SEQUENCE LISTING

<110> DNA SCRIPT

<120> TERMINAL DEOXYNUCLEOTIDYL TRANSFERASE VARIANTS AND USES THEREOF

<130> B2881PC

<160> 34

<170> PatentIn version 3.5

<210> 1
<211> 510
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> TdT PROTEIN

<400> 1

Met Asp Pro Leu Gln Ala Val His Leu Gly Pro Arg Lys Lys Arg Pro
1 5 10 15

Arg Gln Leu Gly Thr Pro Val Ala Ser Thr Pro Tyr Asp Ile Arg Phe
20 25 30

Arg Asp Leu Val Leu Phe Ile Leu Glu Lys Lys Met Gly Thr Thr Arg
35 40 45

Arg Ala Phe Leu Met Glu Leu Ala Arg Arg Lys Gly Phe Arg Val Glu
50 55 60

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

Gly Ser Asp Val Leu Glu Trp Leu Gln Leu Gln Asn Ile Lys Ala Ser
85 90 95

Ser Glu Leu Glu Leu Leu Asp Ile Ser Trp Leu Ile Glu Cys Met Gly
100 105 110

Ala Gly Lys Pro Val Glu Met Met Gly Arg His Gln Leu Val Val Asn
115 120 125

Arg Asn Ser Ser Pro Ser Pro Val Pro Gly Ser Gln Asn Val Pro Ala
130 135 140

Pro Ala Val Lys Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr
145 150 155 160

Leu Asn Asn Tyr Asn Gln Leu Phe Thr Asp Ala Leu Asp Ile Leu Ala
165 170 175

Glu Asn Asp Glu Leu Arg Glu Asn Glu Gly Ser Cys Leu Ala Phe Met
180 185 190

Arg Ala Ser Ser Val Leu Lys Ser Leu Pro Phe Pro Ile Thr Ser Met
195 200 205

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

Ile Glu Gly Ile Ile Glu Asp Gly Glu Ser Ser Glu Ala Lys Ala Val
225 230 235 240

Leu Asn Asp Glu Arg Tyr Lys Ser Phe Lys Leu Phe Thr Ser Val Phe
245 250 255

Gly Val Gly Leu Lys Thr Ala Glu Lys Trp Phe Arg Met Gly Phe Arg
260 265 270

Thr Leu Ser Lys Ile Gln Ser Asp Lys Ser Leu Arg Phe Thr Gln Met
275 280 285

Gln Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Cys Val Asn
290 295 300

Arg Pro Glu Ala Glu Ala Val Ser Met Leu Val Lys Glu Ala Val Val
305 310 315 320

Thr Phe Leu Pro Asp Ala Leu Val Thr Met Thr Gly Gly Phe Arg Arg
325 330 335

Gly Lys Met Thr Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu
340 345 350

Ala Thr Glu Asp Glu Glu Gln Gln Leu Leu His Lys Val Thr Asp Phe
355 360 365

Trp Lys Gln Gln Gly Leu Leu Leu Tyr Cys Asp Ile Leu Glu Ser Thr
370 375 380

Phe Glu Lys Phe Lys Gln Pro Ser Arg Lys Val Asp Ala Leu Asp His
385 390 395 400

Phe Gln Lys Cys Phe Leu Ile Leu Lys Leu Asp His Gly Arg Val His
405 410 415

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

Val Asp Leu Val Met Cys Pro Tyr Asp Arg Arg Ala Phe Ala Leu Leu
435 440 445

Gly Trp Thr Gly Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala
450 455 460

Thr His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Arg
465 470 475 480

Thr Lys Arg Val Phe Leu Glu Ala Glu Ser Glu Glu Glu Ile Phe Ala
485 490 495

His Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
500 505 510

<210> 2
<211> 18
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> PRIMER

<400> 2
aaaaaaaaaa aaaagggg 18

<210> 3
<211> 381

<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> truncated mouse sequence

<400> 3

Asn Ser Ser Pro Ser Pro Val Pro Gly Ser Gln Asn Val Pro Ala Pro
1 5 10 15

Ala Val Lys Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu
20 25 30

Asn Asn Tyr Asn Gln Leu Phe Thr Asp Ala Leu Asp Ile Leu Ala Glu
35 40 45

Asn Asp Glu Leu Arg Glu Asn Glu Gly Ser Cys Leu Ala Phe Met Arg
50 55 60

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

Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys Val Lys Ser Ile Ile
85 90 95

Glu Gly Ile Ile Glu Asp Gly Glu Ser Ser Glu Ala Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Lys Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Leu Lys Thr Ala Glu Lys Trp Phe Arg Met Gly Phe Arg Thr
130 135 140

Leu Ser Lys Ile Gln Ser Asp Lys Ser Leu Arg Phe Thr Gln Met Gln
145 150 155 160

Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Cys Val Asn Arg
165 170 175

Pro Glu Ala Glu Ala Val Ser Met Leu Val Lys Glu Ala Val Val Thr
180 185 190

Phe Leu Pro Asp Ala Leu Val Thr Met Thr Gly Gly Phe Arg Arg Gly
195 200 205

Lys Met Thr Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu Ala
210 215 220

