu Gly Met Ser Gly Pro Leu Thr Ile Ala
 370 375 380

Leu Arg Asp Ala Val Tyr Ala Arg
 385 390

<210> 5

<211> 194

<212> PRT
<213> Humicola insolens

<220>
<221> MISC_FEATURE
<223> Cutinase aus Humicola insolens

<400> 5

Gly Thr Gly Ala Ile Glu Asn Gly Leu Glu Ser Gly Ser Ala Asn Ala
1 5 10 15

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

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

His Ile Arg Asn Ile Trp Ile Gln Gly Val Gly Gly Pro Tyr Asp Ala
50 55 60

Ala Leu Ala Thr Asn Phe Leu Pro Arg Gly Thr Ser Gln Ala Asn Ile
65 70 75 80

Asp Glu Gly Lys Arg Leu Phe Ala Leu Ala Asn Gln Lys Cys Pro Asn
85 90 95

Thr Pro Val Val Ala Gly Gly Tyr Ser Gln Gly Ala Ala Leu Ile Ala
100 105 110

Ala Ala Val Ser Glu Leu Ser Gly Ala Val Lys Glu Gln Val Lys Gly
115 120 125

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

Pro Asn Tyr Pro Arg Glu Arg Thr Lys Val Phe Cys Asn Val Gly Asp
145 150 155 160

Ala Val Cys Thr Gly Thr Leu Ile Ile Thr Pro Ala His Leu Ser Tyr
165 170 175

Thr Ile Glu Ala Arg Gly Glu Ala Ala Arg Phe Leu Arg Asp Arg Ile
180 185 190

Arg Ala

<210> 6
<211> 317
<212> PRT
<213> Candida antarctica

<220>
<221> MISC_FEATURE
<223> Lipase B aus Candida antarctica

<400> 6

Leu Pro Ser Gly Ser Asp Pro Ala Phe Ser Gln Pro Lys Ser Val Leu
1 5 10 15

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

Pro Ile Leu Leu Val Pro Gly Thr Gly Thr Thr Gly Pro Gln Ser Phe
35 40 45

Asp Ser Asn Trp Ile Pro Leu Ser Ala Gln Leu Gly Tyr Thr Pro Cys
50 55 60

Trp Ile Ser Pro Pro Phe Met Leu Asn Asp Thr Gln Val Asn Thr
65 70 75 80

Glu Tyr Met Val Asn Ala Ile Thr Thr Leu Tyr Ala Gly Ser Gly Asn
85 90 95

Asn Lys Leu Pro Val Leu Thr Trp Ser Gln Gly Gly Leu Val Ala Gln
100 105 110

Trp Gly Leu Thr Phe Phe Pro Ser Ile Arg Ser Lys Val Asp Arg Leu
115 120 125

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

Asp Ala Leu Ala Val Ser Ala Pro Ser Val Trp Gln Gln Thr Thr Gly
145 150 155 160

Ser Ala Leu Thr Thr Ala Leu Arg Asn Ala Gly Gly Leu Thr Gln Ile
165 170 175

Val Pro Thr Thr Asn Leu Tyr Ser Ala Thr Asp Glu Ile Val Gln Pro
180 185 190

Gln Val Ser Asn Ser Pro Leu Asp Ser Ser Tyr Leu Phe Asn Gly Lys
195 200 205

Asn Val Gln Ala Gln Ala Val Cys Gly Pro Leu Phe Val Ile Asp His
210 215 220

Ala Gly Ser Leu Thr Ser Gln Phe Ser Tyr Val Val Gly Arg Ser Ala
225 230 235 240

Leu Arg Ser Thr Thr Gly Gln Ala Arg Ser Ala Asp Tyr Gly Ile Thr
245 250 255

Asp Cys Asn Pro Leu Pro Ala Asn Asp Leu Thr Pro Glu Gln Lys Val
260 265 270

Ala Ala Ala Ala Leu Leu Ala Pro Ala Ala Ala Ala Ile Val Ala Gly
275 280 285

Pro Lys Gln Asn Cys Glu Pro Asp Leu Met Pro Tyr Ala Arg Pro Phe
290 295 300

Ala Val Gly Lys Arg Thr Cys Ser Gly Ile Val Thr Pro
305 310 315

<210> 7
<211> 294
<212> PRT
<213> Burkholderia ambifaria

<400> 7

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

Val Leu Val His Gly Ala Trp His Gly Ala Trp Cys Tyr Ala His Val
20 25 30

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

Pro Ala His Gly Ile Asn Ala Arg Phe Pro Ala Ser Tyr Leu Glu Arg
50 55 60

Pro Leu Asp Lys Asp Ala Phe Gly Ala Glu Pro Ser Pro Val Ala Asn
65 70 75 80

Thr Thr Leu Asp Asp Tyr Ala Thr Gln Val Met Glu Ala Val Asp Asp
85 90 95

Ala Tyr Ala Leu Gly Arg Gly Lys Val Val Leu Val Gly His Ser Met
100 105 110

Gly Gly Leu Ala Ile Thr Ala Ala Ala Glu Arg Ala Pro Glu Lys Ile
115 120 125

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

Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn Lys Gly Glu Met Leu Ala
145 150 155 160

Pro Leu Met Leu Ala Ser Pro Arg Val Ala Gly Ala Leu Arg Ile Asp
165 170 175

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

Tyr Asp Asp Ala Ala Gln Ala Asp Phe Glu Ala Met Ala Asn Leu Met
195 200 205

Thr Cys Asp Val Pro Ala Ala Pro Phe Ala Thr Ala Ile Pro Thr Thr
210 215 220

Ala Ala Arg Trp Gly Ala Ile Asp Arg His Tyr Ile Lys Cys Leu Glu
225 230 235 240

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

Asp Ala Phe Val Pro Gly Asn Pro Thr His Val His Gln Leu Asp Ser
260 265 270

Ser His Ser Pro Phe Val Ser Gln Pro Ala Val Leu Ala Gly Val Leu
275 280 285

Val Asp Ile Ala Lys Ser
290

<210> 8
<211> 311
<212> PRT
<213> Burkholderia cenocepacia

<400> 8

Met	Ala	Ala	Gly	Ser	Ser	Lys	Met	Thr	Pro	Phe	Ser	Lys	Asn	Thr	Asp	1	5	10	15
Thr	Met	Glu	Thr	Asn	Asp	Asn	Ala	Thr	Pro	Gln	Ser	Asp	His	Pro	Val	20	25	30	
Phe	Val	Leu	Val	His	Gly	Ala	Trp	His	Gly	Ala	Trp	Cys	Tyr	Ala	His	35	40	45	
Val	Ala	Ala	Ala	Leu	Ala	Ala	Arg	Gly	Tyr	Leu	Ser	Ile	Ala	Arg	Asp	50	55	60	
Leu	Pro	Ala	His	Gly	Ile	His	Ala	Arg	Phe	Pro	Ala	Ser	Tyr	Leu	Ala	65	70	75	80
Arg	Pro	Leu	Asp	Lys	Asp	Ala	Phe	Gly	Ala	Glu	Pro	Ser	Pro	Val	Ala	85	90	95	
Asn	Thr	Thr	Leu	Asp	Asp	Tyr	Ala	Thr	Gln	Val	Met	Gln	Ala	Val	Asp	100	105	110	
Asp	Ala	Tyr	Ala	Leu	Gly	Arg	Gly	Lys	Val	Val	Leu	Val	Gly	His	Ser	115	120	125	
Met	Gly	Gly	Leu	Ala	Ile	Thr	Ala	Ala	Ala	Glu	Arg	Ala	Pro	Glu	Lys	130	135	140	
Ile	Ala	Lys	Ile	Val	Tyr	Leu	Ala	Ala	Phe	Met	Pro	Ala	Ser	Gly	Val	145	150	155	160
Pro	Gly	Leu	Asp	Tyr	Val	Arg	Ala	Pro	Glu	Asn	Lys	Gly	Glu	Leu	Leu	165	170	175	
Gly	Pro	Leu	Met	Leu	Ala	Ser	Pro	Arg	Val	Ala	Gly	Ala	Leu	Arg	Val	180	185	190	
Asp	Pro	His	Ser	Gly	Asp	Ala	Ala	Tyr	Arg	Glu	Leu	Met	Lys	Arg	Ala	195	200	205	
Leu	Tyr	Glu	Asp	Val	Pro	Gln	Ala	Asp	Phe	Asp	Ala	Val	Ala	Asn	Leu	210	215	220	
Met	Ser	Cys	Asp	Val	Pro	Ala	Ala	Pro	Phe	Ala	Thr	Ala	Ile	Pro	Thr	225	230	235	240
Thr	Ala	Ala	Arg	Trp	Gly	Ala	Ile	Asp	Arg	His	Tyr	Val	Lys	Cys	Leu				

245

250

255

Gln Asp Arg Val Ile Leu Pro Ala Leu Gln Gln Arg Phe Ile Asp Glu
 260 265 270

Ala Asp Ala Phe Ala Pro Gly Asn Pro Thr His Val His Gln Leu Asp
 275 280 285

Ser Ser His Ser Pro Phe Val Ser Gln Pro Ala Val Leu Ala Gly Val
 290 295 300

Leu Ala Asp Ile Ala Lys Ser
 305 310

<210> 9

<211> 294

<212> PRT

<213> Burkholderia cenocepacia

<400> 9

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

Val Leu Val His Gly Ala Trp His Gly Ala Trp Cys Tyr Ala His Val
 20 25 30

Ala Ala Ala Leu Ala Ala Arg Gly Tyr Leu Ser Ile Ala Arg Asp Leu
 35 40 45

Pro Ala His Gly Ile His Ala Arg Phe Pro Ala Ser Tyr Leu Ala Arg
 50 55 60

Pro Leu Asp Lys Asp Ala Phe Gly Ala Glu Pro Ser Pro Val Ala Asn
 65 70 75 80

Thr Thr Leu Asp Asp Tyr Ala Thr Gln Val Met Gln Ala Val Asp Asp
 85 90 95

Ala Tyr Ala Leu Gly Arg Gly Lys Val Val Leu Val Gly His Ser Met
 100 105 110

Gly Gly Leu Ala Ile Thr Ala Ala Ala Glu Arg Ala Pro Glu Lys Ile
 115 120 125

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

Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn Lys Gly Glu Leu Leu Gly
145 150 155 160

Pro Leu Met Leu Ala Ser Pro Arg Val Ala Gly Ala Leu Arg Val Asp
165 170 175

Pro Arg Ser Gly Asp Ala Ala Tyr Arg Glu Leu Met Lys Arg Ala Leu
180 185 190

Tyr Glu Asp Val Pro Gln Pro Asp Phe Asp Ala Val Ala Asn Leu Met
195 200 205

Ser Cys Asp Val Pro Ala Ala Pro Phe Ala Thr Ala Ile Pro Thr Thr
210 215 220

Ala Ala Arg Trp Gly Ala Ile Asp Arg His Tyr Ile Lys Cys Leu Gln
225 230 235 240

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

Asp Ala Phe Ala Pro Gly Asn Pro Thr His Val His Gln Leu Asp Ser
260 265 270

Ser His Ser Pro Phe Val Ser Gln Pro Ala Val Leu Ala Gly Val Leu
275 280 285

Ala Asp Ile Ala Lys Ser
290

<210> 10
<211> 294
<212> PRT
<213> Burkholderia cenocepacia

<400> 10

Met Glu Thr Asn Asp Thr Ala Thr Pro Gln Ser Asp His Pro Val Phe
1 5 10 15

Val Leu Val His Gly Ala Trp His Gly Ala Trp Cys Tyr Ala His Val
20 25 30

Ala Ala Ala Leu Ala Ala Arg Gly Tyr Leu Ser Ile Ala Arg Asp Leu
35 40 45

Pro Ala His Gly Ile His Ala Arg Phe Pro Ala Ser Tyr Leu Ala Arg

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<210> 11
<211> 294
<212> PRT
<213> Burkholderia cenocepacia

<400> 11

Met Glu Thr Asn Asp Asn Ala Thr Pro Gln Ser Asp His Pro Val Phe
1 5 10 15

Val Leu Val His Gly Ala Trp His Gly Ala Trp Cys Tyr Ala His Val
20 25 30

Ala Ala Ala Leu Ala Ala Arg Gly Tyr Leu Ser Ile Ala Arg Asp Leu
35 40 45

Pro Ala His Gly Ile His Ala Arg Phe Pro Ala Ser Tyr Leu Ala Arg
50 55 60

Pro Leu Asp Lys Asp Ala Phe Gly Ala Glu Pro Ser Pro Val Ala Asn
65 70 75 80

Thr Thr Leu Asp Asp Tyr Ala Thr Gln Val Met Gln Ala Val Asp Asp
85 90 95

Ala Tyr Ala Leu Gly Arg Gly Lys Val Val Leu Val Gly His Ser Met
100 105 110

Gly Gly Leu Ala Ile Thr Ala Ala Ala Glu Arg Ala Pro Glu Lys Ile
115 120 125

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

Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn Lys Gly Glu Leu Leu Gly
145 150 155 160

