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SEQUENCE LISTING

<110> Nanyang Technological University
Paul, Guerette A
Shawn, Hoon
Ali, Miserez

<120> Compounds and methods for the production of suckerin and uses thereof

<130> P107517

<150> US61/715068
<151> 2012-10-17

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

Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly Leu
100 105 110

Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Tyr Gly Tyr Pro Ala Ala
115 120 125

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

Ala Thr Ala Val Ser His Thr Thr His His Ala Pro Leu Gly Tyr Gly
180 185 190

Leu Ala Gly Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly
195 200 205

Leu Gly Gly Tyr Gly Ala Ala Ala Val Ser His Thr Thr His His Ala
210 215 220

Pro Leu Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Leu Tyr Gly Gly Leu
225 230 235 240

Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu His Tyr Pro Ala Ala
245 250 255

Thr Ala Val Ser His Thr Thr His His Ala Pro Leu Gly Tyr Gly Leu
260 265 270

Gly Gly Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu
275 280 285

Gly Gly Tyr Gly Ala Ala Val Ser His Thr Thr His His Ala Pro Leu
290 295 300

Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Val Gly Gly Tyr Gly Tyr
305 310 315 320

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Gly Tyr Pro Ala Ala Ala Thr Val Ser His Thr Thr His His Ala Pro
                325                 330                 335

Tyr Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly
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Leu Tyr Gly Gly Tyr Gly Phe Gly Ala Val Ser His Thr Thr His His
        355                 360                 365

Ala Pro Leu Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His
    370                 375                 380

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

Gly Gly Ala Gly Gln Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Tyr
    50                  55                  60

Gly Ser Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly Leu Gly
65                  70                  75                  80

Gly Tyr Gly Gly Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly
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Tyr Gly Gln Gly Gly Tyr Ser Thr Gly Gly His Gly His Gly Gly Tyr
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Gly Phe Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Phe Gly Gly Tyr Gly
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Gln Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Gln Gly Gly Ser Gly Tyr
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130 135 140

Gly Gly Tyr Gly His Tyr Tyr Pro Thr Thr Ser Tyr Gly Gly Tyr Leu
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Gly Gly Tyr Gly Gly Tyr Gly Gly Tyr Tyr Pro His Thr Ser Ser Gly
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Ser Tyr Tyr Pro Thr Thr Tyr Gly Gly Ser Asn Gln Gly Asn Pro Gly
180 185 190

Ala Pro Ile Ser Ser Ser Ser Gly Phe Val Phe Pro Gly Tyr His Phe
195 200 205

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

Gln Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Ser Tyr Gly
50 55 60

Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly Leu Gly Gly Tyr Gly Gly
65 70 75 80

Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly Tyr Gly Gln Gly
85 90 95

Gly Tyr Ser Thr Gly Gly His Gly His Gly Gly Tyr Gly Phe Gly Gly
100 105 110

Tyr Gly Gln Gly Gly Tyr Gly Phe Gly Gly Tyr Gly Gln Gly Gly Tyr
115 120 125

Gly Gln Gly Gly Tyr Gly Gln Gly Gly Ser Gly Tyr Gly Gly Tyr Gly
130 135 140

His Tyr Tyr Pro Thr Thr Ser Tyr Gly Gly Tyr Leu Gly Gly Tyr Gly
145 150 155 160

Gly Tyr Gly Gly Tyr Tyr Pro His Thr Ser Ser Gly Ser Tyr Tyr Pro
165 170 175

Thr Thr Tyr Gly Gly Ser Asn Gln Gly Asn Pro Gly Ala Pro Ile Ser
180 185 190

Ser Ser Ser Gly Phe Val Phe Pro Gly Tyr His Phe Pro Gly Val Phe
195 200 205

His Gly Gly Val Asn Gln Gly Ala Gly Arg Thr Gly Thr Asp Leu Gln
210 215 220

Arg Leu Leu Asn Leu Asn Gly Phe Lys Pro Thr Ala Thr Ser Thr Thr
225 230 235 240

Leu Thr Ser Asn Ser Asn Ser Lys Lys
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<210> 5
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Val Leu Ser Ser Thr Ser Ala Tyr His Ala Asn His Val Gly Thr Leu
20 25 30

Trp Ala Lys Pro Pro Gln Gln Thr Pro Tyr Gly Gly Tyr Gly Val Ser
35 40 45

Gly Gly Ala Gly Gln Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Tyr
50 55 60

Gly Ser Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly Leu Gly
65 70 75 80

Gly Tyr Gly Gly Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly
85 90 95

Tyr Gly Gln Gly Gly Tyr Ser Thr Gly Gly His Gly His Gly Gly Tyr
100 105 110

Gly Phe Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Phe Gly Gly Tyr Gly
115 120 125

Gln Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Gln Gly Gly Ser Gly Tyr
130 135 140

Gly Gly Tyr Gly His Tyr Tyr Pro Thr Thr Ser Tyr Gly Gly Tyr Leu
145 150 155 160

Gly Gly Tyr Gly Gly Tyr Gly Gly Tyr Tyr Pro His Thr Ser Ser Gly
165 170 175

Ser Tyr Tyr Pro Thr Thr Tyr Gly Gly Ser Asn Gln Gly Asn Pro Gly
180 185 190

Ala Pro Ile Ser Ser Ser Ser Gly Phe Val Phe Pro Gly Tyr His Phe
195 200 205

Pro Gly Val Phe His Gly Gly Val Asn Gln Gly Ala Gly Arg Thr Ser
210 215 220

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

Ala Thr Ser Thr Thr Ser Thr Ser Asn Ser Asn Ser Lys Lys
245 250

<210> 6
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<400> 6

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Val Leu Ser Tyr Thr Ser Ala Tyr His Ala Asn His Val Gly Thr Leu
20 25 30

Trp Ala Lys Pro Pro Gln Gln Thr Pro Tyr Gly Gly Tyr Gly Val Ser
35 40 45

Gly Gly Ala Gly Gln Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Tyr
50 55 60

Gly Ser Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly Leu Gly
65 70 75 80

Gly Tyr Gly Gly Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly
85 90 95

Tyr Gly Gln Gly Gly Tyr Ser Thr Gly Gly Tyr Gly Phe Gly Gly Tyr
100 105 110

Gly Gln Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Gln Gly Gly Ser Gly
115 120 125

Tyr Gly Gly Tyr Gly His Tyr Tyr Pro Thr Thr Ser Tyr Gly Gly Tyr
130 135 140

Leu Gly Gly Tyr Gly Gly Tyr Gly Gly Tyr Tyr Pro His Thr Ser Ser
145 150 155 160

Gly Ser Tyr Tyr Pro Thr Thr Tyr Gly Gly Ser Asn Gln Gly Asn Pro
165 170 175

Gly Ala Pro Ile Ser Ser Ser Ser Gly Phe Val Phe Pro Gly Ile Phe
180 185 190

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

Met Val Asn
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<210> 7
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<400> 7

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

Cys Ile Ala Val Pro His Leu Leu Ala Tyr His Ser Ser Cys Ser Ala
20 25 30

Ala Leu Gly Val Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly
35 40 45

Tyr Pro Gly Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr Gly
50 55 60

Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Gly Leu Leu His Gly Gly Leu
65 70 75 80

Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Ala Ala
85 90 95

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

Tyr Gly Gly Tyr Gly Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr

115 120 125

Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Ala Ala Thr Val Ser Gln
130 135 140

Thr Thr His His Ala Pro Tyr Gly Tyr Gly Gly Val Tyr Gly Gly Tyr
145 150 155 160

Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr
165 170 175

Gly Leu Gly Tyr Pro Ala Ala Thr Ala Val Ser His Thr Thr His His
180 185 190

Ala Pro Leu Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Gly Leu Leu
195 200 205

His Gly Gly Leu Tyr Gly Gly Tyr Gly Ala Thr Ala Val Ser His Thr
210 215 220

Thr His His Ala Pro Leu Gly Tyr Gly Leu Ala Gly Tyr Gly Gly Leu
225 230 235 240

Tyr Gly Gly Phe Leu His
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<210> 8
<211> 397
<212> PRT
<213> Dosidicus gigas

<400> 8

Met Ala Ala Ser Ile Leu Thr Leu Leu Ala Val Ile Ala Leu Ser Ser
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Cys Thr Leu Ala Val Val Pro Ala Ala Thr Thr Val Ser Arg Thr Thr
20 25 30

His His Ala Pro Tyr Gly Tyr Gly Gly Val Leu Gly Gly Tyr Gly Gly
35 40 45

Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu Gly Gly Tyr Gly
50 55 60

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

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

Thr His His Ala Pro Tyr Gly Phe Gly Gly Leu Tyr Gly Gly His Gly
100 105 110

Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly
115 120 125

Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Val
130 135 140

Ala Thr Ala Val Ser His Val Thr His His Ala Pro Tyr Gly Tyr Gly
145 150 155 160

Leu Ala Gly Tyr Gly Gly Phe His Gly Gly Tyr Gly Leu Leu His Gly
165 170 175

Gly Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly Leu Tyr Gly Gly
180 185 190

Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Ala Ala Thr Val Ser
195 200 205

His Thr Thr His His Ala Pro Tyr Gly Phe Gly Gly Leu Tyr Gly Gly
210 215 220

His Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His His
225 230 235 240

Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr
245 250 255

Pro Ala Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr Gly Phe
260 265 270

Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly Leu Tyr Gly
275 280 285

Gly Tyr Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His
290 295 300

His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly
305 310 315 320

Tyr Pro Gly Ala Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr
325 330 335

Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly Leu
340 345 350

Tyr Gly Gly Tyr Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly
355 360 365

Leu Gly Ala Val Ser His Thr Thr His His Ala Pro Tyr Gly Tyr Gly
370 375 380

Leu Gly Gly Tyr Gly Gly Leu Tyr Gly Gly Trp Leu His
385 390 395

<210> 9
<211> 321
<212> PRT
<213> Dosidicus gigas

<400> 9

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

Cys Thr Leu Ala Val Val Pro Ala Ala Thr Thr Val Ser Arg Thr Thr
20 25 30

His His Ala Pro Tyr Gly Tyr Gly Gly Val Leu Gly Gly Tyr Gly Gly
35 40 45

Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu Gly Gly Tyr Gly
50 55 60

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

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

Thr His His Ala Pro Tyr Gly Phe Gly Gly Leu Tyr Gly Gly His Gly
100 105 110

Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly
115 120 125

Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Val
130 135 140

Ala Thr Ala Val Ser His Val Thr His His Ala Pro Tyr Gly Tyr Gly
145 150 155 160

Leu Ala Gly Tyr Gly Gly Phe His Gly Gly Tyr Gly Leu Leu His Gly
165 170 175

Gly Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly Leu Tyr Gly Gly
180 185 190

Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Ala Ala Thr Val Ser
195 200 205

His Thr Thr His His Ala Pro Tyr Gly Phe Gly Gly Leu Tyr Gly Gly
210 215 220

His Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His His
225 230 235 240

Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr
245 250 255

Pro Ala Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr Gly Phe
260 265 270

Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly Leu Tyr Gly
275 280 285

Arg Asp Thr Gly Ser Ser Ala Arg Arg Ser Ser Met Gly Arg Asp Met
290 295 300

Gly Leu Leu His Gly Trp Ser Phe Met Glu Gly Tyr Gly Leu Gly Arg
305 310 315 320

Cys

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<212> PRT
<213> Dosidicus gigas

<400> 10

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Ala Ser Ala Ile Leu Pro Ala Ala Thr Ser Val Ser Arg Thr Thr His
20 25 30

Arg Thr Gly Tyr Gly Tyr Gly Gly Leu Leu Gly Gly Tyr Gly Leu His
35 40 45

Tyr Pro Ala Thr Thr Ala Val Ser His Thr Thr His His Ala Pro Ala
50 55 60

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

Tyr Pro Gly Ala Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr
85 90 95

Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly Leu
100 105 110

Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Tyr Gly Tyr Pro Ala Ala
115 120 125

