

SEQUENCE LISTING

<110> Henkel KGaA

<120> Verfahren zur enzymatischen Herstellung von Wasserstoffperoxid

<130> H 07327

<160> 3

<170> PatentIn version 3.1

<210> 1

<211> 544

<212> PRT

<213> *Arthrobacter nicotianae*

<400> 1

Met	Asn	Ile	Glu	Lys	Lys	Asp	Phe	Asp	Tyr	Ile	Val	Ile	Gly	Gly	Gly
1				5					10					15	

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

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

Val Leu Gln Leu Asp Arg Trp Met Glu Leu Leu Glu Ser Gly Leu Asp  
50 55 60

Trp Asp Tyr Pro Ile Glu Pro Gln Glu Asn Gly Asn Ser Phe Met Arg  
65 70 75 80

His Ala Arg Ala Lys Val Met Gly Gly Cys Ser Ser His Asn Ser Cys  
85 90 95

Ile Ala Phe Trp Ala Pro Arg Glu Asp Leu Asp Glu Trp Glu Ser Lys  
100 105 110

Phe Gly Ala Thr Gly Trp Asn Ser Glu Met Ala Tyr Arg Leu Tyr Lys  
115 120 125

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

Asp Ser Gly Pro Val Lys Leu Met Asn Val Pro Pro Val Asp Pro Cys  
145 150 155 160

Gly Val Ala Ile Leu Asp Ala Ala Glu Gln Ala Gly Ile Pro Arg Ala  
165 170 175

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

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

Ile His Pro Ile Glu Gly Arg Glu Asn Phe Phe Leu Leu Thr Gly Leu  
210 215 220

Gln Ala Arg Lys Leu Asn Phe Asp Ala Asp Lys Arg Cys Thr Gly Val  
225 230 235 240

Asp Val Val Asp Gly Ala Phe Gly Arg Thr Val Thr Leu Asn Ala Ala  
245 250 255

Arg Glu Val Val Val Ser Ala Gly Ala Ile Asp Ser Pro Lys Leu Leu  
260 265 270

Met Leu Ser Gly Ile Gly Pro Ala Glu His Leu Lys Glu Val Gly Val  
275 280 285

Glu Val Leu Val Asp Ala Pro Gly Val Gly Glu His Leu Gln Asp His  
290 295 300

Pro Glu Gly Val Ile Gln Trp Glu Ala Lys Lys Pro Met Val Glu Thr  
305 310 315 320

Ser Thr Gln Trp Trp Glu Ile Gly Ile Phe Ala Pro Thr Gln Glu Gly  
325 330 335

Leu Asp Arg Pro Asp Leu Met Met His Tyr Gly Ser Val Pro Phe Asp  
340 345 350

Met His Thr Leu Arg Trp Gly Tyr Pro Thr Ser Glu Asn Thr Phe Cys  
355 360 365

Leu Thr Pro Asn Val Thr His Ala Lys Ser Arg Gly Thr Val Arg Leu  
370 375 380

Arg Ser Cys Asp Phe Arg Asp Lys Pro Lys Val Asp Pro Arg Tyr Phe  
385 390 395 400