Pro Leu Met Leu Ala Ser Pro Arg Val Ala Gly Ala Leu Arg Val Asp
165 170 175

Pro His Ser Gly Asp Ala Ala Tyr Arg Glu Leu Met Lys Arg Ala Leu
180 185 190

Tyr Glu Asp Val Pro Gln Ala Asp Phe Asp Ala Val Ala Asn Leu Met
195 200 205

Ser Cys Asp Val Pro Ala Ala Pro Phe Ala Thr Ala Ile Pro Thr Thr
210 215 220

Ala Ala Arg Trp Gly Ala Ile Asp Arg His Tyr Val Lys Cys Leu Gln
225 230 235 240

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

Asp Ala Phe Ala Pro Gly Asn Pro Thr His Val His Gln Leu Asp Ser
260 265 270

Ser His Ser Pro Phe Val Ser Gln Pro Ala Val Leu Ala Gly Val Leu
275 280 285

Ala Asp Ile Ala Lys Ser
290

<210> 12
<211> 294
<212> PRT
<213> Burkholderia cepacia

<400> 12

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

Val Leu Val His Gly Ala Trp His Gly Ala Trp Cys Tyr Ala His Val
20 25 30

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

Pro Ala His Gly Ile Asn Ala Arg Phe Pro Ala Ser Tyr Leu Glu Arg
50 55 60

Pro Leu Asp Lys Asp Ala Phe Gly Ala Glu Pro Ser Pro Val Ala Asn
65 70 75 80

Thr Thr Leu Asp Asp Tyr Ala Thr Gln Val Met Glu Ala Val Asp Asp
85 90 95

Ala Tyr Ala Leu Gly His Gly Lys Val Val Leu Val Gly His Ser Met
100 105 110

Gly Gly Leu Ala Ile Thr Ala Ala Ala Glu Arg Ala Pro Glu Lys Ile
115 120 125

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

Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn Lys Gly Glu Met Leu Ala
145 150 155 160

Pro Leu Met Leu Ala Ser Pro Arg Val Ala Gly Ala Leu Arg Ile Asp
165 170 175

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

Tyr Asp Asp Ala Ala Gln Ala Asp Phe Glu Ala Met Ala Asn Leu Met
195 200 205

Thr Cys Asp Val Pro Ala Ala Pro Phe Ala Thr Ala Ile Pro Thr Thr
210 215 220

Ala Ala Arg Trp Gly Ala Ile Asp Arg His Tyr Ile Lys Cys Leu Glu
225 230 235 240

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

Asp Ala Phe Val Pro Gly Asn Pro Thr His Val His Gln Leu Asp Thr
260 265 270

Ser His Ser Pro Phe Val Ser Gln Pro Ala Val Leu Ala Ala Val Leu
275 280 285

Val Asp Ile Ala Lys Ser
290

<210> 13
<211> 294
<212> PRT
<213> Burkholderia dolosa

<400> 13

Met Glu Thr Asn Val Thr Ala Thr Ser Pro Ala Ala His Pro Val Phe
1 5 10 15

Val Leu Val His Gly Ala Trp His Gly Ala Trp Cys Phe Ala His Val
20 25 30

Ala Ala Ala Leu Ala Ala Arg Gly His Leu Ser Ile Ala Arg Asp Leu
35 40 45

Pro Ala His Gly Ile Asn Ala Arg Phe Pro Ala Ser Tyr Leu Glu Arg
50 55 60

Pro Leu Asp Lys Asp Ala Phe Gly Ala Glu Pro Ser Pro Val Ala Asn
65 70 75 80

Thr Thr Leu Asp Asp Tyr Ala Ser His Val Leu Gln Ala Val Asp Asp
85 90 95

Ala Tyr Ala Leu Gly Arg Gly Lys Val Val Leu Val Gly His Ser Met
100 105 110

Gly Gly Leu Ala Ile Thr Ala Ala Ala Glu Arg Ala Pro Glu Lys Ile
115 120 125

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

Gly Leu Asp Tyr Val Arg Ala Ala Glu Asn Arg Gly Glu Met Leu Gly
145 150 155 160

Pro Leu Met Leu Ala Ser Pro Arg Val Ala Gly Ala Leu Arg Ile Asp
165 170 175

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

Tyr Asp Asp Val Pro Gln Ala Asp Phe Asp Ala Val Ala Asn Leu Met
195 200 205

Ser Cys Asp Val Pro Ala Ala Pro Phe Ala Thr Ala Ile Pro Thr Thr
210 215 220

Ala Ala Arg Trp Gly Ala Ile Asp Arg His Tyr Ile Lys Cys Leu Gln
225 230 235 240

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

Asp Ala Phe Ala Pro Gly Asn Pro Thr His Val His Gln Leu Asp Ser
260 265 270

Ser His Ser Pro Phe Val Ser Gln Pro Ala Val Leu Ala Gly Val Leu

275

280

285

Ala Asp Ile Ala Lys Ser
290

<210> 14

<211> 281

<212> PRT

<213> Burkholderia mallei

<400> 14

Met Pro Phe Val Leu Val His Gly Ala Trp His Gly Ala Trp Ala Tyr
1 5 10 15

Glu Arg Val Ile Pro Ala Leu Ala Ala His Gly His Ala Ala Val Ala
20 25 30

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

Ala Lys Arg Pro Leu Asp Ala Ala Ala Phe Ala Ser Glu Pro Ser Pro
50 55 60

Val Ala Gly Thr Thr Leu Asp Asp Tyr Val Asp His Val Leu Arg Thr
65 70 75 80

Val Asp Gln Ala Arg Ala Leu Gly His Glu Arg Val Val Leu Val Gly
85 90 95

His Ser Met Gly Gly Leu Ala Ile Thr Met Ala Ala Glu Arg Ala Pro
100 105 110

Glu Lys Ile Ala Lys Leu Val Tyr Leu Ala Ala Phe Met Pro Thr Ala
115 120 125

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

Met Leu Gly Pro Leu Met Met Ala Ser Pro Lys Ala Thr Gly Ala Leu
145 150 155 160

Arg Met Asp Pro Arg Ser Asp Asp Pro Ala Tyr Arg Ala Ala Ala Lys
165 170 175

Arg Ala Leu Cys Asp Asp Ala Ser Asp Ala Asp His Ala Ala Val Gly
180 185 190

His Leu Leu Gly Cys Asp Val Pro Ala Ala Pro Phe Ala Ala Arg Ile
195 200 205

Glu Thr Thr Ala Ala Arg Trp Gly Ala Leu Glu Arg His Tyr Ile Lys
210 215 220

Cys Leu Arg Asp Lys Val Leu Leu Pro Ala Leu Gln Gln Arg Phe Ile
225 230 235 240

Asp Glu Ala Asp Ala Leu Ala Pro Gly Asn Arg Thr His Val His Thr
245 250 255

Leu Asp Ser Ser His Ser Pro Phe Ile Ala His Ala Gly Ala Val Ala
260 265 270

Asp Thr Leu Ala Ala Ile Ala Arg Gly
275 280

<210> 15
<211> 336
<212> PRT
<213> Burkholderia mallei

<400> 15

Met Gly His Asp Arg Thr Pro Arg His Arg Asp Ser Ser Leu Arg Trp
1 5 10 15

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

Glu Thr Asp Leu Pro Thr Glu Pro Arg Asp Thr Val Ala Glu Arg Arg
35 40 45

Glu Pro Ala Ala Ser Ser Ser Leu Pro Phe Val Leu Val His Gly Ala
50 55 60

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

His Gly His Ala Ala Val Ala Arg Asp Leu Pro Ala His Gly Val Asn
85 90 95

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

Phe Ala Ser Glu Pro Ser Pro Val Ala Gly Thr Thr Leu Asp Asp Tyr

115

120

125

Val Asp His Val Leu Arg Thr Val Asp Gln Ala Arg Ala Leu Gly His
 130 135 140

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

Met Ala Ala Glu Arg Ala Pro Glu Lys Ile Ala Lys Leu Val Tyr Leu
 165 170 175

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

Ala Pro Glu Asn Arg Gly Glu Met Leu Gly Pro Leu Met Met Ala Ser
 195 200 205

Pro Lys Ala Thr Gly Ala Leu Arg Met Asp Pro Arg Ser Asp Asp Pro
 210 215 220

Ala Tyr Arg Ala Ala Ala Lys Arg Ala Leu Cys Asp Asp Ala Ser Asp
 225 230 235 240

Ala Asp His Ala Ala Val Gly His Leu Leu Gly Cys Asp Val Pro Ala
 245 250 255

Ala Pro Phe Ala Ala Arg Ile Glu Thr Thr Ala Ala Arg Trp Gly Ala
 260 265 270

Leu Glu Arg His Tyr Ile Lys Cys Leu Arg Asp Lys Val Leu Leu Pro
 275 280 285

Ala Leu Gln Gln Arg Phe Ile Asp Glu Ala Asp Ala Leu Ala Pro Gly
 290 295 300

Asn Arg Thr His Val His Thr Leu Asp Ser Ser His Ser Pro Phe Ile
 305 310 315 320

Ala His Ala Gly Ala Val Ala Asp Thr Leu Ala Ala Ile Ala Arg Gly
 325 330 335

<210> 16

<211> 358

<212> PRT

<213> Burkholderia mallei

<400> 16

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

Arg Ser Gly Asp Thr Val Met Gly His Asp Arg Thr Pro Arg His Arg
20 25 30

Asp Ser Ser Leu Arg Trp Arg Arg Leu Ala Ser Arg Pro Ala Ile Arg
35 40 45

Thr Met Thr Asp Arg Gln Glu Thr Asp Leu Pro Thr Glu Pro Arg Asp
50 55 60

Thr Val Ala Glu Arg Arg Glu Pro Ala Ala Ser Ser Ser Leu Pro Phe
65 70 75 80

Val Leu Val His Gly Ala Trp His Gly Ala Trp Ala Tyr Glu Arg Val
85 90 95

Ile Pro Ala Leu Ala Ala His Gly His Ala Ala Val Ala Arg Asp Leu
100 105 110

Pro Ala His Gly Val Asn Ala Arg Phe Pro Ala Ser Phe Ala Lys Arg
115 120 125

Pro Leu Asp Ala Ala Ala Phe Ala Ser Glu Pro Ser Pro Val Ala Gly
130 135 140

Thr Thr Leu Asp Asp Tyr Val Asp His Val Leu Arg Thr Val Asp Gln
145 150 155 160

Ala Arg Ala Leu Gly His Glu Arg Val Val Leu Val Gly His Ser Met
165 170 175

Gly Gly Leu Ala Ile Thr Met Ala Ala Glu Arg Ala Pro Glu Lys Ile
180 185 190

Ala Lys Leu Val Tyr Leu Ala Ala Phe Met Pro Thr Ala Gly Thr Lys
195 200 205

Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn Arg Gly Glu Met Leu Gly
210 215 220