Thr Ala Val Ser His Thr Thr His His Ala Pro Tyr Gly Tyr Gly Leu
130 135 140

Gly Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly
145 150 155 160

Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu His Tyr Pro Ala
165 170 175

Ala Thr Ala Val Ser His Thr Thr His His Ala Pro Leu Gly Tyr Gly
180 185 190

Leu Ala Gly Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly
195 200 205

Leu Val Asp Met Val Pro Gln Leu Ser Ala Thr Pro Pro Ile Met Leu
210 215 220

His
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<210> 11
<211> 251
<212> PRT
<213> Dosidicus gigas

<400> 11

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Tyr Ala Thr Ala Val Leu Pro Val Ala Thr Ser Val Ser Arg Thr Thr
20 25 30

His His Ala Pro Ala Ala Leu Gly Val Tyr Gly Gly Tyr Gly Leu Gly
35 40 45

Ala Tyr Gly Phe Gly Tyr Pro Gly Ala Thr Val Ser His Thr Thr His
50 55 60

His Ala Pro Tyr Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Gly Leu
65 70 75 80

Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe
85 90 95

Gly Tyr Pro Ala Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr
100 105 110

Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Gly Leu Leu His Gly Gly
115 120 125

Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Ala

130 135 140

Ala Thr Val Ser Gln Thr Thr His His Ala Pro Tyr Gly Tyr Gly Gly
145 150 155 160

Val Tyr Gly Gly Tyr Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr
165 170 175

Gly Leu Gly Gly Tyr Gly Leu Gly Tyr Pro Ala Ala Thr Ala Val Ser
180 185 190

His Thr Thr His His Ala Pro Leu Gly Tyr Gly Gly Leu Tyr Gly Gly
195 200 205

Tyr Gly Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Ala Thr
210 215 220

Ala Val Ser His Thr Thr His His Ala Pro Leu Gly Tyr Gly Leu Ala
225 230 235 240

Gly Tyr Gly Gly Leu Tyr Gly Gly Phe Leu His
245 250

<210> 12
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<213> Dosidicus gigas

<400> 12

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

His His Ala Pro Val Tyr Gly Gly Tyr Gly Leu Leu His Gly Gly Leu
35 40 45

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

His Ala Pro Tyr Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala
65 70 75 80

His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Leu Gly
85 90 95

Tyr Pro Ala Ala Ala Ala Val Ser His Thr Thr His His Ala Pro Leu
100 105 110

Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Val Ser His
115 120 125

Thr Thr His His Ala Pro Leu Gly Phe Gly Gly Val Leu Gly Gly Tyr
130 135 140

Gly Leu Gly Ala Val Ser His Thr Thr His His Ala Pro Leu Gly Phe
145 150 155 160

Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Val Ser His Thr Thr
165 170 175

His His Ala Pro Leu Gly Phe Gly Gly Val Val Gly Gly Tyr Gly Leu
180 185 190

Gly Ala Val Ser His Thr Thr His His Ala Pro Leu Gly Phe Gly Gly
195 200 205

Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Val Ser His Thr Thr His His
210 215 220

Ala Pro Leu Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Ala Val Ser
225 230 235 240

His Thr Thr His His Ala Pro Leu Gly Tyr Gly Leu Ala Gly Tyr Gly
245 250 255

Ala Trp Leu His
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<210> 13
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<212> PRT
<213> Dosidicus gigas

<400> 13

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Tyr Ala Ser Ala Ile Ala Pro Ala Ala Thr Ser Val Ser Arg Thr Thr
20 25 30

His His Ala Gly Tyr Gly Tyr Gly Gly Pro Leu Gly Gly Tyr Gly Leu
35 40 45

Gly Ala Tyr Gly Phe Gly Ser Pro Ala Ala Thr Val Ser His Thr Thr
50 55 60

His His Ala Pro Tyr Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Gly
65 70 75 80

Leu Tyr Gly Gly His Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr
85 90 95

Gly His Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr
100 105 110

Gly Phe Gly Tyr Pro Ala Ala Ala Ala Val Ser His Thr Thr His His
115 120 125

Ala Pro Leu Gly Phe Gly Leu Ala Gly Tyr Gly Gly Leu Tyr Gly Gly
130 135 140

Tyr Gly Leu Gly Gly Tyr Gly Gly Leu His Gly Gly Leu Tyr Gly Gly
145 150 155 160

Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Ala Ala Thr Ala Val
165 170 175

Ser His Thr Thr His His Ala Pro Tyr Gly Tyr Gly Leu Gly Gly Tyr
180 185 190

Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala Gly Tyr
195 200 205

Gly Gly Val Tyr Gly Gly His Gly Leu Leu His Gly Gly Leu Tyr Gly
210 215 220

Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Ala Ala Ala Thr
225 230 235 240

Val Ser His Thr Thr His His Ala Pro Tyr Gly Tyr Gly Gly Leu Tyr
245 250 255

Gly Gly Tyr Gly Leu Ala His Gly Gly Leu Tyr Ala His Gly Gly Leu
260 265 270

Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu His Tyr Pro Ala Ala
275 280 285

Thr Ala Val Ser His Thr Thr His His Ala Pro Leu Gly Tyr Gly Leu
290 295 300

Ala Gly Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu
305 310 315 320

Gly Gly Tyr Gly Ala Ala Ala Val Ser His Thr Thr His His Ala Pro
325 330 335

Leu Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr
340 345 350

Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu His Tyr Pro Ala Ala Thr
355 360 365

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Ala Val Ser His Thr Thr His His Ala Pro Leu Gly Tyr Gly Leu Gly
    370                 375                 380

Gly Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly
385                 390                 395                 400

Gly Tyr Gly Ala Ala Val Ser His Thr Thr His His Ala Pro Leu Gly
                405                 410                 415

Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Val Gly Gly Tyr Gly Tyr Gly
            420                 425                 430

Tyr Pro Ala Ala Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr
        435                 440                 445

Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly Leu
    450                 455                 460

Tyr Gly Gly Tyr Gly Phe Gly Ala Val Ser His Thr Thr His His Ala
465                 470                 475                 480

Pro Leu Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly
                485                 490                 495

Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Val Ser His Thr Thr His
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His
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<213> Dosidicus gigas

<400> 14

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            20                  25                  30

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

Gly Ala Tyr Gly Phe Gly Tyr Pro Ala Ala Thr Val Ser His Thr Thr
    50                  55                  60
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His His Ala Pro Tyr Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Leu
65 70 75 80

His His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Leu His Gly Gly Leu
85 90 95

Tyr Gly Gly Tyr Gly Leu His His Gly Gly Leu Tyr Gly Gly Tyr Gly
100 105 110

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

Thr Thr His His Ala Pro Tyr Gly Phe Gly Gly Leu Tyr Gly Gly Tyr
130 135 140

Gly Leu Ala His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr
145 150 155 160

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

Ala Pro Leu Gly Tyr Gly Leu Ala Gly Tyr Gly Gly Leu Tyr Gly Gly
180 185 190

Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Ala Ala Ala Val Ser
195 200 205

His Thr Thr His His Ala Pro Leu Gly Tyr Gly Leu Gly Gly Tyr Gly
210 215 220

Gly Leu Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly
225 230 235 240

Leu His Tyr Pro Ala Ala Thr Ala Val Ser His Thr Thr His His Ala
245 250 255

Pro Leu Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Leu Tyr Gly Gly Leu
260 265 270

Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Ala Ala Val Ser His Thr
275 280 285

Thr His His Ala Pro Leu Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly
290 295 300

Val Gly Gly Tyr Gly Tyr Gly Tyr Pro Ala Ala Ala Thr Val Ser His
305 310 315 320

Thr Thr His His Ala Pro Tyr Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr
325 330 335

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Gly Leu Ala His Gly Gly Leu Tyr Gly Gly Tyr Gly Phe Gly Ala Val
            340                 345                 350

Ser His Thr Thr His His Ala Pro Leu Gly Phe Gly Gly Leu Tyr Gly
        355                 360                 365

Gly Tyr Gly Leu Ala His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly
    370                 375                 380

Ala Val Ser His Thr Thr His His Ala Pro Tyr Gly Phe Gly Gly Leu
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Tyr Gly Gly Tyr Gly Leu Leu His
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<210> 15
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            20                  25                  30

His His Ala Pro Tyr Gly Tyr Gly Gly Val Leu Gly Gly Tyr Gly Gly
        35                  40                  45

Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu Gly Gly Tyr Gly
    50                  55                  60

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

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

Thr His His Ala Pro Tyr Gly Phe Gly Gly Leu Tyr Gly Gly His Gly
            100                 105                 110

Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly
        115                 120                 125

Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Ala
    130                 135                 140

Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr Gly Phe Gly Gly
145                 150                 155                 160

Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly Leu Tyr Gly Gly Tyr
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165 170 175

Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His His Gly
180 185 190

Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro
195 200 205

Ala Ala Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr Gly Tyr
210 215 220

Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly Leu Tyr Gly
225 230 235 240

Gly Tyr Gly Leu Gly Gly Tyr Gly Leu His Tyr Pro Ala Ala Thr Ala
245 250 255

Val Ser His Thr Thr His His Ala Pro Leu Gly Tyr Gly Leu Ala Gly
260 265 270

Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Gly
275 280 285

Tyr Gly Ala Ala Ala Val Ser His Thr Thr His His Ala Pro Leu Gly
290 295 300

Tyr Gly Leu Gly Gly Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly
305 310 315 320

Tyr Gly Leu Gly Gly Tyr Gly Leu His Tyr Pro Ala Ala Thr Ala Val
325 330 335

Ser His Thr Thr His His Ala Pro Leu Gly Tyr Gly Leu Gly Gly Tyr
340 345 350

Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr
355 360 365

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

Gly Leu Tyr Gly Gly Tyr Gly Val Gly Gly Tyr Gly Tyr Gly Tyr Pro
385 390 395 400

Ala Ala Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr Gly Tyr
405 410 415

Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly Leu Tyr Gly
420 425 430

Gly Tyr Gly Phe Gly Ala Val Ser His Thr Thr His His Ala Pro Leu

435 440 445

Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly Leu
450 455 460

Tyr Gly Gly Tyr Gly Leu Gly Ala Val Ser His Thr Thr His His Ala
465 470 475 480

Pro Tyr Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Leu His
485 490 495

<210> 16
<211> 597
<212> PRT
<213> Dosidicus gigas

<400> 16

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

Cys Thr Leu Ala Val Val Pro Ala Ala Thr Thr Val Ser Arg Thr Thr
20 25 30

His His Ala Pro Tyr Gly Tyr Gly Gly Leu Leu Gly Gly Tyr Gly Gly
35 40 45

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

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

Phe Gly Tyr Pro Ala Ala Thr Val Ser His Thr Thr His His Ala Pro
85 90 95

Tyr Gly Phe Gly Gly Leu Tyr Gly Gly His Gly Leu Leu His Gly Gly
100 105 110

Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly Leu Tyr Gly Gly Tyr
115 120 125

Gly Leu Gly Ala Tyr Gly Phe Gly Tyr Pro Ala Ala Thr Ala Val Ser
130 135 140

His Val Thr His His Ala Pro Tyr Gly Tyr Gly Leu Ala Gly Tyr Gly
145 150 155 160

Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly Leu Tyr Gly Gly
165 170 175

Tyr Gly Leu Ala Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly
180 185 190

Ala Tyr Gly Phe Gly Tyr Pro Ala Ala Thr Ala Val Ser His Thr Thr
195 200 205

His His Ala Pro Tyr Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Leu Tyr
210 215 220

Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala Gly Tyr Gly Gly Leu Tyr
225 230 235 240

Gly Gly His Gly Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu
245 250 255

Gly Ala Tyr Gly Phe Gly Tyr Pro Ala Ala Ala Thr Val Ser His Thr
260 265 270

Thr His His Ala Pro Tyr Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly
275 280 285

