

SEQUENCE LISTING

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<120> NOVEL LIPASES AND USES THEREOF

<130> 24925WO

<160> 8

<170> PatentIn version 3.2

<210> 1

<211> 1038

<212> DNA

<213> Artificial sequence

<220>

<223> DNA L01 lipase gene

<400> 1

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<210> 2
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 <212> PRT
 <213> Artificial sequence

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 <223> L01 lipase protein

<400> 2

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 1 5 10 15

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

Thr Val Ser Ser Ser Glu Leu Asn Asn Phe Lys Phe Tyr Ile Gln His
 35 40 45

Gly Ala Ala Ala Tyr Cys Asn Ser Glu Thr Ala Ala Gly Ala Asn Val
 50 55 60

Thr Cys Thr Gly Asn Ala Cys Pro Glu Ile Glu Ala Asn Gly Val Thr
 65 70 75 80

Val Val Ala Ser Phe Thr Gly Thr Lys Thr Gly Ile Gly Gly Tyr Val
 85 90 95

Ser Thr Asp Asn Thr Asn Lys Glu Ile Val Leu Ser Phe Arg Gly Ser
 100 105 110

Ile Asn Ile Arg Asn Trp Leu Thr Asn Leu Asp Phe Gly Gln Asp Asp
 115 120 125

Cys Ser Leu Thr Ser Gly Cys Gly Val His Ser Gly Phe Gln Arg Ala
 130 135 140

Trp Glu Glu Ile Ala Asp Asn Leu Thr Ala Ala Val Ala Lys Ala Lys
 145 150 155 160

Thr Ala Asn Pro Asp Tyr Lys Val Val Ala Thr Gly His Ser Leu Gly
 165 170 175

Gly Ala Val Ala Thr Leu Ala Gly Ala Asn Leu Arg Ala Ala Gly Thr
 180 185 190

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

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

His Gly Asp Asp Pro Val Pro Arg Leu Pro Pro Leu Ile Phe Gly Tyr
 225 230 235 240

Arg His Thr Ser Pro Glu Tyr Trp Leu Asp Gly Ser Gly Gly Asp Lys
 245 250 255

Ile Asn Tyr Thr Ile Asn Asp Ile Lys Val Cys Glu Gly Ala Ala Asn
 260 265 270

Leu Gln Cys Asn Gly Gly Thr Leu Gly Leu Asp Ile Ala Ala His Leu
 275 280 285

His Tyr Phe Gln Ala Thr Asp Ala Cys Asn Ala Gly Gly Phe Ser Trp
 290 295 300

Arg Arg Tyr Arg Ser Ala Glu Ser Val Asp Lys Arg Ala Thr Met Thr
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Asp Ala Glu Leu Glu Lys Lys Leu Asn Ser Tyr Val Gln Met Asp Lys
 325 330 335

Glu Tyr Val Lys Asn Asn Gln Ala Arg Ser
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<210> 3

<211> 1038

<212> DNA

<213> Artificial sequence

<220>

<223> DNA L02 lipase gene

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<212> PRT
<213> Artificial sequence

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<220>
<223> L02 lipase protein

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<400> 4

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

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

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Thr Val Ser Ser Ser Glu Leu Asn Asn Phe Lys Phe Tyr Ile Gln His
      35             40            45

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Gly Ala Ala Ala Tyr Cys Asn Ser Glu Thr Ala Ala Gly Ala Lys Val
50             55            60

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Thr Cys Ser Asn Asn Gly Cys Pro Glu Val Glu Ala Asn Gly Val Thr
65 70 75 80

Val Val Ala Ser Phe Val Gly Thr Lys Thr Gly Ile Gly Gly Tyr Val
85 90 95

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

Ile Asn Ile Arg Asn Trp Leu Thr Asn Leu Asp Phe Gly Gln Glu Asp
115 120 125

Cys Ser Leu Thr Ser Gly Cys Gly Val His Ser Gly Phe Gln Arg Ala
130 135 140

Trp Glu Glu Ile Ala Asp Asn Leu Thr Ala Ala Val Ala Lys Ala Lys
145 150 155 160

Thr Ala Asn Pro Asp Tyr Lys Val Val Ser Thr Gly His Ser Leu Gly
165 170 175

Gly Ala Val Ala Thr Leu Ala Ala Ala Asn Leu Arg Val Gly Gly Thr
180 185 190

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

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

His Gly Asp Asp Pro Val Pro Arg Leu Pro Pro Leu Ile Phe Gly Tyr
225 230 235 240

Arg His Thr Ser Pro Glu Tyr Trp Leu Asp Gly Ser Gly Gly Asp Lys
245 250 255

Val Asp Tyr Thr Ile Asn Asp Ile Lys Val Cys Glu Gly Ala Ala Asn
260 265 270

Leu Gln Cys Asn Gly Gly Thr Leu Gly Leu Asp Ile Ala Ala His Leu
275 280 285

His Tyr Phe Gln Ala Thr Asp Ala Cys Asn Ala Gly Gly Phe Ser Trp

290

295

300

Arg Arg Tyr Arg Ser Ala Glu Ser Val Asp Lys Arg Ala Thr Met Thr
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Asp Ala Glu Leu Glu Lys Lys Leu Asn Ser Tyr Val Gln Met Asp Lys
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Glu Tyr Val Lys Asn Asn Gln Ala Arg Ser
 340 345