Pro Leu Met Met Ala Ser Pro Lys Ala Thr Gly Ala Leu Arg Met Asp
225 230 235 240

Pro Arg Ser Asp Asp Pro Ala Tyr Arg Ala Ala Ala Lys Arg Ala Leu
245 250 255

Cys Asp Asp Ala Ser Asp Ala Asp His Ala Ala Val Gly His Leu Leu
260 265 270

Gly Cys Asp Val Pro Ala Ala Pro Phe Ala Ala Arg Ile Glu Thr Thr
275 280 285

Ala Ala Arg Trp Gly Ala Leu Glu Arg His Tyr Ile Lys Cys Leu Arg
290 295 300

Asp Lys Val Leu Leu Pro Ala Leu Gln Gln Arg Phe Ile Asp Glu Ala
305 310 315 320

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

Ser His Ser Pro Phe Ile Ala His Ala Gly Ala Val Ala Asp Thr Leu
340 345 350

Ala Ala Ile Ala Arg Gly
355

<210> 17
<211> 309
<212> PRT
<213> Burkholderia mallei

<400> 17

Met Thr Asp Arg Gln Glu Thr Asp Leu Pro Thr Glu Pro Arg Asp Thr
1 5 10 15

Val Ala Glu Arg Arg Glu Pro Ala Ala Ser Ser Ser Leu Pro Phe Val
20 25 30

Leu Val His Gly Ala Trp His Gly Ala Trp Ala Tyr Glu Arg Val Ile
35 40 45

Pro Ala Leu Ala Ala His Gly His Ala Ala Val Ala Arg Asp Leu Pro
50 55 60

Ala His Gly Val Asn Ala Arg Phe Pro Ala Ser Phe Ala Lys Arg Pro
65 70 75 80

Leu Asp Ala Ala Ala Phe Ala Ser Glu Pro Ser Pro Val Ala Gly Thr
85 90 95

Thr Leu Asp Asp Tyr Val Asp His Val Leu Arg Thr Val Asp Gln Ala
100 105 110

Arg Ala Leu Gly His Glu Arg Val Val Leu Val Gly His Ser Met Gly
115 120 125

Gly Leu Ala Ile Thr Met Ala Ala Glu Arg Ala Pro Glu Lys Ile Ala
130 135 140

Lys Leu Val Tyr Leu Ala Ala Phe Met Pro Thr Ala Gly Thr Lys Gly
145 150 155 160

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

Leu Met Met Ala Ser Pro Lys Ala Thr Gly Ala Leu Arg Met Asp Pro
180 185 190

Arg Ser Asp Asp Pro Ala Tyr Arg Ala Ala Ala Lys Arg Ala Leu Cys
195 200 205

Asp Asp Ala Ser Asp Ala Asp His Ala Ala Val Gly His Leu Leu Gly
210 215 220

Cys Asp Val Pro Ala Ala Pro Phe Ala Ala Arg Ile Glu Thr Thr Ala
225 230 235 240

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

Lys Val Leu Leu Pro Ala Leu Gln Gln Arg Phe Ile Asp Glu Ala Asp
260 265 270

Ala Leu Ala Pro Gly Asn Arg Thr His Val His Thr Leu Asp Ser Ser
275 280 285

His Ser Pro Phe Ile Ala His Ala Gly Ala Val Ala Asp Thr Leu Ala
290 295 300

Ala Ile Ala Arg Gly
305

<210> 18
<211> 301
<212> PRT

<213> Burkholderia mallei

<400> 18

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

Ala Ser Ser Ser Leu Pro Phe Val Leu Val His Gly Ala Trp His Gly
20 25 30

Ala Trp Ala Tyr Glu Arg Val Ile Pro Ala Leu Ala Ala His Gly His
35 40 45

Ala Ala Val Ala Arg Asp Leu Pro Ala His Gly Val Asn Ala Arg Phe
50 55 60

Pro Ala Ser Phe Ala Lys Arg Pro Leu Asp Ala Ala Ala Phe Ala Ser
65 70 75 80

Glu Pro Ser Pro Val Ala Gly Thr Thr Leu Asp Asp Tyr Val Asp His
85 90 95

Val Leu Arg Thr Val Asp Gln Ala Arg Ala Leu Gly His Glu Arg Val
100 105 110

Val Leu Val Gly His Ser Met Gly Gly Leu Ala Ile Thr Met Ala Ala
115 120 125

Glu Arg Ala Pro Glu Lys Ile Ala Lys Leu Val Tyr Leu Ala Ala Phe
130 135 140

Met Pro Thr Ala Gly Thr Lys Gly Leu Asp Tyr Val Arg Ala Pro Glu
145 150 155 160

Asn Arg Gly Glu Met Leu Gly Pro Leu Met Met Ala Ser Pro Lys Ala
165 170 175

Thr Gly Ala Leu Arg Met Asp Pro Arg Ser Asp Asp Pro Ala Tyr Arg
180 185 190

Ala Ala Ala Lys Arg Ala Leu Cys Asp Asp Ala Ser Asp Ala Asp His
195 200 205

Ala Ala Val Gly His Leu Leu Gly Cys Asp Val Pro Ala Ala Pro Phe
210 215 220

Ala Ala Arg Ile Glu Thr Thr Ala Ala Arg Trp Gly Ala Leu Glu Arg

225 230 235 240
 His Tyr Ile Lys Cys Leu Arg Asp Lys Val Leu Leu Pro Ala Leu Gln
 245 250 255
 Gln Arg Phe Ile Asp Glu Ala Asp Ala Leu Ala Pro Gly Asn Arg Thr
 260 265 270
 His Val His Thr Leu Asp Ser Ser His Ser Pro Phe Ile Ala His Ala
 275 280 285
 Gly Ala Val Ala Asp Thr Leu Ala Ala Ile Ala Arg Gly
 290 295 300

 <210> 19
 <211> 294
 <212> PRT
 <213> Burkholderia multivorans

 <400> 19
 Met Glu Thr Asn Val Thr Ala Pro Ser Gln Ser Asp His Pro Val Phe
 1 5 10 15
 Val Leu Val His Gly Ala Trp His Gly Ala Trp Cys Phe Ala His Val
 20 25 30
 Ala Ala Ala Leu Ala Ala Arg Gly His Leu Ser Ile Ala Arg Asp Leu
 35 40 45
 Pro Ala His Gly Leu His Ala Arg Phe Pro Val Ser Tyr His Val Arg
 50 55 60
 Pro Leu Asp Lys Asp Ala Phe Gly Ala Glu Pro Ser Pro Val Ala Asn
 65 70 75 80
 Thr Thr Leu Asp Asp Tyr Ala Thr Gln Val Met Gln Ala Val Asp Asp
 85 90 95
 Ala Tyr Ala Leu Gly Arg Gly Lys Val Ile Leu Val Gly His Ser Met
 100 105 110
 Gly Gly Leu Ala Ile Thr Ala Ala Ala Glu Arg Ala Pro Asp Lys Ile
 115 120 125
 Ala Lys Leu Val Tyr Leu Ala Ala Phe Met Pro Ala Ala Gly Val Pro
 130 135 140

Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn Arg Gly Glu Leu Leu Gly
145 150 155 160

Pro Leu Met Leu Ala Ser Pro Arg Val Ala Gly Ala Leu Arg Ile Asp
165 170 175

Pro Arg Ser Gly Asp Ala Asp Tyr Arg Ala Ala Thr Arg Arg Ala Leu
180 185 190

Cys Asp Asp Val Pro Gln Ala Asp Phe Asp Ala Val Ala Asn Leu Met
195 200 205

Ser Cys Asp Val Pro Ala Ala Pro Phe Ala Thr Ala Ile Pro Thr Thr
210 215 220

Ala Ala Arg Trp Gly Ala Ile Asp Arg His Tyr Ile Lys Cys Leu Gln
225 230 235 240

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

Asp Ala Phe Ala Pro Gly Asn Pro Thr His Val His Gln Leu Asp Ser
260 265 270

Ser His Ser Pro Phe Met Ser Gln Pro Ala Val Leu Ala Gly Val Leu
275 280 285

Ala Asp Ile Ala Lys His
290

<210> 20
<211> 281
<212> PRT
<213> Burkholderia pseudomallei

<400> 20

Met Pro Phe Val Leu Val His Gly Ala Trp His Gly Ala Trp Ala Tyr
1 5 10 15

Glu Arg Val Ile Pro Ala Leu Ala Ala His Gly His Ala Ala Val Ala
20 25 30

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

Ala Lys Arg Pro Leu Asp Ala Ala Ala Phe Ala Ser Glu Pro Ser Pro

50

55

60

Val Ala Gly Thr Thr Leu Asp Asp Tyr Val Asp His Val Leu Arg Thr
65 70 75 80

Val Asp Gln Ala Arg Ala Leu Gly His Glu Arg Val Val Leu Val Gly
85 90 95

His Ser Met Gly Gly Leu Ala Ile Thr Met Ala Ala Glu Arg Ala Pro
100 105 110

Glu Lys Ile Ala Lys Leu Val Tyr Leu Ala Ala Phe Met Pro Thr Ala
115 120 125

Gly Thr Lys Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn Gln Gly Glu
130 135 140

Met Leu Gly Pro Leu Met Met Ala Ser Pro Lys Ala Thr Gly Ala Leu
145 150 155 160

Arg Met Asp Pro Arg Ser Asp Asp Pro Ala Tyr Arg Ala Ala Lys
165 170 175

Arg Ala Leu Cys Asp Asp Ala Ser Asp Ala Asp His Ala Ala Val Gly
180 185 190

His Leu Leu Gly Cys Asp Val Pro Ala Ala Pro Phe Ala Ala Arg Ile
195 200 205

Glu Thr Thr Ala Ala Arg Trp Gly Ala Leu Glu Arg His Tyr Ile Lys
210 215 220

Cys Leu Arg Asp Lys Val Leu Leu Pro Ala Leu Gln Gln Arg Phe Ile
225 230 235 240

Asp Glu Ala Asp Ala Leu Ala Pro Gly Asn Arg Thr His Val His Thr
245 250 255

Leu Asp Ser Ser His Ser Pro Phe Ile Ala His Ala Gly Ala Val Ala
260 265 270

Asp Thr Leu Ala Ala Ile Ala Arg Gly
275 280

<210> 21
<211> 281

<212> PRT
<213> Burkholderia pseudomallei

<400> 21

Met Pro Phe Val Leu Val His Gly Ala Trp His Gly Ala Trp Ala Tyr
1 5 10 15

Glu Arg Val Ile Pro Ala Leu Ala Ala His Gly His Ala Ala Val Ala
20 25 30

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

Ala Lys Arg Pro Leu Asp Ala Ala Ala Phe Ala Ser Glu Pro Ser Pro
50 55 60

Val Ala Gly Thr Thr Leu Asp Asp Tyr Val Asp His Val Leu His Thr
65 70 75 80

Val Asp Gln Ala Arg Ala Leu Gly His Glu Arg Val Val Leu Val Gly
85 90 95

His Ser Met Gly Gly Leu Ala Ile Thr Met Ala Ala Glu Arg Ala Pro
100 105 110

Glu Lys Ile Ala Lys Leu Val Tyr Leu Ala Ala Phe Met Pro Thr Ala
115 120 125

Gly Thr Lys Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn Gln Gly Glu
130 135 140