Leu Ala His Gly Gly Leu Tyr Gly Asp Met Asp Leu Ala His Thr Asp
290 295 300

Thr Leu Pro Ser Cys Tyr Ser Cys Gln Pro His Thr His His Ala Leu
305 310 315 320

Arg Ile Trp Ser Gly Arg Ile Cys Gly Leu Tyr Glu Ile Cys Leu Ala
325 330 335

His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu His
340 345 350

Tyr Pro Ala Ala Thr Ala Val Ser His Thr Thr His His Ala Pro Leu
355 360 365

Gly Tyr Gly Leu Ala Gly Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr Gly
370 375 380

Gly Tyr Gly Leu Gly Gly Tyr Gly Ala Ala Ala Val Ser His Thr Thr
385 390 395 400

His His Ala Pro Leu Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Leu Tyr
405 410 415

Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu His Tyr
420 425 430

Pro Ala Ala Thr Ala Val Ser His Thr Thr His His Ala Pro Leu Gly
435 440 445

Tyr Gly Leu Gly Gly Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly
450 455 460

Tyr Gly Leu Gly Gly Tyr Gly Ala Ala Val Ser His Thr Thr His His
465 470 475 480

Ala Pro Leu Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly Val Gly Gly
485 490 495

Tyr Gly Tyr Gly Tyr Pro Ala Ala Ala Thr Val Ser His Thr Thr His
500 505 510

His Ala Pro Tyr Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala
515 520 525

His Gly Gly Leu Tyr Gly Gly Tyr Gly Phe Gly Ala Val Ser His Thr
530 535 540

Thr His His Ala Pro Leu Gly Phe Gly Gly Leu Tyr Gly Gly Tyr Gly
545 550 555 560

Leu Ala His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Val Ser
565 570 575

His Thr Thr His His Ala Pro Tyr Gly Phe Gly Gly Leu Tyr Gly Gly
580 585 590

Tyr Gly Leu Leu His
595

<210> 17
<211> 177
<212> PRT
<213> Dosidicus gigas

<400> 17

Met Ala Ala Ile Phe Thr Leu Leu Ala Val Leu Ala Ile Ser Asn Tyr
1 5 10 15

Ala Ser Ala Ile Leu Pro Ala Ala Thr Ser Val Ser Arg Thr Thr His
20 25 30

Arg Thr Gly Tyr Gly Tyr Gly Gly Leu Leu Gly Gly Tyr Gly Leu His
35 40 45

Tyr Pro Ala Thr Thr Ala Val Ser His Thr Thr His His Ala Pro Ala
50 55 60

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

Tyr Pro Gly Ala Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr
85 90 95

Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly Leu
100 105 110

Tyr Gly Gly Tyr Gly Leu His His Gly Gly Leu Tyr Gly Gly Tyr Gly
115 120 125

Leu Leu His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu His His Gly Gly
130 135 140

His Leu Val Pro Leu Ile Gln Met Phe Arg Val Ser Asn Gln Thr Ile
145 150 155 160

Val Asn Ile Leu Trp Lys Ile His Leu Ala Phe Arg Asn Gln Gln Asp
165 170 175

Ala

<210> 18
<211> 324
<212> PRT
<213> Dosidicus gigas

<400> 18

Met Ala Ala Ile Phe Thr Leu Leu Ala Val Leu Ala Ile Ser Asn Tyr
1 5 10 15

Ala Ser Ala Ile Leu Pro Ala Ala Thr Ser Val Ser Arg Thr Thr His
20 25 30

Arg Thr Gly Tyr Gly Tyr Gly Gly Leu Leu Gly Gly Tyr Gly Leu His
35 40 45

Tyr Pro Ala Thr Thr Ala Val Ser His Thr Thr His His Ala Pro Ala
50 55 60

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

Tyr Pro Gly Ala Ala Thr Val Ser His Thr Thr His His Ala Pro Tyr
85 90 95

Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Ala His Gly Gly Leu
100 105 110

Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Tyr Gly Tyr Pro Ala Ala
115 120 125

Ala Val Ser His Val Thr His His Ala Pro Tyr Gly Tyr Gly Leu Gly
130 135 140

Gly Tyr Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Gly His Gly Leu Leu
145 150 155 160

His Gly Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Tyr Gly
165 170 175

Tyr Pro Ala Ala Ala Val Ser His Val Thr His His Ala Pro Tyr Gly
180 185 190

Tyr Gly Leu Ala Gly Tyr Gly Gly Leu His Gly Gly Tyr Gly Phe Leu
195 200 205

His Gly Gly Leu Tyr Gly Gly His Gly Leu Leu His Gly Gly Leu Tyr
210 215 220

Gly Gly Tyr Gly Leu Gly Ala Tyr Gly Tyr Gly Tyr Pro Ala Ala Thr
225 230 235 240

Val Ser His Pro Thr His His Ala Pro Tyr Gly Tyr Gly Gly Leu Tyr
245 250 255

Gly Gly Tyr Gly His Pro Gly Tyr Gly Gly Leu Tyr Gly Gly Tyr Gly
260 265 270

Phe Ala His Gly Gly Leu Tyr Gly Gly Tyr Gly Phe Phe His Gly Gly
275 280 285

Leu Tyr Gly Gly Tyr Gly Phe Pro His Gly Gly Leu Tyr Gly Gly Tyr
290 295 300

Gly Leu Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu Gly Gly Tyr Gly
305 310 315 320

Gly Trp Phe His

<210> 19
<211> 128
<212> PRT
<213> Dosidicus gigas

<400> 19

Met Ala Val Lys Ile Ile Ile Leu Leu Ala Val Met Ala Leu Ser Asn
1 5 10 15

Tyr Ala Tyr Gly His Phe Thr Gly Gly Val Gly Gly Tyr Gly Tyr Gly
20 25 30

Ala Gly Ala Gly Tyr Gly Ala Gly Tyr Gly Gly Gly Leu Gly Gly Gly
35 40 45

Gly Val Gly Ser Tyr Gly Gly Val Ser Gly Gly Tyr Gly Gly Tyr Gly

50 55 60

Gly Tyr Gly Gly Tyr Gly Gly Tyr Gly Gly Tyr Gly Gly His Gly Gly
65 70 75 80

Tyr Gly Gly Tyr Gly Gly Tyr Gly Gly Tyr Ala Gly His Gly Gly Tyr
85 90 95

Gly Gly Leu Gly Gly Tyr Gly Gly His Gly Gly Tyr Gly Gly Tyr Gly
100 105 110

Ser Gly Gly His His Gly Pro Tyr Gly Gly Tyr Gly Gly Tyr Leu Gly
115 120 125

<210> 20
<211> 121
<212> PRT
<213> Dosidicus gigas

<400> 20

Met Ala Val Lys Ile Ile Ile Leu Leu Ala Val Met Ala Leu Ser Asn
1 5 10 15

Tyr Ala Tyr Gly His Leu Thr Gly Gly Val Gly Gly Tyr Gly Tyr Gly
20 25 30

Ala Gly Ala Gly Tyr Gly Ala Gly Tyr Gly Ala Gly Tyr Gly Gly Gly
35 40 45

Val Gly Ser Tyr Gly Gly Val Ser Gly Gly Tyr Gly Gly Tyr Gly Gly
50 55 60

Tyr Gly Gly Tyr Gly Gly Tyr Gly Gly His Gly Gly Tyr Gly Gly Tyr
65 70 75 80

Gly Gly Tyr Ala Gly His Gly Gly Tyr Gly Gly Leu Gly Gly Tyr Gly
85 90 95

Gly His Gly Gly Tyr Gly Gly Tyr Gly Ser Gly Gly His His Gly Pro
100 105 110

Tyr Gly Gly Tyr Gly Gly Tyr Leu Gly
115 120

<210> 21
<211> 181
<212> PRT
<213> Dosidicus gigas

<400> 21

Met Thr Ala Thr Leu Leu Phe Leu Met Ser Met Ile Ala Ala Leu Gly
1 5 10 15

Cys Gln Ser Glu Ala Ala Ile Ser His Gly Ser His Val Lys Thr Val
20 25 30

Val His His Gly Asn Gly Val Arg Thr Val Thr His Thr Ile His His
35 40 45

Pro Val Val His His Gly Leu His Arg Thr Ser Ile Val Pro Gly Thr
50 55 60

Thr Thr Ile Thr His Thr Thr His Asp Asn Arg His Pro Tyr Gly Gly
65 70 75 80

Val Thr Thr Val Thr His Ser Asn Gln Gly Ala His His Pro Tyr Ser
85 90 95

Phe Gly Tyr Gly Phe Gly Gly Pro Tyr Gly Gly Gly Gly Gly Leu Tyr
100 105 110

Gly Ala Pro Tyr His Met Gly Thr Thr Val Val Asn His Pro Gly His
115 120 125

Gly Met Pro Tyr Pro Tyr Met Tyr Gly Ser Gln Gly Phe Gly Leu Gly
130 135 140

Gly Leu Ser Gly Leu Asp Tyr Pro Val Gly Ser Thr Val Thr His Ser
145 150 155 160

Asn Tyr Gly Phe His His Pro Leu Gly Phe Gly Glu Pro Phe Asn Gly
165 170 175

Pro Tyr Gly Phe Gln
180

<210> 22
<211> 166
<212> PRT
<213> Dosidicus gigas

<400> 22

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

Tyr Ala Ser Ala Ile Leu Pro Ala Thr Thr Ser Val Ser Gln Ala Thr
20 25 30

His Arg Gly Tyr Arg Thr Tyr Ala Gly Ile Leu Lys Gly Phe Gly Leu
35 40 45

Thr Tyr Pro Gly Ser Thr Thr Val Ser Lys Thr Thr Arg Arg Tyr Gly
50 55 60

Gly Leu Leu Gly Gly Tyr Gly Tyr Gly Leu Pro Ser Ala Gly Tyr Gly
65 70 75 80

Tyr Gly Tyr Gly Leu Pro Leu Ala Gly Tyr Gly Gly Leu Tyr Gly Gly
85 90 95

Tyr Gly Gly Leu Tyr Gly Gly Trp Gly Tyr Pro Val Gly Ala Val Gly
100 105 110

Ala Tyr Gly Gly Leu Leu Gly Gly Tyr Gly Tyr Gly Leu Pro Leu Gly
115 120 125

Gly Tyr Gly Gly Phe Phe Gly Gly Tyr Gly Ala Pro Tyr Ala Gly Tyr
130 135 140

Gly Tyr Gly Val Leu Leu Gly Pro Val Gly Pro Ile Ala Thr Ser Val
145 150 155 160

Ser Gln Thr Thr His His
165

<210> 23
<211> 150
<212> PRT
<213> Dosidicus gigas

<400> 23

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

Phe Ala Cys Ser Glu Glu Thr Lys Glu Thr Thr Thr Pro Lys Pro Thr
20 25 30

Pro Ala Ala Ser Asn Leu Leu Gly Ser Ser Trp Tyr Thr Pro Thr Leu
35 40 45

Gly Leu Gly Tyr Gly Gly Tyr Gly Leu Gly Leu Gly Tyr Gly Gly Tyr
50 55 60

Gly Met Gly Leu Gly Tyr Gly Gly Tyr Gly Leu Gly Leu Gly Tyr Gly
65 70 75 80

Gly Tyr Gly Leu Gly Leu Gly Tyr Gly Gly Tyr Gly Gly Leu Gly Gly
85 90 95

Phe Tyr Pro Gly Tyr His Gly Gly Val Ser Thr Ser Ser Val Thr His
100 105 110

His Ala Pro Val Tyr Ser Val Pro His Val Thr Ser Ser Val Thr His
115 120 125

His Ala Pro Tyr Gly Leu Gly Ala Gly Tyr Leu Gly Gly Leu Tyr Gly

130 135 140

Gly Tyr Leu Gly Leu His
145 150

<210> 24
<211> 179
<212> PRT
<213> Dosidicus gigas

<400> 24

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

Gly Ser Cys Phe Pro Gly Phe Met Gly Gly Tyr Gly Gly Ala Tyr Pro
20 25 30

Ile Gly Ser Ser Tyr Ser Gln Val Thr His His Gly Pro Tyr Gly Met
35 40 45

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

Val Ser Ser Val Ser His Val Ser His Gly Ala His Tyr Gly Trp Gly
65 70 75 80

Gly Met Tyr Gly Gly Gly Val Gln Val Ser Gln Ser Pro Val Met Tyr
85 90 95

Gln Gly Tyr Ser Val Gly Ala Pro His Val Gln Ser Met Gly Val His
100 105 110

Tyr Pro Thr Thr Thr Ser Val Ser His Ser His Gly Gly Tyr Leu Gly
115 120 125

Gly Leu Gly Gly Ile Gly Ala Val Gly Gly Tyr Gly Gly Tyr Gly Gly
130 135 140

Tyr Gly Leu Ala Gly Gly Leu Gly His Ser Val Ser Thr Val Ser His
145 150 155 160

Gly Ile Gly His Val Gly Met Gly Met Gly Tyr Gly Tyr Gly Gly Phe
165 170 175

Gly His Tyr

<210> 25
<211> 361
<212> PRT
<213> Dosidicus gigas

<400> 25

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Met Ala Ala Thr Tyr Phe Ile Ile Ala Ala Phe Phe Thr Val Thr Gly
1 5 10 15