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

Lys Ala Arg Glu Ile Val Ala Gln Ser Pro Met Ala Glu Trp Ala Gly  
420 425 430

Glu Glu Gln Phe Pro Gly Lys Asp Val Gln Thr Asp Glu Glu Ile Phe  
435 440 445

Asp Tyr Leu Arg Arg Cys His Asn Thr Val Tyr His Pro Ala Gly Ser  
450 455 460

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

Leu Arg Val Lys Gly Val Ser Gly Leu Arg Val Ala Asp Ala Ser Val  
485 490 495

Met Pro Glu Leu Val Thr Val Asn Pro Asn Ile Thr Val Met Met Ile

500

505

510

Gly Glu Arg Cys Ala Glu Leu Ile Gln Glu Asn Pro Val Glu Ala Arg  
515 520 525

Gln Ser Glu Leu Val Ser Glu Ala Leu Glu His His His His His His  
530 535 540

&lt;210&gt; 2

&lt;211&gt; 546

&lt;212&gt; PRT

<213> *Arthrobacter globiformis*

&lt;400&gt; 2

Met His Ile Asp Asn Ile Glu Asn Leu Ser Asp Arg Glu Phe Asp Tyr  
1 5 10 15

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

Ser Glu Asp Pro Ala Val Ser Val Ala Leu Val Glu Ala Gly Pro Asp  
35 40 45

Asp Arg Gly Val Pro Glu Val Leu Gln Leu Asp Arg Trp Met Glu Leu  
50 55 60

Leu Glu Ser Gly Tyr Asp Trp Asp Tyr Pro Ile Glu Pro Gln Glu Asn  
 65 70 75 80

Gly Asn Ser Phe Met Arg His Ala Arg Ala Lys Val Met Gly Gly Cys  
 85 90 95

Ser Ser His Asn Ser Cys Ile Ala Phe Trp Ala Pro Arg Glu Asp Leu  
 100 105 110

Asp Glu Trp Glu Ala Lys Tyr Gly Ala Thr Gly Trp Asn Ala Glu Ala  
 115 120 125

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

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

Pro Pro Lys Asp Pro Thr Gly Val Ala Leu Leu Asp Ala Cys Glu Gln  
 165 170 175

Ala Gly Ile Pro Arg Ala Lys Phe Asn Thr Gly Thr Thr Val Val Asn  
 180 185 190

Gly Ala Asn Phe Phe Gln Ile Asn Arg Arg Ala Asp Gly Thr Arg Ser  
 195 200 205

Ser Ser Ser Val Ser Tyr Ile His Pro Ile Val Glu Gln Glu Asn Phe  
 210 215 220

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

Arg Arg Cys Thr Gly Val Asp Ile Val Asp Ser Ala Phe Gly His Thr  
245 250 255

His Arg Leu Thr Ala Arg Asn Glu Val Val Leu Ser Thr Gly Ala Ile  
260 265 270

Asp Thr Pro Lys Leu Leu Met Leu Ser Gly Ile Gly Pro Ala Ala His  
275 280 285

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

Glu His Leu Gln Asp His Pro Glu Gly Val Val Gln Phe Glu Ala Lys  
305 310 315 320

Gln Pro Met Val Ala Glu Ser Thr Gln Trp Trp Glu Ile Gly Ile Phe  
325 330 335

Thr Pro Thr Glu Asp Gly Leu Asp Arg Pro Asp Leu Met Met His Tyr  
340 345 350

Gly Ser Val Pro Phe Asp Met Asn Thr Leu Arg His Gly Tyr Pro Thr  
355 360 365

Thr Glu Asn Gly Phe Ser Leu Thr Pro Asn Val Thr His Ala Arg Ser  
370 375 380

Arg Gly Thr Val Arg Leu Arg Ser Arg Asp Phe Arg Asp Lys Pro Met  
385 390 395 400

Val Asp Pro Arg Tyr Phe Thr Asp Pro Glu Gly His Asp Met Arg Val  
405 410 415

Met Val Ala Gly Ile Arg Lys Ala Arg Glu Ile Ala Ala Gln Pro Ala  
420 425 430

Met Ala Glu Trp Thr Gly Arg Glu Leu Ser Pro Gly Val Glu Ala Gln  
435 440 445

Thr Asp Glu Glu Leu Gln Asp Tyr Ile Arg Lys Thr His Asn Thr Val  
450 455 460

Tyr His Pro Val Gly Thr Val Arg Met Gly Ala Val Glu Asp Glu Met  
465 470 475 480