Met Leu Gly Pro Leu Met Met Ala Ser Pro Lys Ala Thr Gly Ala Leu
145 150 155 160

Arg Met Asp Pro Arg Ser Asp Asp Pro Ala Tyr Arg Ala Ala Ala Lys
165 170 175

Arg Ala Leu Cys Asp Asp Ala Ser Asp Ala Asp His Ala Ala Val Gly
180 185 190

His Leu Leu Gly Cys Asp Val Pro Ala Ala Pro Phe Ala Ala Arg Ile
195 200 205

Glu Thr Thr Ala Ala Arg Trp Gly Ala Leu Glu Arg His Tyr Ile Lys
210 215 220

Cys Leu Arg Asp Lys Val Leu Leu Pro Ala Leu Gln Gln Arg Phe Ile
225 230 235 240

Asp Glu Ala Asp Ala Leu Ala Pro Gly Asn Arg Thr His Val His Thr
245 250 255

Leu Asp Ser Ser His Ser Pro Phe Ile Ala His Ala Gly Ala Val Ala
260 265 270

Asp Thr Leu Ala Ala Ile Ala Arg Gly
275 280

<210> 22
<211> 281
<212> PRT
<213> Burkholderia pseudomallei

<400> 22

Met Pro Phe Val Leu Val His Gly Ala Trp His Gly Ala Trp Ala Tyr
1 5 10 15

Glu Arg Val Ile Pro Ala Leu Ala Ala His Gly His Ala Ala Val Ala
20 25 30

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

Ala Lys Arg Pro Leu Asp Ala Ala Ala Phe Ala Ser Glu Pro Ser Pro
50 55 60

Val Ala Gly Thr Thr Leu Asp Asp Tyr Val Asp His Val Leu His Thr
65 70 75 80

Val Asp Gln Ala Arg Ala Leu Gly His Glu Arg Val Val Leu Val Gly
85 90 95

His Ser Met Gly Gly Leu Ala Ile Thr Met Ala Ala Glu Arg Ala Pro
100 105 110

Glu Lys Ile Ala Lys Leu Val Tyr Leu Ala Ala Phe Met Pro Thr Ala
115 120 125

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

Met Leu Gly Pro Leu Met Met Ala Ser Pro Lys Ala Thr Gly Ala Leu
145 150 155 160

Arg Met Asp Pro Arg Ser Asp Asp Pro Ala Tyr Arg Ala Ala Ala Lys
165 170 175

Arg Ala Leu Cys Asp Asp Ala Ser Asp Ala Asp His Ala Ala Val Gly
180 185 190

His Leu Leu Gly Cys Asp Val Pro Ala Ala Pro Phe Ala Ala Arg Ile
195 200 205

Glu Thr Thr Ala Ala Arg Trp Gly Ala Leu Glu Arg His Tyr Ile Lys
210 215 220

Cys Leu Arg Asp Lys Val Leu Leu Pro Ala Leu Gln Gln Arg Phe Ile
225 230 235 240

Asp Glu Ala Asp Ala Leu Ala Pro Gly Asn Arg Thr His Val His Thr
245 250 255

Leu Asp Ser Ser His Ser Pro Phe Ile Ala His Ala Gly Ala Val Ala
260 265 270

Asp Thr Leu Ala Ala Ile Ala Arg Gly
275 280

<210> 23
<211> 336
<212> PRT
<213> Burkholderia pseudomallei

<400> 23

Met Gly His Asp Arg Thr Pro Arg His Arg Asp Ser Ser Leu Arg Trp
1 5 10 15

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

Glu Thr Asp Leu Pro Thr Glu Pro Arg Asp Thr Val Ala Glu Arg Arg
35 40 45

Glu Pro Ala Ala Ser Ser Ser Leu Pro Phe Val Leu Val His Gly Ala
50 55 60

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

His Gly His Ala Ala Val Ala Arg Asp Leu Pro Ala His Gly Val Asn
85 90 95

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

Phe Ala Ser Glu Pro Ser Pro Val Ala Gly Thr Thr Leu Asp Asp Tyr
115 120 125

Val Asp His Val Leu His Thr Val Asp Gln Ala Arg Ala Leu Gly His
130 135 140

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

Met Ala Ala Glu Arg Ala Pro Glu Lys Ile Ala Lys Leu Val Tyr Leu
165 170 175

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

Ala Pro Glu Asn Gln Gly Glu Met Leu Gly Pro Leu Met Met Ala Ser
195 200 205

Pro Lys Ala Thr Gly Ala Leu Arg Met Asp Pro Arg Ser Asp Asp Pro
210 215 220

Ala Tyr Arg Ala Ala Ala Lys Arg Ala Leu Cys Asp Asp Ala Ser Asp
225 230 235 240

Ala Asp His Ala Ala Val Gly His Leu Leu Gly Cys Asp Val Pro Ala
245 250 255

Ala Pro Phe Ala Ala Arg Ile Glu Thr Thr Ala Ala Arg Trp Gly Ala
260 265 270

Leu Glu Arg His Tyr Ile Lys Cys Leu Arg Asp Lys Val Leu Leu Pro
275 280 285

Ala Leu Gln Gln Arg Phe Ile Asp Glu Ala Asp Ala Leu Ala Pro Gly
290 295 300

Asn Arg Thr His Val His Thr Leu Asp Ser Ser His Ser Pro Phe Ile
305 310 315 320

Ala His Ala Gly Ala Val Ala Asp Thr Leu Ala Ala Ile Ala Arg Gly

325

330

335

<210> 24
 <211> 301
 <212> PRT
 <213> Burkholderia pseudomallei

<400> 24

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

Ala Ser Ser Ser Leu Pro Phe Val Leu Val His Gly Ala Trp His Gly
 20 25 30

Ala Trp Ala Tyr Glu Arg Val Ile Pro Ala Leu Ala Ala His Gly His
 35 40 45

Ala Ala Val Ala Arg Asp Leu Pro Ala His Gly Val Asn Ala Arg Phe
 50 55 60

Pro Ala Ser Phe Ala Lys Arg Pro Leu Asp Ala Ala Ala Phe Ala Ser
 65 70 75 80

Glu Pro Ser Pro Val Ala Gly Thr Thr Leu Asp Asp Tyr Val Asp His
 85 90 95

Val Leu Arg Thr Val Asp Gln Ala Arg Ala Leu Gly His Glu Arg Val
 100 105 110

Val Leu Val Gly His Ser Met Gly Gly Leu Ala Ile Thr Met Ala Ala
 115 120 125

Glu Arg Ala Pro Glu Lys Ile Ala Lys Leu Val Tyr Leu Ala Ala Phe
 130 135 140

Met Pro Thr Ala Gly Thr Lys Gly Leu Asp Tyr Val Arg Ala Pro Glu
 145 150 155 160

Asn Gln Gly Glu Met Leu Gly Pro Leu Met Met Ala Ser Pro Lys Ala
 165 170 175

Thr Gly Ala Leu Arg Met Asp Pro Arg Ser Asp Asp Pro Ala Tyr Arg
 180 185 190

Ala Ala Ala Lys Arg Ala Leu Cys Asp Asp Ala Ser Asp Ala Asp His
 195 200 205

Ala Ala Val Gly His Leu Leu Gly Cys Asp Val Pro Ala Ala Pro Phe
210 215 220

Ala Ala Arg Ile Glu Thr Thr Ala Ala Arg Trp Gly Ala Leu Glu Arg
225 230 235 240

His Tyr Ile Lys Cys Leu Arg Asp Lys Val Leu Leu Pro Ala Leu Gln
245 250 255

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

His Val His Thr Leu Asp Ser Ser His Ser Pro Phe Ile Ala His Ala
275 280 285

Gly Ala Val Ala Asp Thr Leu Ala Ala Ile Ala Arg Gly
290 295 300

<210> 25
<211> 301
<212> PRT
<213> Burkholderia pseudomallei

<400> 25

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

Ala Ser Ser Ser Leu Pro Phe Val Leu Val His Gly Ala Trp His Gly
20 25 30

Ala Trp Ala Tyr Glu Arg Val Ile Pro Ala Leu Ala Ala His Gly His
35 40 45

Ala Ala Val Ala Arg Asp Leu Pro Ala His Gly Val Asn Ala Arg Phe
50 55 60

Pro Ala Ser Phe Ala Lys Arg Pro Leu Asp Ala Ala Ala Phe Ala Ser
65 70 75 80

Glu Pro Ser Pro Val Ala Gly Thr Thr Leu Asp Asp Tyr Val Asp His
85 90 95

Val Leu His Thr Val Asp Gln Ala Arg Ala Leu Gly His Glu Arg Val
100 105 110

Val Leu Val Gly His Ser Met Gly Gly Leu Ala Ile Thr Met Ala Ala

115

120

125

Glu Arg Ala Pro Glu Lys Ile Ala Lys Leu Val Tyr Leu Ala Ala Phe
 130 135 140

Met Pro Thr Ala Gly Thr Lys Gly Leu Asp Tyr Val Arg Ala Pro Glu
 145 150 155 160

Asn Arg Gly Glu Met Leu Gly Pro Leu Met Met Ala Ser Pro Lys Ala
 165 170 175

Thr Gly Ala Leu Arg Met Asp Pro Arg Ser Asp Asp Pro Ala Tyr Arg
 180 185 190

Ala Ala Ala Lys Arg Ala Leu Cys Asp Asp Ala Ser Asp Ala Asp His
 195 200 205

Ala Ala Val Gly His Leu Leu Gly Cys Asp Val Pro Ala Ala Pro Phe
 210 215 220

Ala Ala Arg Ile Glu Thr Thr Ala Ala Arg Trp Gly Ala Leu Glu Arg
 225 230 235 240

His Tyr Ile Lys Cys Leu Arg Asp Lys Val Leu Leu Pro Ala Leu Gln
 245 250 255

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

His Val His Thr Leu Asp Ser Ser His Ser Pro Phe Ile Ala His Ala
 275 280 285

Gly Ala Val Ala Asp Thr Leu Ala Ala Ile Ala Arg Gly
 290 295 300

<210> 26

<211> 301

<212> PRT

<213> Burkholderia pseudomallei

<400> 26

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

Ala Ser Ser Ser Leu Pro Phe Val Leu Val His Gly Ala Trp His Gly
 20 25 30

Ala Trp Ala Tyr Glu Arg Val Ile Pro Ala Leu Ala Ala His Gly His
35 40 45

Ala Ala Val Ala Arg Asp Leu Pro Ala His Gly Val Asn Ala Arg Phe
50 55 60

Pro Ala Ser Phe Ala Lys Arg Pro Leu Asp Ala Ala Ala Phe Ala Ser
65 70 75 80

Glu Pro Ser Pro Val Ala Gly Thr Thr Leu Asp Asp Tyr Val Asp His
85 90 95

Val Leu Arg Thr Val Asp Gln Ala Arg Ala Leu Gly His Glu Arg Val
100 105 110

Val Leu Val Gly His Ser Met Gly Gly Leu Ala Ile Thr Met Ala Ala
115 120 125

Glu Arg Ala Pro Glu Lys Ile Ala Lys Leu Val Tyr Leu Ala Ala Phe
130 135 140

Met Pro Thr Ala Gly Thr Lys Gly Leu Asp Tyr Val Arg Ala Pro Glu
145 150 155 160

Asn Arg Gly Glu Met Leu Gly Pro Leu Met Met Ala Ser Pro Lys Ala
165 170 175

Thr Gly Ala Leu Arg Met Asp Pro Arg Ser Asp Asp Pro Ala Tyr Arg
180 185 190

Ala Ala Ala Lys Arg Ala Leu Cys Asp Asp Ala Ser Asp Ala Asp His
195 200 205

Ala Ala Val Gly His Leu Leu Gly Cys Asp Val Pro Ala Ala Pro Phe
210 215 220

Ala Ala Arg Ile Glu Thr Thr Ala Ala Arg Trp Gly Ala Leu Glu Arg
225 230 235 240

His Tyr Ile Lys Cys Leu Arg Asp Lys Val Leu Leu Pro Ala Leu Gln
245 250 255

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

His Val His Thr Leu Asp Ser Ser His Ser Pro Phe Ile Ala His Ala
275 280 285

Gly Ala Val Ala Asp Thr Leu Ala Ala Ile Ala Arg Gly
290 295 300

<210> 27

<211> 294

<212> PRT

<213> Burkholderia sp.

<400> 27

Met Glu Thr Asn Ala Ser Ala Thr Pro Gln Ser Asp His Pro Val Phe
1 5 10 15

Val Leu Val His Gly Ala Trp His Gly Ala Trp Ser Tyr Ala His Val
20 25 30

Ala Ala Ala Leu Ala Ala Arg Gly His Leu Ser Ile Ala Arg Asp Leu
35 40 45

Pro Ala His Gly Ile Asn Ala Arg Phe Pro Ala Ser Tyr Phe Ala Arg
50 55 60

Pro Leu Asp Lys Asp Ala Phe Gly Ala Glu Pro Ser Pro Val Ala Asn
65 70 75 80

Thr Thr Leu Asp Asp Tyr Ala Thr Gln Val Met Gln Ala Val Asp Asp
85 90 95

Ala Tyr Ala Leu Gly His Gly Lys Val Val Leu Val Gly His Ser Met
100 105 110

Gly Gly Leu Ala Ile Thr Ala Ala Ala Glu Arg Ala Pro Glu Lys Ile
115 120 125

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

Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn Lys Gly Glu Met Leu Gly
145 150 155 160