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

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

Gly Phe Gly Pro Phe Pro Gly Ala Pro Phe Pro Pro Pro Phe Pro Ala
50 55 60

Pro Tyr Pro Gly Ile Thr Pro His Pro Ile Ser Trp Ser Pro His Val
65 70 75 80

Ser Ile Pro Thr His Thr Val Thr His Thr Ser Gly Val Ser Val Pro
85 90 95

His His Val Ser Thr His Val Gly Gly Ser Thr Thr Thr Lys Thr Val
100 105 110

Thr Val Thr His His Pro Gly Ser His Val Thr Thr Val His His Pro
115 120 125

Ala Thr Pro Met Ala Thr His Val Gln His Val Asn Tyr Gly Ser Gly
130 135 140

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

Tyr Pro Val Glu Pro Tyr Pro Tyr Gly Met Gly His Pro Met Ser Trp
165 170 175

Pro Thr Phe Gly Gly Val Gly Gly Thr Thr His Thr Val Thr His Thr
180 185 190

Pro Val Gly Gly Val Thr His His Val Gly Thr His Gly Ser Thr Thr
195 200 205

Thr Lys Thr Val Thr Val Thr His His Pro Ser Ser Gln Val Thr His
210 215 220

Val Thr His His Pro Ala Pro Met Val Thr Ser His Val Asn Val Gly
225 230 235 240

Ala Gly Phe Pro Gly Gly Phe Gly Tyr Gly His Gly Phe Leu Ala Pro
245 250 255

Pro Gly Ile Thr His Gln Thr Phe Ser His Gly Phe Pro Gly Pro Phe
260 265 270

Pro Gly Gly Met Tyr Asp Gln Phe Pro Gly Val Gly Tyr Gly Phe Asp
275 280 285

Thr Gly Met Pro Phe Pro Tyr Ile His Asp Gly Ser Met Gly Met Gln
290 295 300

Asn Val His Thr Val His His His His Pro Gly Gly Val Thr Thr His
305 310 315 320

Thr Thr Tyr Pro His Pro Leu Thr Ala Tyr Pro Met Gly Asn Pro Tyr
325 330 335

Pro Tyr Gly Ser Thr Thr Thr Val Thr Lys His Thr Lys Thr Val Thr
340 345 350

His Lys Ala Gly Ser Gly Lys Lys Asn
355 360

<210> 26
<211> 259
<212> PRT
<213> Dosidicus gigas

<400> 26

Met Thr Thr Met Phe Ser Ala Leu Val Ser Leu Ala Val Val Leu Gly
1 5 10 15

Val Leu Ser Tyr Thr Ser Ala Tyr His Ala Asn His Val Gly Thr Leu
20 25 30

Trp Ala Lys Pro Pro Gln Gln Thr Pro Tyr Gly Gly Tyr Gly Val Ser
35 40 45

Gly Gly Ala Gly Gln Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Tyr
50 55 60

Gly Ser Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly Leu Gly
65 70 75 80

Gly Tyr Gly Gly Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly
85 90 95

Tyr Gly Gln Gly Gly Tyr Ser Thr Gly Gly His Gly His Gly Gly Tyr
100 105 110

Gly Phe Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Phe Gly Gly Tyr Gly
115 120 125

Gln Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Gln
130 135 140

Gly Gly Ser Gly Tyr Gly Gly Tyr Gly His Tyr Tyr Pro Thr Thr Ser
145 150 155 160

Tyr Gly Gly Tyr Leu Gly Gly Tyr Gly Gly Tyr Gly Gly Tyr Tyr Pro
165 170 175

His Thr Ser Ser Gly Ser Tyr Tyr Pro Thr Thr Tyr Gly Gly Ser Asn
180 185 190

Gln Gly Asn Pro Gly Ala Pro Ile Ser Ser Ser Ser Gly Phe Val Phe
195 200 205

Pro Gly Tyr His Phe Pro Gly Val Phe His Gly Gly Val Asn Gln Gly
210 215 220

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

Gly Phe Lys Pro Thr Ala Thr Ser Thr Thr Ser Thr Ser Asn Ser Asn
245 250 255

Ser Lys Lys

<210> 27
<211> 254
<212> PRT
<213> Dosidicus gigas

<400> 27

Met Thr Thr Met Phe Ser Ala Leu Val Ser Leu Ala Val Val Leu Gly
1 5 10 15

Val Leu Ser Tyr Thr Ser Ala Tyr His Ala Asn His Val Gly Thr Leu
20 25 30

Trp Ala Lys Pro Pro Gln Gln Thr Pro Tyr Gly Gly Tyr Gly Val Ser
35 40 45

Gly Gly Ala Gly Gln Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Tyr
50 55 60

Gly Ser Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly Leu Gly
65 70 75 80

Gly Tyr Gly Gly Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly
85 90 95

Tyr Gly Gln Gly Gly Tyr Ser Thr Gly Gly His Gly His Gly Gly Tyr
100 105 110

Gly Phe Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Phe Gly Gly Tyr Gly

115 120 125

Gln Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Gln Gly Gly Ser Gly Tyr
130 135 140

Gly Gly Tyr Gly His Tyr Tyr Pro Thr Thr Ser Tyr Gly Gly Tyr Leu
145 150 155 160

Gly Gly Tyr Gly Gly Tyr Gly Gly Tyr Tyr Pro His Thr Ser Ser Gly
165 170 175

Ser Tyr Tyr Pro Thr Thr Tyr Gly Gly Ser Asn Gln Gly Asn Pro Gly
180 185 190

Ala Pro Ile Ser Ser Ser Ser Gly Phe Val Phe Pro Gly Tyr His Phe
195 200 205

Pro Gly Val Phe His Gly Gly Val Asn Gln Gly Ala Gly Gly Thr Ser
210 215 220

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

Ala Thr Ser Thr Thr Ser Thr Ser Asn Ser Asn Ser Lys Lys
245 250

<210> 28
<211> 249
<212> PRT
<213> Dosidicus gigas

<400> 28

Met Thr Thr Met Phe Ser Ala Leu Val Ser Leu Ala Val Val Leu Gly
1 5 10 15

Val Leu Ser Tyr Thr Ser Ala Tyr His Ala Asn His Val Gly Thr Leu
20 25 30

Trp Ala Lys Pro Pro Gln Gln Thr Pro Tyr Gly Gly Tyr Gly Val Ser
35 40 45

Gly Gly Ala Gly Gln Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Gly Tyr
50 55 60

Gly Ser Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly Leu Gly
65 70 75 80

Gly Tyr Gly Gly Tyr Gly Gly Leu Gly Gly Tyr Gly Gly Tyr Gly Gly
85 90 95

Tyr Gly Gln Gly Gly Tyr Ser Thr Gly Gly His Gly His Gly Gly Tyr
100 105 110

Gly Phe Gly Gly Tyr Gly Gln Gly Gly Tyr Gly Phe Gly Gly Tyr Gly
115 120 125

Gln Gly Gly Tyr Gly Gln Gly Gly Ser Gly Tyr Gly Gly Tyr Gly His
130 135 140

Tyr Tyr Pro Thr Thr Ser Tyr Gly Gly Tyr Leu Gly Gly Tyr Gly Gly
145 150 155 160

Tyr Gly Gly Tyr Tyr Pro His Thr Ser Ser Gly Ser Tyr Tyr Pro Thr
165 170 175

Thr Tyr Gly Gly Ser Asn Gln Gly Asn Pro Gly Ala Pro Ile Ser Ser
180 185 190

Ser Ser Gly Phe Val Phe Pro Gly Tyr His Phe Pro Gly Val Phe His
195 200 205

Gly Gly Val Asn Gln Gly Ala Gly Gly Thr Ser Gly Thr Asp Leu Gln
210 215 220

Arg Leu Leu Asn Leu Asn Gly Phe Lys Pro Thr Ala Thr Ser Thr Thr
225 230 235 240

Ser Thr Ser Asn Ser Asn Ser Lys Lys
245

<210> 29
<211> 117
<212> PRT
<213> Dosidicus gigas

<400> 29

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

Leu Ser Ser Thr Ala Asn Ala Ile Pro Gly Thr Phe Gly Gly Tyr Phe
20 25 30

Gly Ala Gly His Pro Val Gly His Ser Val Ser Thr Val Ser His Gly
35 40 45

Leu Gly Val Gly Ala Gly Val Gly Val Gly Gly Leu Tyr Gly Gly Tyr
50 55 60

Gly Leu Gly Gly His Ser Val Ser Thr Val Ser His Gly Pro Val Gly
65 70 75 80

Tyr Gly Ser Val Gly Val Gly Gly Leu Tyr Gly Gly Tyr Gly Gly Tyr
85 90 95

Gly Leu Gly Ala Gly Tyr Gly Leu Gly Ala Gly Tyr Gly Leu Gly Ala
100 105 110

Gly Tyr Gly Leu Gly
115

<210> 30
<211> 274
<212> PRT
<213> Dosidicus gigas

<400> 30

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

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

Ser Val His His His Val Val Pro Ser Val Arg His Thr Val Ser Thr
35 40 45

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

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

Val Ser His Gly Val His Pro Ser Pro Leu Thr Thr Thr Ser Val His
85 90 95

His Thr Thr His Gly Gly Leu Ile Gly Gly Gly Leu Tyr Gly Ala Gly
100 105 110

Tyr Pro Leu Gly Phe Gly Gly Tyr Gly Leu His Pro Ala Gly Leu Gly
115 120 125

Tyr Gly Leu Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Tyr Pro Ala Ala
130 135 140

