

## SEQUENCE LISTING

<110> NATIONAL UNIVERSITY CORPORATION HOKKAIDO UNIVERSITY  
FUSO PHARMACEUTICAL INDUSTRIES, LTD.

<120> Anti-PD-L1 antibodies for detection of PD-L1

<130> FP-233PCT

<150> JP 2017-61389

<151> 2017-03-27

<160> 125

<170> PatentIn version 3.5

<210> 1

<211> 6

<212> PRT

<213> Bubalus arnee

<400> 1

Lys Ser Ile Ser Lys Tyr  
1 5

<210> 2

<211> 9

<212> PRT

<213> Bubalus arnee

<400> 2

Gln Gln His Asn Glu Tyr Pro Leu Thr  
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<210> 3

<211> 8

<212> PRT

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Gly Tyr Thr Phe Thr Asp Tyr Ile  
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Ile Asn Pro Asp Ser Gly Gly Asn  
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<211> 17

<212> PRT

<213> Bubalus arnee

<400> 5

Ala Arg Gly Ile Thr Met Met Val Val Ile Ser His Trp Lys Phe Asp  
1 5 10 15

Phe

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<213> Bubalus arnee

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Met Arg Val Gln Ile Gln Phe Trp Gly Leu Leu Leu Leu Trp Thr Ser  
1 5 10 15

Gly Ile Gln Cys Asp Val Gln Met Thr Gln Ser Pro Ser Asn Leu Ala  
20 25 30

Ala Ser Pro Gly Glu Ser Val Ser Ile Asn Cys Lys Ala Ser Lys Ser  
35 40 45

Ile Ser Lys Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Asn  
50 55 60

Lys Leu Leu Ile Tyr Ser Gly Ser Thr Leu Gln Ser Gly Thr Pro Ser  
65 70 75 80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Arg  
85 90 95

Asn Leu Glu Pro Glu Asp Phe Gly Leu Tyr Tyr Cys Gln Gln His Asn  
100 105 110

Glu Tyr Pro Leu Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys  
115 120 125

<210> 7  
<211> 142  
<212> PRT  
<213> Bubalus arnee

<400> 7

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

His Ser Gln Val Lys Leu Leu Gln Ser Gly Ala Ala Leu Val Lys Pro  
20 25 30

Gly Asp Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr  
35 40 45

Asp Tyr Ile Ile His Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu  
50 55 60

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

Lys Phe Lys Ser Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr  
85 90 95

Ala Tyr Met Glu Phe Ser Arg Leu Thr Ser Glu Asp Ser Ala Ile Tyr  
100 105 110

Tyr Cys Ala Arg Gly Ile Thr Met Met Val Val Ile Ser His Trp Lys  
115 120 125

Phe Asp Phe Trp Gly Pro Gly Thr Met Val Thr Val Ser Ser  
130 135 140

<210> 8  
<211> 107

<212> PRT  
<213> Bubalus arnee

<400> 8

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

Gln Leu Ala Thr Gly Gly Ala Ser Val Val Cys Leu Met Asn Asn Phe  
20 25 30

Tyr Pro Arg Asp Ile Ser Val Lys Trp Lys Ile Asp Gly Thr Glu Arg  
35 40 45

Arg Asp Gly Val Leu Asp Ser Val Thr Asp Gln Asp Ser Lys Asp Ser  
50 55 60

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

Ser His Asn Leu Tyr Thr Cys Glu Val Val His Lys Thr Ser Ser Ser  
85 90 95

Pro Val Val Lys Ser Phe Asn Arg Asn Glu Cys  
100 105

<210> 9  
<211> 322  
<212> PRT  
<213> Bubalus arnee

<400> 9

Ala Glu Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Gly Thr Ala  
1 5 10 15

Leu Lys Ser Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr  
20 25 30

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ala Leu Ser Ser  
35 40 45

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

50

55

60

Thr Ser Ser Val Thr Val Pro Ser Ser Thr Trp Ser Ser Gln Ala Val  
65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys  
85 90 95

Ile Val Pro Arg Glu Cys Asn Pro Cys Gly Cys Thr Gly Ser Glu Val  
100 105 110

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

Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser Gln Asn  
130 135 140

Asp Pro Glu Val Arg Phe Ser Trp Phe Ile Asp Asp Val Glu Val His  
145 150 155 160

Thr Ala Gln Thr His Ala Pro Glu Lys Gln Ser Asn Ser Thr Leu Arg  
165 170 175

Ser Val Ser Glu Leu Pro Ile Val His Arg Asp Trp Leu Asn Gly Lys  
180 185 190

Thr Phe Lys Cys Lys Val Asn Ser Gly Ala Phe Pro Ala Pro Ile Glu  
195 200 205

Lys Ser Ile Ser Lys Pro Glu Gly Thr Pro Arg Gly Pro Gln Val Tyr  
210 215 220

Thr Met Ala Pro Pro Lys Glu Glu Met Thr Gln Ser Gln Val Ser Ile  
225 230 235 240

Thr Cys Met Val Lys Gly Phe Tyr Pro Pro Asp Ile Tyr Thr Glu Trp  
245 250 255

Lys Met Asn Gly Gln Pro Gln Glu Asn Tyr Lys Asn Thr Pro Pro Thr  
260 265 270

Met Asp Thr Asp Gly Ser Tyr Phe Leu Tyr Ser Lys Leu Asn Val Lys  
 275 280 285

Lys Glu Thr Trp Gln Gln Gly Asn Thr Phe Thr Cys Ser Val Leu His  
 290 295 300

Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro  
 305 310 315 320

Gly Lys

<210> 10  
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 <212> PRT  
 <213> Bubalus arnee

<400> 10

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Thr Glu Gln  
 1 5 10 15

Leu Ala Thr Gly Gly Ala Ser Val Val Cys Leu Met Asn Asn Phe Tyr  
 20 25 30

Pro Arg Asp Ile Ser Val Lys Trp Lys Ile Asp Gly Thr Glu Arg Arg  
 35 40 45

Asp Gly Val Leu Asp Ser Val Thr Asp Gln Asp Ser Lys Asp Ser Thr  
 50 55 60

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

His Asn Leu Tyr Thr Cys Glu Val Val His Lys Thr Ser Ser Ser Pro  
 85 90 95

Val Val Lys Ser Phe Asn Arg Asn Glu Cys  
 100 105

<210> 11  
<211> 107  
<212> PRT  
<213> Bubalus arnee

<400> 11

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

Gln Leu Ala Thr Gly Gly Ala Ser Val Val Cys Leu Met Asn Asn Phe  
20 25 30

Tyr Pro Arg Asp Ile Ser Val Lys Trp Lys Ile Asp Gly Thr Glu Arg  
35 40 45

Arg Asp Gly Val Leu Asp Ser Val Thr Asp Gln Asp Ser Lys Asp Ser  
50 55 60

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

Ser His Asn Leu Tyr Thr Cys Glu Val Val His Lys Thr Ser Ser Ser  
85 90 95

Pro Val Val Lys Ser Phe Asn Arg Asn Glu Cys  
100 105

<210> 12  
<211> 104  
<212> PRT  
<213> Bubalus arnee

<400> 12

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

Ser Gly Gly Ala Thr Val Val Cys Phe Val Asn Asn Phe Tyr Pro Arg  
20 25 30

Asp Ile Ser Val Lys Trp Lys Ile Asp Gly Ser Glu Gln Arg Asp Gly  
35 40 45

Val Leu Asp Ser Val Thr Asp Gln Asp Ser Lys Asp Ser Thr Tyr Ser  
50 55 60

Met Ser Ser Thr Leu Ser Leu Thr Lys Val Glu Tyr Glu Arg His Asn  
65 70 75 80

Leu Tyr Thr Cys Glu Val Val His Lys Thr Ser Ser Ser Pro Val Val  
85 90 95

Lys Ser Phe Asn Arg Asn Glu Cys  
100

<210> 13  
<211> 318  
<212> PRT  
<213> Bubalus arnee

<400> 13

Ala Pro Ser Val Tyr Pro Leu Ala Pro Gly Thr Ala Leu Lys Ser Asn  
1 5 10 15

Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr Phe Pro Glu Pro  
20 25 30

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

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

Thr Val Pro Ser Ser Thr Trp Ser Ser Gln Ala Val Thr Cys Asn Val  
65 70 75 80

Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys Ile Val Pro Arg  
85 90 95

Glu Cys Asn Pro Cys Gly Cys Thr Gly Ser Glu Val Ser Ser Val Phe  
100 105 110

Ile Phe Pro Pro Lys Thr Lys Asp Val Leu Thr Ile Thr Leu Thr Pro

115

120

125

Lys Val Thr Cys Val Val Val Asp Ile Ser Gln Asn Asp Pro Glu Val  
 130 135 140

Arg Phe Ser Trp Phe Ile Asp Asp Val Glu Val His Thr Ala Gln Thr  
 145 150 155 160

His Ala Pro Glu Lys Gln Ser Asn Ser Thr Leu Arg Ser Val Ser Glu  
 165 170 175

Leu Pro Ile Val His Arg Asp Trp Leu Asn Gly Lys Thr Phe Lys Cys  
 180 185 190

Lys Val Asn Ser Gly Ala Phe Pro Ala Pro Ile Glu Lys Ser Ile Ser  
 195 200 205

Lys Pro Glu Gly Thr Pro Arg Gly Pro Gln Val Tyr Thr Met Ala Pro  
 210 215 220

Pro Lys Glu Glu Met Thr Gln Ser Gln Val Ser Ile Thr Cys Met Val  
 225 230 235 240

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

Gln Pro Gln Glu Asn Tyr Lys Asn Thr Pro Pro Thr Met Asp Thr Asp  
 260 265 270

Gly Ser Tyr Phe Leu Tyr Ser Lys Leu Asn Val Lys Lys Glu Thr Trp  
 275 280 285

Gln Gln Gly Asn Thr Phe Thr Cys Ser Val Leu His Glu Gly Leu His  
 290 295 300

Asn His His Thr Glu Lys Ser Leu Ser His Ser Pro Gly Lys  
 305 310 315

<210> 14  
 <211> 381

<212> DNA  
<213> Bubalus arnee

<400> 14  
atgagggtcc agattcagtt ttgggggctt cttctgctct ggacatcagg tatacagtgt 60  
gatgtccaga tgaccagtc tccatctaatt cttgctgcct ctcttgaga aagtgtttcc 120  
atcaattgca aggcaagtaa gagcattagc aagtatttag cctggatatca acagaaacct 180  
gggaaagcaa ataagcttct tatctactct gggtaactt tgcaatctgg aactccatcg 240  
aggttcagtg gcagtggatc tggtagatc ttactctca ccatcagaaa cctggagcct 300  
gaagattttg gactctatta ctgtcaacag cataatgaat acccgctcac gttcggttct 360  
gggaccaagc tggagatcaa a 381

<210> 15  
<211> 426  
<212> DNA  
<213> Bubalus arnee

<400> 15  
atgggatgga tctgtatcat ctttcttggt gcaatagcta caggtagcca ctcccaggtc 60  
aagctgctgc agtctggggc tgcactggtg aagcctgggg actctgtgaa gatgtcttgc 120  
aaagcttctg gttatacatt cactgactac attatacact gggtagaagca gagtcattga 180  
aaaagccttg agtggattgg ttatattaat cctgacagtg gtggaataa ctacaatgaa 240  
aagttcaaga gcaaggccac attgactgta gacaaatcca gcagcacagc ctatatggag 300  
tttagcagat tgacatctga ggattctgca atctactact gtgcaagagg gattaccatg 360  
atggtagtta ttagccactg gaagtttgac ttctggggcc caggaacct ggtcaccgtg 420  
tcctca 426

<210> 16  
<211> 324  
<212> DNA  
<213> Bubalus arnee

<400> 16  
cgggctgatg ctgcaccaac tgtatctatc ttcccacat ccacggaaca gttagcaact 60  
ggaggtgcct cagtcgtgtg cctcatgaac aacttctatc ccagagacat cagtgtaag 120  
tggaagattg atggcactga acgacgagat ggtgtcctgg acagtgttac tgatcaggac 180

|                                                                    |     |
|--------------------------------------------------------------------|-----|
| agcaaagaca gcacgtacag catgagcagc accctctcgt tgaccaaggc tgactatgaa  | 240 |
| agtcataacc tctatacctg tgagggttgtt cataagacat catcctcacc cgtcgtcaag | 300 |
| agcttcaaca ggaatgagtg ttag                                         | 324 |

<210> 17  
 <211> 969  
 <212> DNA  
 <213> Bubalus arnee

|                                                                    |     |
|--------------------------------------------------------------------|-----|
| <400> 17                                                           |     |
| gctgaaacaa cagccccatc tgtctatcca ctggctcctg gaactgctct caaaagtaac  | 60  |
| tccatggtga ccctgggatg cctggtcaag ggctatttcc ctgagccagt caccgtgacc  | 120 |
| tggaactctg gagccctgtc cagcgggtgtg cacaccttcc cagctgtcct gcagtctgga | 180 |
| ctctacactc tcaccagctc agtgactgta ccctccagca cctggtccag ccaggccgtc  | 240 |
| acctgcaacg tagccccacc ggccagcagc accaaggtgg acaagaaaat tgtgccaagg  | 300 |
| gaatgcaatc cttgtggatg tacaggctca gaagtatcat ctgtcttcat cttcccccca  | 360 |
| aagaccaaag atgtgctcac catcactctg actcctaagg tcacgtgtgt tgtggtagac  | 420 |
| attagccaga atgatcccgga ggtccggttc agctggttta tagatgacgt ggaagtccac | 480 |
| acagctcaga ctcatgcccc ggagaagcag tccaacagca ctttacgctc agtcagtga   | 540 |
| ctccccatcg tgcaccggga ctggctcaat ggcaagacgt tcaaagcaa agtcaacagt   | 600 |
| ggagcattcc ctgccccat cgagaaaagc atctccaaac ccgaaggcac accacgaggt   | 660 |
| ccacaggtat acaccatggc gcctcccaag gaagagatga cccagagtca agtcagtatc  | 720 |
| acctgcatgg taaaaggctt ctatccccca gacatttata cggagtggaa gatgaacggg  | 780 |
| cagccacagg aaaactacaa gaacactcca cctacgatgg acacagatgg gaggttacttc | 840 |
| ctctacagca agctcaatgt aaagaaagaa acatggcagc agggaaacac tttcacgtgt  | 900 |
| tctgtgctgc atgagggcct gcacaaccac catactgaga agagtctctc ccactctcct  | 960 |
| ggtaaatga                                                          | 969 |

<210> 18  
 <211> 323  
 <212> DNA  
 <213> Bubalus arnee

<400> 18  
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 gaggtgcctc agtcgtgtgc ctcatgaaca acttctatcc cagagacatc agtgtcaagt 120  
 ggaagattga tggcactgaa cgacgagatg gtgtcctgga cagtgttact gatcaggaca 180  
 gcaaagacag cacgtacagc atgagcagca ccctctcggt gaccaaggct gactatgaaa 240  
 gtcataacct ctatacctgt gaggttggtt ataagacatc atcctcacc gtcgtcaaga 300  
 gcttcaacag gaatgagtg tag 323

<210> 19  
 <211> 324  
 <212> DNA  
 <213> Bubalus arnee

<400> 19  
 cgggctgatg ctgcaccaac tgtatctatc ttcccaccat ccacggaaca gtttagcaact 60  
 ggaggtgcct cagtcgtgtg cctcatgaac aacttctatc ccagagacat cagtgtcaag 120  
 tggaagattg atggcactga acgacgagat ggtgtcctgg acagtgttac tgatcaggac 180  
 agcaaagaca gcacgtacag catgagcagc accctctcgt tgtccaaggc tgactatgaa 240  
 agtcataacc tctatacctg tgaggttggt cataagacat catcctcacc cgtcgtcaag 300  
 agcttcaaca ggaatgagtg ttag 324

<210> 20  
 <211> 315  
 <212> DNA  
 <213> Bubalus arnee

<400> 20  
 gccgcaccaa ctgtatccat cttcccacca tccatggaac agttaacatc tggaggtgcc 60  
 acagtcgtgt gcttcgtgaa caacttctat cccagagaca tcagtgtcaa gtggaagatt 120  
 gatggcagtg aacaacgaga tgggtgtcctg gacagtgtta ctgatcagga cagcaaagac 180  
 agcacgtaca gcatgagcag caccctctcg ttgaccaagg ttgaatatga aaggcataac 240  
 ctctatacct gtgaggttgt tcataagaca tcctcctcac ccgtcgtcaa gagcttcaac 300  
 aggaatgagt gttag 315

<210> 21  
 <211> 959  
 <212> DNA  
 <213> Bubalus arnee

<400> 21  
 cagccccctc tgtctatcca ctggctcctg gaactgctct caaaagtaac tccatggtga 60  
 ccctgggatg cctggtcaag ggctatttcc ctgagccagt caccgtgacc tggaactctg 120  
 gagccctgtc cagcgggtgtg cacaccttcc cagctgtcct gcagtctgga ctctacactc 180  
 tcaccagctc agtgactgta ccctccagca cctgggtccag ccaggccgtc acctgcaacg 240  
 tagccccacc ggccagcagc accaaggtgg acaagaaaat tgtgccaaagg gaatgcaatc 300  
 cttgtggatg tacaggctca gaagtatcat ctgtcttcat cttcccccca aagaccaaag 360  
 atgtgctcac catcactctg actcctaagg tcacgtgtgt tgtggtagac attagccaga 420  
 atgatcccga ggtccggttc agctgggttta tagatgacgt ggaagtccac acagctcaga 480  
 ctcatgcccc ggagaagcag tccaacagca ctttacgctc agtcagtga ctccccatcg 540  
 tgcaccggga ctggctcaat ggcaagacgt tcaaatgcaa agtcaacagt ggagcattcc 600  
 ctgcccccat cgagaaaagc atctccaaac ccgaaggcac accacgaggt ccacaggtat 660  
 acaccatggc gcctcccaag gaagagatga cccagagtca agtcagtatc acctgcatgg 720  
 taaaaggctt ctatccccca gacatttata cggagtggaa gatgaacggg cagccacagg 780  
 aaaactacaa gaacactcca cctacgatgg acacagatgg gagttacttc ctctacagca 840  
 agtcaatgt aaagaaagaa acatggcagc agggaaacac tttcacgtgt tctgtgctgc 900  
 atgagggcct gcacaaccac catactgaga agagtctctc ccactctcct ggtaaata 959

<210> 22  
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 <212> DNA  
 <213> Bubalus arnee

<400> 22  
 atgagaatgt ttagtgtctt 20

<210> 23  
 <211> 24  
 <212> DNA  
 <213> Bubalus arnee

<400> 23  
 ttatgtctct tcaaattgta tatc 24

<210> 24  
 <211> 17  
 <212> DNA  
 <213> Bubalus arnee

<400> 24  
 ttttagacag aaagtga 17

<210> 25  
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<400> 25  
 gaccagctct tcttggggaa 20

<210> 26  
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 <212> DNA  
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<400> 26  
 gaagatctat gagaatgttt agtgtc 26

<210> 27  
 <211> 28  
 <212> DNA  
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<400> 27  
 ggaattctgt ctcttcaaat tgtatatc 28

<210> 28  
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<400> 28

Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln  
 1 5 10 15

Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr  
 20 25 30

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser  
 35 40 45

Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr  
 50 55 60

Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys  
 65 70 75 80

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

Val Thr Lys Ser Phe Asn Arg Gly Glu Cys  
 100 105

<210> 29  
 <211> 321  
 <212> DNA  
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<400> 29  
 actgtggctg caccatctgt cttcatcttc ccgccatctg atgagcagtt gaaatctgga 60  
 actgcctctg ttgtgtgcct gctgaataac ttctatccca gagaggccaa agtacagtgg 120  
 aaggtggata acgccctcca atcgggtaac tcccaggaga gtgtcacaga gcaggacagc 180  
 aaggacagca cctacagcct cagcagcacc ctgacgctga gcaaagcaga ctacgagaaa 240  
 cacaaagtct acgcctgcga agtcacccat cagggcctga gctcgcccgt cacaaagagc 300  
 ttcaacaggg gagagtgtta g 321

<210> 30  
 <211> 229  
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 <213> Bubalus arnee

<400> 30

Glu Ser Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe  
 1 5 10 15

Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr

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

<210> 31  
 <211> 690  
 <212> DNA  
 <213> Bubalus arnee

<400> 31  
 gagtccaaat atggtccccc atgcccata tgcccagcac ctgagttcct ggggggacca 60  
 tcagtcttcc tgttcccccc aaaaccaag gacactctca tgatctcccg gaccctgag 120  
 gtcacgtgcg tggagggtgga cgtgagccag gaagaccccg aggtccagtt caactggtac 180  
 gtggatggcg tggagggtgca taatgccaag acaaagccgc gggaggagca gttcaacagc 240  
 acgtaccgtg tggtcagcgt cctcaccgtc ctgcaccagg actggctgaa cggcaaggag 300  
 tacaagtgca aggtctccaa caaaggcctc ccgtcctcca tcgagaaaac catctccaaa 360  
 gccaaagggc agccccgaga gccacaggtg tacaccctgc ccccatcca ggaggagatg 420  
 accaagaacc aggtcagcct gacctgcctg gtcaaaggct tctaccccag cgacatcgcc 480  
 gtggagtggg agagcaatgg gcagccggag aacaactaca agaccacgcc tcccgctgctg 540  
 gactccgacg gctccttctt cctctacagc aggctaaccg tggacaagag caggtggcag 600  
 gaggggaatg tcttctcatg ctccgtgatg catgaggctc tgcacaacca ctacacacag 660  
 aagagcctct ccctgtctct gggtaaatga 690