Pro Leu Met Leu Ala Ser Pro Arg Val Ala Gly Ala Leu Arg Ile Asp
165 170 175

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

Tyr Asp Asp Val Pro Gln Ala Asp Phe Glu Ala Val Ala Asn Leu Met
195 200 205

Thr Cys Asp Val Pro Ala Ala Pro Phe Ala Thr Ala Ile Pro Thr Thr
210 215 220

Ala Ala Arg Trp Gly Ala Ile Asp Arg His Tyr Ile Lys Cys Leu Gln
225 230 235 240

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

Asp Ala Phe Ala Pro Gly Asn Pro Thr His Val His Gln Leu Asp Ser
260 265 270

Ser His Ser Pro Phe Met Ser Gln Pro Ala Val Leu Ala Gly Val Leu
275 280 285

Ala Asp Ile Ala Lys Ser
290

<210> 28
<211> 301
<212> PRT
<213> Burkholderia thailandensis

<400> 28

Met Pro Thr Glu Pro Arg Asp Thr Pro Ala Asp Arg Arg Ala Pro Ala
1 5 10 15

Ala Pro Ser Pro Leu Pro Phe Val Leu Val His Gly Ala Trp His Gly
20 25 30

Ala Trp Ala Tyr Glu Arg Val Ile Pro Ala Leu Ala Ala His Gly His
35 40 45

Ala Ala Val Ala Arg Asp Leu Pro Ala His Gly Ile Asn Ala Arg Phe
50 55 60

Pro Ala Ser Phe Phe Glu Arg Pro Leu Asp Ala Ala Ala Phe Ala Ser
65 70 75 80

Glu Pro Ser Pro Val Ala Gly Thr Thr Leu Asp Asp Tyr Val Asp His
85 90 95

Val Leu His Thr Ile Asp Gln Ala Arg Ala Leu Gly His Glu Arg Val
100 105 110

Val Leu Val Gly His Ser Met Gly Gly Leu Ala Ile Thr Met Ala Ala
115 120 125

Glu Arg Ala Pro Glu Lys Ile Ala Lys Ile Val Tyr Leu Ala Ala Phe
130 135 140

Met Pro Thr Ala Gly Thr Lys Gly Leu Asp Tyr Val Arg Ala Pro Glu
145 150 155 160

Asn Gln Gly Glu Met Leu Ala Pro Leu Met Met Ala Ser Pro Lys Ala
165 170 175

Thr Gly Ala Leu Arg Met Asp Pro Arg Ser Glu Asp Pro Ala Tyr Arg
180 185 190

Ala Ala Ala Lys Arg Ala Leu Cys Asp Asp Ala Asn Asp Ala Asp His
195 200 205

Ala Ala Val Gly His Leu Leu Ser Cys Asp Thr Pro Ala Ala Pro Phe
210 215 220

Ala Ala Arg Ile Glu Thr Thr Ala Ala Arg Trp Gly Ala Ile Glu Arg
225 230 235 240

His Tyr Ile Lys Cys Leu Arg Asp Arg Val Leu Leu Pro Ala Leu Gln
245 250 255

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

His Val His Thr Leu Asp Ser Ser His Ser Pro Phe Ile Ala Gln Pro
275 280 285

Gly Ala Leu Ala Asp Thr Leu Ala Ala Ile Ala Arg Gly
290 295 300

<210> 29
<211> 294
<212> PRT
<213> Burkholderia vietnamensis

<400> 29

Met Glu Thr Asn Val Thr Ala Ala Gln Gln Ser Asp His Pro Val Phe
1 5 10 15

Val Leu Val His Gly Ala Trp His Gly Ala Trp Ser Tyr Ala Pro Val
20 25 30

Ala Ala Ala Leu Ala Ala Arg Gly Tyr Leu Ser Ile Ala Arg Asp Leu
35 40 45

Pro Ala His Gly Ile Asn Ala Arg Phe Pro Ala Ser Tyr Leu Ala Arg
50 55 60

Pro Leu Asp Lys Asp Ala Phe Gly Ala Glu Pro Ser Pro Val Ala Asn
65 70 75 80

Thr Thr Leu Asp Asp Tyr Ala Thr Gln Val Leu Gln Ala Val Asp Asp
85 90 95

Ala Tyr Ala Leu Gly Arg Gly Lys Val Val Leu Val Gly His Ser Met
100 105 110

Gly Gly Leu Ala Ile Thr Ala Ala Ala Glu Arg Ala Pro Glu Lys Ile
115 120 125

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

Gly Leu Asp Tyr Val Arg Ala Pro Glu Asn His Gly Asp Met Leu Gly
145 150 155 160

Ala Leu Met Leu Ala Ser Pro Arg Val Ala Gly Ala Leu Arg Ile Asp
165 170 175

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

Tyr Asp Asp Val Pro Gln Ala Asp Phe Asp Ala Val Ala Asn Leu Met
195 200 205

Thr Cys Asp Val Pro Ala Ala Pro Phe Ala Thr Ala Ile Pro Thr Ser
210 215 220

Ala Ala Arg Trp Gly Ala Ile Asp Arg His Tyr Ile Lys Cys Leu Ala
225 230 235 240

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

Asp Ala Phe Ala Pro Asp Asn Pro Thr His Val His Gln Leu Asp Ser
260 265 270

Ser His Ser Pro Phe Met Ser Gln Pro Ala Val Leu Ala Gly Val Leu
275 280 285

Ala Asp Ile Ala Lys Ser
290

<210> 30
<211> 282
<212> PRT
<213> Mycobacterium smegmatis

<400> 30

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

Ala Trp His Ser Ser Leu His Trp Ala Ala Ala Gln Arg Gly Leu Ala
20 25 30

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

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

Glu Thr Glu Lys Ser Ala Leu Ala Asp Ile Thr Met Asp Asp Leu Ala
65 70 75 80

Asp Ala Val Val Asp Ala Leu Ala Glu Val Arg Ser Arg Phe Ala Arg
85 90 95

Val Leu Leu Val Ala His Ser Ala Gly Gly Gly Pro Ala Ser Leu Ala
100 105 110

Ala Glu Lys Ala Pro Glu Leu Val Asp His Leu Val Tyr Leu Ala Ala
115 120 125

Phe Val Pro Ala Ala Arg Pro Arg Phe Thr Asp Tyr Ile Asn Ala Pro
130 135 140

Glu Asn Ala Asp Val Val Ala Leu Pro Ile Phe Ser Asp Pro Ala Asn
145 150 155 160

Leu Gly Ala His Arg Leu Asn Pro Leu Ser Ser Asp Ala Ile Glu Val

165

170

175

Asp Ala Ile Arg Arg Ala Phe Leu Thr Asp Met Pro Pro Asp Ala Pro
 180 185 190

Glu Gly Trp Arg His Leu Leu His Pro Asp Glu Pro Tyr Ala Ser Leu
 195 200 205

Ser Ala Pro Val Pro Val Thr Pro Arg Arg Trp Gly Arg Ile Pro Arg
 210 215 220

Thr Tyr Ile Arg Leu Asp Gly Asp Arg Ala Leu Ala Pro Thr Thr Gln
 225 230 235 240

Asn Leu Met Ile Ala Glu Ala Asp Arg Leu Thr Pro Asp Asn Pro Phe
 245 250 255

Gly Val Arg Ser Leu Pro Gly Asp His Ser Pro Met Val His Arg Pro
 260 265 270

Gly Glu Leu Ala Asp Leu Leu Ala Gly Ile
 275 280

<210> 31
 <211> 294
 <212> PRT
 <213> Saccharopolyspora erythraea

<400> 31

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

Gly Ser Gly Ala Thr Ser Phe Leu Trp Asn Pro Leu Val Thr Glu Ile
 20 25 30

Val Leu Arg Gly His Arg Ala Leu Pro Val Glu Leu Pro Gly His Gly
 35 40 45

Phe Asp Ala Val Phe Pro Asp Gly Tyr Gly Ser Pro Gln Asp Thr Glu
 50 55 60

Val Phe Ala Gly Ala Pro Ser Pro Leu Ala Ala Leu Thr Leu Asp Asp
 65 70 75 80

Tyr Ala Asp His Ala Leu Gly Val Val Arg Arg Ala Ala Glu His Gly
 85 90 95

Pro Val Val Leu Val Gly His Ser Leu Gly Gly Ala Thr Val Thr Arg
100 105 110

Val Ala Asn Ala Ala Pro Glu Leu Leu Ala His Val Val Tyr Leu Cys
115 120 125

Ala Tyr Cys Cys Val Asp Glu Pro Ser Val Ala Ala Tyr Ala Pro Ser
130 135 140

Ala Pro Ala Pro Gly Ser Pro Leu Glu Arg Ala Arg Arg Ile Ala Phe
145 150 155 160

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

Gly Asp Pro Asp Val Leu Ala Val Gln His Glu Leu Leu Met Ala Asp
180 185 190

Leu Asp Ala Ala Arg Val Pro Ala Val Leu Ala Tyr Ala Thr Gln Pro
195 200 205

Asp Glu Pro Leu Arg Val Val Leu Ala Asp Ala Arg Val Asp Pro Ala
210 215 220

Thr Trp Gly Arg Leu Pro Arg Thr Tyr Val Arg Thr Ser Arg Asp Glu
225 230 235 240

Val Val Pro Pro Ala Leu Gln Asp Arg Met Ile Ala Glu Ala Asp Arg
245 250 255

Arg Thr Pro Gly Asn Thr Phe Thr Ser His Thr Val Glu Ala Ser His
260 265 270

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

Ala Leu Arg Gln Glu Gly
290

<210> 32
<211> 289
<212> PRT
<213> Saccharopolyspora erythraea

<400> 32

Met Thr Arg Pro Ser Ser Ser Glu Thr Val Phe Leu Phe Val His Gly

1		5		10		15													
Ala	Trp	His	Ser	Ser	Leu	His	Trp	Ala	Glu	Thr	Leu	Arg	Ala	Leu	Ala				
			20					25					30						
Leu	Gln	Asp	Leu	Ala	Gly	Ile	Ala	Ile	Asp	Leu	Pro	Gly	Ser	Gly	Leu				
		35					40					45							
Gly	Ala	Pro	Val	Pro	Thr	Gly	Tyr	Phe	Gln	Pro	Gly	Gln	Pro	Gly	Leu				
	50					55					60								
Ala	Thr	Glu	Lys	Ser	Ala	Leu	Ala	Glu	Val	Thr	Pro	Ala	Gln	Ile	Thr				
65					70					75					80				
Asp	Val	Val	Leu	Asp	Ala	Leu	Ala	Ala	Val	Arg	Thr	Arg	Phe	Arg	Asn				
				85					90					95					
Val	Val	Leu	Val	Ala	His	Ser	Ala	Gly	Gly	Ala	Pro	Ala	Ser	Ala	Ala				
			100					105					110						
Ala	Glu	Arg	Ala	Pro	Glu	Leu	Val	Asp	His	Leu	Val	Tyr	Leu	Ser	Ser				
		115					120					125							
Phe	Val	Pro	Ala	Gly	Arg	Pro	Arg	Phe	Ser	Asp	Tyr	Ile	Glu	Ala	Glu				
	130					135					140								
Gln	Asn	Ala	Gly	Ala	Val	Arg	Ile	Pro	Pro	Leu	Gly	Asp	Pro	Ala	Glu				
145					150					155					160				
Leu	Gly	Ala	Phe	Arg	Ile	Asn	Pro	Leu	Ser	Pro	Asp	Pro	Ala	Asp	Ile				
				165					170					175					
Asp	Val	Ile	Arg	Arg	Ala	Phe	Leu	Asn	Asp	Leu	Pro	Ala	Thr	Ala	Pro				
			180					185					190						
Asp	Thr	Trp	Arg	Gln	Phe	Leu	His	Pro	Asp	Gln	Pro	Phe	Thr	Ser	Val				
		195					200					205							
Thr	Thr	Pro	Val	Pro	Val	Thr	Pro	Glu	Arg	Trp	Gly	Arg	Ile	Ala	Arg				
	210					215					220								
Thr	Phe	Ile	Arg	Leu	Thr	Asp	Asp	Leu	Ala	Leu	Pro	Leu	Val	Thr	Gln				
225					230					235					240				
Asp	Leu	Met	Ile	Asp	Glu	Ala	Asn	Gln	Val	Val	Pro	Asp	Leu	Pro	Leu				
				245					250					255					