Ala Ser Val Thr His Gly Phe His Pro Ala Gly Phe Gly Leu Gly Leu
145 150 155 160

Gly Gly Phe Tyr Gly Gly Ser Tyr Gly Tyr Pro Gly Ala Thr Val Ser
165 170 175

His Thr Thr His Gly Leu His Pro Gly Gly Phe Gly Leu Gly Leu Gly
180 185 190

Gly Phe Tyr Gly Gly Ala Tyr Gly Phe Pro Ala Ala Ser Ser Val Ser
195 200 205

His Val Thr His Gly Val His Pro Ala Gly Leu Gly Phe Gly Gly Val
210 215 220

Tyr Gly Thr Gly Tyr Gly Ile Pro Ala Gly Thr Thr Val Ser His Thr
225 230 235 240

Thr His Gly Val His His Leu Pro Ala Ala Ser Thr Val Thr His Thr
245 250 255

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

Leu His

<210> 31
<211> 212
<212> PRT
<213> Dosidicus gigas

<400> 31

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

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

Ser Val His His His Val Val Pro Ser Val Arg His Thr Val Ser Thr
35 40 45

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

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

Val Ser His Gly Val His Pro Ser Pro Leu Thr Thr Thr Ser Val His
85 90 95

His Thr Thr His Gly Gly Leu Ile Gly Gly Gly Leu Tyr Gly Ala Gly
100 105 110

Tyr Pro Leu Gly Phe Gly Gly Tyr Gly Leu His Pro Ala Gly Leu Gly
115 120 125

Tyr Gly Leu Gly Gly Leu Tyr Gly Gly Leu Tyr Gly Tyr Pro Ala Ala
130 135 140

Ala Ser Val Thr His Gly Phe His Pro Ala Gly Phe Gly Leu Gly Leu
145 150 155 160

Gly Gly Phe Tyr Gly Gly Ala Tyr Gly Tyr Pro Gly Ala Thr Val Ser

165 170 175

His Thr Thr His Gly Val His His Leu Pro Ala Ala Ser Thr Val Thr
180 185 190

His Thr Thr His Gly Val Ala His Pro Met Gly Val Ser Tyr Gly Asn
195 200 205

Val Phe Leu His
210

<210> 32
<211> 142
<212> PRT
<213> Dosidicus gigas

<400> 32

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

Phe Ala Cys Ser Glu Asp Glu Lys Gln Ala Pro Thr Ala Lys Pro Ala
20 25 30

Thr Ala Pro Ser Asn Leu Leu Arg Ser Ser Trp Tyr Thr Pro Ser Ser
35 40 45

Ser Tyr Gly Ile Gly Leu Gly Tyr Gly Gly Tyr Gly Leu Gly Leu Gly
50 55 60

Tyr Gly Gly Tyr Gly Ala Tyr Gly Gly Tyr Gly Gly Tyr Gly Gly Tyr
65 70 75 80

Leu Pro Tyr Gly Tyr Gly Gly Ile Leu Pro Gly Tyr Phe Gly Gly Tyr
85 90 95

Pro Ala Val Thr Ser Ser Ser Val Thr His His Ala Pro Thr Tyr Pro
100 105 110

Gln Val Thr Ser Ser Val Thr His His Ala Pro Tyr Gly Val Gly Val
115 120 125

Gly Tyr Leu Gly Gly Leu Tyr Gly Gly Tyr Leu Gly Leu His
130 135 140

<210> 33
<211> 142
<212> PRT
<213> Dosidicus gigas

<400> 33

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

Phe Ala Cys Ser Glu Asp Glu Lys Gln Ala Pro Thr Ala Lys Pro Ala
20 25 30

Thr Ala Pro Ser Asn Leu Leu Arg Ser Ser Trp Tyr Thr Pro Ser Ser
35 40 45

Ser Tyr Gly Ile Gly Leu Gly Tyr Gly Gly Tyr Gly Leu Gly Leu Gly
50 55 60

Tyr Gly Gly Tyr Gly Ala Tyr Gly Gly Tyr Gly Gly Tyr Gly Gly Tyr
65 70 75 80

Leu Pro Tyr Gly Tyr Gly Gly Ile Leu Pro Gly Tyr Phe Gly Gly Tyr
85 90 95

Pro Ala Val Thr Ser Ser Ser Val Thr His His Ala Pro Thr Tyr Pro
100 105 110

Gln Val Thr Ser Ser Val Thr His His Ala Pro Tyr Gly Val Gly Val
115 120 125

Gly Tyr Leu Gly Gly Leu Tyr Gly Gly Tyr Leu Gly Leu His
130 135 140

<210> 34
<211> 315
<212> PRT
<213> Dosidicus gigas

<400> 34

Thr Val Ser His Val Ser His Gly Thr Val Gly Tyr Gly Gly His Gly
1 5 10 15

Leu Gly Gly Tyr Gly Gly Tyr Gly Leu Gly Gly Ile Ser Gly Gly Tyr
20 25 30

Gly Leu Gly Gly His Thr Val Ser His Val Ser His Gly Pro Val Gly
35 40 45

Tyr Gly Gly Tyr Gly Ile Gly Gly Val Ser Gly Gly Tyr Gly Gly Tyr
50 55 60

Gly Leu Gly Gly Val Ser Gly Gly Tyr Gly Met Gly Gly Leu Tyr Gly
65 70 75 80

Gly Tyr Gly Gly Tyr Gly Val Gly Val His Ser Arg Tyr Gly Val Gly
85 90 95

His Arg Thr Val Thr Gln Leu Arg His Arg Ile Gln Pro Leu Gly Tyr
100 105 110

Gly Val Val Asn Gln Ile Gly His Ala Val His Arg Val Val Gln Pro
115 120 125

Val Ala His His Gly Val Val Ser Arg Arg Tyr Ala Ile Pro His Thr
130 135 140

Glu Val Arg Tyr Val Gln Tyr Pro Val Val Asn Arg Tyr Ile Gln Tyr
145 150 155 160

Val Thr Val Asn Lys Pro Tyr Val Val Pro Arg Tyr Glu Trp His Val
165 170 175

Arg Ser Tyr Gln Val Pro Val Pro Arg Tyr Ser Val Arg Met Ala Val
180 185 190

Arg Pro Val Tyr Ile Pro Arg Val His Tyr Ala Glu Ser His Thr Pro
195 200 205

Val Thr His Tyr Ser His Val Ser His Asp Val His Gln Pro Ile Tyr
210 215 220

Gly Val His Tyr Pro Met Gly His Ser Val Glu Ala Val Thr His Gln
225 230 235 240

Gln Pro Phe Val Tyr Gly His His Thr Thr Tyr Gly His Gly Gly Leu
245 250 255

Tyr Gly Gly Tyr Gly Gly Tyr Gly Val Gly Gly Ala Val Gly Gly Tyr
260 265 270

Gly Met Gly Gly Ala Val Gly Gly Tyr Gly Leu Gly Gly Ala Val Gly
275 280 285

Gly Tyr Gly Leu Gly Gly Ala Val Gly Gly Tyr Gly Leu Gly Gly Gly
290 295 300

Tyr Gly Gly Tyr Gly Leu Gly Gly Leu Tyr His
305 310 315

<210> 35
<211> 73
<212> PRT
<213> Dosidicus gigas

<400> 35

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

Tyr Ala Ser Gly Ala Leu Thr Tyr Gly Ala Gly Gly Trp Ala Leu Pro
20 25 30

Val Gly Gly Trp Ala Val Pro Thr Gly Gly Val Gly Gly Tyr Gly Val

35 40 45

Pro Gly Gly Tyr Gly Val Pro Gly Gly Phe Gly Gly Phe Gly Gly Tyr
50 55 60

Gly Gly Gly Phe Gly Phe Gly Gly Tyr
65 70

<210> 36
<211> 354
<212> PRT
<213> Dosidicus gigas

<400> 36

Gly Gly Leu Tyr Gly Gly His Tyr Gly Gly Tyr Gly Leu Gly Gly Ser
1 5 10 15

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

Ala Pro Ser Ser Tyr Gly Leu Ala Gly Tyr Gly Gly Val Ser Gly Gly
35 40 45

Arg Tyr Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu Gly Tyr Pro Thr
50 55 60

Ala Thr Ser Ser Ser Tyr Thr Thr His His Ala Pro Ser Gly Tyr Gly
65 70 75 80

Ser Leu Gly Gly Ser Gly Phe Gly Gly Ile Val Ser Gly Ser Gln Tyr
85 90 95

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

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

Val Ser His Thr Ser Gln Asn Gly Gly Tyr Gly Tyr Gly Asn Leu Leu
130 135 140

Gly Gly Tyr Gly Gly Ser Tyr Gly Gly Leu Gly Leu Ser Lys Gln Met
145 150 155 160

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

Pro Tyr Gly Val Phe Gly Leu Tyr Gly Leu Gly Gly Gln Gly Leu Thr
180 185 190

Ser Asn Thr Tyr Gln Ser Gly Tyr Gly Phe Gly Gly Ser Gln Gly Gly
195 200 205

Leu Gly Tyr Thr Ala Gly Asn Gly Gly Leu Ser Ser Gly Leu Pro Gly
210 215 220

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

Thr Thr Val Ser Thr Thr Ala Asn His Met Gly Pro Gly Tyr Gly Ser
245 250 255

Leu Leu Gly Gly Tyr Gly Ala Gln Phe Pro Ser Val Ser Ser Gly Ala
260 265 270

Gln Gly Val Asn Ser Gly Val Phe Gly Gly Tyr Gly Ser Thr Phe Gly
275 280 285

Gly Ile Gly Leu Ser Gly Tyr Gly Ser Gln Asn Ser Ala Gly Pro Val
290 295 300

Val Gly Ser Thr Ala Gln Thr Gly Gly Phe Gly Asn Gly Gly Leu Leu
305 310 315 320

Gly Gly Leu Gly Ser Gln Ser Thr Tyr Ser Tyr Gly Leu His Gln Pro
325 330 335

His Ala Ser Gly Leu Ser Gly Tyr Gly Phe His Ser Pro Thr Ser Thr
340 345 350

Leu Gln

<210> 37
<211> 504
<212> PRT
<213> Sepioteuthis lessoniana

<400> 37

Met Gly Thr Ile Lys Val Ile Val Ala Leu Leu Ile Val Leu Gly Ile
1 5 10 15

Ser Ser Ser Ala Lys Gly Ile Tyr Asn Gly Ser Leu Ala Ala Leu Asp
20 25 30

Ser Ser Ser Tyr Ser His Pro Ser Pro Tyr Leu Gln Arg Ser Val Ser
35 40 45

Thr Val Ser His Gly Ser His Tyr Pro Thr Tyr Gly Gly Trp Gly Tyr
50 55 60

Asn Leu Gly Thr Trp Gly His Gly Leu Gly Gly Leu Gly Gly Tyr Gly
65 70 75 80

Phe Arg Tyr Pro Thr Ser Ser Ser Ile Ser Arg Val Ser His Thr Ala
85 90 95

His Ser Pro Val Gly Tyr Tyr Gly Trp Gly Gly Tyr Ala Gln His Ser
100 105 110

Pro Leu Gln Tyr Val Ser Arg Thr Ala Leu Pro Pro Val Gly Trp Thr
115 120 125

Phe Gly Gly Ile Tyr Arg Gly His Gly Ala His Val Ser Gln Ser Pro
130 135 140

Val Arg Tyr Gln Gly Tyr Ser Phe Gly Arg Pro Ala Val Ala Thr Tyr
145 150 155 160

Arg Val Leu Tyr Pro Arg Pro Val Val Ser His Val Thr His Ser Ile
165 170 175

Pro Tyr Gly Gly Trp Ser Val Gly Gly Gln Gly Gly Phe Val Ser Ser
180 185 190

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

Ala Pro Ile Tyr Gly Gly Trp Gly Phe Gly Tyr Pro Ala Gly Gln Ala
210 215 220

Ile Ser Thr Val Gly His Gly Ile His Pro Thr Val Thr Tyr Gly Gly
225 230 235 240

Leu Gly Leu Gly Gly Leu Tyr Gly Gly Tyr Gly Ala His Tyr Pro Thr
245 250 255

Gly Ser Ser Val Ser Thr Leu Ser His Gly Val Ser His Pro Val Gly
260 265 270

Phe Gly Phe Gly Tyr Ser Ser His Tyr Pro Ala Ser Thr Ser Val Ser
275 280 285

Gln Thr Ser His Ser Val Pro His Ile Ile Gly Leu Gly Leu Gly Ser
290 295 300

Trp Gly Gly Tyr Gly Val Gly Tyr Gly Leu His Thr Pro Val Gly Ala
305 310 315 320

Ser Val Ser Thr Val Ser His Gly Ile Gly His Pro Val Gly Tyr Gly
325 330 335

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

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Ser Thr Val Ser His Gly Ile His Ala Pro Val Ala His Gly Gly Leu
        355                 360                 365