<210> 5
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 <212> DNA
 <213> Artificial sequence

<220>
 <223> DNA L03 lipase gene

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<210> 6
 <211> 346
 <212> PRT
 <213> Artificial sequence

<220>
 <223> L03 lipase protein

<400> 6

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

Thr Val Ser Ser Ser Glu Leu Asn Asn Phe Lys Phe Tyr Ile Gln His
 35 40 45

Gly Ala Ala Ala Tyr Cys Asn Ser Glu Thr Ala Ala Gly Ala Lys Val
 50 55 60

Thr Cys Ser Gly Asn Gly Cys Pro Glu Val Glu Ala Asn Gly Val Thr
 65 70 75 80

Val Val Ala Ser Phe Thr Gly Thr Lys Thr Gly Ile Gly Gly Tyr Val
 85 90 95

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

Ile Asn Ile Arg Asn Trp Leu Thr Asn Leu Asp Phe Gly Gln Asp Asp
 115 120 125

Cys Ser Leu Thr Ser Gly Cys Gly Val His Ser Gly Phe Gln Arg Ala
 130 135 140

Trp Glu Glu Ile Ala Asp Asn Leu Thr Ala Ala Val Ala Lys Ala Lys
 145 150 155 160

Thr Ala Asn Pro Asp Tyr Lys Val Val Ala Thr Gly His Ser Leu Gly
 165 170 175

Gly Ala Val Ala Thr Leu Ala Gly Ala Asn Leu Arg Val Gly Gly Thr
 180 185 190

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

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

His Gly Asp Asp Pro Val Pro Arg Leu Pro Pro Leu Ile Phe Gly Tyr
 225 230 235 240

Arg His Thr Ser Pro Glu Tyr Trp Leu Asp Gly Ser Gly Gly Asp Lys
 245 250 255

Ile Asp Tyr Thr Ile Asn Asp Ile Lys Val Cys Glu Gly Ala Ala Asn
 260 265 270

Leu Gln Cys Asn Gly Gly Thr Leu Gly Leu Asp Ile Ala Ala His Leu
 275 280 285

His Tyr Phe Gln Ala Thr Asp Ala Cys Asn Ala Gly Gly Phe Ser Trp
 290 295 300

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

Asp Ala Glu Leu Glu Lys Lys Leu Asn Ser Tyr Val Gln Met Asp Lys
 325 330 335

Glu Tyr Val Lys Asn Asn Gln Ala Arg Ser
 340 345

<210> 7

<211> 1038

<212> DNA

<213> Artificial sequence

<220>

<223> DNA L04 lipase gene

<400> 7

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<210> 8
<211> 346
<212> PRT
<213> Artificial sequence

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<220>
<223> L04 lipase protein

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<400> 8

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

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

```

```

Thr Val Ser Ser Ser Glu Leu Asn Asn Phe Lys Phe Tyr Ile Gln His
      35           40           45

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Gly Ala Ala Ala Tyr Cys Asn Ser Glu Thr Ala Ala Gly Ala Asn Val

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Thr Cys Ser Gly Asn Gly Cys Pro Glu Val Glu Ala Asn Gly Val Thr
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				85				90						95	

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

Ile Asn Ile Arg Asn Trp Leu Thr Asn Leu Asp Phe Gly Gln Asp Asp
115 120 125

Cys Ser Leu Thr Ser Gly Cys Gly Val His Ser Gly Phe Gln Arg Ala
130 135 140

Trp Glu Glu Ile Ala Asp Asn Leu Thr Ala Ala Val Ala Lys Ala Lys
145 150 155 160

Thr Ala Asn Pro Asp Tyr Lys Val Val Ala Thr Gly His Ser Leu Gly
165 170 175

Gly Ala Val Ala Thr Leu Ala Gly Ala Asn Leu Arg Val Gly Gly Thr
180 185 190

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

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

His Gly Asp Asp Pro Val Pro Arg Leu Pro Pro Leu Ile Phe Gly Tyr
225 230 235 240

Arg His Thr Ser Pro Glu Tyr Trp Leu Asp Gly Ser Gly Gly Asp Lys
245 250 255

Ile Asp Tyr Thr Ile Asn Asp Ile Lys Val Cys Glu Gly Ala Ala Asn
260 265 270

Leu Gln Cys Asn Gly Gly Thr Leu Gly Leu Asp Ile Ala Ala His Leu
275 280 285

His Tyr Phe Gln Ala Thr Asp Ala Cys Asn Ala Gly Gly Phe Ser Trp
 290 295 300

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

Asp Ala Glu Leu Glu Lys Lys Leu Asn Ser Tyr Val Gln Met Asp Lys
 325 330 335

Glu Tyr Val Lys Asn Asn Gln Ala Arg Ser
 340 345