Gln Val Arg Thr Leu Pro Gly Gly His Ser Pro Phe Val Thr Arg Pro
260 265 270

Ala Glu Leu Ala Ala Val Leu Ala Ser Val Ala Leu Gln Arg Thr Ala
275 280 285

Arg

<210> 33
<211> 281
<212> PRT
<213> Saccharopolyspora erythraea

<400> 33

Met Ser His Thr Phe Val Leu Val His Gly Ser Asn Cys Asn Ser Phe
1 5 10 15

Thr Trp Ala Pro Met Gln Arg Glu Leu Ala Leu Leu Gly His Arg Ser
20 25 30

Leu Ala Val Asp Leu Pro Gly His Gly Phe Ala Ala Gly Trp His Pro
35 40 45

Ser Tyr Gln Ala Pro Gln Asp Pro Ala Ala Leu Ala Ser Ala Pro Ser
50 55 60

Gly Gln Ala Gly Arg Thr Val Ala Glu Cys Val Glu His Val Val Glu
65 70 75 80

Val Val Arg Arg Ala Ala Ala His Gly Pro Val Thr Leu Val Gly His
85 90 95

Ser Arg Gly Gly Leu Thr Leu Thr Gly Val Gly Asn Ala Val Pro Glu
100 105 110

Leu Val Asp Arg Leu Val Tyr Val Ser Ala Trp Cys Cys Val Asp Ser
115 120 125

Thr Val Ala Glu Tyr Val Ala Ser Pro Glu Asn Ala Asp Ser Val Leu
130 135 140

Gly Glu Ala Ala Gly Val Met Val Gly Asp Ile Ala Ala Leu Gly Ala
145 150 155 160

Ile Arg Met Asn Trp Arg Thr Ala Asp Ala Gly Leu Leu Ala Thr Leu
165 170 175

Lys Thr Ala Met Leu Ala Asp Gly Thr Asp Glu Glu Phe Leu Ala Phe
180 185 190

Leu Asn Thr Leu Glu Pro Asp Glu Ser Leu Asp Ala Gly Gly Ile Gly
195 200 205

Val Gln Ala Asp Ala Ala Thr Trp Gly Arg Val Pro Arg Ser Tyr Val
210 215 220

Arg Leu Thr Arg Asp Arg Ser Leu Pro Val Ala Leu Gln Asp Arg Phe
225 230 235 240

Ile Ala Glu Ala Asp Ala Leu Thr Pro Gly Asn Pro Phe Asp Val His
245 250 255

Ser Val Glu Gly Ser His Val Gly Phe Leu Val His Pro Gln Glu Val
260 265 270

Ala Gly Ile Leu Ala Glu Leu Ala Ala
275 280

<210> 34
<211> 308
<212> PRT
<213> Stigmatella aurantiaca

<400> 34

Met Asn Arg Arg Asn Leu Leu Lys Ser Ala Val Leu Thr Thr Ala Thr
1 5 10 15

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

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

His Trp Gly Arg Val Ala Gln His Leu Ser Ala Leu Gly His Arg Val
50 55 60

Leu Ser Ile Asp Leu Pro Gly His Gly Leu Asn Ala Arg Phe Pro Ser
65 70 75 80

Ala Tyr Ile Thr Gly Glu Trp Ala Lys Phe Ala Glu Glu Pro Ser Pro
85 90 95

Gln Arg Asp Ile Ser Leu Asp Glu Cys Ala Ser Ala Val Val Asp Ala
100 105 110

Leu Arg Ala Leu Lys Gly Gly Pro Arg Pro Ile Leu Val Gly His Ser
115 120 125

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

Val Gly Arg Leu Val Tyr Leu Ser Ala Tyr Cys Pro Leu Arg Leu Lys
145 150 155 160

Lys Pro Ser Ala Tyr Gly Ala Leu Pro Glu Ala Lys Thr Asp Gln Gly
165 170 175

Ser Thr Leu Ile Ile Gly Asn Pro Ala Ala Leu Gly Ala Val Arg Ile
180 185 190

Asn Pro Arg Gly Asn Ala Ser Tyr Leu Glu Ala Leu Arg Ser Ala Tyr
195 200 205

Tyr Asn Asp Val Glu Met Arg Glu Phe Leu Pro Phe Ala Leu Ala Leu
210 215 220

Thr Pro Asp Leu Pro Ala Ala Leu Trp Thr Ser Glu Val Val Ala Thr
225 230 235 240

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

Asp Arg Ala Leu Met Pro Gly Leu Gln Asp Leu Met Ile Arg Glu Ala
260 265 270

Asp Ala Phe Thr Pro Thr Asn Thr Phe Glu Gln Lys Thr Leu Glu Thr
275 280 285

Ser His Ser Pro Phe Ala Ser Gln Pro Ala Arg Leu Ala Glu Leu Leu
290 295 300

Thr Ser Leu Arg
305

<210> 35
<211> 287
<212> PRT

<213> Streptomyces ambofaciens

<400> 35

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

Ser Phe Ala Pro Leu Gln Ala Glu Leu Gly Leu Leu Gly His Arg Ser
20 25 30

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

Ala Tyr Gln Ala Pro Gln Asp Ala Glu Gly Leu Ala Thr Ala Pro Gly
50 55 60

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

Val Leu Glu Arg Ala Lys Glu His Gly Pro Val Ile Leu Val Ala His
85 90 95

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

Leu Ile Asp Arg Ile Val Tyr Val Ala Ala Trp Cys Pro Val Arg Leu
115 120 125

Asp Val Asn Asp Tyr Tyr Ala Glu Pro Glu Met Ala Thr Val Asp Ala
130 135 140

Ala Ser Val Gly Leu Ala Met Ala Gly Asn Pro Ala Glu Leu Gly Leu
145 150 155 160

Leu Arg Val Asn Phe Arg Thr Ala Asp Gln Ala Ala Leu Ala Ala Leu
165 170 175

Lys Ala Ala Phe Leu Ala Asp Gly Thr Glu Glu Glu Phe Leu Thr Phe
180 185 190

Leu Asn Thr Phe Gln Pro Asp Glu Asn Leu Asp Val Gly Gly Ala Ala
195 200 205

Asp Arg Ala Gln Ala Ala Thr Trp Gly Arg Val Pro Lys Thr Phe Val
210 215 220

Arg Leu Ala Asp Asp Ala Ser Met Pro Leu Val Met Gln Asp Arg Leu

225	230							235							240		
Ile	Arg	Glu	Gly	Asp	Glu	Leu	Thr	Pro	Asp	Asn	Pro	Tyr	Asp	Val	Arg		
				245					250					255			
Thr	Leu	Gly	Gly	Ser	His	Leu	Lys	Trp	Leu	Val	Asp	Pro	Ala	Pro	Ala		
			260					265					270				
Ala	Arg	Val	Leu	Gly	Glu	Leu	Ser	Ala	Leu	Thr	Ala	Gly	Ala	Ser			
		275					280					285					
<210>	36																
<211>	327																
<212>	PRT																
<213>	Streptomyces	coelicolor															
<400>	36																
Met	Phe	Met	Thr	Asp	Asp	Thr	Asn	Glu	Glu	Gly	Glu	Gly	Ala	Thr	Arg		
1				5					10					15			
Arg	Thr	Ala	Leu	Arg	Gly	Leu	Gly	Leu	Ala	Val	Gly	Gly	Met	Ala	Leu		
			20					25					30				
Ala	Ala	Gly	Pro	Gly	Thr	Ser	Pro	Ala	Ala	Ala	Ala	Pro	Arg	Arg	Arg		
		35					40					45					
Leu	Val	Thr	Tyr	Val	Leu	Val	His	Gly	Thr	His	Ser	Ala	Gly	Ala	Phe		
	50					55					60						
Trp	Thr	Pro	Ile	Ala	Arg	Glu	Leu	Gly	Leu	Arg	Gly	His	Arg	Val	Val		
65					70					75					80		
Met	Val	Asp	Gln	Pro	Arg	His	Gly	Ala	Glu	Ala	Phe	Val	Ala	Glu	Ser		
				85					90					95			
Tyr	Gln	Arg	Gln	Asp	Leu	Ala	Ala	Met	Ala	Val	Glu	Pro	Ser	Pro	Leu		
			100					105					110				
Lys	Gly	Leu	Gly	Leu	Asp	Asp	Tyr	Glu	Ala	Arg	Val	Ala	Gly	Ile	Val		
		115					120					125					
Arg	Arg	Ala	Ala	Arg	Asn	Gly	Pro	Val	Val	Leu	Val	Gly	His	Ser	Leu		
	130					135					140						
Gly	Gly	Val	Ser	Val	Ser	Arg	Val	Gly	Glu	Ala	Val	Pro	His	Leu	Leu		
145					150					155					160		

His His Ile Cys Tyr Met Ala Ala Phe Cys Pro Ser Arg Val Leu Pro
165 170 175

Thr Ala Asp Ala Cys Thr Ala Ala Pro Glu Asn Ala Asn Ala Val Ser
180 185 190

Pro Val Glu Leu Thr Val Gly Asp Pro Asp Arg Leu Gly Val Leu Arg
195 200 205

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

Met Ile Cys Ala Asp Tyr Pro Asp Ala Asp Phe Arg Arg Ile Leu Ala
225 230 235 240

Gly Met Gln Thr Asp Glu Pro Val Ala Ala Tyr Ala Gly Arg Ala Val
245 250 255

Gly Arg Ala Gly Arg Trp Gly Arg Ile Pro Arg Thr Tyr Leu Arg Phe
260 265 270

Gly Arg Asp Arg Thr Ile Ala Thr Ala Leu Gln Asp Arg Val Ile Ala
275 280 285

Glu Ala Asp Ala Ala Thr Pro Gly Asn Gly Phe Arg Val His Asp Phe
290 295 300

Pro Glu Ala Ser His Val Gly Pro Leu Asp Pro Thr Pro Val Ala Asp
305 310 315 320

Val Leu Asp Arg Leu Ala Gly
325

<210> 37

<211> 388

<212> PRT

<213> Artificial

<220>

<223> Deletionsmutante EstB_Short4; abgeleitet von SEQ ID NO:3

<220>

<221> MISC_FEATURE

<223> entspricht EstB_N27, wobei die Aminosäuren 317-319 (RGP) von EstB_N27 (SEQ ID NO:3) deletiert wurden

<400> 37

Met	Thr	Ala	Ala	Ser	Leu	Asp	Pro	Thr	Ala	Phe	Ser	Leu	Asp	Ala	Ala	1	5	10	15
Leu	Leu	Ala	Ala	Arg	Leu	Asp	Ala	Val	Phe	Asp	Gln	Ala	Leu	Arg	Glu	20	25	30	
Arg	Arg	Leu	Val	Gly	Ala	Val	Ala	Ile	Val	Ala	Arg	His	Gly	Glu	Ile	35	40	45	
Leu	Tyr	Arg	Arg	Ala	Gln	Gly	Leu	Ala	Asp	Arg	Glu	Ala	Gly	Arg	Pro	50	55	60	
Met	Arg	Glu	Asp	Thr	Leu	Phe	Arg	Leu	Ala	Ser	Val	Thr	Lys	Pro	Ile	65	70	75	80
Val	Ala	Leu	Ala	Val	Leu	Arg	Leu	Val	Ala	Arg	Gly	Glu	Leu	Ala	Leu	85	90	95	
Asp	Ala	Pro	Val	Thr	Arg	Trp	Leu	Pro	Glu	Phe	Arg	Pro	Arg	Leu	Ala	100	105	110	
Asp	Gly	Ser	Glu	Pro	Leu	Val	Thr	Ile	His	His	Leu	Leu	Thr	His	Thr	115	120	125	
Ser	Gly	Leu	Ser	Tyr	Trp	Leu	Leu	Glu	Gly	Ala	Gly	Ser	Val	Tyr	Asp	130	135	140	
Arg	Leu	Gly	Ile	Ser	Asp	Gly	Ile	Asp	Leu	Arg	Asp	Phe	Asp	Leu	Asp	145	150	155	160
Glu	Asn	Leu	Arg	Arg	Leu	Ala	Ser	Ala	Pro	Leu	Ser	Phe	Ala	Pro	Gly	165	170	175	
Ser	Gly	Trp	Gln	Tyr	Ser	Leu	Ala	Leu	Asp	Val	Leu	Gly	Ala	Val	Val	180	185	190	
Glu	Arg	Ala	Thr	Gly	Gln	Pro	Leu	Ala	Ala	Ala	Val	Asp	Ala	Leu	Val	195	200	205	
Ala	Gln	Pro	Leu	Gly	Met	Arg	Asp	Cys	Gly	Phe	Val	Ser	Ala	Glu	Pro	210	215	220	
Glu	Arg	Phe	Ala	Val	Pro	Tyr	His	Asp	Gly	Gln	Pro	Glu	Pro	Val	Arg	225	230	235	240
Met	Arg	Asp	Gly	Ile	Glu	Val	Pro	Leu	Pro	Gly	Gly	His	Gly	Ala	Ala				

245

250

255

Val Arg Phe Ala Pro Ser Arg Val Phe Glu Pro Gly Ala Tyr Pro Ser
 260 265 270

Gly Gly Ala Gly Met Tyr Gly Ser Ala Asp Asp Val Leu Arg Ala Leu
 275 280 285

Glu Ala Ile Arg Ala Asn Pro Gly Phe Leu Pro Glu Thr Leu Ala Asp
 290 295 300

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

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

Pro Gln His Ala Gly Thr Leu Gln Trp Gly Gly Val Tyr Gly His Ser
 340 345 350

Trp Phe Val Asp Arg Ala Leu Gly Leu Ser Val Leu Leu Leu Thr Asn
 355 360 365

Thr Ala Tyr Glu Gly Met Ser Gly Pro Leu Thr Ile Ala Leu Arg Asp
 370 375 380

Ala Val Tyr Ala
 385

<210> 38
 <211> 388
 <212> PRT
 <213> Artificial

<220>
 <223> EstB_N27 Short 5; abgeleitet von SEQ ID NO:3

<220>
 <221> MISC_FEATURE
 <223> Aminosäuren 248-255 (PLPGGHGA) von SEQ ID NO:3 wurden ersetzt
 durch SLGTT

<400> 38

Met Thr Ala Ala Ser Leu Asp Pro Thr Ala Phe Ser Leu Asp Ala Ala
 1 5 10 15

Leu Leu Ala Ala Arg Leu Asp Ala Val Phe Asp Gln Ala Leu Arg Glu
 20 25 30

Arg Arg Leu Val Gly Ala Val Ala Ile Val Ala Arg His Gly Glu Ile
35 40 45

Leu Tyr Arg Arg Ala Gln Gly Leu Ala Asp Arg Glu Ala Gly Arg Pro
50 55 60

Met Arg Glu Asp Thr Leu Phe Arg Leu Ala Ser Val Thr Lys Pro Ile
65 70 75 80

Val Ala Leu Ala Val Leu Arg Leu Val Ala Arg Gly Glu Leu Ala Leu
85 90 95

Asp Ala Pro Val Thr Arg Trp Leu Pro Glu Phe Arg Pro Arg Leu Ala
100 105 110

Asp Gly Ser Glu Pro Leu Val Thr Ile His His Leu Leu Thr His Thr
115 120 125

Ser Gly Leu Ser Tyr Trp Leu Leu Glu Gly Ala Gly Ser Val Tyr Asp
130 135 140

Arg Leu Gly Ile Ser Asp Gly Ile Asp Leu Arg Asp Phe Asp Leu Asp
145 150 155 160

Glu Asn Leu Arg Arg Leu Ala Ser Ala Pro Leu Ser Phe Ala Pro Gly
165 170 175

Ser Gly Trp Gln Tyr Ser Leu Ala Leu Asp Val Leu Gly Ala Val Val
180 185 190

Glu Arg Ala Thr Gly Gln Pro Leu Ala Ala Ala Val Asp Ala Leu Val
195 200 205

Ala Gln Pro Leu Gly Met Arg Asp Cys Gly Phe Val Ser Ala Glu Pro
210 215 220

Glu Arg Phe Ala Val Pro Tyr His Asp Gly Gln Pro Glu Pro Val Arg
225 230 235 240

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

Ala Pro Ser Arg Val Phe Glu Pro Gly Ala Tyr Pro Ser Gly Gly Ala
260 265 270

Gly Met Tyr Gly Ser Ala Asp Asp Val Leu Arg Ala Leu Glu Ala Ile
275 280 285

Arg Ala Asn Pro Gly Phe Leu Pro Glu Thr Leu Ala Asp Ala Ala Arg
290 295 300

Arg Asp Gln Val Gly Val Gly Ala Lys Thr Arg Gly Pro Gly Trp Gly
305 310 315 320

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

Pro Gln His Ala Gly Thr Leu Gln Trp Gly Gly Val Tyr Gly His Ser
340 345 350

Trp Phe Val Asp Arg Ala Leu Gly Leu Ser Val Leu Leu Leu Thr Asn
355 360 365

Thr Ala Tyr Glu Gly Met Ser Gly Pro Leu Thr Ile Ala Leu Arg Asp
370 375 380

Ala Val Tyr Ala
385

<210> 39
<211> 35
<212> DNA
<213> Artificial

<220>
<223> PCR-Primer

<220>
<221> misc_feature
<223> führt den Aminosäureaustausch Phe138Val ein

<400> 39
gctgctcttg tatatcttgc tgcggtcatg cctgc

35

<210> 40
<211> 35
<212> DNA
<213> Artificial

<220>
<223> PCR-Primer

<220>
<221> misc_feature

<223> führt den Aminosäureaustausch Phe138Ala ein

<400> 40

gctgctcttg tatatcttgc tgcggccatg cctgc

35

<210> 41

<211> 35

<212> DNA

<213> Artificial

<220>

<223> PCR-Primer

<220>

<221> misc_feature

<223> führt den Aminosäureaustausch Glu154Ala ein

<400> 41

gtaagagcac cagcaaacca tggcgaaatg ctggc

35

<210> 42

<211> 27

<212> DNA

<213> Artificial

<220>

<223> PCR-Primer

<220>

<221> misc_feature

<223> führt den Aminosäureaustausch Leu163Ala ein

<400> 42

ctggcctcgg cgatctgcgc cagccct

27

<210> 43

<211> 25

<212> DNA

<213> Artificial

<220>

<223> PCR-Primer

<220>

<221> misc_feature

<223> führt den Aminosäureaustausch Leu189Ala ein

<400> 43

cggcctatct cgccacggcg aagca

25

<210> 44

<211> 35

<212> DNA

<213> Artificial

<220>
<223> PCR-Primer

<220>
<221> misc_feature
<223> führt die Aminosäureaustausche Leu189AlaLeu193Ala ein