<210> 32  
 <211> 229  
 <212> PRT  
 <213> Bubalus arnee

<400> 32

Glu Ser Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe  
 1 5 10 15

Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr  
 20 25 30

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val  
 35 40 45

Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val

50

55

60

Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser  
65 70 75 80

Thr Tyr Arg Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu  
85 90 95

Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser  
100 105 110

Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro  
115 120 125

Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln  
130 135 140

Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala  
145 150 155 160

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr  
165 170 175

Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu  
180 185 190

Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser  
195 200 205

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser  
210 215 220

Leu Ser Leu Gly Lys  
225

<210> 33

<211> 690

<212> DNA

<213> Bubalus arnee

<400> 33

|                                                                     |     |
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| gagtccaaat atggtccccc gtgcccacatca tgcccagcac ctgagttcct ggggggacca | 60  |
| tcagtcttcc tgttccccc aaaaccaag gacactctca tgatctcccg gaccctgag      | 120 |
| gtcacgtgcg tggtggtgga cgtgagccag gaagaccccg aggtccagtt caactggtac   | 180 |
| gtggatggcg tggaggtgca taatgccaag acaaagccgc gggaggagca gttcaacagc   | 240 |
| acgtaccgtg tggtcagcgt cctcaccgtc gtgcaccagg actggctgaa cggcaaggag   | 300 |
| tacaagtgca aggtctccaa caaaggcctc ccgtcctcca tcgagaaaac catctccaaa   | 360 |
| gccaaagggc agcccgaga gccacaggtg tacaccctgc ccccatcca ggaggagatg     | 420 |
| accaagaacc aggtcagcct gacctgcctg gtcaaaggct tctaccccag cgacatcgcc   | 480 |
| gtggagtggg agagcaatgg gcagccggag aacaactaca agaccacgcc tcccgtgctg   | 540 |
| gactccgacg gctccttctt cctctacagc aggctaaccg tggacaagag caggtggcag   | 600 |
| gaggggaatg tcttctcatg ctccgtgatg catgaggctc tgcacaacca ctacacgcag   | 660 |
| aagagcctct ccctgtctct gggtaaatga                                    | 690 |

<210> 34  
 <211> 217  
 <212> PRT  
 <213> Bubalus arnee

<400> 34

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Pro | Glu | Phe | Leu | Gly | Gly | Pro | Ser | Val | Phe | Leu | Phe | Pro | Pro | Lys |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Lys | Asp | Thr | Leu | Met | Ile | Ser | Arg | Thr | Pro | Glu | Val | Thr | Cys | Val |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Val | Asp | Val | Ser | Gln | Glu | Asp | Pro | Glu | Val | Gln | Phe | Asn | Trp | Tyr |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Asp | Gly | Val | Glu | Val | His | Asn | Ala | Lys | Thr | Lys | Pro | Arg | Glu | Glu |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Phe | Asn | Ser | Thr | Tyr | Arg | Val | Val | Ser | Val | Leu | Thr | Val | Leu | His |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Asp | Trp | Leu | Asn | Gly | Lys | Glu | Tyr | Lys | Cys | Lys | Val | Ser | Asn | Lys |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

85

90

95

Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln  
 100 105 110

Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met  
 115 120 125

Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro  
 130 135 140

Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn  
 145 150 155 160

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu  
 165 170 175

Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val  
 180 185 190

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln  
 195 200 205

Lys Ser Leu Ser Leu Ser Leu Gly Lys  
 210 215

<210> 35

<211> 654

<212> DNA

<213> Bubalus arnee

<400> 35

gcacctgagt tcctgggggg accatcagtc ttcctgttcc ccccaaaacc caaggacact 60

ctcatgatct cccggacccc tgaggtcacg tgcgtggtgg tggacgtgag ccaggaagac 120

cccgaggtcc agttcaactg gtacgtggat ggcgtggagg tgcataatgc caagacaaag 180

ccgcggggagg agcagttcaa cagcacgtac cgtgtggtca gcgtcctcac cgtcctgcac 240

caggactggc tgaacggcaa ggagtacaag tgcaaggtct ccaacaaagg cctcccgtcc 300

tccatcgaga aaaccatctc caaagccaaa ggcagcccc gagagccaca ggtgtacacc 360

ctgcccccat cccaggagga gatgaccaag aaccaggtca gcctgacctg cctggtcaaa 420  
 ggcttctacc ccagcgacat cgccgtggag tgggagagca atgggcagcc ggagaacaac 480  
 tacaagacca cgcctcccgt gctggactcc gacggctcct tcttcctcta cagcaagctc 540  
 accgtggaca agagcaggtg gcaggagggg aacgtcttct catgctccgt gatgcatgag 600  
 gctctgcaca accactacac gcagaagagc ctctccctgt ctctgggtaa atga 654

<210> 36  
 <211> 106  
 <212> PRT  
 <213> Bubalus arnee

<400> 36

Ala Asp Ala Ala Pro Thr Val Ser Ile Phe Pro Pro Ser Ser Glu Gln  
 1 5 10 15

Leu Thr Ser Gly Gly Ala Ser Val Val Cys Phe Leu Asn Asn Phe Tyr  
 20 25 30

Pro Lys Asp Ile Asn Val Lys Trp Lys Ile Asp Gly Ser Glu Arg Gln  
 35 40 45

Asn Gly Val Leu Asn Ser Trp Thr Asp Gln Asp Ser Lys Asp Ser Thr  
 50 55 60

Tyr Ser Met Ser Ser Thr Leu Thr Leu Thr Lys Asp Glu Tyr Glu Arg  
 65 70 75 80

His Asn Ser Tyr Thr Cys Glu Ala Thr His Lys Thr Ser Thr Ser Pro  
 85 90 95

Ile Val Lys Ser Phe Asn Arg Asn Glu Cys  
 100 105

<210> 37  
 <211> 321  
 <212> DNA  
 <213> Bubalus arnee

<400> 37  
 gctgatgctg caccaactgt atccatcttc ccaccatcca gtgagcagtt aacatctgga 60

ggtgcctcag tcgtgtgctt cttgaacaac ttctacccca aagacatcaa tgtcaagtgg 120  
 aagattgatg gcagtgaacg acaaaatggc gtcctgaaca gttggactga tcaggacagc 180  
 aaagacagca cctacagcat gagcagcacc ctcacgttga ccaaggacga gtatgaacga 240  
 cataacagct atacctgtga ggccactcac aagacatcaa cttcacccat tgtcaagagc 300  
 ttcaacagga atgagtgtta g 321

<210> 38  
 <211> 106  
 <212> PRT  
 <213> Bubalus arnee

<400> 38

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

Glu Glu Leu Glu Thr Asn Lys Ala Thr Leu Val Cys Thr Ile Thr Asp  
 20 25 30

Phe Tyr Pro Gly Val Val Thr Val Asp Trp Lys Val Asp Gly Thr Pro  
 35 40 45

Val Thr Gln Gly Met Glu Thr Thr Gln Pro Ser Lys Gln Ser Asn Asn  
 50 55 60

Lys Tyr Met Ala Ser Ser Tyr Leu Thr Leu Thr Ala Arg Ala Trp Glu  
 65 70 75 80

Arg His Ser Ser Tyr Ser Cys Gln Val Thr His Glu Gly His Thr Val  
 85 90 95

Glu Lys Ser Leu Ser Arg Ala Asp Cys Ser  
 100 105

<210> 39  
 <211> 321  
 <212> DNA  
 <213> Bubalus arnee

<400> 39

ggccagccca agtcttcgcc atcagtcacc ctgtttccac cttcctctga agagctcgag 60  
 actaacaagg ccacactggg gtgtacgac actgatttct acccaggtgt ggtgacagtg 120  
 gactggaagg tagatgggtac ccctgtcact cagggtatgg agacaacca gccttcctaaa 180  
 cagagcaaca acaagtacat ggctagcagc tacctgaccc tgacagcaag agcatgggaa 240  
 aggcatagca gttacagctg ccaggtcact catgaaggtc acactgtgga gaagagtttg 300  
 tcccgtgctg actgttccta g 321

<210> 40  
 <211> 105  
 <212> PRT  
 <213> Bubalus arnee

<400> 40

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

Glu Glu Leu Lys Glu Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asn  
 20 25 30

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

Ile Thr Gln Gly Val Asp Thr Ser Asn Pro Thr Lys Glu Gly Asn Lys  
 50 55 60

Phe Met Ala Ser Ser Phe Leu His Leu Thr Ser Asp Gln Trp Arg Ser  
 65 70 75 80

His Asn Ser Phe Thr Cys Gln Val Thr His Glu Gly Asp Thr Val Glu  
 85 90 95

Lys Ser Leu Ser Pro Ala Glu Cys Leu  
 100 105

<210> 41  
 <211> 318  
 <212> DNA  
 <213> Bubalus arnee

<400> 41  
 ggtcagccca agtccactcc cactctcacc gtgtttccac cttcctctga ggagctcaag 60  
 gaaaacaaaag ccacactgggt gtgtctgatt tccaactttt ccccgagtgg tgtgacagtg 120  
 gcctggaagg caaatggtac acctatcacc cagggtgtgg acacttcaaa tcccaccaaa 180  
 gagggcaaca agttcatggc cagcagcttc ctacatttga catcggacca gtggagatct 240  
 cacaacagtt ttacctgtca agttacacat gaaggggaca ctgtggagaa gagtctgtct 300  
 cctgcagaat gtctctaa 318

<210> 42  
 <211> 105  
 <212> PRT  
 <213> Bubalus arnee

<400> 42  
 Gly Gln Pro Lys Ser Thr Pro Thr Leu Thr Met Phe Pro Pro Ser Pro  
 1 5 10 15  
 Glu Glu Leu Gln Glu Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asn  
 20 25 30  
 Phe Ser Pro Ser Gly Val Thr Val Ala Trp Lys Ala Asn Gly Thr Pro  
 35 40 45  
 Ile Thr Gln Gly Val Asp Thr Ser Asn Pro Thr Lys Glu Asp Asn Lys  
 50 55 60  
 Tyr Met Ala Ser Ser Phe Leu His Leu Thr Ser Asp Gln Trp Arg Ser  
 65 70 75 80  
 His Asn Ser Phe Thr Cys Gln Val Thr His Glu Gly Asp Thr Val Glu  
 85 90 95  
 Lys Ser Leu Ser Pro Ala Glu Cys Leu  
 100 105

<210> 43  
 <211> 318  
 <212> DNA  
 <213> Bubalus arnee

<400> 43  
 ggtcagccca agtccactcc cacactcacc atgtttccac cttcccctga ggagctccag 60  
 gaaaacaaag ccacactcgt gtgtctgatt tccaattttt cccaagtgg tgtgacagtg 120  
 gcctggaagg caaatggtac acctatcacc cagggtgtgg acatttcaaa tcccaccaa 180  
 gaggacaaca agtacatggc cagcagcttc ttacatttga catcggacca gtggagatct 240  
 cacaacagtt ttacctgcca agttacacat gaaggggaca ctgtggagaa gagtctgtct 300  
 cctgcagaat gtctctaa 318

<210> 44  
 <211> 324  
 <212> PRT  
 <213> Bubalus arnee

<400> 44

Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala  
 1 5 10 15

Ala Gln Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr  
 20 25 30

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser  
 35 40 45

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

Ser Ser Ser Val Thr Val Pro Ser Ser Pro Arg Pro Ser Glu Thr Val  
 65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys  
 85 90 95

Ile Val Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro  
 100 105 110

Glu Val Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu  
 115 120 125

Thr Ile Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser  
 130 135 140

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

Val His Thr Ala Gln Thr Gln Pro Arg Glu Glu Gln Phe Asn Ser Thr  
 165 170 175

Phe Arg Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn  
 180 185 190

Gly Lys Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro  
 195 200 205

Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln  
 210 215 220

Val Tyr Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val  
 225 230 235 240

Ser Leu Thr Cys Met Ile Thr Asp Phe Phe Pro Glu Asp Ile Thr Val  
 245 250 255

Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln  
 260 265 270

Pro Ile Met Asn Thr Asn Gly Ser Tyr Phe Val Tyr Ser Lys Leu Asn  
 275 280 285

Val Gln Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val  
 290 295 300

Leu His Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His  
 305 310 315 320

Ser Pro Gly Lys

<210> 45  
 <211> 975  
 <212> DNA  
 <213> Bubalus arnee

<400> 45  
 gccaaaacga caccgccatc tgtctatcca ctggcccctg gatctgctgc ccaaactaac 60  
 tccatgggtga ccctgggatg cctgggtcaag ggctatttcc ctgagccagt gacagtgacc 120  
 tggaactctg gatccctgtc cagcgggtgtg cacaccttcc cagctgtcct ggagtctgac 180  
 ctctacactc tgagcagctc agtgactgtc ccctccagcc ctcggccag cgagaccgtc 240  
 acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg 300  
 gattgtgggtt gtaagccttg catatgtaca gtcccagaag tatcatctgt cttcatcttc 360  
 cccccaaagc ccaaggatgt gtcaccatt actctgactc ctaaggtcac gtgtgtttgtg 420  
 gtagacatca gcaaggatga tcccggaggtc cagttcagct ggttttaga tgatgtggag 480  
 gtgcacacag ctgagacgca accccgggag gagcagttca acagcacttt ccgctcagtc 540  
 agtgaacttc ccatcatgca ccaggactgg ctcaatggca aggagttcaa atgcagggtc 600  
 aacagtgcag ctttccctgc ccccatcgag aaaaccatct ccaaaaccaa aggcagaccg 660  
 aaggctccac aggtgtacac cattccacct cccaaggagc agatggccaa ggataaagtc 720  
 agtctgacct gcatgataac agacttcttc cctgaagaca ttactgtgga gtggcagtg 780  
 aatgggcagc cagcggagaa ctacaagaac actcagccca tcatgaacac gaatggctct 840  
 tacttcgtct acagcaagct caatgtgcag aagagcaact gggaggcagg aaatactttc 900  
 acctgctctg tgttacatga gggcctgcac aaccaccata ctgagaagag cctctccac 960  
 tctcctggta aatga 975

<210> 46  
 <211> 324  
 <212> PRT  
 <213> Bubalus arnee

<400> 46

Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Ser Ala  
 1 5 10 15

Ala Gln Thr Asn Ser Met Val Thr Leu Gly Cys Leu Val Lys Gly Tyr

20

25

30

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser  
 35 40 45

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

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Gln Thr Val  
 65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys  
 85 90 95

Ile Val Pro Arg Asp Cys Gly Cys Lys Pro Cys Ile Cys Thr Val Pro  
 100 105 110

Glu Val Ser Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Val Leu  
 115 120 125

Thr Ile Thr Leu Thr Pro Lys Val Thr Cys Val Val Val Asp Ile Ser  
 130 135 140

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

Val His Thr Ala Gln Thr Lys Pro Arg Glu Glu Gln Ile Asn Ser Thr  
 165 170 175

Phe Arg Ser Val Ser Glu Leu Pro Ile Met His Gln Asp Trp Leu Asn  
 180 185 190

Gly Lys Glu Phe Lys Cys Arg Val Asn Ser Ala Ala Phe Pro Ala Pro  
 195 200 205

Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Arg Pro Lys Ala Pro Gln  
 210 215 220

Val Tyr Thr Ile Pro Pro Pro Lys Glu Gln Met Ala Lys Asp Lys Val  
 225 230 235 240

Ser Leu Thr Cys Met Ile Thr Asn Phe Phe Pro Glu Asp Ile Thr Val  
245 250 255

Glu Trp Gln Trp Asn Gly Gln Pro Ala Glu Asn Tyr Lys Asn Thr Gln  
260 265 270

Pro Ile Met Asp Thr Asp Gly Ser Tyr Phe Val Tyr Ser Lys Leu Asn  
275 280 285

Val Gln Lys Ser Asn Trp Glu Ala Gly Asn Thr Phe Thr Cys Ser Val  
290 295 300

Leu His Glu Gly Leu His Asn His His Thr Glu Lys Ser Leu Ser His  
305 310 315 320

Ser Pro Gly Lys

<210> 47  
<211> 975  
<212> DNA  
<213> Bubalus arnee

<400> 47  
gccaaaacga caccgccatc tgtctatcca ctggcccctg gatctgctgc ccaaactaac 60  
tccatggtga ccctgggatg cctggtcaag ggctatttcc ctgagccagt gacagtgacc 120  
tggaactctg gatccctgtc cagcgggtgtg cacaccttcc cagctgtcct gcagtctgac 180  
ctctacactc tgagcagctc agtgactgtc ccctccagca cctggcccag ccagaccgtc 240  
acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg 300  
gattgtgggt gtaagccttg catatgtaca gtcccagaag tatcatctgt cttcatcttc 360  
ccccaaaagc ccaaggatgt gctcaccatt actctgactc ctaaggtcac gtgtgtttgtg 420  
gtagacatca gcaaggatga tcccagggtc cagttcagct ggttttaga tgatgtggag 480  
gtgcacacag ctgagacgaa accccgggag gagcagatca acagcacttt ccgttcagtc 540  
agtgaacttc ccatcatgca ccaggactgg ctcaatggca aggagttcaa atgcagggtc 600  
aacagtgcag ctttccctgc ccccatcgag aaaaccatct ccaaaaccaa aggcagaccg 660

aaggctccac aggtgtacac cattccacct cccaaggagc agatggccaa ggataaagtc 720  
agtctgacct gcatgataac aaacttcttc cctgaagaca ttactgtgga gtggcagtgg 780  
aatgggcagc cagcggagaa ctacaagaac actcagccca tcatggacac agatggctct 840  
tacttcgtct acagcaagct caatgtgcag aagagcaact gggaggcagg aaatactttc 900  
acctgctctg tgttacatga gggcctgcac aaccaccata ctgagaagag cctctccac 960  
tctcctggta aatga 975

<210> 48  
<211> 330  
<212> PRT  
<213> Bubalus arnee

<400> 48

Ala Lys Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Val Cys Gly  
1 5 10 15

Asp Thr Thr Gly Ser Ser Val Thr Leu Gly Cys Leu Val Lys Gly Tyr  
20 25 30

Phe Pro Glu Pro Val Thr Leu Thr Trp Asn Ser Gly Ser Leu Ser Ser  
35 40 45

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

Ser Ser Ser Val Thr Val Thr Ser Ser Thr Trp Pro Ser Gln Ser Ile  
65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys  
85 90 95

Ile Glu Pro Arg Gly Pro Thr Ile Lys Pro Cys Pro Pro Cys Lys Cys  
100 105 110

Pro Ala Pro Asn Leu Leu Gly Gly Pro Ser Val Phe Ile Phe Pro Pro  
115 120 125

Lys Ile Lys Asp Val Leu Met Ile Ser Leu Ser Pro Ile Val Thr Cys  
130 135 140

Val Val Val Asp Val Ser Glu Asp Asp Pro Asp Val Gln Ile Ser Trp  
145 150 155 160

Phe Val Asn Asn Val Glu Val His Thr Ala Gln Thr Gln Thr His Arg  
165 170 175

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

His Gln Asp Trp Met Ser Gly Lys Glu Phe Lys Cys Lys Val Asn Asn  
195 200 205

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

Ser Val Arg Ala Pro Gln Val Tyr Val Leu Pro Pro Pro Glu Glu Glu  
225 230 235 240

Met Thr Lys Lys Gln Val Thr Leu Thr Cys Met Val Thr Asp Phe Met  
245 250 255

Pro Glu Asp Ile Tyr Val Glu Trp Thr Asn Asn Gly Lys Thr Glu Leu  
260 265 270

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

Met Tyr Ser Lys Leu Arg Val Glu Lys Lys Asn Trp Val Glu Arg Asn  
290 295 300

Ser Tyr Ser Cys Ser Val Val His Glu Gly Leu His Asn His His Thr  
305 310 315 320

Thr Lys Ser Phe Ser Arg Thr Pro Gly Lys  
325 330

<210> 49

<211> 993  
 <212> DNA  
 <213> Bubalus arnee

<400> 49  
 gccaaaacaa cagccccatc ggtctatcca ctggcccctg tgtgtggaga tacaactggc 60  
 tcctcgggtga ctctaggatg cctgggtcaag ggttatttcc ctgagccagt gaccttgacc 120  
 tggaactctg gatccctgtc cagtgggtgtg cacaccttcc cagctgtcct gcagtctgac 180  
 ctctacaccc tcagcagctc agtgactgta acctcgagca cctggcccag ccagtccatc 240  
 acctgcaatg tggcccaccc ggcaagcagc accaaggtgg acaagaaaat tgagcccaga 300  
 gggcccacaa tcaagccctg tcctccatgc aaatgcccag cacctaacct cttgggtgga 360  
 ccatccgtct tcattttccc tccaaagatc aaggatgtac tcatgatctc cctgagcccc 420  
 atagtacat gtgtgggtggt ggatgtgagc gaggatgacc cagatgtcca gatcagctgg 480  
 tttgtgaaca acgtggaagt acacacagct cagacacaaa cccatagaga ggattacaac 540  
 agtactctcc ggggtggtcag tgccctcccc atccagcacc aggactggat gagtggcaag 600  
 gagttcaaat gcaaggtcaa caacaaagac ctcccagcgc ccatcgagag aaccatctca 660  
 aaacccaaag ggtcagtaag agctccacag gtatatgtct tgcctccacc agaagaagag 720  
 atgactaaga aacaggtcac tctgacctgc atgggtcacag acttcatgcc tgaagacatt 780  
 tacgtggagt ggaccaacaa cgggaaaaca gagctaaact acaagaacac tgaaccagtc 840  
 ctggactctg atggttctta cttcatgtac agcaagctga gagtggaaaa gaagaactgg 900  
 gtggaaagaa atagctactc ctgttcagtg gtccacgagg gtctgcacaa tcaccacacg 960  
 actaagagct tctcccggac tccgggtaaa tga 993