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

Ser Thr Val Ser His Gly Val His Ser Pro Val Ile Tyr Gly Arg Tyr
385                 390                 395                 400

Gly Leu Gly Gly Leu Gly Gly Asn Gly Gly Tyr Gly Leu Gly Gly Leu
                405                 410                 415

Val Gly Gly Tyr Gly Gly Tyr Gly Leu Gly Gly Leu Val Gly Gly Tyr
            420                 425                 430

Gly Thr Tyr Gln Pro Thr Gly Ser Ser Ile Ser Thr Val Ser His Gly
        435                 440                 445

Val His Ser Pro Val Gly Tyr Gly Gly Tyr Gly Leu Gly Gly Leu Gly
    450                 455                 460

Glu Ser Tyr Gly Gly Tyr Gly Leu Gly Gly Leu Val Gly Ser Tyr Gly
465                 470                 475                 480

Gly Tyr Gly Leu Gly Gly Leu Val Gly Ser Tyr Gly Gly Tyr Gly Leu
                485                 490                 495

Gly Gly Leu Val Gly Ser Tyr Gly
            500


<210>  38
<211>  129
<212>  PRT
<213>  Sepioteuthis lessoniana

<400>  38

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

Tyr Ala Tyr Ala Leu Leu Pro Gly Leu Met Gly Gly Tyr Gly Tyr Pro
            20                  25                  30

Ala Ala Thr Thr Tyr Arg Arg Thr Thr Leu Asn Gly Tyr Gly Gly Leu
        35                  40                  45

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

Thr Thr His His Ala Pro Tyr Gly Tyr Gly Gly Leu Tyr Gly Gly Trp
65                  70                  75                  80
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Gly Tyr Pro Ala Ala Ser Ser Val Ser Thr Val Ser His Gly Val His
85 90 95

His Pro Val Gly Trp Gly Leu Gly Tyr Gly Leu His Tyr Pro Ala Ala
100 105 110

Thr Val Gly Tyr Ser Gly Leu Gly Leu Gly Tyr Gly Ser Gly Tyr Val
115 120 125

Leu

<210> 39
<211> 133
<212> PRT
<213> Sepioteuthis lessoniana

<400> 39

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

Tyr Ala Tyr Ala Leu Leu Pro Gly Leu Met Gly Gly Tyr Gly Tyr Pro
20 25 30

Ala Ala Thr Thr Tyr Arg Arg Thr Thr Leu Asn Gly Tyr Gly Gly Leu
35 40 45

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

Thr Thr His His Ala Pro Tyr Gly Tyr Gly Gly Leu Tyr Gly Gly Trp
65 70 75 80

Gly Tyr Pro Ala Ala Ala Ser Val Ser Thr Val His Arg Pro Val Gly
85 90 95

Tyr Gly Gly Trp Gly Leu Gly Gly Tyr Gly Leu Gly Tyr Gly Leu His
100 105 110

Tyr Pro Ala Ala Thr Val Gly Tyr Ser Gly Leu Gly Leu Gly Tyr Gly
115 120 125

Ser Gly Tyr Val Leu
130

<210> 40
<211> 138
<212> PRT
<213> Sepioteuthis lessoniana

<400> 40

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

Tyr Ala Tyr Ala Leu Leu Pro Gly Leu Met Gly Gly Tyr Gly Tyr Pro
20 25 30

Ala Ala Thr Thr Tyr Arg Arg Thr Thr Leu Asn Gly Tyr Gly Gly Leu
35 40 45

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

Thr Thr His His Ala Pro Tyr Gly Tyr Gly Gly Leu Tyr Gly Gly Trp
65 70 75 80

Gly Tyr Pro Ala Ala Ala Ser Val Ser Thr Val His Arg Pro Val Gly
85 90 95

Tyr Gly Gly Trp Gly Leu Gly Gly Tyr Gly Leu Gly Gly Tyr Gly Leu
100 105 110

Gly Tyr Gly Leu His Tyr Pro Ala Ala Thr Val Gly Tyr Ser Gly Leu
115 120 125

Gly Leu Gly Tyr Gly Ser Gly Tyr Val Leu
130 135

<210> 41
<211> 483
<212> PRT
<213> Sepioteuthis lessoniana

<400> 41

Met Gly Thr Ile Lys Val Ile Val Ala Leu Leu Ile Val Leu Gly Ile
1 5 10 15

Ser Ser Ser Ala Lys Gly Ile Tyr Asn Gly Ser Leu Ala Ala Leu Asp
20 25 30

Ser Ser Ser Tyr Ser His Pro Ser Pro Tyr Leu Gln Arg Ser Val Ser
35 40 45

Thr Val Ser His Gly Ser His Tyr Pro Thr Tyr Gly Gly Trp Gly Tyr
50 55 60

Asn Leu Gly Thr Trp Gly His Gly Leu Gly Gly Leu Gly Gly Tyr Gly
65 70 75 80

Phe Arg Tyr Pro Thr Ser Ser Ser Ile Ser Arg Val Ser His Thr Ala
85 90 95

His Ser Pro Val Gly Tyr Tyr Gly Trp Gly Gly Tyr Ala Gln His Ser
100 105 110

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Pro Leu Gln Tyr Val Ser Arg Thr Ala Leu Pro Pro Val Gly Trp Thr
        115                 120                 125

Phe Gly Gly Ile Tyr Arg Gly His Gly Ala His Val Ser Gln Ser Pro
    130                 135                 140

Val Arg Tyr Gln Gly Tyr Ser Phe Gly Arg Pro Ala Val Ala Thr Tyr
145                 150                 155                 160

Arg Val Leu Tyr Pro Arg Pro Val Val Ser His Val Thr His Ser Ile
                165                 170                 175

Pro Tyr Gly Gly Trp Ser Val Gly Gly Gln Gly Gly Phe Val Ser Ser
            180                 185                 190

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

Ala Pro Ile Tyr Gly Gly Trp Gly Phe Gly Tyr Pro Ala Gly Gln Ala
    210                 215                 220

Ile Ser Thr Val Gly His Gly Ile His Pro Thr Val Thr Tyr Gly Gly
225                 230                 235                 240

Leu Gly Leu Gly Gly Leu Tyr Gly Gly Tyr Gly Ala His Tyr Pro Thr
                245                 250                 255

Gly Ser Ser Val Ser Thr Leu Ser His Gly Val Ser His Pro Val Gly
            260                 265                 270

Phe Gly Phe Gly Tyr Ser Ser His Tyr Pro Ala Ser Thr Ser Val Ser
        275                 280                 285

Gln Thr Ser His Ser Val Pro His Ile Ile Gly Leu Gly Leu Gly Ser
    290                 295                 300

Trp Gly Gly Tyr Gly Val Gly Tyr Gly Leu His Thr Pro Val Gly Ala
305                 310                 315                 320

Ser Val Ser Thr Val Ser His Gly Ile Gly His Pro Val Gly Tyr Gly
                325                 330                 335

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

Ser Thr Val Ser His Gly Ile His Ala Pro Val Ala His Gly Gly Leu
        355                 360                 365

Ser Gly Leu Ser Glu Gly Tyr Gly Val Phe His Pro Thr Arg Ser Val
    370                 375                 380
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Ser Thr Val Ser His Gly Val His Ser Pro Val Ile Tyr Gly Arg Tyr
385                 390                 395                 400

Gly Leu Gly Gly Leu Gly Gly Asn Gly Gly Tyr Gly Leu Gly Gly Leu
                405                 410                 415

Val Gly Gly Tyr Gly Gly Tyr Gly Leu Gly Gly Leu Val Gly Gly Tyr
            420                 425                 430

Gly Thr Tyr His Pro Ala Gly Ser Ser Ile Ser Thr Val Ser His Gly
        435                 440                 445

Leu His Ser Leu Gly Ala Tyr Gly Gly Tyr Gly His Gly Ser Leu Leu
    450                 455                 460

Gly Gly Tyr Gly Val Pro Leu Pro Ile Ser Thr Thr Ser His His Ser
465                 470                 475                 480

Val Thr His
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<210> 42
<211> 238
<212> PRT
<213> Sepioteuthis lessoniana

<400> 42

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

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

His His Ser Val His His Pro Ile Ser Ala Val Gly Gln Thr Val Lys
        35                  40                  45

Thr Val Thr His Ala Val Pro Gln Ile Tyr Pro Phe Gly Gly Leu Pro
    50                  55                  60

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

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

His Pro Thr Val Pro Val Gly Ser Thr Ser Val Ser His Thr Thr His
            100                 105                 110

Gly Ile His His Pro Val Thr Tyr Gly Gly Leu Gly Val Gly Gly Leu
        115                 120                 125
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Gly Phe Gly Gly Leu Gly Tyr Gly Gly Val Gly Gly Leu Gly Leu Gly
130 135 140