<400> 44
gccacggcga agcaggcggc gttcgaggat gttga

35

<210> 45
<211> 25
<212> DNA
<213> Artificial

<220>
<223> PCR-Primer

<220>
<221> misc_feature
<223> führt den Aminosäureaustausch Leu193Ala ein

<400> 45
gcaggcggcg ttcgaggatg ttgac

25

<210> 46
<211> 30
<212> DNA
<213> Artificial

<220>
<223> PCR-Primer

<220>
<221> misc_feature
<223> führt den Aminosäureaustausch Val150Ala ein

<400> 46
gtacctggtc ttgattacgc gagagctcct

30

<210> 47
<211> 25
<212> DNA
<213> Artificial

<220>
<223> PCR-Primer

<220>
<221> misc_feature
<223> führt den Aminosäureaustausch Thr188Ser ein

<400> 47

gcctatctcg cctcgctgaa gcagg 25

<210> 48
<211> 25
<212> DNA
<213> Artificial

<220>
<223> PCR-Primer

<220>
<221> misc_feature
<223> führt den Aminosäureaustausch Leu160Ala ein

<400> 48
cgaaatggcg gcctcgctga tctgc 25

<210> 49
<211> 35
<212> DNA
<213> Artificial

<220>
<223> PCR-Primer

<220>
<221> misc_feature
<223> führt die Aminosäureaustausche Thr188AlaLeu189AlaLeu193Ala ein

<400> 49
tatctcgctt cggcgaagca ggccggcggtc gagga 35

<210> 50
<211> 1179
<212> DNA
<213> Burkholderia gladioli

<220>
<221> misc_feature
<223> für SEQ ID NO:1 kodierende Sequenz

<400> 50
atgaccgctg cctcgctcga cccgaccgct ttctccctcg atgccgcctc gctggccgcg 60
cgtctcgatg ccgtgttcga ccaggcgctg cgccaacggc gcctggtcgg cgcggtggcg 120
atcgtcgcgc ggcacggcga gatcctgtat cgccgcgccc agggcctggc cgaccgagag 180
gcaggtcggc cgatgcgcga ggacacgctg ttccggctcg ctccggtgac caagccgata 240
gtcgcgctgg cggtgctgcg gctgggtggc cgcggcgaac tcgcgctcga cgcgccggtc 300
acgcgctggg tgcccgaatt ccggccgctg ctggccgacg gcagcgagcc gctcgtcacg 360
attcaccacc tgctcacgca cacgtcgggg ctccggtact ggctgctcga gggcgccggc 420

tccgtgtacg accggctcgg catctcggac ggcacgcacc tgcgcgactt cgatctcgac	480
gaaaacctgc gccgcctcgc ctccggcgccg ctgtccttcg cgcggggcag cggctggcag	540
tattcgctgg cgctcgacgt gctcggcgcg gtggctcgagc gcgccaccgg gcagccgctg	600
gccgcggcgg tggacgcgtt ggtcgcccag ccgctcggca tgcgcgattg cggtttcgtc	660
tcggcgagac ccgagcgctt cgcctgcctt taccacgacg gccagccgga gccggtgcgc	720
atgcgcgacg gcatcgaggt gccgctgccg gaaggccacg gcgcggccgt gcgttttcgcg	780
ccctcccgcg tgttcgagcc gggcgccctat ccctcggggc gcgccggcat gtacggctcg	840
gccgacgacg tcctgcgcgc gctcgaggcg atccgcgcca atcccggttt cctgcccag	900
acgctggccg acgcggcgcg ccgcgaccag gccggagtcg gcgccgagac gcgcggcccc	960
ggctggggct tcggctacct gagcgcggtg ctcgacgacg cggccgcggc cggcaccgcc	1020
cagcacgccg ggacgctgca atggggcggc gtctatggcc attcctgggt cgtcgaccgc	1080
gcgctgggac tcagcgtgct gctgctcacc aataccgcct acgaaggcat gtcgggcccc	1140
ctgacgatcg ccttgcgcga cgcctctac gcgcgctga	1179

<210> 51
 <211> 897
 <212> DNA
 <213> Burkholderia gladioli

<220>
 <221> misc_feature
 <223> für SEQ ID NO:2 kodierende Sequenz

<400> 51	
atgaaccatc ccgatatcga cactcattca cgaaatgccg ccgcgccttt accctttgtg	60
ttggtccatg gagcctggca tggagcctgg gcctatgaac gattaggagc ggcgttggcg	120
gcgcgtggac atgccagtgt ccgcgatgat ttaccgcgcg atggaattaa tgcccgatat	180
ccggccgcgt tttggcaagg agatgcgcaa gcgttagcgc aagaaccgtc tccggtcgcg	240
gccacaactt tagacgatta tacaggacaa gtgttacgag cgatcgatgc tgcttgtgct	300
cttggtcacc cgagagtagt gcttgtaggt catagtatgg gtggtgtagc tatcacagcc	360
gcggctgaaa gagctccgga aagaatcgct gctcttgtat atcttgctgc gttcatgcct	420
gctagtggtg tacctggtct tgattacgtg agagctcctg aaaaccatgg cgaaatgctg	480
gcctcgctga tctgcgccag ccctcgcgcg atcggcgcgc tgcgcatcaa cccggccagc	540
cgcgacgcgg cctatctcgc cacgctgaag caggcgctgt tcgaggatgt tgacgaggcg	600
acgttccgcg ccgtgacacg gctgatgtcc tcggacgtgc cgaccgcgcc attcgccacg	660

ccgatcgcg	ccacggccga	gcgctggggc	tcgatcgcg	gccactacgt	gacctgcgcc	720
gaggatcgcg	tgatcctgcc	ggcgctgcag	cggcgcttca	tcgccgaggg	cgacgccttc	780
ctgccccgagc	ggccgacgcg	cgtccacgca	ctcgacagca	gccattcgcc	gttcctgtcc	840
cagccccgaca	cgctcgccga	gttgctgacg	ggcatcgcg	gcaacacggc	gatctga	897

<210> 52
 <211> 585
 <212> DNA
 <213> Humicola insolens

<220>
 <221> misc_feature
 <223> für Cutinase gemäß SEQ ID NO:5 kodierende Sequenz

<400> 52						
ggtaccggcg	caatcgaaaa	cggcctggaa	tccggctccg	caaacgcatg	cccagatgca	60
atcctgatct	tcgcacgcgg	ctccaccgaa	ccaggcaaca	tgggcatcac	cgtgggcccc	120
gcactggcaa	acggcctgga	atcccacatc	cgcaacatct	ggatccaggg	cgtgggcggc	180
ccatacgatg	cagcactggc	aaccaacttc	ctgccacgcg	gcacctccca	ggcaaacatc	240
gatgaaggca	agcgctgtt	cgcactggca	aaccagaagt	gccccaaacac	cccagtgggtg	300
gcaggcggct	actcccaggg	cgcagcactg	atcgcagcag	cagtgtccga	actgtccggc	360
gcagtgaagg	aacaggtgaa	gggcgtggca	ctgttcgggt	acaccagaa	cctgcagaac	420
cgcgggcgga	tcccaaacta	cccacgcgaa	cgcaccaagg	tgttctgcaa	cgtgggcgat	480
gcagtgtgca	ccggcaccct	gatcatcacc	ccagcacacc	tgtcctacac	catcgaagca	540
cgcggcgaag	cagcacgctt	cctgcgcgat	cgcacccgcg	cataa		585

<210> 53
 <211> 954
 <212> DNA
 <213> Candida antarctica

<220>
 <221> misc_feature
 <223> kodiert für Lipase B gemäß SEQ ID NO:6

<400> 53						
ctaccttccg	gttcggaccc	tgctttttcg	cagcccaagt	cggtgctcga	tgccgggtctg	60
acctgccagg	gtgcttcgcc	atcctcggtc	tccaaaccca	tccttctcgt	ccccggaacc	120
ggcaccacag	gtccacagtc	gttcgactcg	aactggatcc	ccctctctgc	gcagctgggt	180
tacacaccct	gctggatctc	acccccgcgc	ttcatgctca	acgacacca	ggtcaacacg	240
gagtacatgg	tcaacgccat	caccacgctc	tacgctgggt	cgggcaacaa	caagcttccc	300

```

gtgtcacct ggtcccaggg tggctctggtt gcacagtggg gtctgacctt cttccccagt 360
atcaggtcca aggtcgatcg acttatggcc tttgcgcccc actacaaggg caccgtcctc 420
gccggccctc tcgatgcact cgcggttagt gcaccctccg tatggcagca aaccaccggt 480
tcggcactca ctaccgcact ccgaaacgca ggtggtctga cccagatcgt gccaccacc 540
aacctctact cggcgaccga cgagatcgtt cagcctcagg tgtccaactc gccactcgac 600
tcatcctacc tcttcaacgg aaagaacgtc caggcacagg ctgtgtgtgg gccgctgttc 660
gtcatcgacc atgcaggctc gctcacctcg cagttctcct acgtcgtcgg tcgatccgcc 720
ctgcgctcca ccacggggcca ggctcgtagt gcagactatg gcattacgga ctgcaaccct 780
cttcccgcca atgatctgac tcccagacaa aaggctgcgcg cggctgcgct cctggcgccg 840
gcggtgcag ccatcgtggc gggtccaaag cagaactgcg agcccgacct catgccctac 900
gcccgccct ttgcagtagg caaaaggacc tgctccggca tcgtcacccc ctga 954

```

```

<210> 54
<211> 1179
<212> DNA
<213> Artificial

```

```

<220>
<223> Gene coding for modified EstB_N27 (according to SEQ ID NO:3)

```

```

<220>
<221> misc_feature
<223> kodiert für N27 gemäß SEQ ID NO:3

```

```

<220>
<221> misc_feature
<222> (1)..(42)
<223> kodiert für Aminosäuren, die im aktiven Protein fehlen

```

```

<220>
<221> misc_feature
<222> (49)..(51)
<223> Codon TCG des Wildtyps (SEQ ID NO:50) zu TTG mutiert, was zu
Ser17Leu führt

```

```

<220>
<221> misc_feature
<222> (60)..(60)
<223> stiller Nukleotidaustausch G to A

```

```

<220>
<221> misc_feature
<222> (394)..(396)
<223> Codon GGC des Wildtyps (SEQ ID NO:50) zu AGC mutiert, was zu
Gly132Ser führt

```

```

<220>
<221> misc_feature

```

<222> (513)..(513)
<223> stiller Nukleotidaustausch G to A

<220>
<221> misc_feature
<222> (751)..(753)
<223> Codon GAA des Wildtyps (SEQ ID NO:50) zu GAA, was zu Glu251Gly führt

<220>
<221> misc_feature
<222> (931)..(933)
<223> Codon GCC des Wildtyps (SEQ ID NO:50) zu GTC mutiert, was zu Ala311Val führt

<220>
<221> misc_feature
<222> (946)..(948)
<223> Codon GAG des Wildtyps (SEQ ID NO:50) zu AAG mutiert, was zu Glu316Lys führt

<400> 54
atgaccgctg cctcgctcga cccgaccgct ttctccctcg atgccgcctt gctggccgca 60
cgtctcgatg ccgtgttcga ccaggcgctg cgccaacggc gcctggctcg cgcggtggcg 120
atcgtcgctg ggcacggcga gatcctgtat cgccgcgccc agggcctggc cgaccgagag 180
gcaggtcggc cgatgcgcga ggacacgctg ttccggctcg ctctgggtgac caagccgatc 240
gtcgcgctgg cggtgctgct actgggtggc cgcggcgaac tcgcgctcga cgcgcgggtc 300
acgcgctggt tgcccgaatt ccggccgctg ctggccgacg gcagcgagcc gctcgtcacg 360
attcaccacc tgctcacgca cacgtcgggg ctacgtact ggctgctcga gggcgccggc 420
tccgtgtacg accggctcgg catctcggac ggcacgcacc tcgcgcgactt cgatctcgac 480
gaaaacctgc gccgcctcgc ctccggcgcc ctatccttcg cgccggggcag cggctggcag 540
tattcgctgg cgctcgacgt gctcggcgcg gtggctcgagc gcgccaccgg gcagccgctg 600
gcggcgggcg tggacgcgtt ggtcgcccag ccgctcggca tcgcgcgattg cggtttcgtc 660
tcggcgagc ccgagcgctt cgccgtgcct taccacgacg gccagccgga gccggtgcgc 720
atgcgcgacg gcatcgaggt gccgctgccg ggaggccacg gcgcggccgt gcgtttcgcg 780
ccctcccgcg tgttcgagcc gggcgccctat ccctcggggc gcgcggccat gtacggctcg 840
gccgacgacg tcctgcgcgc gctcgaggcg atccgcgcca atcccggttt cctgcccag 900
acgctggccg acgcggcgcg ccgcgaccag gtcggagtcg gcgccaagac gcgcggcccc 960
ggctggggct tcggctacct gagcgcggtg ctcgacgacg cgcccgcggc cggcaccgcc 1020
cagcacgccg ggacgctgca atggggcggc gtctatggcc attcctggtt cgctcgaccg 1080
gcgctgggac tcagcgtgct gctgctcacc aataccgctt acgaaggcat gtcgggcccc 1140
ctgacgatcg ccttgcgcca cgccgtctac gcgcgctga 1179