<210> 50  
 <211> 330  
 <212> PRT  
 <213> Bubalus arnee

<400> 50

Ala Lys Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Val Cys Gly  
 1 5 10 15

Asp Thr Thr Gly Ser Ser Val Thr Leu Gly Cys Leu Val Lys Gly Tyr  
 20 25 30

Phe Pro Glu Pro Val Thr Leu Thr Trp Asn Ser Gly Ser Leu Ser Ser  
35 40 45

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

Ser Ser Ser Val Thr Val Thr Ser Ser Thr Trp Pro Ser Gln Ser Ile  
65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys  
85 90 95

Ile Glu Pro Arg Gly Pro Thr Ile Lys Pro Cys Pro Pro Cys Lys Cys  
100 105 110

Pro Ala Pro Asn Leu Leu Gly Gly Pro Ser Val Phe Ile Phe Pro Pro  
115 120 125

Lys Ile Lys Asp Val Leu Met Ile Ser Leu Ser Pro Met Val Thr Cys  
130 135 140

Val Val Val Asp Val Ser Glu Asp Asp Pro Asp Val Gln Ile Ser Trp  
145 150 155 160

Phe Val Asn Asn Val Glu Val Leu Thr Ala Gln Thr Gln Thr His Arg  
165 170 175

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

His Gln Asp Trp Met Ser Gly Lys Glu Phe Lys Cys Lys Val Asn Asn  
195 200 205

Lys Ala Leu Pro Ala Pro Ile Glu Arg Thr Ile Ser Lys Pro Lys Gly  
210 215 220

Ser Val Arg Ala Pro Gln Val Tyr Val Leu Pro Pro Pro Glu Glu Glu  
225 230 235 240

Met Thr Lys Lys Gln Val Thr Leu Thr Cys Met Val Thr Asp Phe Met  
245 250 255

Pro Glu Asp Ile Tyr Val Glu Trp Thr Asn Asn Gly Lys Thr Glu Leu  
260 265 270

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

Met Tyr Ser Lys Leu Arg Val Glu Lys Lys Asn Trp Val Glu Arg Asn  
290 295 300

Ser Tyr Ser Cys Ser Val Val His Glu Gly Leu His Asn His His Thr  
305 310 315 320

Thr Lys Ser Phe Ser Arg Thr Pro Gly Lys  
325 330

<210> 51  
<211> 993  
<212> DNA  
<213> Bubalus arnee

<400> 51  
gccaaaacaa cagccccatc ggtctatcca ctggcccctg tgtgtggaga tacaactggc 60  
tcctcgggtga ctctaggatg cctgggtcaag ggttatttcc ctgagccagt gaccttgacc 120  
tggaactctg gatccctgtc cagtgggtgtg cacaccttcc cagctgtcct gcagtctgac 180  
ctctacaccc tcagcagctc agtgactgta acctcgagca cctggcccag ccagtccatc 240  
acctgcaatg tggcccaccc ggcaagcagc accaaggtgg acaagaaaat tgagcccaga 300  
gggcccacaa tcaagccctg tcctccatgc aaatgcccag cacctaacct cttgggtgga 360  
ccatccgtct tcattttccc tcaaagatc aaggatgtac tcatgatctc cctgagtccc 420  
atggtcacat gtgtgggtgt ggatgtgagc gaggatgacc cagatgtcca gatcagctgg 480  
ttcgtgaaca acgtggaagt actcacagct cagacacaaa cccatagaga ggattacaac 540  
agtactctcc ggggtggtcag tgccctcccc atccagcacc aggactggat gagtggcaag 600  
gagttcaaat gcaaggtcaa caacaaagcc ctcccagcgc ccatcgagag aaccatctca 660

aaacccaaag ggtcagtaag agctccacag gtatatgtct tgcctccacc agaagaagag 720  
 atgactaaga aacaggtcac tctgacctgc atgggtcacag acttcatgcc tgaagacatt 780  
 tacgtggagt ggaccaacaa cgggaaaaca gagctaaact acaagaacac tgaaccagtc 840  
 ctggactctg atggttctta cttcatgtac agcaagctga gagtggaaaa gaagaactgg 900  
 gtggaaagaa atagctactc ctgttcagtg gtccacgagg gtctgcacaa tcaccacacg 960  
 actaagagct tctcccggac tccgggtaaa tga 993

<210> 52  
 <211> 336  
 <212> PRT  
 <213> Bubalus arnee

<400> 52

Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Cys Gly  
 1 5 10 15

Asp Thr Thr Gly Ser Ser Val Thr Leu Gly Cys Leu Val Lys Gly Tyr  
 20 25 30

Phe Pro Glu Ser Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser  
 35 40 45

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

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Gln Thr Val  
 65 70 75 80

Thr Cys Ser Val Ala His Pro Ala Ser Ser Thr Thr Val Asp Lys Lys  
 85 90 95

Leu Glu Pro Ser Gly Pro Ile Ser Thr Ile Asn Pro Cys Pro Pro Cys  
 100 105 110

Lys Glu Cys His Lys Cys Pro Ala Pro Asn Leu Glu Gly Gly Pro Ser  
 115 120 125

Val Phe Ile Phe Pro Pro Asn Ile Lys Asp Val Leu Met Ile Ser Leu

130

135

140

Thr Pro Lys Val Thr Cys Val Val Val Asp Val Ser Glu Asp Asp Pro  
 145 150 155 160

Asp Val Gln Ile Ser Trp Phe Val Asn Asn Val Glu Val His Thr Ala  
 165 170 175

Gln Thr Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Ile Arg Val Val  
 180 185 190

Ser Thr Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly Lys Glu Phe  
 195 200 205

Lys Cys Lys Val Asn Asn Lys Asp Leu Pro Ser Pro Ile Glu Arg Thr  
 210 215 220

Ile Ser Lys Ile Lys Gly Leu Val Arg Ala Pro Gln Val Tyr Ile Leu  
 225 230 235 240

Pro Pro Pro Ala Glu Gln Leu Ser Arg Lys Asp Val Ser Leu Thr Cys  
 245 250 255

Leu Val Val Gly Phe Asn Pro Gly Asp Ile Ser Val Glu Trp Thr Ser  
 260 265 270

Asn Gly His Thr Glu Glu Asn Tyr Lys Asp Thr Ala Pro Val Leu Asp  
 275 280 285

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

Lys Trp Glu Lys Thr Asp Ser Phe Ser Cys Asn Val Arg His Glu Gly  
 305 310 315 320

Leu Lys Asn Tyr Tyr Leu Lys Lys Thr Ile Ser Arg Ser Pro Gly Lys  
 325 330 335

<210> 53

<211> 1011

<212> DNA  
 <213> Bubalus arnee

<400> 53  
 gccaaaacaa caccgccatc agtctatcca ctggcccctg ggtgtggaga tacaactggt 60  
 tcctccgtga ctctgggatg cctgggtcaag ggctacttcc ctgagtcagt gactgtgact 120  
 tggaactctg gatccctgtc cagcagtgtg cacaccttcc cagctctcct gcagtctgga 180  
 ctctacacta tgagcagctc agtgactgtc ccctccagca cttggccaag tcagaccgtc 240  
 acctgcagcg ttgctcacc agccagcagc accacggtgg aaaaaaact tgagcccagc 300  
 gggcccattt caacaatcaa cccctgtcct ccatgcaagg agtgtcacia atgccagct 360  
 cctaacctcg aggggtggacc atccgtcttc atcttccctc caaatatcaa ggatgtactc 420  
 atgatctccc tgacacccaa ggtcacgtgt gtgggtgggtg atgtgagcga ggatgaccca 480  
 gacgtccaga tcagctgggtt tgtgaacaac gtggaagtac acacagctca gacacaaacc 540  
 catagagagg attacaacag tactatccgg gtggtcagca ccctcccat ccagcaccag 600  
 gactggatga gtggcaagga gttcaaagtc aaggtcaaca acaaagacct cccatcacc 660  
 atcgagagaa ccatctcaaa aattaaagg ctagtcagag ctccacaagt atacatcttg 720  
 ccgccaccag cagagcagtt gtccaggaaa gatgtcagtc tcacttgcct ggtcgtgggc 780  
 ttcaaccctg gagacatcag tgtggagtgg accagcaatg ggcatacaga ggagaactac 840  
 aaggacaccg caccagtcct agactctgac ggttcttact tcatatatag caagctcaat 900  
 atgaaaacaa gcaagtggga gaaaacagat tccttctcat gcaacgtgag acacgagggt 960  
 ctgaaaaatt actacctgaa gaagaccatc tcccggtctc cgggtaaatg a 1011

<210> 54  
 <211> 336  
 <212> PRT  
 <213> Bubalus arnee

<400> 54  
 Ala Lys Thr Thr Pro Pro Ser Val Tyr Pro Leu Ala Pro Gly Cys Gly  
 1 5 10 15  
 Asp Thr Thr Gly Ser Ser Val Thr Ser Gly Cys Leu Val Lys Gly Tyr  
 20 25 30

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ser Leu Ser Ser  
35 40 45

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

Ser Ser Ser Val Thr Val Pro Ser Ser Thr Trp Pro Ser Gln Thr Val  
65 70 75 80

Thr Cys Ser Val Ala His Pro Ala Ser Ser Thr Thr Val Asp Lys Lys  
85 90 95

Leu Glu Pro Ser Gly Pro Ile Ser Thr Ile Asn Pro Cys Pro Pro Cys  
100 105 110

Lys Glu Cys His Lys Cys Pro Ala Pro Asn Leu Glu Gly Gly Pro Ser  
115 120 125

Val Phe Ile Phe Pro Pro Asn Ile Lys Asp Val Leu Met Ile Ser Leu  
130 135 140

Thr Pro Lys Val Thr Cys Val Val Val Asp Val Ser Glu Asp Asp Pro  
145 150 155 160

Asp Val Gln Ile Ser Trp Phe Val Asn Asn Val Glu Val His Thr Ala  
165 170 175

Gln Thr Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Ile Arg Val Val  
180 185 190

Ser Thr Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly Lys Glu Phe  
195 200 205

Lys Cys Lys Val Asn Asn Lys Asp Leu Pro Ser Pro Ile Glu Arg Thr  
210 215 220

Ile Ser Lys Ile Lys Gly Leu Val Arg Ala Pro Gln Val Tyr Thr Leu  
225 230 235 240

Pro Pro Pro Ala Glu Gln Leu Ser Arg Lys Asp Val Ser Leu Thr Cys  
245 250 255

Leu Val Val Gly Phe Asn Pro Gly Asp Ile Ser Val Glu Trp Thr Ser  
260 265 270

Asn Gly His Thr Glu Glu Asn Tyr Lys Asp Thr Ala Pro Val Leu Asp  
275 280 285

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

Lys Trp Glu Lys Thr Asp Ser Phe Ser Cys Asn Val Arg His Glu Gly  
305 310 315 320

Leu Lys Asn Tyr Tyr Leu Lys Lys Thr Ile Ser Arg Ser Pro Gly Lys  
325 330 335

<210> 55  
<211> 1011  
<212> DNA  
<213> Bubalus arnee

<400> 55  
gccaaaacaa ccccccatc agtctatcca ctggcccctg ggtgtggaga tacaactggt 60  
tcctccgtga cctctgggtg cctgggtcaag gggtacttcc ctgagccagt gactgtgact 120  
tggaactctg gatccctgtc cagcagtgtg cacaccttcc cagctctcct gcagtctgga 180  
ctctacacta tgagcagctc agtgactgtc ccctccagca cctggccaag tcagaccgtc 240  
acctgcagcg ttgctcacc agccagcagc accacggtgg aaaaaaact tgagcccagc 300  
gggcccattt caacaatcaa cccctgtcct ccatgcaagg agtgtcacia atgcccagct 360  
cctaacctcg aggggtggacc atccgtcttc atcttcctc caaatatcaa ggatgtactc 420  
atgatctccc tgacacccaa ggtcacgtgt gtggtggtgg atgtgagcga ggatgaccca 480  
gacgtccaga tcagctgggtt tgtgaacaac gtggaagtac acacagctca gacacaaacc 540  
catagagagg attacaacag tactatccgg gtggtcagca ccctcccat ccagcaccag 600  
gactggatga gtggcaagga gttcaaagtc aaggtgaaca acaaagacct cccatcacc 660  
atcgagagaa ccatctcaaa aattaaagg ctagtcagag ctccacaagt atacactttg 720

ccgccaccag cagagcagtt gtccaggaaa gatgtcagtc tcacttgcct ggtcgtgggc 780  
 ttcaaccctg gagacatcag tgtggagtgg accagcaatg ggcatacaga ggagaactac 840  
 aaggacaccg caccagttct tgactctgac ggttcttact tcatatatag caagctcaat 900  
 atgaaaacaa gcaagtggga gaaaacagat tccttctcat gcaacgtgag acacgagggt 960  
 ctgaaaaatt actacctgaa gaagaccatc tcccggtctc cgggtaaatg a 1011

<210> 56  
 <211> 335  
 <212> PRT  
 <213> Bubalus arnee

<400> 56

Ala Lys Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Val Cys Gly  
 1 5 10 15

Gly Thr Thr Gly Ser Ser Val Thr Leu Gly Cys Leu Val Lys Gly Tyr  
 20 25 30

Phe Pro Glu Pro Val Thr Leu Thr Trp Asn Ser Gly Ser Leu Ser Ser  
 35 40 45

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

Ser Ser Ser Val Thr Val Thr Ser Asn Thr Trp Pro Ser Gln Thr Ile  
 65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys  
 85 90 95

Ile Glu Pro Arg Val Pro Ile Thr Gln Asn Pro Cys Pro Pro Leu Lys  
 100 105 110

Glu Cys Pro Pro Cys Ala Ala Pro Asp Leu Leu Gly Gly Pro Ser Val  
 115 120 125

Phe Ile Phe Pro Pro Lys Ile Lys Asp Val Leu Met Ile Ser Leu Ser  
 130 135 140

Pro Met Val Thr Cys Val Val Val Asp Val Ser Glu Asp Asp Pro Asp  
 145 150 155 160

Val Gln Ile Ser Trp Phe Val Asn Asn Val Glu Val His Thr Ala Gln  
 165 170 175

Thr Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Leu Arg Val Val Ser  
 180 185 190

Ala Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly Lys Glu Phe Lys  
 195 200 205

Cys Lys Val Asn Asn Arg Ala Leu Pro Ser Pro Ile Glu Lys Thr Ile  
 210 215 220

Ser Lys Pro Arg Gly Pro Val Arg Ala Pro Gln Val Tyr Val Leu Pro  
 225 230 235 240

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

Ile Thr Gly Phe Leu Pro Ala Glu Ile Ala Val Asp Trp Thr Ser Asn  
 260 265 270

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

Asp Gly Ser Tyr Phe Met Tyr Ser Lys Leu Arg Val Gln Lys Ser Thr  
 290 295 300

Trp Glu Arg Gly Ser Leu Phe Ala Cys Ser Val Val His Glu Val Leu  
 305 310 315 320

His Asn His Leu Thr Thr Lys Thr Ile Ser Arg Ser Leu Gly Lys  
 325 330 335

<210> 57  
 <211> 1008  
 <212> DNA

<213> Bubalus arnee

<400> 57

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gccaaaacaa cagccccatc ggtctatcca ctggcccctg tgtgtggagg tacaactggc      60
tcctcgggtga ctctaggatg cctgggtcaag ggttatttcc ctgagccagt gaccttgacc    120
tggaactctg gatccctgtc cagtgggtgtg cacaccttcc cagctctcct gcagtctggc    180
ctctacaccc tcagcagctc agtgactgta acctcgaaca cctggcccag ccagaccatc     240
acctgcaatg tggcccaccc ggcaagcagc accaaagtgg acaagaaaat tgagcccaga     300
gtgcccataa cacagaaccc ctgtcctcca ctcaaagagt gtcccccatt cgagctcca      360
gacctcttgg gtggaccatc cgtcttcatc ttccctcaa agatcaagga tgtactcatg      420
atctccctga gcccattggt cacatgtgtg gtgggtggatg tgagcgagga tgaccagac     480
gtccagatca gctggtttgt gaacaacgtg gaagtacaca cagctcagac acaaaccat      540
agagaggatt acaacagtac tctccgggtg gtcagtgtcc tccccatcca gcaccaggac     600
tggatgagtg gcaaggagtt caaatgcaag gtcaacaaca gagccctccc atccccatc     660
gagaaaacca tctcaaaacc cagagggcca gtaagagctc cacaggtata tgtcttgcct     720
ccaccagcag aagagatgac taagaaagag ttcagtctga cctgcatgat cacaggcttc     780
ttacctgccg aaattgctgt ggactggacc agcaatgggc gtacagagca aaactacaag     840
aacaccgcaa cagtcctgga ctctgatggt tcttacttca tgtacagcaa gctcagagta     900
caaaagagca cttgggaaag aggaagtctt ttgcctgct cagtgggtcca cgaggtgctg    960
cacaatcacc ttacgactaa gaccatctcc cggtctctgg gtaaataa                    1008
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<210> 58

<211> 335

<212> PRT

<213> Bubalus arnee

<400> 58

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Ala Lys Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Val Cys Gly
1           5           10          15

Gly Thr Thr Gly Ser Ser Val Thr Leu Gly Cys Leu Val Lys Gly Tyr
          20          25          30
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Phe Pro Glu Pro Val Thr Leu Thr Trp Asn Ser Gly Ser Leu Ser Ser  
35 40 45

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

Ser Ser Ser Val Thr Val Thr Ser Asn Thr Trp Pro Ser Gln Thr Ile  
65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys  
85 90 95

Ile Glu Ser Arg Arg Pro Ile Pro Pro Asn Ser Cys Pro Pro Cys Lys  
100 105 110

Glu Cys Ser Ile Phe Pro Ala Pro Asp Leu Leu Gly Gly Pro Ser Val  
115 120 125

Phe Ile Phe Pro Pro Lys Ile Lys Asp Val Leu Met Ile Ser Leu Ser  
130 135 140

Pro Ile Val Thr Cys Val Val Val Asp Val Ser Glu Asp Asp Pro Asp  
145 150 155 160

Val Gln Ile Ser Trp Phe Val Asn Asn Val Glu Val His Thr Ala Gln  
165 170 175

Thr Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Leu Arg Val Val Ser  
180 185 190

Ala Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly Lys Glu Phe Lys  
195 200 205

Cys Lys Val Asn Asn Arg Ala Leu Pro Ser Pro Ile Glu Lys Thr Ile  
210 215 220

Ser Lys Pro Arg Gly Pro Val Arg Ala Pro Gln Val Tyr Val Leu Pro  
225 230 235 240

Pro Pro Ala Glu Glu Met Thr Lys Lys Glu Phe Ser Leu Thr Cys Met

245

250

255

Ile Thr Asp Phe Leu Pro Ala Glu Ile Ala Val Asp Trp Thr Ser Asn  
 260 265 270

Gly His Lys Glu Leu Asn Tyr Lys Asn Thr Ala Pro Val Leu Asp Thr  
 275 280 285

Asp Gly Ser Tyr Phe Met Tyr Ser Lys Leu Arg Val Gln Lys Ser Thr  
 290 295 300

Trp Glu Lys Gly Ser Leu Phe Ala Cys Ser Val Val His Glu Gly Leu  
 305 310 315 320

His Asn His His Thr Thr Lys Thr Ile Ser Arg Ser Leu Gly Lys  
 325 330 335

<210> 59  
 <211> 1008  
 <212> DNA  
 <213> Bubalus arnee

<400> 59  
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 tcctcgggtga ctctaggatg cctgggtcaag ggttatttcc ctgagccagt gaccttgacc 120  
 tggaactctg gatccctgtc cagtgggtgtg cacaccttcc cagctctcct gcagtctggc 180  
 ctctacaccc tcagcagctc agtgactgta acctcgaaca cctggcccag ccagaccatc 240  
 acctgcaatg tggcccaccc ggcaagcagc accaaagtgg acaagaaaat tgaatccaga 300  
 aggcccatc caccactc ctgtcctcca tgcaaagagt gttccatatt ccagctcct 360  
 gacctttgg gtggaccatc cgtcttcatc ttccctcaa agatcaagga tgtactcatg 420  
 atctccctga gcccatagt cacatgtgtg gtggtggatg tgagcgagga tgaccagat 480  
 gtccagatca gctggtttgt gaacaacgtg gaagtacaca cagctcagac acaaaccat 540  
 agagaggatt acaacagtac tctccgggtg gtcagtgcc tccccatcca gcaccaggac 600  
 tggatgagtg gcaaggagtt caaatgcaag gtcaacaaca gagccctccc atccccatc 660  
 gagaaaacca tctcaaaacc cagagggcca gtaagagctc cacaggtata tgtcttgct 720

ccaccagcag aagagatgac taagaaagag ttcagtctga cctgcatgat cacagacttc 780  
 ttacctgccg aaattgctgt ggactggacc agcaatgggc ataaagagct gaactacaag 840  
 aacaccgcac cagtcctgga cactgatggg tcttacttca tgtacagcaa gctcagagtg 900  
 caaaagagca cttgggaaaa aggaagtctt ttcgcctgct cagtgggtcca cgagggtctg 960  
 cacaatcacc atacgactaa gaccatctcc cggctctctgg gtaaataga 1008

<210> 60  
 <211> 335  
 <212> PRT  
 <213> Bubalus arnee

<400> 60

Ala Lys Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Val Cys Gly  
 1 5 10 15

Gly Thr Thr Gly Ser Ser Val Thr Leu Gly Cys Leu Val Lys Gly Tyr  
 20 25 30

Phe Pro Glu Pro Val Thr Leu Thr Trp Asn Ser Gly Ser Leu Ser Ser  
 35 40 45

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

Ser Ser Ser Val Thr Val Thr Ser Asn Thr Trp Pro Ser Gln Thr Ile  
 65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Lys  
 85 90 95