Thr Glu Asp Glu Glu Gln Gln Leu Leu His Lys Val Thr Asp Phe Trp
225 230 235 240

Lys Gln Gln Gly Leu Leu Leu Tyr Cys Asp Ile Leu Glu Ser Thr Phe
245 250 255

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

Gln Lys Cys Phe Leu Ile Leu Lys Leu Asp His Gly Arg Val His Ser
275 280 285

Glu Lys Ser Gly Gln Gln Glu Gly Lys Gly Trp Lys Ala Ile Arg Val
290 295 300

Asp Leu Val Met Cys Pro Tyr Asp Arg Arg Ala Phe Ala Leu Leu Gly
305 310 315 320

Trp Thr Gly Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala Thr
325 330 335

His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Arg Thr
340 345 350

Lys Arg Val Phe Leu Glu Ala Glu Ser Glu Glu Glu Ile Phe Ala His
355 360 365

Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 4
<211> 380
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>

<223> Bovine truncated catalytic domain

<400> 4

Asp Tyr Ser Ala Thr Pro Asn Pro Gly Phe Gln Lys Thr Pro Pro Leu
1 5 10 15

Ala Val Lys Lys Ile Ser Gln Tyr Ala Cys Gln Arg Lys Thr Thr Leu
20 25 30

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

Asn Ser Glu Phe Lys Glu Asn Glu Val Ser Tyr Val Thr Phe Met Arg
50 55 60

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

Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys Val Lys Cys Ile Ile
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Gln Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Leu Lys Thr Ser Glu Lys Trp Phe Arg Met Gly Phe Arg Ser
130 135 140

Leu Ser Lys Ile Met Ser Asp Lys Thr Leu Lys Phe Thr Lys Met Gln
145 150 155 160

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

Ala Glu Ala Glu Ala Val Gly Val Leu Val Lys Glu Ala Val Trp Ala
180 185 190

Phe Leu Pro Asp Ala Phe Val Thr Met Thr Gly Gly Phe Arg Arg Gly
195 200 205

Lys Lys Ile Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Gly Ser
210 215 220

Ala Glu Asp Glu Glu Gln Leu Leu Pro Lys Val Ile Asn Leu Trp Glu
225 230 235 240

Lys Lys Gly Leu Leu Leu Tyr Tyr Asp Leu Val Glu Ser Thr Phe Glu
245 250 255

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

Lys Cys Phe Leu Ile Leu Lys Leu His His Gln Arg Val Asp Ser Ser
275 280 285

Lys Ser Asn Gln Gln Glu Gly Lys Thr Trp Lys Ala Ile Arg Val Asp
290 295 300

Leu Val Met Cys Pro Tyr Glu Asn Arg Ala Phe Ala Leu Leu Gly Trp
305 310 315 320

Thr Gly Ser Arg Gln Phe Glu Arg Asp Ile Arg Arg Tyr Ala Thr His
325 330 335

Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys Thr Lys
340 345 350

Arg Val Phe Leu Lys Ala Glu Ser Glu Glu Glu Ile Phe Ala His Leu
355 360 365

Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 5
<211> 380
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> Human truncated

<400> 5

Asp Tyr Ser Asp Ser Thr Asn Pro Gly Pro Pro Lys Thr Pro Pro Ile
1 5 10 15

Ala Val Gln Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu
20 25 30

Asn Asn Cys Asn Gln Ile Phe Thr Asp Ala Phe Asp Ile Leu Ala Glu
35 40 45

Asn Cys Glu Phe Arg Glu Asn Glu Asp Ser Cys Val Thr Phe Met Arg
50 55 60

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

Asp Thr Glu Gly Ile Pro Cys Leu Gly Ser Lys Val Lys Gly Ile Ile
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Gln Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Leu Lys Thr Ser Glu Lys Trp Phe Arg Met Gly Phe Arg Thr
130 135 140

Leu Ser Lys Val Arg Ser Asp Lys Ser Leu Lys Phe Thr Arg Met Gln
145 150 155 160

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

Ala Glu Ala Glu Ala Val Ser Val Leu Val Lys Glu Ala Val Trp Ala
180 185 190

Phe Leu Pro Asp Ala Phe Val Thr Met Thr Gly Gly Phe Arg Arg Gly
195 200 205

Lys Lys Met Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Gly Ser
210 215 220