<210> 55
<211> 1179
<212> DNA
<213> Artificial

<220>
<223> DNA coding for EstB_NJ70 (SE ID NO:4)

<220>
<221> misc_feature
<223> kodiert für NJ_70 gemäß SEQ ID NO:4

<400> 55
atgaccgctg cctcactcga cctgaccgcc ttctccctcg atgcgcctc gctggccgcg 60
cgtctcgatg ccgtgttcga ccaggcgctg cgccaacggc gcctggtcgg cgcggtggcg 120
atcgtcgcgc ggcacggcga gatcctgtat cgccgcgccc agggcctggc cgaccgagag 180
gcaggtcggc cgatgcgcga ggacacgctg ttccggctcg ctccggtgac caagccgata 240
gtcgcgctgg cgggtgctgcg gctgggtggc cgcgccgagc tcgcgctcga cgcgcgggtc 300
acgcgctggg tgcgcgaatt ccggccgcgg ctggccgacg gcagcgagcc gctcgtcacg 360
attcaccacc tgctcacgca cacgtcgggg ctacgtaca ggctgctcga gggcgccggc 420
tccgtgtacg accggctcgg catctcggac ggcatcgacc tgtgcgactt cgatctcgac 480
gaaaacctgc gccgcctcgc ctccggcgccg ctgtccttcg cgccgggcag cggctggcag 540
tattcgctgg cgctcgacgt gctcggcgcg gtggctcgagc gcgccaccgg gcagccgctg 600
gccgcggcgg tggacgcgtt ggctcggcag ccgctcggca tgcgcgattg cggtttcgtc 660
tcggcgagac ccgagcgctt cgccgtgcct taccacgacg gccagcctga gccggtgcgc 720
atgcgcgacg gcacgaggt gccgctgccg ggaggccacg gcgcggccgt gcgtttcgcg 780
ccctcccgcg tgttcgagcc gggcgcttat ccctcggggc gcgcggccat gtacggctcg 840
gccgacgacg tcctgcgcgc gctcggggcg atccgcgcca atcccggttt cctgcccag 900
acgctggccg acgcggcgcg ccgcgaccag gtcggagtcg gcgccaagac gcgcggcccc 960
ggctggggct tcggctactt gagcgcggtg ctcgacgata cggccgcggc cggcaccocg 1020
cagcacgccg ggacgctgca atggggcggc gtctatggcc attcctggtt cgtcgaccgc 1080
gcgctgggac tcagcgtgct gctgctcacc aataccgcct acgaaggcat gtcgggcccc 1140
ctgacgatcg ctttgcgcga cgccgtctac gcgcgctga 1179

<210> 56
<211> 1170
<212> DNA
<213> Artificial

<220>
<223> für EstB_N27_Short4 (SEQ ID NO:37) kodierende Sequenz

<220>
<221> misc_feature
<222> (951)..(952)
<223> Nukleotide CGCGGCCCC der Positionen 952 bis 960 von N27 (SEQ ID NO:54) sind zwischen den Nukleotiden 952 and 952 of N27_Short4 (SEQ ID NO:56) deletiert

<400> 56
atgaccgctg cctcgctcga cccgaccgct ttctccctcg atgccgcctt gctggccgca 60
cgtctcgatg ccgtgttcga ccaggcgctg cggaacggc gcttggtcgg cgcggtggcg 120
atcgtcgcgc ggcacggcga gatcctgtat cgccgcgccc agggcctggc cgaccgagag 180
gcaggtcggc cgatgcgcga ggacacgctg ttccggctcg cttcggtgac caagccgata 240
gtcgcgctgg cgggtgctgc actggtggcg cgcggcgaac tcgcgctcga cgcgcgggtc 300
acgcgctggt tgcccgaatt ccggccgcgg ctggccgacg gcagcgagcc gctcgtcacg 360
attcaccacc tgctcacgca cacgtcgggg ctacgtact ggctgctcga gggcgccggc 420
tccgtgtacg accggctcgg catctcggac ggcacgcacc tcgcgcgactt cgatctcgac 480
gaaaacctgc gccgcctcgc ctccggcgccg ctatccttcg cgccgggcag cggctggcag 540
tattcgctgg cgctcgacgt gctcggcgcg gtggctcagc gcgccaccgg gcagccgctg 600
gcggcgggcg tggacgcgtt ggtcgcccag ccgctcggca tgccgcgattg cggtttcgtc 660
tcggcgagc ccgagcgctt cgccgtgcct taccacgacg gccagccgga gccggtgcgc 720
atgcgcgacg gcatcgaggt gccgctgccg ggaggccacg gcgcggccgt gcgtttcgcg 780
ccctcccgcg tgttcgagcc gggcgccctat ccctcggggc gcgcggccat gtacggctcg 840
gccgacgacg tcctgcgcgc gctcgaggcg atccgcgcca atcccggttt cctgcccagag 900
acgctggccg acgcggcgcg ccgcgaccag gtcggagtcg gcgccaagac gggctggggc 960
ttcggctacc tgagcgcggt gctcgacgat ccggccgcgg ccggcacccc gcagcacgcc 1020
gggacgctgc aatggggcgcg cgtctatggc cattcctggt tcgctgaccg cgcgctggga 1080
ctcagcgtgc tgctgctcac caataccgcc tacgaaggca tgcggggccc gctgacgata 1140
gccttgcgcg acgccgtcta cgcgcgctga 1170

<210> 57
<211> 1170
<212> DNA
<213> Artificial

<220>
<223> kodiert für EstB_N27_Short5 (SEQ ID NO:38)

<220>
<221> misc_feature
<223> kodiert für EstB_N27_Short5

<220>
<221> misc_feature
<222> (746)..(759)
<223> Sequenz ctgGGGACGACGgcc der Nukleotide 746 bis 759 von N27_Short
5 entspricht den Nukleotiden 745 bis 768 von EstB-wt (SEQ ID
NO:50) , d.h. ctgCCGGAAGGCCACGGCGCGgcc

<400> 57
atgaccgctg cctcgctcga cccgaccgct ttctccctcg atgccgcctt gctggccgca 60
cgtctcgatg ccgtgttcga ccaggcgctg cggaacggc gcctggtcgg cgcggtggcg 120
atcgtcgcgc ggcacggcga gatcctgtat cgccgcgccc agggcctggc cgaccgagag 180
gcaggtcggc cgatgcgcga ggacacgctg ttccggctcg cttcggtgac caagccgata 240
gtcgcgctgg cggtgctgcg actggtggcg cgcggcgaac tcgcgctcga cgcgccggtc 300
acgcgctggt tgcccgaatt ccggccgctg ctggccgacg gcagcgagcc gctcgtcacg 360
attcaccacc tgctcacgca cacgtcgggg ctacgtact ggctgctcga gggcgccggc 420
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gaaaacctgc gccgcctcgc ctcggcgcgc ctatccttcg cgccgggcag cggctggcag 540
tattcgctgg cgctcgacgt gctcggcgcg gtggtcgagc gcgccaccgg gcagccgctg 600
gcggcgggcg tggacgcgtt ggtcgcccag ccgctcggca tcgcgcgattg cggtttcgtc 660
tcggcgggagc ccgagcgctt cgccgtgcct taccacgacg gccagccgga gccggtgcgc 720
atgcgcgacg gcatcgaggt gtcgctgggg acgacggccg tcggtttcgc gccctccgc 780
gtgttcgagc cgggcgccta tccctcgggc ggcgccggca tgtacggctc ggccgacgac 840
gtcctgcgcg cgctcgaggc gatccgcgc aatcccggtt tcctgcccga gacgtggcc 900
gacgcggcgc gccgcgacca ggtcggagtc ggcgccaaga cgcgcgcccc cggctggggc 960
ttcggctacc tgagcgcggt gctcgacgat ccggccgcgg ccggcaccac gcagcacgcc 1020
gggacgctgc aatggggcg cgtctatggc cattcctggt tcgctgaccg cgcgctggga 1080
ctcagcgtgc tgctgctcac caataccgcc tacgaaggca tgcggggccc gctgacgata 1140
gccttgccgc acgccgtcta cgcgcgctga 1170

<210> 58
<211> 257
<212> PRT
<213> Hevea brasiliensis

<220>
<221> MISC_FEATURE
<223> Hydroxynitril-Lyase, GenBank-Nr. AAC49184

<400> 58

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

Trp Ile Trp His Lys Leu Lys Pro Leu Leu Glu Ala Leu Gly His Lys
20 25 30

Val Thr Ala Leu Asp Leu Ala Ala Ser Gly Val Asp Pro Arg Gln Ile
35 40 45

Glu Glu Ile Gly Ser Phe Asp Glu Tyr Ser Glu Pro Leu Leu Thr Phe
50 55 60

Leu Glu Ala Leu Pro Pro Gly Glu Lys Val Ile Leu Val Gly Glu Ser
65 70 75 80

Cys Gly Gly Leu Asn Ile Ala Ile Ala Asp Lys Tyr Cys Glu Lys
85 90 95

Ile Ala Ala Ala Val Phe His Asn Ser Val Leu Pro Asp Thr Glu His
100 105 110

Cys Pro Ser Tyr Val Val Asp Lys Leu Met Glu Val Phe Pro Asp Trp
115 120 125

Lys Asp Thr Thr Tyr Phe Thr Tyr Thr Lys Asp Gly Lys Glu Ile Thr
130 135 140

Gly Leu Lys Leu Gly Phe Thr Leu Leu Arg Glu Asn Leu Tyr Thr Leu
145 150 155 160

Cys Gly Pro Glu Glu Tyr Glu Leu Ala Lys Met Leu Thr Arg Lys Gly
165 170 175

Ser Leu Phe Gln Asn Ile Leu Ala Lys Arg Pro Phe Phe Thr Lys Glu
180 185 190

Gly Tyr Gly Ser Ile Lys Lys Ile Tyr Val Trp Thr Asp Gln Asp Glu
195 200 205

Ile Phe Leu Pro Glu Phe Gln Leu Trp Gln Ile Glu Asn Tyr Lys Pro
210 215 220

Asp Lys Val Tyr Lys Val Glu Gly Gly Asp His Lys Leu Gln Leu Thr
225 230 235 240

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

Asn

<210> 59
<211> 258
<212> PRT
<213> Manihot esculenta

<220>
<221> MISC_FEATURE
<223> Hydroxynitril-Lyase, Swiss-Prot Nr. P52705

<400> 59

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

Trp Ile Trp His Lys Leu Lys Pro Ala Leu Glu Arg Ala Gly His Lys
20 25 30

Val Thr Ala Leu Asp Met Ala Ala Ser Gly Ile Asp Pro Arg Gln Ile
35 40 45

Glu Gln Ile Asn Ser Phe Asp Glu Tyr Ser Glu Pro Leu Leu Thr Phe
50 55 60

Leu Glu Lys Leu Pro Gln Gly Glu Lys Val Ile Ile Val Gly Glu Ser
65 70 75 80

Cys Ala Gly Leu Asn Ile Ala Ile Ala Ala Asp Arg Tyr Val Asp Lys
85 90 95

Ile Ala Ala Gly Val Phe His Asn Ser Leu Leu Pro Asp Thr Val His
100 105 110

Ser Pro Ser Tyr Thr Val Glu Lys Leu Leu Glu Ser Phe Pro Asp Trp
115 120 125

Arg Asp Thr Glu Tyr Phe Thr Phe Thr Asn Ile Thr Gly Glu Thr Ile
130 135 140

Thr Thr Met Lys Leu Gly Phe Val Leu Leu Arg Glu Asn Leu Phe Thr
145 150 155 160

Lys Cys Thr Asp Gly Glu Tyr Glu Leu Ala Lys Met Val Met Arg Lys
165 170 175

Gly Ser Leu Phe Gln Asn Val Leu Ala Gln Arg Pro Lys Phe Thr Glu
180 185 190

Lys Gly Tyr Gly Ser Ile Lys Lys Val Tyr Ile Trp Thr Asp Gln Asp
195 200 205

Lys Ile Phe Leu Pro Asp Phe Gln Arg Trp Gln Ile Ala Asn Tyr Lys
210 215 220

Pro Asp Lys Val Tyr Gln Val Gln Gly Gly Asp His Lys Leu Gln Leu
225 230 235 240

Thr Lys Thr Glu Glu Val Ala His Ile Leu Gln Glu Val Ala Asp Ala
245 250 255

Tyr Ala