Ile Glu Pro Arg Val Pro Ile Thr Gln Asn Pro Cys Pro Pro Leu Lys  
 100 105 110

Glu Cys Pro Pro Cys Ala Ala Pro Asp Leu Leu Gly Gly Pro Ser Val  
 115 120 125

Phe Ile Phe Pro Pro Lys Ile Lys Asp Val Leu Met Ile Ser Leu Ser  
 130 135 140

Pro Met Val Thr Cys Val Val Val Asp Val Ser Glu Asp Asp Pro Asp  
 145 150 155 160

Val Gln Ile Ser Trp Phe Val Asn Asn Val Glu Val His Thr Ala Gln  
 165 170 175

Thr Gln Thr His Arg Glu Asp Tyr Asn Ser Thr Leu Arg Val Val Ser  
 180 185 190

Ala Leu Pro Ile Gln His Gln Asp Trp Met Ser Gly Lys Glu Phe Lys  
 195 200 205

Cys Lys Val Asn Asn Arg Ala Leu Pro Ser Pro Ile Glu Lys Thr Ile  
 210 215 220

Ser Lys Pro Arg Gly Pro Val Arg Ala Pro Gln Val Tyr Val Leu Pro  
 225 230 235 240

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

Ile Thr Gly Phe Leu Pro Ala Glu Ile Ala Val Asp Trp Thr Ser Asn  
 260 265 270

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

Asp Gly Ser Tyr Phe Met Tyr Ser Lys Leu Arg Val Gln Lys Ser Thr  
 290 295 300

Trp Glu Arg Gly Ser Leu Phe Ala Cys Ser Val Val His Glu Gly Leu  
 305 310 315 320

His Asn His Leu Thr Thr Lys Thr Ile Ser Arg Ser Leu Gly Lys  
 325 330 335

<210> 61  
 <211> 1008  
 <212> DNA  
 <213> Bubalus arnee

<400> 61  
gccaaaacaa cagccccatc ggtctatcca ctggcccctg tgtgtggagg tacaactggc 60  
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tggaactctg gatccctgtc cagtgggtgtg cacaccttcc cagctctcct gcagtctggc 180  
ctctacaccc tcagcagctc agtgactgta acctcgaaca cctggcccag ccagaccatc 240  
acctgcaatg tggcccaccc ggcaagcagc accaaagtgg acaagaaaat tgagcccaga 300  
gtgcccataa cacagaaccc ctgtcctcca ctcaaagagt gtcccccattg cgcagctcca 360  
gacctcttgg gtggaccatc cgtcttcatc ttccctcaa agatcaagga tgtactcatg 420  
atctccctga gcccattggt cacatgtgtg gtgggtggatg tgagcgagga tgaccagac 480  
gtccagatca gctggtttgt gaacaacgtg gaagtacaca cagctcagac acaaaccat 540  
agagaggatt acaacagtac tctccgggtg gtcagtgtcc tccccatcca gcaccaggac 600  
tggatgagtg gcaaggagtt caaatgcaag gtcaacaaca gagccctccc atccccatc 660  
gagaaaacca tctcaaaacc cagagggcca gtaagagctc cacaggtata tgtcttgcct 720  
ccaccagcag aagagatgac taagaaagag ttcagtctga cctgcatgat cacaggcttc 780  
ttacctgccg aaattgctgt ggactggacc agcaatgggc gtacagagca aaactacaag 840  
aacaccgcaa cagtcctgga ctctgatggt tcttacttca tgtacagcaa gctcagagta 900  
caaaagagca cttgggaaag aggaagtctt ttgcctgct cagtgggtcca cgagggtctg 960  
cacaatcacc ttacgactaa gaccatctcc cggctctctgg gtaaata 1008

<210> 62  
<211> 330  
<212> PRT  
<213> Bubalus arnee

<400> 62

Ala Thr Thr Thr Ala Pro Ser Val Tyr Pro Leu Val Pro Gly Cys Ser  
1 5 10 15

Asp Thr Ser Gly Ser Ser Val Thr Leu Gly Cys Leu Val Lys Gly Tyr  
20 25 30

Phe Pro Glu Pro Val Thr Val Lys Trp Asn Tyr Gly Ala Leu Ser Ser

35

40

45

Gly Val Arg Thr Val Ser Ser Val Leu Gln Ser Gly Phe Tyr Ser Leu  
50 55 60

Ser Ser Leu Val Thr Val Pro Ser Ser Thr Trp Pro Ser Gln Thr Val  
65 70 75 80

Ile Cys Asn Val Ala His Pro Ala Ser Lys Thr Glu Leu Ile Lys Arg  
85 90 95

Ile Glu Pro Arg Ile Pro Lys Pro Ser Thr Pro Pro Gly Ser Ser Cys  
100 105 110

Pro Pro Gly Asn Ile Leu Gly Gly Pro Ser Val Phe Ile Phe Pro Pro  
115 120 125

Lys Pro Lys Asp Ala Leu Met Ile Ser Leu Thr Pro Lys Val Thr Cys  
130 135 140

Val Val Val Asp Val Ser Glu Asp Asp Pro Asp Val His Val Ser Trp  
145 150 155 160

Phe Val Asp Asn Lys Glu Val His Thr Ala Trp Thr Gln Pro Arg Glu  
165 170 175

Ala Gln Tyr Asn Ser Thr Phe Arg Val Val Ser Ala Leu Pro Ile Gln  
180 185 190

His Gln Asp Trp Met Arg Gly Lys Glu Phe Lys Cys Lys Val Asn Asn  
195 200 205

Lys Ala Leu Pro Ala Pro Ile Glu Arg Thr Ile Ser Lys Pro Lys Gly  
210 215 220

Arg Ala Gln Thr Pro Gln Val Tyr Thr Ile Pro Pro Pro Arg Glu Gln  
225 230 235 240

Met Ser Lys Lys Lys Val Ser Leu Thr Cys Leu Val Thr Asn Phe Phe  
245 250 255

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

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

Leu Tyr Ser Lys Leu Thr Val Asp Thr Asp Ser Trp Leu Gln Gly Glu  
290 295 300

Ile Phe Thr Cys Ser Val Val His Glu Ala Leu His Asn His His Thr  
305 310 315 320

Gln Lys Asn Leu Ser Arg Ser Pro Gly Lys  
325 330

<210> 63  
<211> 993  
<212> DNA  
<213> Bubalus arnee

<400> 63  
gctacaacaa cagcccatc tgtctatccc ttggtccctg gctgcagtga cacatctgga 60  
tcctcggtga cactgggatg ccttgtcaaa ggctacttcc ctgagccggt aactgtaaaa 120  
tggaactatg gagccctgtc cagcgggtgtg cgcacagtct catctgtcct gcagtctggg 180  
ttctattccc tcagcagctt ggtgactgta ccctccagca cctggcccag ccagactgtc 240  
atctgcaacg tagcccaccc agccagcaag actgagttga tcaagagaat cgagcctaga 300  
atacccaagc ccagtacccc cccaggttct tcatgcccac ctggtaacat cttgggtgga 360  
ccatccgtct tcatcttccc ccaaagccc aaggatgcac tcatgatctc cctaaccccc 420  
aaggttacgt gtgtgggtggt ggatgtgagc gaggatgacc cagatgtcca tgtcagctgg 480  
tttgtggaca acaaagaagt acacacagcc tggacacagc cccgtgaagc tcagtacaac 540  
agtaccttcc gagtggctcag tgccctcccc atccagcacc aggactggat gaggggcaag 600  
gagttcaaat gcaaggtcaa caacaaagcc ctcccagccc ccatcgagag aaccatctca 660  
aaacccaaag gaagagccca gacacctcaa gtatacacca taccaccacc tcgtgaacaa 720  
atgtccaaga agaaggttag tctgacctgc ctggtcacca acttcttctc tgaagccatc 780

agtgtggagt gggaaaggaa cggagaactg gagcaggatt acaagaacac tccacccatc 840  
 ctggactcag atgggaccta cttcctctac agcaagctca ctgtggatac agacagttgg 900  
 ttgcaaggag aaatttttac ctgctccgtg gtgcatgagg ctctccataa ccaccacaca 960  
 cagaagaacc tgtctcgctc ccctggtaaa tga 993

<210> 64  
 <211> 105  
 <212> PRT  
 <213> Bubalus arnee

<400> 64

Gln Pro Lys Ser Pro Pro Ser Val Thr Leu Phe Pro Pro Ser Thr Glu  
 1 5 10 15

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

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

Thr Arg Asn Val Glu Thr Thr Arg Ala Ser Lys Gln Ser Asn Ser Lys  
 50 55 60

Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Ser Ser Asp Trp Lys Ser  
 65 70 75 80

Lys Gly Ser Tyr Ser Cys Glu Val Thr His Glu Gly Ser Thr Val Thr  
 85 90 95

Lys Thr Val Lys Pro Ser Glu Cys Ser  
 100 105

<210> 65  
 <211> 318  
 <212> DNA  
 <213> Bubalus arnee

<400> 65  
 cagcccaagt cccaccctc ggtcaccctg ttcccgccct ccacggagga gctcaacggc 60

|                                                                   |     |
|-------------------------------------------------------------------|-----|
| aacaaggcca ccctggtgtg tctcatcagc gacttctacc cgggtagcgt gaccgtggtc | 120 |
| tggaaggcag acggcagcac catcacccgc aacgtggaga ccaccgggc ctccaaacag  | 180 |
| agcaacagca agtacgcggc cagcagctac ctgagcctga cgagcagcga ctggaaatcg | 240 |
| aaaggcagtt acagctgcga ggtcacgcac gaggggagca ccgtgacgaa gacagtgaag | 300 |
| ccctcagagt gttcttag                                               | 318 |

<210> 66  
 <211> 329  
 <212> PRT  
 <213> Bubalus arnee

<400> 66

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ser | Thr | Thr | Ala | Pro | Lys | Val | Tyr | Pro | Leu | Ser | Ser | Cys | Cys | Gly |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Lys | Ser | Ser | Ser | Thr | Val | Thr | Leu | Gly | Cys | Leu | Val | Ser | Ser | Tyr |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Pro | Glu | Pro | Val | Thr | Val | Thr | Trp | Asn | Ser | Gly | Ala | Leu | Lys | Ser |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Val | His | Thr | Phe | Pro | Ala | Val | Leu | Gln | Ser | Ser | Gly | Leu | Tyr | Ser |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ser | Ser | Met | Val | Thr | Val | Pro | Gly | Ser | Thr | Ser | Gly | Gln | Thr | Phe |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Cys | Asn | Val | Ala | His | Pro | Ala | Ser | Ser | Thr | Lys | Val | Asp | Lys | Ala |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Asp | Pro | Thr | Cys | Lys | Pro | Ser | Pro | Cys | Asp | Cys | Cys | Pro | Pro | Pro |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Leu | Pro | Gly | Gly | Pro | Ser | Val | Phe | Ile | Phe | Pro | Pro | Lys | Pro | Lys |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Thr | Leu | Thr | Ile | Ser | Gly | Thr | Pro | Glu | Val | Thr | Cys | Val | Val | Val |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |

Asp Val Gly His Asp Asp Pro Glu Val Lys Phe Ser Trp Phe Val Asp  
 145 150 155 160

Asp Val Glu Val Asn Thr Ala Thr Thr Lys Pro Arg Glu Glu Gln Phe  
 165 170 175

Asn Ser Thr Tyr Arg Val Val Ser Ala Leu Arg Ile Gln His Gln Asp  
 180 185 190

Trp Thr Gly Gly Lys Glu Phe Lys Cys Lys Val His Asn Glu Gly Leu  
 195 200 205

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

Glu Pro Gln Val Tyr Val Leu Ala Pro Pro Gln Glu Glu Leu Ser Lys  
 225 230 235 240

Ser Thr Val Ser Leu Thr Cys Met Val Thr Ser Phe Tyr Pro Asp Tyr  
 245 250 255

Ile Ala Val Glu Trp Gln Arg Asn Gly Gln Pro Glu Ser Glu Asp Lys  
 260 265 270

Tyr Gly Thr Thr Pro Pro Gln Leu Asp Ala Asp Ser Ser Tyr Phe Leu  
 275 280 285

Tyr Ser Lys Leu Arg Val Asp Arg Asn Ser Trp Gln Glu Gly Asp Thr  
 290 295 300

Tyr Thr Cys Val Val Met His Glu Ala Leu His Asn His Tyr Thr Gln  
 305 310 315 320

Lys Ser Thr Ser Lys Ser Ala Gly Lys  
 325

<210> 67  
 <211> 990  
 <212> DNA  
 <213> Bubalus arnee

<400> 67  
gcctccacca cagccccgaa agtctaccct ctgagttctt gctgcgggga caagtccagc 60  
tccaccgtga ccctgggctg cctgggtctcc agctacatgc ccgagccggt gaccgtgacc 120  
tggaactcgg gtgccctgaa gagcggcgtg cacaccttcc cggctgtcct tcagtcctcc 180  
gggctgtact ctctcagcag catggtgacc gtgcccggca gcacctcagg acagaccttc 240  
acctgcaacg tagccccacc ggccagcagc accaagggtgg acaaggctgt tgatcccaca 300  
tgcaaaccat caccctgtga ctgttgccca cccctgagc tccccggagg accctctgtc 360  
ttcatcttcc caccgaaacc caaggacacc ctcaaatct cggaacgcc cgaggtcacg 420  
tgtgtggtgg tggacgtggg ccacgatgac cccgaggtga agttctcctg gttcgtggac 480  
gacgtggagg taaacacagc cacgacgaag ccgagagagg agcagttcaa cagcacctac 540  
cgcgtggtca gcgccctgcg catccagcac caggactgga ctggaggaaa ggagttcaag 600  
tgcaagggtcc acaacgaagg cctcccggcc cccatcgtga ggaccatctc caggaccaaa 660  
gggccggccc gggagccgca ggtgtatgtc ctggccccac cccaggaaga gctcagcaaa 720  
agcacggtca gcctcacctg catggtcacc agcttctacc cagactacat cgccgtggag 780  
tggcagagaa acgggcagcc tgagtcggag gacaagtacg gcacgacccc gcccagctg 840  
gacgccgaca gtcctactt cctgtacagc aagctcaggg tggacaggaa cagctggcag 900  
gaaggagaca cctacacgtg tgtggtgatg cacgaggccc tgcacaatca ctacacgcag 960  
aagtccacct ctaagtctgc gggtaaata 990

<210> 68  
<211> 329  
<212> PRT  
<213> Bubalus arnee

<400> 68  
Ala Ser Thr Thr Ala Pro Lys Val Tyr Pro Leu Ser Ser Cys Cys Gly  
1 5 10 15  
Asp Lys Ser Ser Ser Thr Val Thr Leu Gly Cys Leu Val Ser Ser Tyr  
20 25 30  
Met Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ala Leu Lys Ser

35

40

45

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

Leu Ser Ser Met Val Thr Val Pro Gly Ser Thr Ser Gly Gln Thr Phe  
65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Ala  
85 90 95

Val Asp Pro Thr Cys Lys Pro Ser Pro Cys Asp Cys Cys Pro Pro Pro  
100 105 110

Glu Leu Pro Gly Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys  
115 120 125

Asp Thr Leu Thr Ile Ser Gly Thr Pro Glu Val Thr Cys Val Val Val  
130 135 140

Asp Val Gly His Asp Asp Pro Glu Val Lys Phe Ser Trp Phe Val Asp  
145 150 155 160

Asp Val Glu Val Asn Thr Ala Thr Thr Lys Pro Arg Glu Glu Gln Phe  
165 170 175

Asn Ser Thr Tyr Arg Val Val Ser Ala Leu Arg Ile Gln His Gln Asp  
180 185 190

Trp Thr Gly Gly Lys Glu Phe Lys Cys Lys Val His Asn Glu Gly Leu  
195 200 205

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

Glu Pro Gln Val Tyr Val Leu Ala Pro Pro Gln Glu Glu Leu Ser Lys  
225 230 235 240

Ser Thr Val Ser Leu Thr Cys Met Val Thr Ser Phe Tyr Pro Asp Tyr  
245 250 255

Ile Ala Val Glu Trp Gln Arg Asn Gly Gln Pro Glu Ser Glu Asp Lys  
260 265 270

Tyr Gly Thr Thr Pro Pro Gln Leu Asp Ala Asp Ser Ser Tyr Phe Leu  
275 280 285

Tyr Ser Lys Leu Arg Val Asp Arg Asn Ser Trp Gln Glu Gly Asp Thr  
290 295 300

Tyr Thr Cys Val Val Met His Glu Ala Leu His Asn His Tyr Thr Gln  
305 310 315 320

Lys Ser Thr Ser Lys Ser Ala Gly Lys  
325

<210> 69

<211> 990

<212> DNA

<213> Bubalus arnee

<400> 69

gcctccacca cagccccgaa agtctaccct ctgagttcct gctgcgggga caagtccagc 60

tccaccgtga ccctgggctg cctggtctcc agctacatgc ccgagccggt gaccgtgacc 120

tggaactcgg gtgccctgaa gagcggcgtg cacaccttcc cggccgtcct tcagtcctcc 180

ggggtgtact ctctcagcag catggtgacc gtgcccggca gcacctcagg acagaccttc 240

acctgcaacg tagccccacc ggccagcagc accaaggtgg acaaggctgt tgatcccaca 300

tgcaaaccat caccctgtga ctgttgccca cccctgagc tccccggagg accctctgtc 360

ttcatcttcc caccgaaacc caaggacacc ctcaaatct cgggaacgcc cgaggtcacg 420

tgtgtggtgg tggacgtggg ccacgatgac cccgaggtga agttctcctg gttcgtggac 480

gacgtggagg taaacacagc cacgacgaag ccgagagagg agcagttcaa cagcacctac 540

cgcgtggtca gcgccctgcg catccagcac caggactgga ctggaggaaa ggagttcaag 600

tgcaaggtcc acaacgaagg cctcccggcc cccatcgtga ggaccatctc caggacaaaa 660

gggccggccc gggagccgca ggtgtatgtc ctggccccac cccaggaaga gctcagcaaa 720

agcacggtca gcctcacctg catggtcacc agcttctacc cagactacat cgccgtggag 780

|                                                                    |     |
|--------------------------------------------------------------------|-----|
| tggcagagaa acgggcagcc tgagtcggag gacaagtacg gcacgacccc gccccagctg  | 840 |
| gacgccgaca gtcctactt cctgtacagc aagctcaggg tggacaggaa cagctggcag   | 900 |
| gaaggagaca cctacacgtg tgtgggtgatg cacgaggccc tgcacaatca ctacacgcag | 960 |
| aagtccacct ctaagtctgc gggtaaatga                                   | 990 |

<210> 70  
 <211> 329  
 <212> PRT  
 <213> Bubalus arnee

<400> 70

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ser | Thr | Thr | Ala | Pro | Lys | Val | Tyr | Pro | Leu | Ser | Ser | Cys | Cys | Gly |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Lys | Ser | Ser | Ser | Thr | Val | Thr | Leu | Gly | Cys | Leu | Val | Ser | Ser | Tyr |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Pro | Glu | Pro | Val | Thr | Val | Thr | Trp | Asn | Ser | Gly | Ala | Leu | Lys | Ser |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Val | His | Thr | Phe | Pro | Ala | Val | Leu | Gln | Ser | Ser | Gly | Leu | Tyr | Ser |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ser | Ser | Met | Val | Thr | Val | Pro | Gly | Ser | Thr | Ser | Gly | Thr | Gln | Thr |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Thr | Cys | Asn | Val | Ala | His | Pro | Ala | Ser | Ser | Thr | Lys | Val | Asp | Lys |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Val | Asp | Pro | Arg | Cys | Lys | Thr | Thr | Cys | Asp | Cys | Cys | Pro | Pro | Pro |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Leu | Pro | Gly | Gly | Pro | Ser | Val | Phe | Ile | Phe | Pro | Pro | Lys | Pro | Lys |
|     |     | 115 |     |     |     |     | 120 |     |     |     | 125 |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Thr | Leu | Thr | Ile | Ser | Gly | Thr | Pro | Glu | Val | Thr | Cys | Val | Val | Val |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |

Asp Val Gly His Asp Asp Pro Glu Val Lys Phe Ser Trp Phe Val Asp  
 145 150 155 160

Asp Val Glu Val Asn Thr Ala Thr Thr Lys Pro Arg Glu Glu Gln Phe  
 165 170 175

Asn Ser Thr Tyr Arg Val Val Ser Ala Leu Arg Ile Gln His Gln Asp  
 180 185 190

Trp Thr Gly Gly Lys Glu Phe Lys Cys Lys Val His Asn Glu Gly Leu  
 195 200 205

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

Glu Pro Gln Val Tyr Val Leu Ala Pro Pro Gln Glu Glu Leu Ser Lys  
 225 230 235 240

Ser Thr Val Ser Leu Thr Cys Met Val Thr Ser Phe Tyr Pro Asp Tyr  
 245 250 255

Ile Ala Val Glu Trp Gln Arg Asn Gly Gln Pro Glu Ser Glu Asp Lys  
 260 265 270

Tyr Gly Thr Thr Pro Pro Gln Leu Asp Ala Asp Gly Ser Tyr Phe Leu  
 275 280 285

Tyr Ser Arg Leu Arg Val Asp Arg Asn Ser Trp Gln Glu Gly Asp Thr  
 290 295 300

Tyr Thr Cys Val Val Met His Glu Ala Leu His Asn His Tyr Thr Gln  
 305 310 315 320