Gly Leu Tyr Gly Gly Val Tyr Gly Leu His Tyr Pro Gly Ala Ala Phe
145 150 155 160

His Tyr Pro Ala Gly Leu Gly Tyr Gly Leu Gly Gly Leu Tyr Gly Gly
165 170 175

Leu Tyr Gly Leu His Leu Pro Ala Ala Thr Ser Val Ser His Thr Thr
180 185 190

His Gly Val His His Pro Ala Leu Gly Tyr Gly Leu Gly Leu Tyr Gly
195 200 205

Ala Ala His Tyr Pro Ala Ala Ser Ser Val Thr His Thr Thr His Ala
210 215 220

Val Pro His Pro Gly Phe Gly Leu Asn Tyr Gly Val Phe His
225 230 235

<210> 43
<211> 201
<212> PRT
<213> Sepioteuthis lessoniana

<400> 43

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

Cys Gln Thr Glu Ala Ala Ile Thr Gly Thr Ser Ser Val Lys Thr Val
20 25 30

Val His Pro Pro Thr Val Val His Pro Val His Thr Val Thr His Thr
35 40 45

Asp His His Pro Leu Val Trp Asn Thr Gly Pro Val Tyr Gly Ile Pro
50 55 60

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

Thr Gly Gly Ile Ser Val Thr Ser Pro Gly Gly Ala Thr Val Thr His
85 90 95

Thr Thr His Gly Ile Ser His Pro Phe Gly Leu Gly His Gly Leu Gly
100 105 110

Gly Leu Tyr Gly Gly Val Tyr Gly Leu Pro Met Pro Gly Ala Thr Thr
115 120 125

Val Ser His Ser Thr His Gly Val Pro Tyr Ser Phe Gly Tyr Gly Gly

130 135 140

Leu Gly Tyr Gly Gly Ile Gly Tyr Gly Gly Leu Gly Tyr Gly Gly Leu
145 150 155 160

Gly Tyr Gly Leu Gly Gly Ala Tyr Gly Leu Pro Tyr Pro Asn Thr Ala
165 170 175

Ile Ser His Ser Ser Tyr Gly Phe Gln Ser Pro Ser Val Tyr Gly Phe
180 185 190

Gly Phe Gly Gly Pro Tyr Gly Phe His
195 200

<210> 44
<211> 129
<212> PRT
<213> Sepioteuthis lessoniana

<400> 44

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

Leu Ala Tyr Gly Glu Gln Thr Lys Lys Thr Thr Thr Thr Ser Asn Thr
20 25 30

Gly Ala Gln Asn Tyr Tyr Asn Pro Trp Tyr Tyr Pro Thr Tyr Asn Tyr
35 40 45

Gly Trp Gly Asn Pro Trp Gly Leu Gly Tyr Tyr Gly Tyr Gly Met Leu
50 55 60

Pro Asn Tyr Gly Thr His Thr Val Thr His His Ala Pro Gln Tyr Pro
65 70 75 80

Phe Tyr Tyr Gly Phe Pro Gln Val Ser Thr Ser His Val Thr His His
85 90 95

Ala Pro Ile Val Pro His Val Thr Ser Asn Thr Val Thr His His Ala
100 105 110

Pro Tyr Thr Phe Gly Asn Leu Gly Leu Tyr Gly Gly Leu Phe Gly Tyr
115 120 125

His

<210> 45
<211> 146
<212> PRT
<213> Sepioteuthis lessoniana

<400> 45

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

Val Thr Cys Cys Ala Gly Tyr Pro Ser Trp Gly Ser Thr Tyr Ser Gln
20 25 30

Val Ser Thr His His Ala Pro Val Gly Trp Gly Gly Leu Gly Gly Leu
35 40 45

Tyr Gly Tyr Gly Ser Leu Gly Gly Leu Gly Tyr Gly Gly Val Tyr Gly
50 55 60

Gly Gly Val His Val Ala Gln Ser Pro Val Arg Tyr His Gly Tyr Ser
65 70 75 80

Val Gly Thr Pro His Val Gln Ser Tyr Gly Val Asn Tyr Pro Thr Pro
85 90 95

Thr Val Thr His His His Asn Thr Trp His Gly Gly Tyr Gly Gly Phe
100 105 110

Gly Leu Ala Gly Pro Val Gly His Ser Val Gln Thr Val Ser Gln Gly
115 120 125

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

Tyr Tyr
145

<210> 46
<211> 337
<212> PRT
<213> Sepioteuthis lessoniana

<400> 46

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

Leu Val Ser Ala Gln Met Pro Phe Tyr Ala Gly Pro Asn Tyr Gly Ile
20 25 30

Gly Gly Ile Gly Gly Ile Gly Phe Gly Tyr Pro Gly Gly Leu Gly Ala
35 40 45

Tyr Ala His Gly Phe Glu Pro Val Thr Gly Gly Ile Phe Pro Tyr Tyr
50 55 60

Gly Ala Ala His Ser Leu Pro Trp Ser Ala Pro Val Gly Gly Thr Thr
65 70 75 80

His Thr Ile Ser His Val Ala His Gly Thr Leu Pro His Pro Val Gly
85 90 95

Pro His Val Ser Thr Thr Ser Lys Thr Val Ser Val His His Pro Thr
100 105 110

Thr His Val Thr Val His His Pro Ala Val Thr Thr His Val Gln His
115 120 125

Pro Asp Ile Gly Phe Pro Ala Ala Leu Thr Tyr Pro Tyr Pro Gly Leu
130 135 140

Ser Pro Phe Phe Pro Gln Tyr Pro Thr Gly Val Leu Glu His His Ser
145 150 155 160

Pro Val Ile Thr Glu Thr Thr Val Glu Lys Asn Leu Ala Lys Lys Asn
165 170 175

Thr Asp Gln Thr Asn Thr Ile Tyr Thr His His Ser Pro Thr His Thr
180 185 190

Ile Val Thr Lys Ser His His Val Pro Ser Gly Tyr Pro Phe Asn Gln
195 200 205

Pro Gly Val Val Ser Thr Ser His His Gln Thr Val Ser His Val Asn
210 215 220

Pro Gly Val Gly Val Thr His Leu Pro Gly Thr Phe Pro Gly Thr Phe
225 230 235 240

Pro Ala Thr Tyr Pro Gly Leu Asp Tyr Pro Tyr His Pro Gly Ser Ser
245 250 255

Ala Phe Gly Ile Gln Phe Pro Tyr Leu Asn Ala Gly Leu Gln Gly Gly
260 265 270

Ala Val Ser Ser Ser Ser Val His Thr Val His His Pro Gly Val Gly
275 280 285

Phe Pro Pro Leu Tyr Pro Gly Thr Phe Gly Gly Tyr His Ile Gly Thr
290 295 300

Tyr Pro Phe Gly Phe Ser Ser Val Thr Ser Ser Ser Thr Thr Thr Thr
305 310 315 320

Glu Lys Asp Thr Lys Ser Ser Ser Gly Lys Ser Asp Ser Ser Ser Lys
325 330 335

Asn

<210> 47
<211> 106
<212> PRT
<213> Sepioteuthis lessoniana

<400> 47

Met Ala Ala Gly His Leu Ile Val Ser Ala Leu Leu Ala Val Ile Ala
1 5 10 15

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

Phe Gly Ala Gly His Pro Ile Gly Thr Ser Tyr Ser Ala Ile Ser His
35 40 45

Gly Gly Pro Val Gly Ala Trp Gly His Gly Phe Gly Tyr Gly Leu Gly
50 55 60

Gly Leu Tyr Gly Gly Tyr Gly Leu Gly Gly His Thr Val Ser His Val
65 70 75 80

Ser His Gly Pro Val Gly Leu Gly Tyr Gly Gly Leu Tyr Gly His Tyr
85 90 95

Gly Gly Tyr Gly Leu Gly Gly Val Tyr Gly
100 105

<210> 48
<211> 206
<212> PRT
<213> Sepioteuthis lessoniana

<400> 48

His Gly Tyr Gly Leu Gly Gly Gly Tyr Gly His Gly Tyr Gly Leu Gly
1 5 10 15

Gly Gly Tyr Gly His Gly Tyr Gly Leu Gly Gly Ile Tyr Gly His Tyr
20 25 30

Gly Gly Tyr Gly Leu Gly Gly Val Tyr Ser His Tyr Gly Val Gly Ser
35 40 45

Arg Thr Val Asn His Val Ser His Arg Tyr His Pro Leu Gly Tyr Gly
50 55 60

Ile Thr Tyr Pro Ile Gly His Ala Val His Arg Val Thr Gln Pro Ile
65 70 75 80

Ala His His Gly Thr Ile Ser Arg Arg Tyr Ala Ile Pro His Tyr Glu
85 90 95

Val Arg Tyr Val Ser Tyr Pro Val Val Gln Arg Tyr Val Gln Met Val
100 105 110

Thr Val Asn Gln Pro Tyr Ile Val Pro Arg Tyr Glu Thr His Ile Arg
115 120 125

Ser Tyr Gln Val Pro Val Pro Arg Tyr Gln Val His Met Ala Gln Tyr
130 135 140

Pro Val Val Ile Pro Arg Leu His Ile Ala Glu Ser His His Pro Val
145 150 155 160

Thr His Tyr Ser Gln Val Ser His Asp Val His Gln Pro Ile Tyr Gly
165 170 175

Val His Tyr Pro Met Gly His Thr Val Gln Ala Val Ser His Gln Val
180 185 190

Pro Tyr Val Tyr Gly Ser Thr His Ala Tyr Gly Gly Phe Met
195 200 205

<210> 49
<211> 378
<212> PRT
<213> Sepia. esculenta

<400> 49

Met Thr Ala Lys Tyr Val Ile Val Ala Ala Phe Leu Ala Gly Ile Val
1 5 10 15

Ser Gly Gln Leu Pro Phe His Ala Phe Pro Ala Tyr Gly Ile Gly Gly
20 25 30

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

Phe Gly Gln Phe Pro Gly Phe Ser Pro Tyr Tyr Gly Ile Ser Tyr Ser
50 55 60

Leu Pro Leu Pro Val Ser Ala Ala Gly Ala Ala Gly Thr Thr His Thr
65 70 75 80

Val Ser His Thr Ser Ala Ala Val Val Pro His Pro Ala Ala Ser His
85 90 95

Val Asn Lys Ala Val Thr Val Ala His His Phe Pro Ser Thr His Val
100 105 110

Thr Thr Val His His Pro Val Ser Ala Val Thr Thr His Glu Gln His
115 120 125

Val Asn His Gly Pro Ala Phe His Glu Val Val Pro Tyr Ser Pro Phe
130 135 140

Phe Tyr Gly Pro Thr Leu Ser Gln Phe Gly Pro Gln Tyr Arg Thr Ser
145 150 155 160

Phe Val Lys His Gln Pro Ile Pro Ala Thr Ser His Ser Thr Val Val
165 170 175

Lys Ser Thr Ser Gln Thr Ser Ser Thr Pro Gly Ser Tyr Leu Asp Leu
180 185 190

Val Lys Lys Leu Ser Ser Ser Ala Ala Asn Val Ala Gln Pro Ser Thr
195 200 205

Ile Tyr Ser Tyr Gln Asn Tyr Lys Pro Val Ala Ser Val Val Thr Lys
210 215 220

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

Thr Thr Arg His His Gln Thr Val Ser His Val Gly Pro Glu Phe Gly
245 250 255

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

Thr Lys Tyr Gln Gln Thr Thr Ala Tyr Pro Gly Leu Gly Tyr Ser Tyr
275 280 285

Gly Pro Leu Pro Gly Thr Phe Asn Ser Pro Phe Gly Ala Phe Gly Thr
290 295 300

Pro Phe Pro Tyr Val Asn Ala Gly Phe Pro Gly Gly Ala Val Ser Ser
305 310 315 320

Ser Ala Val His Thr Val His His Pro Gly Ala Phe Thr Pro Ala Leu
325 330 335

Tyr Pro Ser Ala Phe Gln Asn Tyr Pro Val Gly Thr Ser Ser Pro Val
340 345 350

Ser Phe Tyr Ser Val Pro Ser Ser His Leu Lys Ile Thr Lys Thr Lys
355 360 365

Ser Gln Lys Ser Ser Ser Asn Asn Lys Lys
370 375

<210> 50
<211> 326
<212> PRT
<213> Sepia. esculenta

<400> 50

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

Leu Ser Asn Cys Ala Asn Gly Val Leu Pro Gly Val Ala Gly Gly Tyr
            20                  25                  30

Gly Thr Ser Tyr Gly Thr Phe Ser His Gly Ser Phe His Pro Ser Gly
        35                  40                  45

Trp Trp Gly Ser Gly Leu Ser Gly Phe Gly His Gly His Thr Val Ser
    50                  55                  60

Gln Val Ser His Gly Pro Val Gly Tyr Gly Trp Gly Tyr Gly Asn Leu
65                  70                  75                  80

Gly Gly Tyr Gly Gly Tyr Gly Leu Gly Gly Ile Ser Gly His Tyr Gly
                85                  90                  95

Gly Tyr Gly Leu Gly Gly Ile Ser Gly His Tyr Gly Gly Tyr Gly Leu
            100                 105                 110

Gly Gly Leu Tyr Gly His Tyr Gly Gly Tyr Gly Leu Gly Gly Leu His
        115                 120                 125

Gly His Phe Gly Gly Tyr Gly Leu Gly Gly Gly Tyr Gly Gly Tyr Gly
    130                 135                 140

Leu Pro Gly Met Tyr Gly Ala Tyr Gly Gly Tyr Gly His Gly Gly Val
145                 150                 155                 160

Tyr Ser His Tyr Gly Ile Gly Gly Arg Thr Ile Asn Gln Val Thr Arg
                165                 170                 175

Arg Leu His Pro Leu Gly Tyr Gly Ile Pro Tyr Pro Val Gly His Ala
            180                 185                 190

Val His Arg Val Thr Gln Pro Ile Ala His Tyr Gly Thr Ile Ser Arg
        195                 200                 205

Arg Phe Ala Ile Pro Gln Tyr Glu Val Arg Tyr Val Ser Tyr Pro Val
    210                 215                 220

Thr His Arg Tyr Ile Gln Met Val Thr Val Ser Lys Pro Tyr Val Val
225                 230                 235                 240

Pro Arg Tyr Glu Met His Val Arg Gln Tyr Gln Val Pro Val Pro Arg
                245                 250                 255