Ser Pro Leu Asp Pro Glu Leu Arg Val Lys Gly Val Thr Gly Leu Arg  
485 490 495

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

Ile Thr Val Met Met Ile Gly Glu Arg Cys Ala Asp Leu Ile Arg Ser  
515 520 525

Ala Arg Ala Gly Glu Thr Thr Thr Ala Asp Ala Glu Leu Ser Ala Ala



530

535

540

Leu Ala

545

&lt;210&gt; 3

&lt;211&gt; 542

&lt;212&gt; PRT

<213> *Arthrobacter nicotianae*

&lt;400&gt; 3

Thr Arg Lys Gly Glu Lys Leu Asn Ile Glu Lys Lys Asp Phe Asp Tyr  
1 5 10 15

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

Ser Glu Asp Pro Ser Val Ser Val Ala Leu Val Glu Ala Gly Pro Asp  
35 40 45

Asp Arg Gly Tyr Asp Glu Val Leu Gln Leu Asp Arg Trp Met Glu Leu  
50 55 60

Leu Glu Ser Gly Leu Asp Trp Asp Tyr Pro Ile Glu Pro Gln Glu Asn  
65 70 75 80

Gly Asn Ser Phe Met Arg His Ala Arg Ala Lys Val Met Gly Gly Cys  
85 90 95

Ser Ser His Asn Ser Cys Ile Ala Phe Trp Ala Pro Arg Glu Asp Leu  
100 105 110

Asp Glu Trp Glu Ser Lys Phe Gly Ala Thr Gly Trp Asn Ser Glu Met  
115 120 125

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

Asp Ala Pro His His Gly Asp Ser Gly Pro Val Lys Leu Met Asn Val  
145 150 155 160

Pro Pro Val Asp Pro Cys Gly Val Ala Ile Leu Asp Ala Ala Glu Gln  
165 170 175

Ala Gly Ile Pro Arg Ala Lys Phe Asn Asn Asn Glu Thr Val Ile Asn  
180 185 190

Gly Ala Asn Phe Phe Gln Ile Asn Arg Leu Pro Asp Gly Thr Arg Ala  
195 200 205

Ser Ser Ser Val Ser Tyr Ile His Pro Ile Glu Gly Arg Glu Asn Phe  
210 215 220

Phe Leu Leu Thr Gly Leu Gln Ala Arg Lys Leu Asn Phe Asp Ala Asp  
225 230 235 240

Lys Arg Cys Thr Gly Val Asp Val Val Asp Gly Ala Phe Gly Arg Thr  
245 250 255

Val Thr Leu Asn Ala Ala Arg Glu Val Val Val Ser Ala Gly Ala Ile  
260 265 270

Asp Ser Pro Lys Leu Leu Met Leu Ser Gly Ile Gly Pro Ala Glu His  
275 280 285

Leu Lys Glu Val Gly Val Glu Val Leu Val Asp Ala Pro Gly Val Gly  
290 295 300

Glu His Leu Gln Asp His Pro Glu Gly Val Ile Gln Trp Glu Ala Lys  
305 310 315 320

Lys Pro Met Val Glu Thr Ser Thr Gln Trp Trp Glu Ile Gly Ile Phe  
325 330 335

Ala Pro Thr Gln Glu Gly Leu Asp Arg Pro Asp Leu Met Met His Tyr  
340 345 350

Gly Ser Val Pro Phe Asp Met His Thr Leu Arg Trp Gly Tyr Pro Thr  
355 360 365

Ser Glu Asn Thr Phe Cys Leu Thr Pro Asn Val Thr His Ala Lys Ser  
370 375 380

Arg Gly Thr Val Arg Leu Arg Ser Cys Asp Phe Ser Asp Lys Pro Lys  
385 390 395 400

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

Met Thr Phe Gly Ile Arg Lys Ala Arg Glu Ile Val Ala Gln Ser Pro  
420 425 430

Met Ala Glu Trp Ala Gly Glu Glu Gln Phe Pro Gly Lys Asp Val Gln  
435 440 445

Thr Asp Glu Glu Ile Phe Asp Tyr Leu Arg Arg Cys His Asn Thr Val  
450 455 460

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

Ser Pro Leu Asp Pro Gln Leu Arg Val Lys Gly Val Ser Gly Leu Arg  
485 490 495

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

Ile Thr Val Met Met Ile Gly Glu Arg Cys Ala Glu Leu Ile Gln Glu  
515 520 525

Asn Pro Val Glu Ala Arg Gln Ser Glu Leu Val Ser Glu Ala  
530 535 540