Lys Ser Thr Ser Lys Ser Ala Gly Lys  
 325

<210> 71  
 <211> 990  
 <212> DNA  
 <213> Bubalus arnee

<400> 71  
 gcctccacca cagccccgaa agtctaccct ctgagttctt gctgcgggga caagtccagc 60  
 tccaccgtga ccctgggctg cctggtctcc agctacatgc ccgagccggt gaccgtgacc 120  
 tggaaactcgg gtgccctgaa gagcggcgtg cacaccttcc cggccgtcct tcagtcctcc 180  
 gggctctact ctctcagcag catggtgacc gtgcccggca gcacctcagg aaccagacc 240  
 ttcacctgca acgtagccca cccggccagc agcaccaagg tggacaaggc tgttgatccc 300  
 agatgcaaaa caacctgtga ctgttgccca ccgcctgagc tccctggagg accctctgtc 360  
 ttcatcttcc caccgaaacc caaggacacc ctcaaatct cggaacgcc cgaggtcacg 420  
 tgtgtggtgg tggacgtggg ccacgatgac cccgaggtga agttctcctg gttcgtggac 480  
 gacgtggagg taaacacagc cacgacgaag ccgagagagg agcagttcaa cagcacctac 540  
 cgcgtggtca gcgccctgcg catccagcac caggactgga ctggaggaaa ggagttcaag 600  
 tgcaagggtcc acaacgaagg cctcccagcc cccatcgtga ggaccatctc caggacaaaa 660  
 gggccggccc gggagccgca ggtgtatgtc ctggccccac cccaggaaga gctcagcaaa 720  
 agcacggtca gcctcacctg catggtcacc agcttctacc cagactacat cgccgtggag 780  
 tggcagagaa atgggcagcc tgagtcagag gacaagtacg gcacgacccc tcccagctg 840  
 gacgccgacg gtcctactt cctgtacagc aggctcaggg tggacaggaa cagctggcag 900  
 gaaggagaca cctacacgtg tgtggtgatg cagaggccc tgcacaatca ctacacgcag 960  
 aagtccacct ctaagtctgc gggtaaata 990

<210> 72  
 <211> 326  
 <212> PRT  
 <213> Bubalus arnee

<400> 72

Ala Ser Thr Thr Ala Pro Lys Val Tyr Pro Leu Ala Ser Ser Cys Gly  
 1 5 10 15

Asp Thr Ser Ser Ser Thr Val Thr Leu Gly Cys Leu Val Ser Ser Tyr  
 20 25 30

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

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

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

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Ala  
85 90 95

Val Gly Val Ser Ile Asp Cys Ser Lys Cys His Asn Gln Pro Cys Val  
100 105 110

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

Met Ile Thr Gly Thr Pro Glu Val Thr Cys Val Val Val Asn Val Gly  
130 135 140

His Asp Asn Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu  
145 150 155 160

Val His Thr Ala Arg Ser Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr  
165 170 175

Tyr Arg Val Val Ser Ala Leu Pro Ile Gln His Gln Asp Trp Thr Gly  
180 185 190

Gly Lys Glu Phe Lys Cys Lys Val Asn Asn Lys Gly Leu Ser Ala Pro  
195 200 205

Ile Val Arg Ile Ile Ser Arg Ser Lys Gly Pro Ala Arg Glu Pro Gln  
210 215 220

Val Tyr Val Leu Asp Pro Pro Lys Glu Glu Leu Ser Lys Ser Thr Leu  
225 230 235 240

Ser Val Thr Cys Met Val Thr Gly Phe Tyr Pro Glu Asp Val Ala Val  
245 250 255

Glu Trp Gln Arg Asn Arg Gln Thr Glu Ser Glu Asp Lys Tyr Arg Thr  
260 265 270

Thr Pro Pro Gln Leu Asp Thr Asp Arg Ser Tyr Phe Leu Tyr Ser Lys  
275 280 285

Leu Arg Val Asp Arg Asn Ser Trp Gln Glu Gly Asp Ala Tyr Thr Cys  
290 295 300

Val Val Met His Glu Ala Leu His Asn His Tyr Met Gln Lys Ser Thr  
305 310 315 320

Ser Lys Ser Ala Gly Lys  
325

<210> 73  
<211> 981  
<212> DNA  
<213> Bubalus arnee

<400> 73  
gcctccacca cagccccgaa agtctaccct ctggcatcca gctgcggaga cacatccagc 60  
tccaccgtga ccctgggctg cctggtgtcc agctacatgc ccgagccggt gaccgtgacc 120  
tggaactcgg gtgccctgaa gagcggcgtg cacaccttcc cggctgtcct tcagtcctcc 180  
gggctctact ctctcagcag catggtgacc gtgcccgcc aacagctcagg acagaccttc 240  
acctgcaacg tagccccacc ggccagcagc accaaggtgg acaaggctgt tgggggtctcc 300  
attgactgct ccaagtgtca taaccagcct tgcgtgaggg aaccatctgt cttcatcttc 360  
ccaccgaaac ccaaagacac cctgatgatc acaggaacgc ccgaggtcac gtgtgtggtg 420  
gtgaacgtgg gccacgataa ccccgaggtg cagttctcct ggttcgtgga tgacgtggag 480  
gtgcacacgg ccaggtcgaa gccaagagag gagcagttca acagcacgta ccgcgtggtc 540  
agcgccctgc ccatccagca ccaggactgg actggaggaa aggagttcaa gtgcaaggtc 600  
aacaacaaag gcctctcggc ccccatcgtg aggatcatct ccaggagcaa agggccggcc 660  
cgggagccgc aggtgtatgt cctggacca cccaaggaag agctcagcaa aagcacgctc 720  
agcgtcacct gcatggtcac cggcttctac ccagaagatg tagccgtgga gtggcagaga 780

aaccggcaga ctgagtcgga ggacaagtac cgcacgaccc cgccccagct ggacaccgac 840  
 cgctcctact tcctgtacag caagctcagg gtggacagga acagctggca ggaaggagac 900  
 gcctacacgt gtgtggtgat gcacgaggcc ctgcacaatc actacatgca gaagtccacc 960  
 tctaagtctg cgggtaaatg a 981

<210> 74  
 <211> 326  
 <212> PRT  
 <213> Bubalus arnee

<400> 74

Ala Ser Thr Thr Ala Pro Lys Val Tyr Pro Leu Ser Ser Cys Cys Gly  
 1 5 10 15

Asp Lys Ser Ser Ser Thr Val Thr Leu Gly Cys Leu Val Ser Ser Tyr  
 20 25 30

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

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

Leu Ser Ser Met Val Thr Val Pro Gly Ser Thr Ser Gly Gln Thr Phe  
 65 70 75 80

Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys Ala  
 85 90 95

Val Gly Val Ser Ser Asp Cys Ser Lys Pro Asn Asn Gln His Cys Val  
 100 105 110

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

Met Ile Thr Gly Thr Pro Glu Val Thr Cys Val Val Val Asn Val Gly  
 130 135 140

His Asp Asn Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val Glu

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

<210> 75  
 <211> 981  
 <212> DNA  
 <213> Bubalus arnee

<400> 75

gcctccacca cagccccgaa agtctaccct ctgagttctt gctgcgggga caagtccagc 60  
tccaccgtga ccctgggctg cctgggtgtcc agctacatgc ccgagccggt gaccgtgacc 120  
tggaactcgg gtgccctgaa gagcggcgtg cacaccttcc cggccgtcct tcagtcctcc 180  
gggctctact ctctcagcag catgggtgacc gtgcccggca gcacctcagg acagaccttc 240  
acctgcaacg tagccccacc ggccagcagc accaaggtgg acaaggctgt tgggggtctcc 300  
agtgactgct ccaagcctaa taaccagcat tgcgtgaggg aaccatctgt cttcatcttc 360  
ccaccgaaac ccaaagacac cctgatgatc acaggaacgc ccgaggtcac gtgtgtggtg 420  
gtgaacgtgg gccacgataa ccccaggtg cagttctcct ggttcgtgga cgacgtggag 480  
gtgcacacgg ccaggacgaa gccgagagag gagcagttca acagcacgta ccgcgtggtc 540  
agcgccctgc ccatccagca ccaggactgg actggaggaa aggagttcaa gtgcaaggtc 600  
aacatcaaag gcctctcggc ctccatcgtg aggatcatct ccaggagcaa agggccggcc 660  
cgggagccgc aggtgtatgt cctggacca cccaaggaag agctcagcaa aagcacggtc 720  
agcgtcacct gcatggtcac cggcttctac ccagaagatg tagacgtgga gtggcagaga 780  
gaccggcaga ctgagtcgga ggacaagtac cgcacgaccc cgccccagct ggacgccgac 840  
cgctcctact tcctgtacag caagctcagg gtggacagga acagctggca gagaggagac 900  
acctacacgt gtgtggtgat gcacgaggcc ctgcacaatc actacatgca gaagtccacc 960  
tctaagtctg cgggtaaata a 981

<210> 76  
<211> 327  
<212> PRT  
<213> Bubalus arnee

<400> 76

Ala Ser Thr Thr Ala Pro Lys Val Tyr Pro Leu Ser Ser Cys Cys Gly  
1 5 10 15

Asp Lys Ser Ser Ser Gly Val Thr Leu Gly Cys Leu Val Ser Ser Tyr  
20 25 30

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

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

Leu Ser Ser Met Val Thr Val Pro Ala Ser Ser Ser Gly Thr Gln Thr  
65 70 75 80

Phe Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys  
85 90 95

Ala Val Gly Val Ser Ser Asp Cys Ser Lys Pro Asn Asn Gln His Cys  
100 105 110

Val Arg Glu Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Thr  
115 120 125

Leu Met Ile Thr Gly Thr Pro Glu Val Thr Cys Val Val Val Asn Val  
130 135 140

Gly His Asp Asn Pro Glu Val Gln Phe Ser Trp Phe Val Asp Asp Val  
145 150 155 160

Glu Val His Thr Ala Arg Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser  
165 170 175

Thr Tyr Arg Val Val Ser Ala Leu Pro Ile Gln His Gln Asp Trp Thr  
180 185 190

Gly Gly Lys Glu Phe Lys Cys Lys Val Asn Ile Lys Gly Leu Ser Ala  
195 200 205

Ser Ile Val Arg Ile Ile Ser Arg Ser Lys Gly Pro Ala Arg Glu Pro  
210 215 220

Gln Val Tyr Val Leu Asp Pro Pro Lys Glu Glu Leu Ser Lys Ser Thr  
225 230 235 240

Val Ser Leu Thr Cys Met Val Ile Gly Phe Tyr Pro Glu Asp Val Asp  
245 250 255

Val Glu Trp Gln Arg Asp Arg Gln Thr Glu Ser Glu Asp Lys Tyr Arg  
 260 265 270

Thr Thr Pro Pro Gln Leu Asp Ala Asp Arg Ser Tyr Phe Leu Tyr Ser  
 275 280 285

Lys Leu Arg Val Asp Arg Asn Ser Trp Gln Arg Gly Asp Thr Tyr Thr  
 290 295 300

Cys Val Val Met His Glu Ala Leu His Asn His Tyr Met Gln Lys Ser  
 305 310 315 320

Thr Ser Lys Ser Ala Gly Lys  
 325

<210> 77  
 <211> 984  
 <212> DNA  
 <213> Bubalus arnee

<400> 77  
 gcctccacca cagccccgaa agtctaccct ctgagttctt gctgcgggga caagtccagc 60  
 tcgggggtga ccctgggctg cctgggtctcc agctacatgc ccgagccggt gaccgtgacc 120  
 tggaactcgg gtgccctgaa gagcggcgtg cacaccttcc cggccgtcct tcagtcctcc 180  
 gggctctact ctctcagcag catggtgacc gtgcccgccg gcagctcagg aaccagacc 240  
 ttcacctgca acgtagccca cccggccagc agcaccaagg tggacaaggc tgttggggtc 300  
 tccagtgact gtcceaagcc taataaccag cattgcgtga gggaaccatc tgtcttcac 360  
 ttcccaccga aacccaaaga caccctgatg atcacaggaa cggccgaggt cacgtgtgtg 420  
 gtggtgaacg tggggccacga taaccccgag gtgcagttct cctggttcgt ggacgacgtg 480  
 gaggtgcaca cggccaggac gaagccgaga gaggagcagt tcaacagcac gtaccgcgtg 540  
 gtcagcggcc tgcccatcca gcaccaggac tggactggag gaaaggagtt caagtgaag 600  
 gtcaacatca aaggcctctc ggcctccatc gtgaggatca tctccaggag caaagggccg 660  
 gcccgggagc cgcaggtgta tgtcctggac ccaccaagg aagagctcag caaaagcacg 720  
 gtcagcctca cctgcatggt catcggcttc taccagaag atgtagacgt ggagtggcag 780  
 agagaccggc agactgagtc ggaggacaag taccgcacga ccccgcccca gctggacgcc 840

gaccgctcct acttcctgta cagcaagctc aggggtggaca ggaacagctg gcagagagga 900  
gacacctaca cgtgtgtgggt gatgcacgag gccctgcaca atcactacat gcagaagtcc 960  
acctctaagt ctgcgggtaa atga 984

<210> 78  
<211> 352  
<212> PRT  
<213> Bubalus arnee

<400> 78

Ala Ser Thr Thr Ala Pro Lys Val Tyr Pro Leu Ala Ser Ser Cys Gly  
1 5 10 15

Asp Thr Ser Ser Ser Thr Val Thr Leu Gly Cys Leu Val Ser Ser Tyr  
20 25 30

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

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

Leu Ser Ser Met Val Thr Val Pro Ala Ser Ser Ser Glu Thr Gln Thr  
65 70 75 80

Phe Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys  
85 90 95

Ala Val Thr Ala Arg Arg Pro Val Pro Thr Thr Pro Lys Thr Thr Ile  
100 105 110

Pro Pro Gly Lys Pro Thr Thr Pro Lys Ser Glu Val Glu Lys Thr Pro  
115 120 125

Cys Gln Cys Ser Lys Cys Pro Glu Pro Leu Gly Gly Leu Ser Val Phe  
130 135 140

Ile Phe Pro Pro Lys Pro Lys Asp Thr Leu Thr Ile Ser Gly Thr Pro  
145 150 155 160

Glu Val Thr Cys Val Val Val Asp Val Gly Gln Asp Asp Pro Glu Val  
165 170 175

Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Arg Thr  
180 185 190

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Ala  
195 200 205

Leu Arg Ile Gln His Gln Asp Trp Leu Gln Gly Lys Glu Phe Lys Cys  
210 215 220

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

Arg Thr Lys Gly Gln Ala Arg Glu Pro Gln Val Tyr Val Leu Ala Pro  
245 250 255

Pro Arg Glu Glu Leu Ser Lys Ser Thr Leu Ser Leu Thr Cys Leu Ile  
260 265 270

Thr Gly Phe Tyr Pro Glu Glu Ile Asp Val Glu Trp Gln Arg Asn Gly  
275 280 285

Gln Pro Glu Ser Glu Asp Lys Tyr His Thr Thr Ala Pro Gln Leu Asp  
290 295 300

Ala Asp Gly Ser Tyr Phe Leu Tyr Ser Lys Leu Arg Val Asn Lys Ser  
305 310 315 320

Ser Trp Gln Glu Gly Asp His Tyr Thr Cys Ala Val Met His Glu Ala  
325 330 335

Leu Arg Asn His Tyr Lys Glu Lys Ser Ile Ser Arg Ser Pro Gly Lys  
340 345 350

<210> 79  
<211> 1059  
<212> DNA

<213> Bubalus arnee

<400> 79

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gcctccacca cagccccgaa agtctaccct ctggcatcca gctgcggaga cacatccagc      60
tccaccgtga ccctgggctg cctgggtctcc agctacatgc ccgagccggt gaccgtgacc      120
tggaactcgg gtgccctgaa gagcggcgtg cacaccttcc cggccgtccg gcagtcctct      180
gggctgtact ctctcagcag catggtgact gtgcccgccg gcagctcaga aaccagacc      240
ttcacctgca acgtagccca cccggccagc agcaccaagg tggacaaggc tgtcactgca      300
aggcgtccag tcccgacgac gccaaagaca actatccctc ctggaaaacc cacaacccca      360
aagtctgaag ttgaaaagac accctgccag tgttcctaat gccagaacc tctgggagga      420
ctgtctgtct tcattcttcc accgaaacc aaggacacc tcacaatctc gggaacgccc      480
gaggtcacgt gtgtgggtgt ggacgtgggc caggatgacc ccgaggtgca gttctcctgg      540
ttcgtggacg acgtggaggt gcacacggcc aggacgaagc cgagagagga gcagttcaac      600
agcacctacc gcgtggtcag cggcctgctc atccagcacc aggactggct gcagggaag      660
gagttcaagt gcaaggtcaa caacaaaggc ctcccggccc ccattgtgag gaccatctcc      720
aggaccaaag ggcaggcccg ggagccgcag gtgtatgtcc tggccccacc ccgggaagag      780
ctcagcaaaa gcacgctcag cctcacctgc ctgatcaccg gtttctaccc agaagagata      840
gacgtggagt ggcagagaaa tgggcagcct gagtgcggagg acaagtacca cacgaccgca      900
ccccagctgg atgctgacgg ctctacttcc ctgtacagca agctcagggt gaacaagagc      960
agctggcagg aaggagacca ctacacgtgt gcagtgatgc acgaagcttt acggaatcac     1020
tacaaagaga agtccatctc gaggtctccg ggtaaata      1059
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<210> 80

<211> 352

<212> PRT

<213> Bubalus arnee

<400> 80

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Ala Ser Thr Thr Ala Pro Lys Val Tyr Pro Leu Ala Ser Arg Cys Gly
1           5           10          15
```

```
Asp Thr Ser Ser Ser Thr Val Thr Leu Gly Cys Leu Val Ser Ser Tyr
          20          25          30
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Met Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ala Leu Lys Ser  
35 40 45

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

Leu Ser Ser Met Val Thr Val Pro Ala Ser Thr Ser Glu Thr Gln Thr  
65 70 75 80

Phe Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys  
85 90 95

Ala Val Thr Ala Arg Arg Pro Val Pro Thr Thr Pro Lys Thr Thr Ile  
100 105 110

Pro Pro Gly Lys Pro Thr Thr Gln Glu Ser Glu Val Glu Lys Thr Pro  
115 120 125

Cys Gln Cys Ser Lys Cys Pro Glu Pro Leu Gly Gly Leu Ser Val Phe  
130 135 140

Ile Phe Pro Pro Lys Pro Lys Asp Thr Leu Thr Ile Ser Gly Thr Pro  
145 150 155 160

Glu Val Thr Cys Val Val Val Asp Val Gly Gln Asp Asp Pro Glu Val  
165 170 175

Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Arg Thr  
180 185 190

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Ala  
195 200 205

Leu Arg Ile Gln His Gln Asp Trp Leu Gln Gly Lys Glu Phe Lys Cys  
210 215 220

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

Arg Thr Lys Gly Gln Ala Arg Glu Pro Gln Val Tyr Val Leu Ala Pro  
245 250 255

Pro Arg Glu Glu Leu Ser Lys Ser Thr Leu Ser Leu Thr Cys Leu Ile  
260 265 270

Thr Gly Phe Tyr Pro Glu Glu Ile Asp Val Glu Trp Gln Arg Asn Gly  
275 280 285

Gln Pro Glu Ser Glu Asp Lys Tyr His Thr Thr Ala Pro Gln Leu Asp  
290 295 300

Ala Asp Gly Ser Tyr Phe Leu Tyr Ser Arg Leu Arg Val Asn Lys Ser  
305 310 315 320

Ser Trp Gln Glu Gly Asp His Tyr Thr Cys Ala Val Met His Glu Ala  
325 330 335

Leu Arg Asn His Tyr Lys Glu Lys Ser Ile Ser Arg Ser Pro Gly Lys  
340 345 350

<210> 81  
<211> 1059  
<212> DNA  
<213> Bubalus arnee

<400> 81  
gcctccacca cagccccgaa agtctaccct ctggcatccc gctgcggaga cacatccagc 60  
tccaccgtga ccctgggctg cctgggtctcc agctacatgc ccgagccggt gaccgtgacc 120  
tggaactcgg gtgccctgaa gagtggcgtg cacaccttcc cggccgtcct tcagtcctcc 180  
gggctgtact ctctcagcag catgggtgacc gtgcccgcga gcacctcaga aaccagacc 240  
ttcacctgca acgtagccca cccggccagc agcaccaagg tggacaaggc tgtcactgca 300  
aggcgtccag tcccgacgac gccaaagaca accatccctc ctggaaaacc cacaaccag 360  
gagtctgaag ttgaaaagac accctgccag tgttccaaat gcccagaacc tctgggagga 420  
ctgtctgtct tcatcttccc accgaaaccc aaggacaccc tcacaatctc gggaacgccc 480  
gaggtcacgt gtgtggtggt ggacgtgggc caggatgacc ccgaggtgca gttctcctgg 540

ttcgtggacg acgtggaggt gcacacggcc aggacgaagc cgagagagga gcagttcaac 600  
 agcacctacc gcgtgggtcag cgccctgctc atccagcacc aggactggct gcagggaaag 660  
 gagttcaagt gcaaggtcaa caacaaaggc ctcccggccc ccattgtgag gaccatctcc 720  
 aggaccaaag ggcaggcccg ggagccgcag gtgtatgtcc tggccccacc ccgggaagag 780  
 ctgagcaaaa gcacgctcag cctcacctgc ctgatcaccg gtttctaccc agaagagata 840  
 gacgtggagt ggcagagaaa tgggcagcct gagtcggagg acaagtacca cacgaccgca 900  
 cccagctgg atgctgacgg ctctacttc ctgtacagca ggctcagggt gaacaagagc 960  
 agctggcagg aaggagacca ctacacgtgt gcagtgatgc atgaagcttt acggaatcac 1020  
 taaaagaga agtccatctc gaggtctccg ggtaaata 1059