Tyr Tyr Val Thr Met Ala Gln Tyr Pro Val Val Ile Pro Arg Val His
            260                 265                 270
```

Ile Ala Glu Ser His Gln Pro Val Thr His Ile Ser His Val Ser Arg
275 280 285

Asp Tyr His Gln Pro Ile Ile Gly Met His Tyr Pro Met Gly Gln Thr
290 295 300

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

Thr Tyr Gly Gly Gly Tyr
325

<210> 51
<211> 162
<212> PRT
<213> Sepia. esculenta

<400> 51

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

Thr Ser Cys Tyr Pro Gly Tyr Phe Gly Gly Tyr Gly Gly Ala Leu Pro
20 25 30

Ala Ala Ser Thr Tyr Ser Gln Val Ser His His His Gly Trp Gly Gly
35 40 45

Leu Gly Gly Leu Tyr Gly Tyr Gly Val His Leu Pro Val Ser Thr Thr
50 55 60

Ser His Val Ser His Gly Ala His Tyr Gly Gly Trp Gly Tyr Pro Gly
65 70 75 80

Leu Tyr Gly Gly Val His Val Ser Gln Ser Pro Val Arg Tyr His Gly
85 90 95

Tyr Ser Val Gly Thr Pro His Val Gln Ser Tyr Gly Val His Tyr Pro
100 105 110

Thr Thr Ser Val Thr His Ser His Gly Asp Trp Gly Leu Gly Glu Tyr
115 120 125

Gly Tyr Gly Ala Pro Leu Ala His Ser Val Gln Thr Val Ser His Gly
130 135 140

Phe Gly His Asn His Leu Glu Leu Gly Tyr Gly Leu His Ser Phe Gly
145 150 155 160

His Phe

<210> 52

<211> 201
<212> PRT
<213> Sepia. esculenta

<400> 52

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

Cys Gln Leu Ala Ala Ala Leu Ala Ala Ile Lys Thr Ser Ser Thr Ala
20 25 30

Val His His Ser Pro Pro Thr Val Ala His Thr Val His Ser Ile Ala
35 40 45

His Ala Val Pro His Pro Tyr Thr Phe Gly Val Trp Pro Tyr Gly Asp
50 55 60

Phe Tyr Gly Gly Leu Tyr Gly Tyr Pro Pro Thr Thr Ser Val Lys Thr
65 70 75 80

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

Thr Ser Gln Gly Ile His Gln Pro Leu Pro Tyr Gly Gly Phe His Gly
100 105 110

Gly Phe Tyr Pro Gly Ala Ala Phe His Tyr Pro Leu Gly Leu Gly Tyr
115 120 125

Gly Phe Gly Gly Leu Tyr Gly Gly Phe Gln Gly Phe His Asn Pro Gly
130 135 140

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

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

Ser Val Ser His Thr Thr Gln Gly Leu Ser His Pro Ala Phe Gly Trp
180 185 190

Asn Tyr Gly Asn Val Phe Gly Leu His
195 200

<210> 53
<211> 189
<212> PRT
<213> Sepia. esculenta

<400> 53

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

Leu Ile Ala Cys Ser Glu Ala Ile Phe Pro Ala Tyr Tyr Gly Ser Tyr
20 25 30

Tyr Pro Gly Tyr Arg Arg Ser Val Ser Ser Val Thr His His Pro Val
35 40 45

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

Gly Tyr Pro Ala Ala Ser Thr Val Thr His Thr Ala His Gly Val Pro
65 70 75 80

Tyr Ser Gly Val Gly Tyr Gly Trp Gly Leu Ala Gly Leu His Gly Gly
85 90 95

Tyr Gly Trp His Tyr Pro Ala Gly Tyr Gly Gly Trp Gly Leu Asn Gly
100 105 110

Val Tyr Gly Phe His His Pro Val Gly Ala Ser Val Ser Thr Val Ser
115 120 125

His His Pro Gly Phe Tyr Gly Gly Tyr Gly Leu Gly Phe Gly Tyr Gly
130 135 140

Gly Trp Gly Tyr Pro Ala Ala Thr Tyr Ser His Val Ala His Gln Pro
145 150 155 160

Phe Gly Leu Gly Tyr Gly Tyr Gly Ala Trp Gly Tyr Pro Gly Ala Ser
165 170 175

Tyr Thr Ser His Val Ala His His Pro Phe Gly Phe Tyr
180 185

<210> 54
<211> 765
<212> DNA
<213> Dosidicus gigas

<400> 54
atgacgacca tgttttccgc tttggtatcc ctcgccgttg tactcggtgt gctcagttac 60

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ccatatggtg gatatggagt ttctggagga gctggtcagg gaggatacgg cttaggtggt 180

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gttccagtac cccgttattc agtacgtatg gccgtccgcc ccgtatacat cccacgtgtc 600

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<211> 948
<212> DNA
<213> Dosidicus gigas

<400> 86
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catgtatctc atggtcccgt aggatatggt ggttatggta tcggaggtgt ctctggtggc 180

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gttccagtac cccgttattc agtacgtatg gccgtccgcc ccgtatacat cccacgtgtc 600

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<210> 87
<211> 222
<212> DNA
<213> Dosidicus gigas

<400> 87
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ttcggaggat atggtggtgg ctttggcttt ggtggatatt ga 222

<210> 88
<211> 1131
<212> DNA
<213> Dosidicus gigas

<400> 88
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ggatatggag gtgtctctgg aggtcgttat gggggatacg gacttggtgg atacggactc 180

ggctacccaa cagctacatc atctagttac accacacatc acgccccatc aggatatggt 240

tcccttgggg gatctggatt tggaggtatc gttagtggtt ctcaataccc cgttggagca 300

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ggtaatctcc tcggtggata tggaggttca tatggtggat taggattaag caaacaaatg 480

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<210> 89
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<212> DNA
<213> Sepioteuthis lessoniana

<400> 89
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ccttatttac aaagatctgt cagcactgtt tcacatggtt cccattatcc cacatacggt 180

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tttcgctatc caacgtcttc atcaatcagt cgtgtttctc acacagctca ctcccccgtt 300

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<210> 90
<211> 390
<212> DNA
<213> Sepioteuthis lessoniana

<400> 90
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actctaaatg gatatggagg tctctacggt ggtctcggat accactaccc agcagccaca 180

gccgttagcc acactactca ccacgcccct tacggatacg gaggtctcta tggtggatgg 240

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<210> 91
<211> 402
<212> DNA
<213> Sepioteuthis lessoniana

<400> 91
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ctccttccag gtctgatggg tggttatggc tatccggctg ctacaactta tagacgaaca 120

actctaaatg gatatggagg tctctacggt ggtctcggat accactaccc agcagccaca 180

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<210> 92
<211> 417
<212> DNA
<213> Sepioteuthis lessoniana

<400> 92
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<210> 93
<211> 1452
<212> DNA
<213> Sepioteuthis lessoniana

<400> 93
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ccttatttac aaagatctgt cagcactgtt tcacatggtt cccattatcc cacatacggt 180

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gtaacacatt ga 1452

<210> 94
<211> 717
<212> DNA
<213> Sepioteuthis lessoniana

<400> 94
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tccgcagtag gacaaactgt aaaaactgtc actcatgcag ttccccaaat atatccattt 180

ggaggattgc cattcggtga tgcttatgga ggtctttacg gagctcttca cggaggtgtt 240

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acaactcacg cagttccaca cccaggcttt ggattgaatt atggtgtctt ccactga 717

<210> 95
<211> 606
<212> DNA
<213> Sepioteuthis lessoniana

<400> 95
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cctgtacaca ctgtaaccca tactgaccac cacccactgg tttggaatac aggacccgtg 180

tatggcattc cttcagctgg atcaacatct gtaaagaccg ttacccatgg tatccaccac 240

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ggatacggcc ttggaggtgc ctatgggctc ccatacccaa ataccgcaat cagtcactct 540

agttacggct ttcaatctcc atcagtatac ggattcggct ttggagggcc ctacggcttt 600

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<210> 96
<211> 390
<212> DNA
<213> Sepioteuthis lessoniana

<400> 96
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tggtactatc cgacttacaa ctacggatgg ggtaacccct ggggacttgg ttactacggc 180

tacggaatgc ttccaaacta tggtacacat acagttaccc atcatgctcc acaatacccc 240

ttctactatg gattcccaca agtttcaacc agtcatgtga cacatcatgc tccaatcgta 300

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ctttatggag gattattcgg atatcattaa 390

<210> 97
<211> 441
<212> DNA
<213> Sepioteuthis lessoniana

<400> 97
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ggctggggcg gtcttggagg tctgtacgga tatgggtccc ttggtggttt gggttacgga 180

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gttggaacac cacatgttca atcatacggt gtgaactatc cgacaccaac tgttacccac 300

catcacaaca catggcatgg cggatatggt ggatttggct tggctggtcc agtcggtcat 360

tcagttcaaa ctgtgtctca aggtgtgcac actcctggct ggggacttgg atatggtctt 420

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<210> 98
<211> 1014
<212> DNA
<213> Sepioteuthis lessoniana

<400> 98
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cagatgccat tctatgcagg ccccaattat ggaatcggag gaatcggagg aatcggtttc 120

ggttatccag gaggattggg tgcttacgct catggtttcg aaccagtgac aggaggaatt 180

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gaaaaagata ccaagtcatc gtcaggaaag tcagattcaa gcagcaaaaa ttaa 1014

<210> 99
<211> 319
<212> DNA
<213> Sepioteuthis lessoniana

<400> 99
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cttggaggtg tttatggtc 319

<210> 100
<211> 621
<212> DNA
<213> Sepioteuthis lessoniana

<400> 100
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gcacaccatg gtaccatttc tcgccgttat gcaatccccc actatgaagt ccgttatgta 300

tcctacccag tcgtacaacg ttacgttcag atggtcactg taaaccaacc atacatcgta 360

cccagatatg aaacccatat ccgttcatat caagttccag taccccgtta ccaggttcac 420

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acccattaca gccaagtatc ccatgatgtc caccaaccaa tctacggagt gcattaccca 540

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<210> 101
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<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer 1

<400> 101
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<210> 102
<211> 25
<212> DNA
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<220>
<223> reverse primer 1

<400> 102
gctgtcaacg atacgctacg taacg 25

<210> 103
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> forward primer

<400> 103
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<210> 104
<211> 35
<212> DNA
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<223> reverse primer

<400> 104
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<210> 105
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<212> PRT
<213> Artificial Sequence

<220>
<223> Consensus sequence of clade 1

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<222> (1)..(1)
<223> X is and amino acid

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> ,X1 is W or G

<220>
<221> MISC_FEATURE
<222> (4)..(5)
<223> X is and amino acid

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> X2 is L or A

<220>
<221> MISC_FEATURE
<222> (11)..(11)
<223> X is and amino acid

<400> 105

Xaa Gly Xaa Xaa Xaa Gly Gly Tyr Gly Xaa Xaa
1 5 10

<210> 106
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Consensus sequence of clade 2

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> X1is any amino acid

<220>
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<222> (7)..(7)
<223> X1is any amino acid

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> X1is A or E

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<221> MISC_FEATURE
<222> (10)..(10)
<223> X2 is A or I

<220>
<221> MISC_FEATURE
<222> (11)..(11)
<223> X3 is L or I

<220>
<221> MISC_FEATURE

<222> (12)..(12)
<223> X is 90-200 of any amino acids

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> X is any amino acid

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> X4 is G or V

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> X is any amino acids

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> X is any amino acids

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> X5 is P or G

<220>
<221> MISC_FEATURE
<222> (20)..(20)
<223> X6 is F or L

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1 5 10 15

Gly Xaa Xaa Xaa Xaa Gly Xaa Tyr Gly
20 25

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Xaa Xaa Gly Gly Xaa Gly Xaa Xaa Gly
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Xaa Val Thr His His Ala Pro Tyr Xaa Xaa Gly Xaa Gly Leu Tyr Gly
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Gly

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Ile Gly Xaa Gly Ala Xaa Xaa His Gly Phe
20 25

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<400> 110

Xaa Gly Xaa Xaa Xaa Ser Xaa Xaa Thr Val Ser His
1 5 10