<210> 82  
 <211> 105  
 <212> PRT  
 <213> Bubalus arnee

<400> 82

Gln Pro Lys Ala Ser Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu  
 1 5 10 15

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

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

Thr Gln Gly Val Glu Thr Thr Lys Pro Ser Lys Gln Ser Asn Asn Lys  
 50 55 60

Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Asp Lys Trp Lys Ser  
 65 70 75 80

His Ser Ser Phe Ser Cys Leu Val Thr His Glu Gly Ser Thr Val Glu  
 85 90 95

Lys Lys Val Ala Pro Ala Glu Cys Ser  
 100 105

<210> 83  
 <211> 318  
 <212> DNA  
 <213> Bubalus arnee

<400> 83  
 cagcccaagg cctccccctc ggtcacactc ttcccgcctt cctctgagga gctcggcgcc 60  
 aacaaggcca ccctggtgtg cctcatcagc gacttctacc ccagcggcgt gacggtggcc 120  
 tggaaggcaa gcggcagccc cgtcacccag ggcgtggaga ccaccaagcc ctccaagcag 180  
 agcaacaaca agtacgcggc cagcagctac ctgagcctga cgcctgacaa gtggaaatct 240  
 cacagcagct tcagctgcct ggtcacgcac gaggggagca ccgtggagaa gaaggtggcc 300  
 cccgcagagt gctcttag 318

<210> 84  
 <211> 331  
 <212> PRT  
 <213> Bubalus arnee

<400> 84

Ala Ser Thr Thr Ala Pro Ser Val Phe Pro Leu Ala Pro Ser Cys Gly  
 1 5 10 15

Ser Thr Ser Gly Ser Thr Val Ala Leu Ala Cys Leu Val Ser Gly Tyr  
 20 25 30

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ser Leu Thr Ser  
 35 40 45

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

Leu Ser Ser Thr Val Thr Val Pro Ser Ser Arg Trp Pro Ser Glu Thr  
 65 70 75 80

Phe Thr Cys Asn Val Val His Pro Ala Ser Asn Thr Lys Val Asp Lys  
 85 90 95

Pro Val Pro Lys Glu Ser Thr Cys Lys Cys Ile Ser Pro Cys Pro Val  
 100 105 110

Pro Glu Ser Leu Gly Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Pro  
115 120 125

Lys Asp Ile Leu Arg Ile Thr Arg Thr Pro Glu Ile Thr Cys Val Val  
130 135 140

Leu Asp Leu Gly Arg Glu Asp Pro Glu Val Gln Ile Ser Trp Phe Val  
145 150 155 160

Asp Gly Lys Glu Val His Thr Ala Lys Thr Gln Pro Arg Glu Gln Gln  
165 170 175

Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Pro Ile Glu His Gln  
180 185 190

Asp Trp Leu Thr Gly Lys Glu Phe Lys Cys Arg Val Asn His Ile Gly  
195 200 205

Leu Pro Ser Pro Ile Glu Arg Thr Ile Ser Lys Ala Arg Gly Gln Ala  
210 215 220

His Gln Pro Ser Val Tyr Val Leu Pro Pro Ser Pro Lys Glu Leu Ser  
225 230 235 240

Ser Ser Asp Thr Val Thr Leu Thr Cys Leu Ile Lys Asp Phe Phe Pro  
245 250 255

Pro Glu Ile Asp Val Glu Trp Gln Ser Asn Gly Gln Pro Glu Pro Glu  
260 265 270

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

Phe Leu Tyr Ser Lys Leu Ser Val Asp Lys Ser Arg Trp Gln Gln Gly  
290 295 300

Asp Thr Phe Thr Cys Ala Val Met His Glu Ala Leu Gln Asn His Tyr  
305 310 315 320

Thr Asp Leu Ser Leu Ser His Ser Pro Gly Lys  
 325 330

<210> 85  
 <211> 996  
 <212> DNA  
 <213> Bubalus arnee

<400> 85  
 gcctccacca cggccccctc ggttttccca ctggccccca gctgcgggtc cacttccggc 60  
 tccacgggtg ccctggcctg cctgggtgtca ggctacttcc ccgagcctgt aactgtgtcc 120  
 tggaattccg gtccttgac cagcgggtgtg cacaccttcc cgtccgtcct gcagtcctca 180  
 gggctctact ccctcagcag cacgggtgaca gtgccctcca gcaggtggcc cagcgagacc 240  
 ttcacctgca acgtgggtcca cccggccagc aacactaaag tagacaagcc agtgcccaaa 300  
 gagtccacct gcaagtgtat atcccatgc ccagtccctg aatcactggg agggccttcg 360  
 gtcttcatct ttccccgaa acccaaggac atcctcagga ttaccgaac acccgagatc 420  
 acctgtgtgg tgtagatct gggccgtgag gaccctgagg tgcagatcag ctggttcgtg 480  
 gatggtaagg aggtgcacac agccaagacg cagcctcgtg agcagcagtt caacagcacc 540  
 taccgtgtgg tcagcgtcct cccattgag caccaggact ggctcaccgg aaaggagttc 600  
 aagtgcagag tcaaccacat aggcctcccg tccccatcg agaggactat ctcaaagcc 660  
 agagggcaag cccatcagcc cagtgtgtat gtcctgccac catccccaaa ggagttgtca 720  
 tccagtga ca cggtcaccct gacctgcctg atcaaagact tcttcccacc tgagattgat 780  
 gtggagtggc agagcaatgg acagccggag cccgagagca agtaccacac gactgcgccc 840  
 cagctggacg aggacgggtc ctacttctctg tacagcaagc tctctgtgga caagagccgc 900  
 tggcagcagg gagacacctt cacatgtgcg gtgatgcatg aagctctaca gaaccactac 960  
 acagatctat ccctctccca ttctccgggt aaatga 996

<210> 86  
 <211> 102  
 <212> PRT  
 <213> Bubalus arnee

<400> 86

Pro Ser Val Phe Leu Phe Lys Pro Ser Glu Glu Gln Leu Arg Thr Gly  
1 5 10 15

Thr Val Ser Val Val Cys Leu Val Asn Asp Phe Tyr Pro Lys Asp Ile  
20 25 30

Asn Val Lys Val Lys Val Asp Gly Val Thr Gln Asn Ser Asn Phe Gln  
35 40 45

Asn Ser Phe Thr Asp Gln Asp Ser Lys Lys Ser Thr Tyr Ser Leu Ser  
50 55 60

Ser Thr Leu Thr Leu Ser Ser Ser Glu Tyr Gln Ser His Asn Ala Tyr  
65 70 75 80

Ala Cys Glu Val Ser His Lys Ser Leu Pro Thr Ala Leu Val Lys Ser  
85 90 95

Phe Asn Lys Asn Glu Cys  
100

<210> 87  
<211> 309  
<212> DNA  
<213> Bubalus arnee

<400> 87  
ccatccgtct tcctcttcaa accatctgag gaacagctga ggaccggaac tgtctctgtc 60  
gtgtgcttgg tgaatgattt ctaccccaaa gatatcaatg tcaaggtgaa agtggatggg 120  
gttaccaga acagcaactt ccagaacagc ttcacagacc aggacagcaa gaaaagcacc 180  
tacagcctca gcagcacctt gacactgtcc agctcagagt accagagcca taacgcctat 240  
gcgtgtgagg tcagccacaa gagcctgccc accgccctcg tcaagagctt caataagaat 300  
gaatgtag 309

<210> 88  
<211> 106  
<212> PRT  
<213> Bubalus arnee

<400> 88

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

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

Phe Tyr Pro Gly Ser Val Asn Val Val Trp Lys Ala Asp Gly Ser Thr  
 35 40 45

Ile Asn Gln Asn Val Lys Thr Thr Gln Ala Ser Lys Gln Ser Asn Ser  
 50 55 60

Lys Tyr Ala Ala Ser Ser Tyr Leu Thr Leu Thr Gly Ser Glu Trp Lys  
 65 70 75 80

Ser Lys Ser Ser Tyr Thr Cys Glu Val Thr His Glu Gly Ser Thr Val  
 85 90 95

Thr Lys Thr Val Lys Pro Ser Glu Cys Ser  
 100 105

<210> 89  
 <211> 321  
 <212> DNA  
 <213> Bubalus arnee

<400> 89  
 ggtcagccca agtccgcacc ctcggtcacc ctgttcccg cttccacgga ggagctcagt 60  
 accaacaagg ccaccgtggt gtgtctcatc aacgacttct acccggttag cgtgaacgtg 120  
 gtctggaagg cagatggcag caccatcaat cagaacgtga agaccacca ggcctccaaa 180  
 cagagcaaca gcaagtacgc ggccagcagc tacctgacct tgacgggcag cgagtggaag 240  
 tctaagagca gttacacctg cgaggtcacg cacgagggga gcaccgtgac gaagacagtg 300  
 aagccctcag agtgttctta g 321

<210> 90  
 <211> 331  
 <212> PRT  
 <213> Bubalus arnee

<400> 90

Ala Ser Thr Thr Pro Pro Lys Val Tyr Pro Leu Thr Ser Cys Cys Gly  
1 5 10 15

Asp Thr Ser Ser Ser Ile Val Thr Leu Gly Cys Leu Val Ser Ser Tyr  
20 25 30

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

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

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

Phe Ile Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Lys  
85 90 95

Arg Val Glu Pro Gly Cys Pro Asp Pro Cys Lys His Cys Arg Cys Pro  
100 105 110

Pro Pro Glu Leu Pro Gly Gly Pro Ser Val Phe Ile Phe Pro Pro Lys  
115 120 125

Pro Lys Asp Thr Leu Thr Ile Ser Gly Thr Pro Glu Val Thr Cys Val  
130 135 140

Val Val Asp Val Gly Gln Asp Asp Pro Glu Val Gln Phe Ser Trp Phe  
145 150 155 160

Val Asp Asn Val Glu Val Arg Thr Ala Arg Thr Lys Pro Arg Glu Glu  
165 170 175

Gln Phe Asn Ser Thr Phe Arg Val Val Ser Ala Leu Pro Ile Gln His  
180 185 190

Gln Asp Trp Thr Gly Gly Lys Glu Phe Lys Cys Lys Val His Asn Glu  
195 200 205

Ala Leu Pro Ala Pro Ile Val Arg Thr Ile Ser Arg Thr Lys Gly Gln  
 210 215 220

Ala Arg Glu Pro Gln Val Tyr Val Leu Ala Pro Pro Gln Glu Glu Leu  
 225 230 235 240

Ser Lys Ser Thr Leu Ser Val Thr Cys Leu Val Thr Gly Phe Tyr Pro  
 245 250 255

Asp Tyr Ile Ala Val Glu Trp Gln Lys Asn Gly Gln Pro Glu Ser Glu  
 260 265 270

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

Phe Leu Tyr Ser Arg Leu Arg Val Asp Lys Asn Ser Trp Gln Glu Gly  
 290 295 300

Asp Thr Tyr Ala Cys Val Val Met His Glu Ala Leu His Asn His Tyr  
 305 310 315 320

Thr Gln Lys Ser Ile Ser Lys Pro Pro Gly Lys  
 325 330

<210> 91  
 <211> 996  
 <212> DNA  
 <213> Bubalus arnee

<400> 91  
 gcctcaacaa caccgccgaa agtctaccct ctgacttctt gctgcgggga cacgtccagc 60  
 tccatcgtga ccctgggctg cctgggtctcc agctatatgc ccgagccggt gaccgtgacc 120  
 tggaactctg gtgccctgac cagcggcgtg cacaccttcc cggccatcct gcagtcctcc 180  
 gggctctact ctctcagcag cgtgggtgacc gtgccggcca gcacctcagg agcccagacc 240  
 ttcatctgca acgtagccca cccggccagc agcaccaagg tggacaagcg tgttgagccc 300  
 ggatgcccgg acccatgcaa acattgccga tgcccacccc ctgagctccc cggaggaccg 360  
 tctgtcttca tcttcccacc gaaaccaag gacaccctta caatctctgg aacgcccag 420

gtcacgtgtg tgggtggtgga cgtgggccag gatgaccccg aggtgcagtt ctcttggttc 480  
 gtggacaacg tggaggtgcg cacggccagg acaaagccga gagaggagca gttcaacagc 540  
 accttccgcg tggtcagcgc cctgcccatac cagcaccaag actggactgg aggaaaggag 600  
 ttcaagtgca aggtccacaa cgaagccctc ccggccccc tcgtgaggac catctccagg 660  
 accaaagggc agggccggga gccgcaggtg tacgtcctgg cccacccca ggaagagctc 720  
 agcaaaagca cgctcagcgt cacctgcctg gtcaccggct tctaccaga ctacatcgcc 780  
 gtggagtggc agaaaaatgg gcagcctgag tcggaggaca agtacggcac gaccacatcc 840  
 cagctggacg ccgacggctc ctacttctg tacagcaggc tcagggtgga caagaacagc 900  
 tggcaagaag gagacaccta cgcgtgtgtg gtgatgcacg aggctctgca caaccactac 960  
 acacagaagt cgatctctaa gcctccgggt aatga 996

<210> 92  
 <211> 329  
 <212> PRT  
 <213> Bubalus arnee

<400> 92

Ala Ser Thr Thr Ala Pro Lys Val Tyr Pro Leu Thr Ser Cys Cys Gly  
 1 5 10 15

Asp Thr Ser Ser Ser Ser Ser Ile Val Thr Leu Gly Cys Leu Val Ser  
 20 25 30

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

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

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

Gln Thr Phe Ile Cys Asn Val Ala His Pro Ala Ser Ser Ala Lys Val  
 85 90 95

Asp Lys Arg Val Gly Ile Ser Ser Asp Tyr Ser Lys Cys Ser Lys Pro

100

105

110

Pro Cys Val Ser Arg Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys  
 115 120 125

Asp Ser Leu Met Ile Thr Gly Thr Pro Glu Val Thr Cys Val Val Val  
 130 135 140

Asp Val Gly Gln Gly Asp Pro Glu Val Gln Phe Ser Trp Phe Val Asp  
 145 150 155 160

Asn Val Glu Val Arg Thr Ala Arg Thr Lys Pro Arg Glu Glu Gln Phe  
 165 170 175

Asn Ser Thr Phe Arg Val Val Ser Ala Leu Pro Ile Gln His Asp His  
 180 185 190

Trp Thr Gly Gly Lys Glu Phe Lys Cys Lys Val His Ser Lys Gly Leu  
 195 200 205

Pro Ala Pro Ile Val Arg Thr Ile Ser Arg Ala Lys Gly Gln Ala Arg  
 210 215 220

Glu Pro Gln Val Tyr Val Leu Ala Pro Pro Gln Glu Glu Leu Ser Lys  
 225 230 235 240

Ser Thr Leu Ser Val Thr Cys Leu Val Thr Gly Phe Tyr Pro Asp Tyr  
 245 250 255

Ile Ala Val Glu Trp Gln Arg Ala Arg Gln Pro Glu Ser Glu Asp Lys  
 260 265 270

Tyr Gly Thr Thr Thr Ser Gln Leu Asp Ala Asp Gly Ser Tyr Phe Leu  
 275 280 285

Tyr Ser Arg Leu Arg Val Asp Lys Ser Ser Trp Gln Arg Gly Asp Thr  
 290 295 300

Tyr Ala Cys Val Val Met His Glu Ala Leu His Asn His Tyr Thr Gln  
 305 310 315 320

Lys Ser Ile Ser Lys Pro Pro Gly Lys  
325

<210> 93  
<211> 990  
<212> DNA  
<213> Bubalus arnee

<400> 93  
gcctccacca cagccccgaa agtctaccct ctgacttctt gctgcgggga cacgtccagc 60  
tccagctcca tcgtgaccct gggctgcctg gtctccagct atatgcccga gccggtgacc 120  
gtgacctgga actctggtgc cctgaccagc ggcgtgcaca ctttcccggc catcctgcag 180  
tcctccgggc tctactctct cagcagcgtg gtgaccgtgc cggccagcac ctcaggagcc 240  
cagaccttca tctgcaacgt agcccacccg gccagcagcg ccaaggtgga caagcgtgtt 300  
gggatctcca gtgactactc caagtgttct aaaccgcctt gcgtgagccg accgtctgtc 360  
ttcatcttcc ccccgaaacc caaggacagc ctcatgatca caggaacgcc cgaggtcacg 420  
tgtgtggtgg tggacgtggg ccagggtgac cccgaggtgc agttctcctg gttcgtggac 480  
aacgtggagg tgcgcacggc caggacaaag ccgagagagg agcagttcaa cagcaccttc 540  
cgcgtggtca gcgccctgcc catccagcac gaccactgga ctggaggaaa ggagttcaag 600  
tgcaaggtcc acagcaaagg cctcccggcc cccatcgtga ggaccatctc cagggccaaa 660  
gggcaggccc gggagccgca ggtgtacgtc ctggccccac cccaggaaga gctcagcaaa 720  
agcacgtca gcgtcacctg cctggtcacc ggcttctacc cagactacat cgccgtggag 780  
tggcagagag cgcggcagcc tgagtcggag gacaagtacg gcacgaccac atcccagctg 840  
gacgccgacg gctcctactt cctgtacagc aggctcaggg tggacaagag cagctggcaa 900  
agaggagaca cctacgcgtg tgtggtgatg cacgaggctc tgcacaacca ctacacacag 960  
aagtcgatct ctaagcctcc gggtaaatga 990

<210> 94  
<211> 328  
<212> PRT  
<213> Bubalus arnee

<400> 94

Ala Pro Lys Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Cys Gly Arg  
 1 5 10 15

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

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

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

Leu Ser Ser Met Val Thr Val Pro Ala Ser Ser Leu Ser Ser Lys Ser  
 65 70 75 80

Tyr Thr Cys Asn Val Asn His Pro Ala Thr Thr Thr Lys Val Asp Lys  
 85 90 95

Arg Val Gly Thr Lys Thr Lys Pro Pro Cys Pro Ile Cys Pro Gly Cys  
 100 105 110

Glu Val Ala Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp  
 115 120 125

Thr Leu Met Ile Ser Gln Thr Pro Glu Val Thr Cys Val Val Val Asp  
 130 135 140

Val Ser Lys Glu His Ala Glu Val Gln Phe Ser Trp Tyr Val Asp Gly  
 145 150 155 160

Val Glu Val His Thr Ala Glu Thr Arg Pro Lys Glu Glu Gln Phe Asn  
 165 170 175

Ser Thr Tyr Arg Val Val Ser Val Leu Pro Ile Gln His Gln Asp Trp  
 180 185 190

Leu Lys Gly Lys Glu Phe Lys Cys Lys Val Asn Asn Val Asp Leu Pro  
 195 200 205

Ala Pro Ile Thr Arg Thr Ile Ser Lys Ala Ile Gly Gln Ser Arg Glu  
 210 215 220

Pro Gln Val Tyr Thr Leu Pro Pro Pro Ala Glu Glu Leu Ser Arg Ser  
 225 230 235 240

Lys Val Thr Val Thr Cys Leu Val Ile Gly Phe Tyr Pro Pro Asp Ile  
 245 250 255

His Val Glu Trp Lys Ser Asn Gly Gln Pro Glu Pro Glu Gly Asn Tyr  
 260 265 270

Arg Thr Thr Pro Pro Gln Gln Asp Val Asp Gly Thr Phe Phe Leu Tyr  
 275 280 285

Ser Lys Leu Ala Val Asp Lys Ala Arg Trp Asp His Gly Glu Thr Phe  
 290 295 300

Glu Cys Ala Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys  
 305 310 315 320

Ser Ile Ser Lys Thr Gln Gly Lys  
 325

<210> 95  
 <211> 987  
 <212> DNA  
 <213> Bubalus arnee

<400> 95  
 gcccccaaga cggccccatc ggtctaccct ctggccccct gcggcaggga cacgtctggc 60  
 cctaactgtg ccttgggctg cctggcctca agctacttcc ccgagccagt gaccatgacc 120  
 tggaactcgg gcgccctgac cagtggcgtg cataccttcc catccgtcct gcagccgtca 180  
 gggctctact ccctcagcag catggtgacc gtgccggcca gcagcctgtc cagcaagagc 240  
 tacacctgca atgtcaacca cccggccacc accaccaagg tggacaagcg tgttgggaaca 300  
 aagaccaaac caccatgtcc catatgccca ggctgtgaag tggccgggcc ctcggtcttc 360  
 atcttcctc caaaaccaa ggacaccctc atgatctccc agacccccga ggtcacgtgc 420  
 gtggtggtgg acgtcagcaa ggagcacgcc gaggtccagt tctcctggta cgtggacggc 480

gtagaggtgc acacggccga gacgagacca aaggaggagc agttcaacag cacctaccgt 540  
 gtggtcagcg tcctgcccac ccagcaccag gactggctga aggggaagga gttcaagtgc 600  
 aaggtcaaca acgtagacct cccagccccc atcacagga ccatctcaa ggctataggg 660  
 cagagccggg agccgcaggt gtacaccctg cccccacccg ccgaggagct gtccaggagc 720  
 aaagtaccg taacctgcct ggtcattggc ttctaccac ctgacatcca tgttgagtgg 780  
 aagagcaacg gacagccgga gccagagggc aattaccgca ccaccccgcc ccagcaggac 840  
 gtggacggga ctttcttct gtacagcaag ctgcggtgg acaaggcaag atgggaccat 900  
 ggagaaacat ttgagtgtgc ggtgatgcac gaggctctgc acaaccacta caccagaag 960  
 tccatctcca agactcaggg taaatga 987

<210> 96  
 <211> 328  
 <212> PRT  
 <213> Bubalus arnee

<400> 96

Ala Pro Lys Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Cys Gly Arg  
 1 5 10 15

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

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ala Leu Thr Ser  
 35 40 45

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

Leu Ser Ser Met Val Thr Val Pro Ala Ser Ser Leu Ser Ser Lys Ser  
 65 70 75 80

Tyr Thr Cys Asn Val Asn His Pro Ala Thr Thr Thr Lys Val Asp Lys  
 85 90 95

Arg Val Gly Ile His Gln Pro Gln Thr Cys Pro Ile Cys Pro Gly Cys  
 100 105 110

Glu Val Ala Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp  
115 120 125

Thr Leu Met Ile Ser Gln Thr Pro Glu Val Thr Cys Val Val Val Asp  
130 135 140

Val Ser Lys Glu His Ala Glu Val Gln Phe Ser Trp Tyr Val Asp Gly  
145 150 155 160

Val Glu Val His Thr Ala Glu Thr Arg Pro Lys Glu Glu Gln Phe Asn  
165 170 175

Ser Thr Tyr Arg Val Val Ser Val Leu Pro Ile Gln His Gln Asp Trp  
180 185 190

Leu Lys Gly Lys Glu Phe Lys Cys Lys Val Asn Asn Val Asp Leu Pro  
195 200 205

Ala Pro Ile Thr Arg Thr Ile Ser Lys Ala Ile Gly Gln Ser Arg Glu  
210 215 220

Pro Gln Val Tyr Thr Leu Pro Pro Pro Ala Glu Glu Leu Ser Arg Ser  
225 230 235 240

Lys Val Thr Leu Thr Cys Leu Val Ile Gly Phe Tyr Pro Pro Asp Ile  
245 250 255

His Val Glu Trp Lys Ser Asn Gly Gln Pro Glu Pro Glu Asn Thr Tyr  
260 265 270

Arg Thr Thr Pro Pro Gln Gln Asp Val Asp Gly Thr Phe Phe Leu Tyr  
275 280 285

Ser Lys Leu Ala Val Asp Lys Ala Arg Trp Asp His Gly Asp Lys Phe  
290 295 300

Glu Cys Ala Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys  
305 310 315 320

Ser Ile Ser Lys Thr Gln Gly Lys  
325

<210> 97  
<211> 987  
<212> DNA  
<213> Bubalus arnee

<400> 97  
gcccccaaga cggccccatc ggtctaccct ctggccccct gcggcaggga cgtgtctggc 60  
cctaactgtg ccttgggctg cctggcctca agctacttcc ccgagccagt gaccgtgacc 120  
tggaactcgg gcgccctgac cagtggcgtg cacaccttcc catccgtcct gcagccgtca 180  
gggctctact ccctcagcag catggtgacc gtgccggcca gcagcctgtc cagcaagagc 240  
tacacctgca atgtcaacca cccggccacc accaccaagg tggacaagcg tgttgggaata 300  
caccagccgc aaacatgtcc catatgcca ggctgtgaag tggccgggccc ctcggtcttc 360  
atcttccctc caaaaccaa ggacaccctc atgatctccc agacccccga ggtcacgtgc 420  
gtggtggtgg acgtcagcaa ggagcacgcc gaggtccagt tctcctggta cgtggacggc 480  
gtagagggtc acacggccga gacgagacca aaggaggagc agttcaacag cacctaccgt 540  
gtggtcagcg tcctgcccac ccagcaccag gactggctga aggggaagga gttcaagtgc 600  
aaggtcaaca acgtagacct cccagcccc atcacgagga ccattctcaa ggctataggg 660  
cagagccggg agccgcaggt gtacaccctg cccccacccg ccgaggagct gtccaggagc 720  
aaagtcacgc taacctgcct ggtcattggc ttctaccac ctgacatcca tgttgagtgg 780  
aagagcaacg gacagccgga gccagagaac acataccgca ccacccgcc ccagcaggac 840  
gtggacggga ctttcttct gtacagcaaa ctcgcggtgg acaaggcaag atgggacat 900  
ggagacaaat ttgagtgtgc ggtgatgcac gaggctctgc acaaccacta caccagaag 960  
tccatctcca agactcagg taaatga 987

<210> 98  
<211> 328  
<212> PRT  
<213> Bubalus arnee

<400> 98

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

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

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ala Leu Ser Ser  
 35 40 45

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

Leu Ser Ser Met Val Thr Val Pro Ala Ser Ser Leu Ser Ser Lys Ser  
 65 70 75 80

Tyr Thr Cys Asn Val Asn His Pro Ala Thr Thr Thr Lys Val Asp Lys  
 85 90 95

Arg Val Gly Thr Lys Thr Lys Pro Pro Cys Pro Ile Cys Pro Ala Cys  
 100 105 110

Glu Ser Pro Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp  
 115 120 125

Thr Leu Met Ile Ser Arg Thr Pro Gln Val Thr Cys Val Val Val Asp  
 130 135 140

Val Ser Gln Glu Asn Pro Glu Val Gln Phe Ser Trp Tyr Val Asp Gly  
 145 150 155 160

Val Glu Val His Thr Ala Gln Thr Arg Pro Lys Glu Glu Gln Phe Asn  
 165 170 175

Ser Thr Tyr Arg Val Val Ser Val Leu Pro Ile Gln His Gln Asp Trp  
 180 185 190

Leu Asn Gly Lys Glu Phe Lys Cys Lys Val Asn Asn Lys Asp Leu Pro  
 195 200 205

Ala Pro Ile Thr Arg Ile Ile Ser Lys Ala Lys Gly Gln Thr Arg Glu

210

215

220

Pro Gln Val Tyr Thr Leu Pro Pro His Ala Glu Glu Leu Ser Arg Ser  
225 230 235 240

Lys Val Ser Ile Thr Cys Leu Val Ile Gly Phe Tyr Pro Pro Asp Ile  
245 250 255

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

Arg Thr Thr Pro Pro Gln Gln Asp Val Asp Gly Thr Tyr Phe Leu Tyr  
275 280 285

Ser Lys Phe Ser Val Asp Lys Ala Ser Trp Gln Gly Gly Gly Ile Phe  
290 295 300

Gln Cys Ala Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys  
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Ser Ile Ser Lys Thr Pro Gly Lys  
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<210> 99

<211> 987

<212> DNA

<213> Bubalus arnee

<400> 99

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tggaactcgg gcgccctgtc cagtggcgtg cataccttcc catccgtcct gcagccgtca 180

gggctctact ccctcagcag catggtgacc gtgccggcca gcagcctgtc cagcaagagc 240

tacacctgca atgtcaacca cccggccacc accaccaagg tggacaagcg tgttggaaca 300

aagaccaaac caccatgtcc catatgccca gcctgtgaat caccagggcc ctcggtcttc 360

atcttccctc caaaaccaa ggacaccctc atgatctccc ggacaccca ggtcacgtgc 420

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 <211> 328  
 <212> PRT  
 <213> Bubalus arnee

<400> 100

Ala Pro Lys Thr Ala Pro Leu Val Tyr Pro Leu Ala Pro Cys Gly Arg  
1 5 10 15

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

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ala Leu Thr Ser  
35 40 45

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

Leu Ser Ser Met Val Thr Val Pro Ala Ser Ser Leu Ser Ser Lys Ser  
65 70 75 80

Tyr Thr Cys Asn Val Asn His Pro Ala Thr Thr Thr Lys Val Asp Lys  
85 90 95

Arg Val Gly Thr Lys Thr Lys Pro Pro Cys Pro Ile Cys Pro Ala Cys  
100 105 110

Glu Ser Pro Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp  
115 120 125

Thr Leu Met Ile Ser Arg Thr Pro Gln Val Thr Cys Val Val Val Asp  
130 135 140

Val Ser Gln Glu Asn Pro Glu Val Gln Phe Ser Trp Tyr Val Asp Gly  
145 150 155 160

Val Glu Val His Thr Ala Gln Thr Arg Pro Lys Glu Glu Gln Phe Asn  
165 170 175

Ser Thr Tyr Arg Val Val Ser Val Leu Pro Ile Gln His Gln Asp Trp  
180 185 190

Leu Asn Gly Lys Glu Phe Lys Cys Lys Val Asn Asn Lys Asp Leu Pro  
195 200 205

Ala Pro Ile Thr Arg Ile Ile Ser Lys Ala Lys Gly Gln Thr Arg Glu  
210 215 220

Pro Gln Val Tyr Thr Leu Pro Pro His Ala Glu Glu Leu Ser Arg Ser  
225 230 235 240

Lys Val Ser Ile Thr Cys Leu Val Ile Gly Phe Tyr Pro Pro Asp Ile  
245 250 255

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

Arg Thr Thr Pro Pro Gln Gln Asp Val Asp Gly Thr Tyr Phe Leu Tyr  
275 280 285

Ser Lys Phe Ser Val Asp Lys Ala Ser Trp Gln Gly Gly Gly Ile Phe  
290 295 300

Gln Cys Ala Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys  
305 310 315 320

Ser Ile Ser Lys Thr Pro Gly Lys  
325

<210> 101  
<211> 987  
<212> DNA  
<213> Bubalus arnee

<400> 101  
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tggaactcgg gcgccctgac cagtggcgtg cataccttcc catccgtcct gcagccgtca 180  
gggctctact ccctcagcag catggtgacc gtgccggcca gcagcctgtc cagcaagagc 240  
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gtggtagttg atgtgagcca ggagaacccg gaggtccagt tctcctggta cgtggacggc 480  
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gtggtcagcg tcctgccccat ccagcaccag gactggctga acgggaagga gttcaagtgc 600  
aaggtcaaca acaaagacct cccagcccc atcacaagga tcattctcaa ggccaaaggg 660  
cagacccggg agccgcaggt gtacaccctg cccccacacg ccgaggagct gtccaggagc 720  
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<210> 102  
<211> 333  
<212> PRT  
<213> Bubalus arnee

<400> 102

Ala Tyr Asn Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Cys Gly Arg

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

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

Glu Leu Ser Lys Ser Lys Val Ser Ile Thr Cys Leu Val Thr Gly Phe  
 245 250 255

Tyr Pro Pro Asp Ile Asp Val Glu Trp Gln Ser Asn Gly Gln Gln Glu  
 260 265 270

Pro Glu Gly Asn Tyr Arg Thr Thr Pro Pro Gln Gln Asp Val Asp Gly  
 275 280 285

Thr Tyr Phe Leu Tyr Ser Lys Leu Ala Val Asp Lys Val Arg Trp Gln  
 290 295 300

Arg Gly Asp Leu Phe Gln Cys Ala Val Met His Glu Ala Leu His Asn  
 305 310 315 320

His Tyr Thr Gln Lys Ser Ile Ser Lys Thr Gln Gly Lys  
 325 330

<210> 103  
 <211> 1002  
 <212> DNA  
 <213> Bubalus arnee

<400> 103  
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 tggaactcgg gtgccctgtc cagagtcgtg cataccttcc catccgtcct gcagccgtca 180  
 gggctctact ccctcagcag catggtgatc gtggcggcca gcagcctgtc caccctgagc 240  
 tacacgtgca acgtctacca cccggccacc aacaccaagg tggacaagcg tgttgacatc 300  
 gaacccccca caccatctg tcccgaatt tgctcatgcc cagctgcaga ggtcctggga 360  
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<210> 104  
 <211> 277  
 <212> PRT  
 <213> Bubalus arnee

<400> 104

Thr Phe Pro Ser Val Leu Gln Pro Ser Gly Leu Tyr Ser Leu Ser Ser  
 1 5 10 15

Met Val Thr Val Pro Ala Ser Ser Leu Ser Ser Lys Ser Tyr Thr Cys  
 20 25 30

Asn Val Asn His Pro Ala Thr Thr Thr Lys Val Asp Lys Arg Val Gly  
 35 40 45

Thr Lys Thr Lys Pro Pro Cys Pro Ile Cys Pro Ala Cys Glu Gly Pro  
 50 55 60

Gly Pro Ser Ala Phe Ile Phe Pro Pro Lys Pro Lys Asp Thr Leu Met  
 65 70 75 80

Ile Ser Arg Thr Pro Lys Val Thr Cys Val Val Val Asp Val Ser Gln  
 85 90 95

Glu Asn Pro Glu Val Gln Phe Ser Trp Tyr Val Asp Gly Val Glu Val  
 100 105 110

His Thr Ala Gln Thr Arg Pro Lys Glu Glu Gln Phe Asn Ser Thr Tyr  
 115 120 125

Arg Val Val Ser Val Leu Pro Ile Gln His Gln Asp Trp Leu Asn Gly  
 130 135 140

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

Thr Arg Ile Ile Ser Lys Ala Lys Gly Gln Thr Arg Glu Pro Gln Val  
 165 170 175

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

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

Trp Gln Arg Asn Gly Gln Pro Glu Pro Glu Gly Asn Tyr Arg Thr Thr  
 210 215 220

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

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

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Ile Phe  
 260 265 270

Lys Thr Pro Gly Lys  
 275

<210> 105  
 <211> 834  
 <212> DNA  
 <213> Bubalus arnee

<400> 105  
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accaaggtgg acaagcgtgt tggaacaaag accaaaccac catgtcccat atgccagcc 180  
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<210> 106  
 <211> 318  
 <212> PRT  
 <213> Bubalus arnee

<400> 106

Ala Pro Lys Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Cys Gly Arg  
 1 5 10 15

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

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ala Leu Thr Ser  
 35 40 45

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

Leu Ser Ser Met Val Thr Val Pro Ala Ser Ser Leu Ser Ser Lys Ser  
 65 70 75 80

Tyr Thr Cys Asn Val Asn His Pro Ala Thr Thr Thr Lys Val Asp Lys  
85 90 95

Arg Val Gly Ile His Gln Pro Gln Thr Cys Pro Ile Cys Pro Ala Cys  
100 105 110

Glu Gly Pro Gly Pro Ser Ala Phe Ile Phe Pro Pro Lys Pro Lys Asp  
115 120 125

Thr Leu Met Ile Ser Arg Thr Pro Lys Val Thr Cys Val Val Val Asp  
130 135 140

Val Ser Gln Glu Asn Pro Glu Val Gln Phe Ser Trp Tyr Val Asp Gly  
145 150 155 160

Val Glu Val His Thr Ala Gln Thr Arg Pro Lys Glu Glu Gln Phe Asn  
165 170 175

Ser Thr Tyr Arg Val Val Ser Val Leu Leu Ile Gln His Gln Asp Trp  
180 185 190

Leu Asn Gly Lys Glu Phe Lys Cys Lys Val Asn Asn Lys Asp Leu Pro  
195 200 205

Ala Pro Ile Thr Arg Ile Ile Ser Lys Ala Lys Gly Gln Thr Arg Glu  
210 215 220

Pro Gln Val Tyr Thr Leu Pro Pro Pro Thr Glu Glu Leu Ser Arg Ser  
225 230 235 240

Lys Val Thr Leu Thr Cys Leu Val Thr Gly Phe Tyr Pro Pro Asp Ile  
245 250 255

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

Arg Thr Thr Pro Pro Gln Gln Asp Val Asp Gly Thr Tyr Phe Leu Tyr  
275 280 285

Ser Lys Leu Ala Val Asp Lys Ala Ser Trp Gln Arg Gly Asp Thr Phe

290

295

300

Gln Cys Ala Val Met His Glu Ala Leu His Asn His Tyr Thr  
 305 310 315

&lt;210&gt; 107

&lt;211&gt; 955

&lt;212&gt; DNA

&lt;213&gt; Bubalus arnee

&lt;400&gt; 107

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tggaactcgg gcgccctgac cagtggcgtg cacaccttcc catccgtcct gcagccgtca      180
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&lt;210&gt; 108

&lt;211&gt; 323

&lt;212&gt; PRT

&lt;213&gt; Bubalus arnee

&lt;400&gt; 108

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

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

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ala Leu Thr Ser  
35 40 45

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

Leu Ser Ser Met Val Thr Val Pro Ala His Ser Leu Ser Ser Lys Arg  
65 70 75 80

Tyr Thr Cys Asn Val Asn His Pro Ala Thr Lys Thr Lys Val Asp Leu  
85 90 95

Cys Val Gly Arg Pro Cys Pro Ile Cys Pro Gly Cys Glu Val Ala Gly  
100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Ile Leu Met Ile  
115 120 125

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Lys Glu  
130 135 140

His Ala Glu Val Gln Phe Ser Trp Tyr Val Asp Gly Glu Glu Val His  
145 150 155 160

Thr Ala Glu Thr Arg Pro Lys Glu Glu Gln Phe Asn Ser Thr Tyr Arg  
165 170 175

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

Glu Phe Glu Cys Lys Val Asn Asn Glu Asp Leu Pro Gly Pro Ile Thr  
195 200 205

Arg Thr Ile Ser Lys Ala Lys Gly Val Val Arg Ser Pro Glu Val Tyr

210

215

220

Thr Leu Pro Pro Pro Ala Glu Glu Leu Ser Lys Ser Ile Val Thr Leu  
 225 230 235 240

Thr Cys Leu Val Lys Ser Ile Phe Pro Phe Ile His Val Glu Trp Lys  
 245 250 255

Ile Asn Gly Lys Pro Glu Pro Glu Asn Ala Tyr Arg Thr Thr Pro Pro  
 260 265 270

Gln Glu Asp Glu Asp Arg Thr Tyr Phe Leu Tyr Ser Lys Leu Ala Val  
 275 280 285

Asp Lys Ala Arg Trp Asp His Gly Glu Thr Phe Glu Cys Ala Val Met  
 290 295 300

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Ile Ser Lys Thr  
 305 310 315 320

Gln Gly Lys

<210> 109  
 <211> 975  
 <212> DNA  
 <213> Bubalus arnee

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<400> 109  
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 tggaactcgg gcgccctgac cagtggcgtg cacaccttcc catccgtcct gcagccgtca 180  
 gggctctact ccctcagcag catggtgacc gtgccggccc acagcttgct cagcaagcgc 240  
 tatacgtgca atgtcaacca cccagccacc aaaaccaagg tggacctgtg tggttgacga 300

|                                                                    |     |
|--------------------------------------------------------------------|-----|
| ccatgtccca tatgcccagg ctgtgaagtg gccgggccct cggtcttcat cttccctcca  | 360 |
| aaacccaagg acatcctcat gatctcccgg acccccgagg tcacgtgcgt ggtggtggac  | 420 |
| gtcagcaagg agcacgccga ggtccagttc tcctggtacg tggacggcga agaggtgcac  | 480 |
| acggccgaga cgaggccaaa ggaggagcag ttcaacagca cctaccgcgt ggtcagcgtc  | 540 |
| ctgcccattcc agcacgagga ctggctgaag gggaaggagt tcgagtgcaa ggtcaacaac | 600 |
| gaagacctcc caggcccat cagcaggacc atctccaagg ccaaaggggt ggtacggagc   | 660 |
| ccggagggtgt acacctgcc cccacccgcc gaggagctgt ccaagagcat agtcacgcta  | 720 |
| acctgcctgg tcaaaagcat cttcccgnct ttcatccatg ttgagtggaa aatcaacgga  | 780 |
| aaaccagagc cagagaacgc atatcgacc accccgcctc aggaggacga ggacaggacc   | 840 |
| tacttcctgt acagcaagct cgcggtggac aaggcaagat gggaccatgg agaaacattt  | 900 |
| gagtgtgcgg tgatgcacga ggctctgcac aaccactaca cccagaagtc catctccaag  | 960 |
| actcagggtg aatga                                                   | 975 |

<210> 110  
 <211> 317  
 <212> PRT  
 <213> Bubalus arnee

<400> 110

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Tyr | Asn | Thr | Ala | Pro | Ser | Val | Tyr | Pro | Leu | Ala | Pro | Cys | Gly | Arg |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Val | Ser | Asp | His | Asn | Val | Ala | Leu | Gly | Cys | Leu | Val | Ser | Ser | Tyr |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Pro | Glu | Pro | Val | Thr | Val | Thr | Trp | Asn | Trp | Gly | Ala | Gln | Thr | Ser |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Val | His | Thr | Phe | Pro | Ser | Val | Leu | Gln | Pro | Ser | Gly | Leu | Tyr | Ser |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ser | Ser | Thr | Val | Thr | Val | Pro | Ala | His | Ser | Leu | Ser | Ser | Lys | Cys |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Thr | Cys | Asn | Val | Asn | His | Pro | Ala | Thr | Thr | Thr | Lys | Val | Asp | Leu |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

85

90

95

Cys Val Gly Lys Lys Thr Lys Pro Arg Cys Pro Ile Cys Pro Gly Cys  
 100 105 110

Glu Val Ala Gly Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp  
 115 120 125

Ile Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp  
 130 135 140

Val Ser Lys Glu His Ala Glu Val Gln Phe Ser Trp Tyr Val Asp Gly  
 145 150 155 160

Glu Glu Val His Thr Ala Glu Thr Arg Pro Lys Glu Glu Gln Phe Asn  
 165 170 175

Ser Thr Tyr Arg Val Val Ser Val Leu Pro Ile Gln His Glu Asp Trp  
 180 185 190

Leu Lys Gly Lys Glu Phe Glu Cys Lys Val Asn Asn Glu Asp Leu Pro  
 195 200 205

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

Pro Glu Val Tyr Thr Leu Pro Pro Pro Ala Glu Glu Leu Ser Lys Ser  
 225 230 235 240

Ile Val Thr Leu Thr Cys Leu Val Lys Ser Phe Phe Pro Pro Phe Ile  
 245 250 255

His Val Glu Trp Lys Ile Asn Gly Lys Pro Glu Pro Glu Asn Ala Tyr  
 260 265 270

Arg Thr Thr Pro Pro Gln Glu Asp Glu Asp Gly Thr Tyr Phe Leu Tyr  
 275 280 285

Ser Lys Phe Ser Val Glu Lys Phe Arg Trp His Ser Gly Gly Ile His  
 290 295 300

Cys Ala Val Met His Glu Ala Leu His Asn His Tyr Thr  
 305 310 315

<210> 111  
 <211> 952  
 <212> DNA  
 <213> Bubalus arnee

<400> 111  
 gcctacaaca cagctccatc ggtctaccct ctggccccct gtggcaggga cgtgtctgat 60  
 cataacgtgg ccttgggctg cctgggtctca agctacttcc ccgagccagt gaccgtgacc 120  
 tggaactggg gcgcccagac cagtggcgtg cacaccttcc catccgtcct gcagccgtca 180  
 gggctctact ccctcagcag cacggtgacc gtgccggccc acagcttgtc cagcaagtgc 240  
 ttcacgtgca atgtcaacca cccggccacc accaccaagg tggacctgtg tgttggaaaa 300  
 aagaccaagc ctcgatgtcc catatgcccga ggctgtgaag tggccgggccc ctcggtcttc 360  
 atcttccctc caaaaccaa ggacatcctc atgatctccc ggacccccga ggtcacgtgc 420  
 gtggtggtgg acgtcagcaa ggagcacgcc gaggtccagt tctcctggta cgtggacggc 480  
 gaagagggtg acacggccga gacgagacca aaggaggagc agttcaacag cacttaccgc 540  
 gtggtcagcg tcctgcccac ccagcacgag gactggctga aggggaagga gttcgagtgc 600  
 aaggtcaaca acgaagacct cccaggcccc atcacgagga ccatctccaa ggccaaaggg 660  
 gtggtacgga gcccggagggt gtacaccctg cccccacccg ccgaggagct gtccaagagc 720  
 atagtcacgc taacctgcct ggtcaaaagc ttcttcccg ctttcatcca tgttgagtgg 780  
 aaaatcaacg gaaaaccaga gccagagaac gcataccgca ccaccccgcc ccaggaggac 840  
 gaggacggga cctacttcct gtacagcaag ttctcggtgg aaaagttcag gtggcacagt 900  
 ggaggcatcc actgtgcggt gatgcacgag gctctgcaca accactacac cc 952

<210> 112  
 <211> 314  
 <212> PRT  
 <213> Bubalus arnee

<400> 112

Ala Pro Lys Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Cys Gly Arg

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

Thr Leu Ser Pro Ser Ala Glu Glu Leu Ser Arg Ser Lys Val Ser Ile  
 225 230 235 240

Thr Cys Leu Val Thr Gly Phe Tyr Pro Pro Asp Ile Asp Val Glu Trp  
 245 250 255

Lys Ser Asn Gly Gln Pro Glu Pro Glu Gly Asn Tyr Arg Thr Thr Pro  
 260 265 270

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

Val Asp Lys Ala Ser Trp Gln Arg Gly Asp Pro Phe Gln Cys Ala Val  
 290 295 300

Met His Glu Ala Leu His Asn His Tyr Thr  
 305 310

<210> 113  
 <211> 943  
 <212> DNA  
 <213> Bubalus arnee

<400> 113  
 gcccccaaga cggccccatc ggtctaccct ctggccccct gcggcaggga cacgtctggc 60  
 cctaacgtgg ccttgggctg cctggcctca agctacttcc ccgagccagt gaccctgacc 120  
 tggaactcgg gcgccctgac cagtggcgtg cataccttcc catccgtcct gcagccgtca 180  
 gggctctact ccctcagcag catggtgacc gtgccggcca gcagcctgtc cagcaagagc 240  
 tacacctgca atgtcaacca cccggccacc accaccaagg tggacctgtg tgttggacga 300  
 ccatgtccca tatgcccagc ctgtgaaggg cccgggccct cggcttctcat cttccctcca 360  
 aaaccaagg acaccctcat gatctcccgg acaccccagg tcacgtgcgt ggtggtagat 420  
 gtgagccagg aaaaccgga ggtccagttc tcctggtatg tggacggtgt agaggtgcac 480  
 acggcccaga cgaggccaaa ggaggcgcag ttcaacagca cctaccgtgt ggtcagcgtc 540  
 ctgcccattcc agcacgagga ctggctgaag gggaaggagt tcgagtgcaa ggtcaacaac 600  
 aaagacctcc cagcccccat cacaaggatc atctccaagg ccaaagggcc gagccgggag 660

ccgcaggtgt acaccctgtc cccatccgcc gaggagctgt ccaggagcaa agtcagcata 720  
acctgcctgg tctactggctt ctaccacact gacatcgatg tcgagtggaa gagcaacgga 780  
cagccggagc cagagggcaa ttaccgcacc accccgcccc agcaggacgt ggacgggacc 840  
tacttcctgt acagcaagct cgcggtggac aaggccagct ggcagcgtgg agacccattc 900  
cagtgtgcgg tgatgcacga ggctctgcac aaccactaca ccc 943

<210> 114  
<211> 320  
<212> PRT  
<213> Bubalus arnee

<400> 114

Ala Pro Lys Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro Cys Gly Arg  
1 5 10 15

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

Phe Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ala Leu Thr Ser  
35 40 45

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

Leu Ser Ser Thr Val Thr Val Pro Ala Arg Ser Ser Ser Arg Lys Cys  
65 70 75 80

Phe Thr Cys Asn Val Asn His Pro Ala Thr Thr Thr Lys Val Asp Leu  
85 90 95

Cys Val Gly Arg Pro Cys Pro Ile Cys Pro Ala Cys Glu Gly Asn Gly  
100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile  
115 120 125

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu  
130 135 140

Asn Pro Glu Val Gln Phe Ser Trp Tyr Val Asp Gly Glu Glu Val His  
 145 150 155 160

Thr Ala Glu Thr Arg Pro Lys Glu Glu Gln Phe Asn Ser Thr Tyr Arg  
 165 170 175

Val Val Ser Val Leu Pro Ile Gln His Gln Asp Trp Leu Lys Gly Lys  
 180 185 190

Glu Phe Glu Cys Lys Val Asn Asn Lys Asp Leu Pro Ala Pro Ile Thr  
 195 200 205

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

Thr Leu Ser Pro Ser Ala Glu Glu Leu Ser Arg Ser Lys Val Ser Ile  
 225 230 235 240

Thr Cys Leu Val Thr Gly Phe Tyr Pro Pro Asp Ile Asp Val Glu Trp  
 245 250 255

Lys Ser Asn Gly Gln Pro Glu Pro Glu Gly Asn Tyr Arg Ser Thr Pro  
 260 265 270

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

Val Asp Lys Ala Arg Leu Gln Ser Gly Gly Ile His Cys Ala Val Met  
 290 295 300

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Ile Ser Lys Thr  
 305 310 315 320

<210> 115  
 <211> 960  
 <212> DNA  
 <213> Bubalus arnee

<400> 115  
 gcccccaaga cggccccatc ggtctaccct ctggccccct gcggcaggga cacgtctggc

|                                                                    |     |
|--------------------------------------------------------------------|-----|
| cctaacgtgg ccttgggctg cctggcctca agctacttcc ccgagccagt gaccgtgacc  | 120 |
| tggaactcgg gcgccctgac cagtggcgtg cacaccttcc catccgtcct gcagccgtca  | 180 |
| gggctctact ccctcagcag cacggtgacc gtgccggcca ggagctcgtc cagaaagtgc  | 240 |
| ttcacgtgca atgtcaacca cccggccacc accaccaagg tggacctgtg tgttggacga  | 300 |
| ccatgtccca tatgcccagc ctgtgaaggg aacgggccct cggctttcat cttccctcca  | 360 |
| aaaccaagg acaccctcat gatctcccgg acccccgagg tcacgtgcgt ggtggtagat   | 420 |
| gtgagccagg aaaaccgga ggtccagttc tcctggtacg tggacggcga agaggtgcac   | 480 |
| acggccgaga cgaggccaaa ggaggagcag ttcaacagca cctaccgtgt ggtcagcgtc  | 540 |
| ctgccccatcc agcaccagga ctggctgaag ggaaaggagt tcgagtgcaa ggtcaacaac | 600 |
| aaagacctcc cagccccat cacaaggatc atctccaagg ccaaagggcc gagccgggag   | 660 |
| ccgcaggtgt acaccctgtc cccatccgcc gaggagctgt ccaggagcaa agtcagcata  | 720 |
| acctgcctgg tctactggctt ctaccacct gacatcgatg tcgagtggaa gagcaacgga  | 780 |
| cagccggagc cagagggcaa ttaccgctcc accccgcccc aggaggacga ggacgggacc  | 840 |
| tacttcctgt acagcaaact cgcggtggac aaggcgaggt tgcagagtgg aggcattcac  | 900 |
| tgtgcggtga tgcacgaggc tctgcacaac cactacaccc agaagtccat ctccaagact  | 960 |

<210> 116  
 <211> 105  
 <212> PRT  
 <213> Bubalus arnee

<400> 116

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Pro | Lys | Ser | Ala | Pro | Ser | Val | Thr | Leu | Phe | Pro | Pro | Ser | Thr | Glu |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Leu | Ser | Ala | Asn | Lys | Ala | Thr | Leu | Val | Cys | Leu | Ile | Ser | Asp | Phe |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Pro | Gly | Ser | Met | Thr | Val | Ala | Arg | Lys | Ala | Asp | Gly | Ser | Thr | Ile |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Arg | Asn | Val | Glu | Thr | Thr | Arg | Ala | Ser | Lys | Gln | Ser | Asn | Ser | Lys |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |

Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Gly Ser Glu Trp Lys Ser  
65 70 75 80

Lys Gly Ser Tyr Ser Cys Glu Val Thr His Glu Gly Ser Thr Val Thr  
85 90 95

Lys Thr Val Lys Pro Ser Glu Cys Ser  
100 105

<210> 117  
<211> 318  
<212> DNA  
<213> Bubalus arnee

<400> 117  
cagcccaagt ccgcaccctc agtcaccctg ttcccaccct ccacggagga gctcagcgcc 60  
aacaaggcca ccctggtgtg tctcatcagc gacttctacc cgggtagcat gaccgtggcc 120  
aggaaggcag acggcagcac catcaccggg aacgtggaga ccaccgggc ctccaaacag 180  
agcaacagca agtacgcggc cagcagctac ctgagcctga cgggcagcga gtggaaatcg 240  
aaaggcagtt acagctgcga ggtcacgcac gaggggagca ccgtgacaaa gacagtgaag 300  
ccctcagagt gttcttag 318

<210> 118  
<211> 266  
<212> PRT  
<213> Bubalus arnee

<400> 118

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

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

Thr Phe Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp  
35 40 45

Lys Ala Val Val Pro Pro Cys Arg Pro Lys Pro Cys Asp Cys Cys Pro

50

55

60

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

Pro Lys Asp Thr Leu Thr Ile Ser Gly Thr Pro Glu Val Thr Cys Val  
85 90 95

Val Val Asp Val Gly His Asp Asp Pro Glu Val Lys Phe Ser Trp Phe  
100 105 110

Val Asp Asp Val Glu Val Asn Thr Ala Arg Thr Lys Pro Arg Glu Glu  
115 120 125

Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Ala Leu Pro Ile Gln His  
130 135 140

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

Gly Leu Pro Ala Pro Ile Val Arg Thr Ile Ser Arg Thr Lys Gly Gln  
165 170 175

Ala Arg Glu Pro Gln Val Tyr Val Leu Ala Pro Pro Gln Asp Glu Leu  
180 185 190

Ser Lys Ser Thr Val Ser Ile Thr Cys Met Val Thr Gly Phe Tyr Pro  
195 200 205

Asp Tyr Ile Ala Val Glu Trp Gln Lys Asp Gly Gln Pro Glu Ser Glu  
210 215 220

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

Phe Leu Tyr Ser Arg Leu Arg Val Asn Lys Asn Ser Trp Gln Glu Gly  
245 250 255

Gly Ala Tyr Thr Cys Val Val Met His Glu  
260 265

<210> 119  
 <211> 801  
 <212> DNA  
 <213> Bubalus arnee

<400> 119  
 gagcggcgtg cacaccttcc cggccgtcct tcagtcctcc gggctctact ctctcagcag 60  
 cacggtgacc gcgcccgccg gcgccacaaa aagccagacc ttcacctgca acgtagccca 120  
 cccggccagc agcaccaagg tggacaaggc tgttgttccc ccatgcagac cgaaaccctg 180  
 tgattgctgc ccaccccctg agctccccgg aggaccctct gtcttcatct tcccaccaa 240  
 acccaaggac accctcaca tctctggaac tcctgaggtc acgtgtgtgg tgggtggacgt 300  
 gggccacgat gaccccgagg tgaagttctc ctggttcgtg gacgatgtgg aggtaaacac 360  
 agccaggacg aagccaagag aggagcagtt caacagcacc taccgcgtgg tcagcgcctt 420  
 gcccatccag cacaacgact ggactggagg aaaggagttc aagtgaagg tctacaatga 480  
 aggcctccca gcccccatcg tgaggaccat ctccaggacc aaagggcagg cccgggagcc 540  
 gcaggtgtac gtcctggccc caccacagga cgagctcagc aaaagcacgg tcagcatcac 600  
 ttgcatggtc actggcttct acccagacta catcgccgta gagtggcaga aagatgggca 660  
 gcctgagtca gaggacaaat atggcacgac cccgccccag ctggacagcg atggctccta 720  
 cttcctgtac agcaggctca ggggtgaaca gaacagctgg caagaaggag gcgcctacac 780  
 gtgtgtagtg atgcatgagg c 801

<210> 120  
 <211> 309  
 <212> PRT  
 <213> Bubalus arnee

<400> 120  
 Ala Ser Ile Thr Ala Pro Lys Val Tyr Pro Leu Thr Ser Cys Arg Gly  
 1 5 10 15  
 Glu Thr Ser Ser Ser Thr Val Thr Leu Gly Cys Leu Val Ser Ser Tyr  
 20 25 30  
 Met Pro Glu Pro Val Thr Val Thr Trp Asn Ser Gly Ala Leu Lys Ser

35

40

45

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

Leu Ser Ser Thr Val Thr Ala Pro Ala Ser Ala Thr Lys Ser Gln Thr  
 65 70 75 80

Phe Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Thr  
 85 90 95

Ala Val Gly Phe Ser Ser Asp Cys Cys Lys Phe Pro Lys Pro Cys Val  
 100 105 110

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

Met Ile Thr Gly Asn Pro Glu Val Thr Cys Val Val Val Asp Val Gly  
 130 135 140

Arg Asp Asn Pro Glu Val Gln Phe Ser Trp Phe Val Gly Asp Val Glu  
 145 150 155 160

Val His Thr Gly Arg Ser Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr  
 165 170 175

Tyr Arg Val Val Ser Thr Leu Pro Ile Gln His Asn Asp Trp Thr Gly  
 180 185 190

Gly Lys Glu Phe Lys Cys Lys Val Asn Asn Lys Gly Leu Pro Ala Pro  
 195 200 205

Ile Val Arg Thr Ile Ser Arg Thr Lys Gly Gln Ala Arg Glu Pro Gln  
 210 215 220

Val Tyr Val Leu Ala Pro Pro Gln Glu Glu Leu Ser Lys Ser Thr Val  
 225 230 235 240

Ser Val Thr Cys Met Val Thr Gly Phe Tyr Pro Asp Tyr Ile Ala Val  
 245 250 255

Glu Trp His Arg Asp Arg Gln Ala Glu Ser Glu Asp Lys Tyr Arg Thr  
260 265 270

Thr Pro Pro Gln Leu Asp Ser Asp Gly Ser Tyr Phe Leu Tyr Ser Arg  
275 280 285

Leu Lys Val Asn Lys Asn Ser Trp Gln Glu Gly Gly Ala Tyr Thr Cys  
290 295 300

Val Val Met His Glu  
305

<210> 121  
<211> 929  
<212> DNA  
<213> Bubalus arnee

<400> 121  
gcctccatca cagccccgaa agtctaccct ctgacttctt gccgcgggga aacgtccagc 60  
tccaccgtga ccctgggctg cctgggtctcc agctacatgc ccgagccggt gaccgtgacc 120  
tggaactcgg gtgccctgaa gagcggcgtg cacaccttcc cggccgtcct tcagtcctct 180  
gggctctact ctctcagcag cacgggtgacc gcgcccgcga gcgccacaaa aagccagacc 240  
ttcacctgca acgtagccca cccggccagc agcaccaagg tggacacggc tgttgggttc 300  
tccagtgact gctgcaagtt tcctaagcct tgtgtgaggg gaccatctgt cttcatcttc 360  
ccgccgaaac ccaaagacac cctgatgatc acaggaaatc ccgaggtcac atgtgtggtg 420  
gtggacgtgg gccgggataa ccccagagtg cagttctcct ggttcgtggg tgatgtggag 480  
gtgcacacgg gcaggtcgaa gccgagagag gagcagttca acagcaccta ccgcgtggtc 540  
agcaccctgc ccatccagca caatgactgg actggaggaa aggagttcaa gtgcaaggtc 600  
aacaacaaag gcctcccagc ccccatcgtg aggaccatct ccaggaccaa agggcaggcc 660  
cgggagccgc aggtgtacgt cctggcccca cccaggaag agctcagcaa aagcacggtc 720  
agcgtcactt gcatggtcac tggcttctac ccagactaca tcgccgtaga gtggcataga 780  
gaccggcagg ctgagtcgga ggacaagtac cgcacgaccc cgccccagct ggacagcgat 840  
ggctcctact tcctgtacag caggctcaag gtgaacaaga acagctggca agaaggaggc 900

gcctacacgt gtgtagtgat gcatgaggc

929

<210> 122  
<211> 352  
<212> PRT  
<213> Bubalus arnee

<400> 122

Ala Ser Thr Thr Ala Pro Lys Val Tyr Pro Leu Ala Ser Ser Cys Gly  
1 5 10 15

Asp Thr Ser Ser Ser Thr Val Thr Leu Gly Cys Leu Val Ser Ser Tyr  
20 25 30

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

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

Leu Ser Ser Met Val Thr Met Pro Thr Ser Thr Ala Gly Thr Gln Thr  
65 70 75 80

Phe Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val Asp Thr  
85 90 95

Ala Val Thr Ala Arg His Pro Val Pro Lys Thr Pro Glu Thr Pro Ile  
100 105 110

His Pro Val Lys Pro Pro Thr Gln Glu Pro Arg Asp Glu Lys Thr Pro  
115 120 125

Cys Gln Cys Pro Lys Cys Pro Glu Pro Leu Gly Gly Leu Ser Val Phe  
130 135 140

Ile Phe Pro Pro Lys Pro Lys Asp Thr Leu Thr Ile Ser Gly Thr Pro  
145 150 155 160

Glu Val Thr Cys Val Val Val Asp Val Gly Gln Asp Asp Pro Glu Val  
165 170 175

Gln Phe Ser Trp Phe Val Asp Asp Val Glu Val His Thr Ala Arg Met  
180 185 190

Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Ala  
195 200 205

Leu Pro Ile Gln His Gln Asp Trp Leu Arg Glu Lys Glu Phe Lys Cys  
210 215 220

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

Arg Thr Lys Gly Gln Ala Arg Glu Pro Gln Val Tyr Val Leu Ala Pro  
245 250 255

Pro Arg Glu Glu Leu Ser Lys Ser Thr Leu Ser Leu Thr Cys Leu Ile  
260 265 270

Thr Gly Phe Tyr Pro Glu Glu Val Asp Val Glu Trp Gln Arg Asn Gly  
275 280 285

Gln Pro Glu Ser Glu Asp Lys Tyr His Thr Thr Pro Pro Gln Leu Asp  
290 295 300

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

Ser Trp Gln Glu Gly Asp His Tyr Thr Cys Ala Val Met His Glu Ala  
325 330 335

Leu Arg Asn His Tyr Lys Glu Lys Pro Ile Ser Arg Ser Pro Gly Lys  
340 345 350

<210> 123  
<211> 1059  
<212> DNA  
<213> Bubalus bubalis

<400> 123  
gcctccacca cagccccgaa agtctaccct ctggcatcca gctgcgggga cacgtccagc

|                                                                    |      |
|--------------------------------------------------------------------|------|
| tccaccgtga ccctgggctg cctggtctcc agctacatgc ccgagccggt gaccgtgacc  | 120  |
| tggaactcgg gtgccctgaa gaacggcgtg cacaccttcc cggccgtccg gcagtcctcc  | 180  |
| gggctctact ctctcagcag catggtgacc atgcccacca gcaccgcagg aaccagacc   | 240  |
| ttcacctgca acgtagccca cccggccagc agcaccaagg tggacacggc tgtcactgca  | 300  |
| aggcatccgg tcccgaagac accagagaca cctatccatc ctgtaaaacc cccaaccag   | 360  |
| gagcccagag atgaaaagac accctgccag tgtcccaaatt gcccagaacc tctgggagga | 420  |
| ctgtctgtct tcatcttccc accgaaaccc aaggacaccc tcacaatctc tggaacgccc  | 480  |
| gaggtcacgt gtgtgggtgt ggacgtgggc caggatgacc ccgaagtgca gttctcctgg  | 540  |
| ttcgtggatg acgtggaggt gcacacagcc aggatgaagc caagagagga gcagttcaac  | 600  |
| agcacctacc gcgtgggtcag cgccctgccc atccagcacc aggactggct gcgggaaaag | 660  |
| gagttcaagt gcaaggtcaa caacaaaggc ctcccggccc ccatcgtgag gaccatctcc  | 720  |
| aggaccaaag ggcaggcccg ggagccacag gtgtatgtcc tggccccacc ccgggaagag  | 780  |
| ctcagcaaaa gcacgtcag cctcacctgc ctaatcaccg gcttctaccc agaagaggta   | 840  |
| gacgtggagt ggagagaaaa tgggcagcct gagtcagagg acaagtacca cacgacccca  | 900  |
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31