Thr Glu Asp Glu Glu Gln Leu Leu Gln Lys Val Met Asn Leu Trp Glu
225 230 235 240

Lys Lys Gly Leu Leu Leu Tyr Tyr Asp Leu Val Glu Ser Thr Phe Glu
245 250 255

Lys Leu Arg Leu Pro Ser Arg Lys Val Asp Ala Leu Asp His Phe Gln
260 265 270

Lys Cys Phe Leu Ile Phe Lys Leu Pro Arg Gln Arg Val Asp Ser Asp
275 280 285

Gln Ser Ser Trp Gln Glu Gly Lys Thr Trp Lys Ala Ile Arg Val Asp
290 295 300

Leu Val Leu Cys Pro Tyr Glu Arg Arg Ala Phe Ala Leu Leu Gly Trp
305 310 315 320

Thr Gly Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala Thr His
325 330 335

Glu Arg Lys Met Ile Leu Asp Asn His Ala Leu Tyr Asp Lys Thr Lys
340 345 350

Arg Ile Phe Leu Lys Ala Glu Ser Glu Glu Glu Ile Phe Ala His Leu
355 360 365

Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 6
<211> 376
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> Chicken 1 truncated

<400> 6

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

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

Asn Cys Asn Lys Lys Phe Thr Asp Ala Phe Glu Ile Met Ala Glu Asn
35 40 45

Tyr Glu Phe Lys Glu Asn Glu Ile Phe Cys Leu Glu Phe Leu Arg Ala
50 55 60

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

Ile Gln Gly Leu Pro Cys Met Gly Asp Arg Val Arg Asp Val Ile Glu
85 90 95

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

Asp Glu Arg Tyr Lys Ser Phe Lys Glu Phe Thr Ser Val Phe Gly Val
115 120 125

Gly Val Lys Thr Ser Glu Lys Trp Phe Arg Met Gly Leu Arg Thr Val
130 135 140

Glu Glu Val Lys Ala Asp Lys Thr Leu Lys Leu Ser Lys Met Gln Arg
145 150 155 160

Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Cys Val Ser Lys Ala
165 170 175

Glu Ala Asp Ala Val Ser Ser Ile Val Lys Asn Thr Val Cys Thr Phe
180 185 190

Leu Pro Asp Ala Leu Val Thr Ile Thr Gly Gly Phe Arg Arg Gly Lys
195 200 205

Lys Ile Gly His Asp Ile Asp Phe Leu Ile Thr Ser Pro Gly Gln Arg
210 215 220

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

Ile Glu Ser Thr Phe Val Lys Glu Gln Ile Pro Ser Arg His Val Asp
245 250 255

Ala Met Asp His Phe Gln Lys Cys Phe Ala Ile Leu Lys Leu Tyr Gln
260 265 270

Pro Arg Val Asp Asn Ser Ser Tyr Asn Met Ser Lys Lys Cys Asp Met
275 280 285

Ala Glu Val Lys Asp Trp Lys Ala Ile Arg Val Asp Leu Val Ile Thr
290 295 300

Pro Phe Glu Gln Tyr Ala Tyr Ala Leu Leu Gly Trp Thr Gly Ser Arg
305 310 315 320

Gln Phe Gly Arg Asp Leu Arg Arg Tyr Ala Thr His Glu Arg Lys Met
325 330 335

Met Leu Asp Asn His Ala Leu Tyr Asp Lys Arg Lys Arg Val Phe Leu
340 345 350

Lys Ala Gly Ser Glu Glu Glu Ile Phe Ala His Leu Gly Leu Asp Tyr
355 360 365

Val Glu Pro Trp Glu Arg Asn Ala
370 375

<210> 7
<211> 387
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> Possum truncated

<400> 7

Ser Ala Asn Pro Asp Pro Thr Ala Gly Thr Leu Asn Ile Leu Pro Pro
1 5 10 15

Thr Thr Lys Thr Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Ile
20 25 30

Asn Asn His Asn Gln Arg Phe Thr Asp Ala Phe Glu Ile Leu Ala Lys
35 40 45

Asn Tyr Glu Phe Lys Glu Asn Asp Asp Thr Cys Leu Thr Phe Met Arg
50 55 60

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

Asp Thr Glu Gly Leu Pro Trp Ile Gly Asp Glu Val Lys Gly Ile Met
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Leu Glu Val Gln Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Gln Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

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

Leu Asn Lys Ile Arg Ser Asp Lys Thr Leu Lys Leu Thr Lys Met Gln
145 150 155 160

Lys Ala Gly Leu Cys Tyr Tyr Glu Asp Leu Ile Asp Cys Val Ser Lys
165 170 175

Ala Glu Ala Asp Ala Val Ser Leu Leu Val Gln Asp Ala Val Trp Thr
180 185 190

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

Lys Glu Phe Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Gly Ala
210 215 220

Glu Lys Glu Gln Glu Asp Gln Leu Leu Gln Lys Val Thr Asn Leu Trp
225 230 235 240

Lys Lys Gln Gly Leu Leu Leu Tyr Cys Asp Leu Ile Glu Ser Thr Phe
245 250 255

Glu Asp Leu Lys Leu Pro Ser Arg Lys Ile Asp Ala Leu Asp His Phe
260 265 270

Gln Lys Cys Phe Leu Ile Leu Lys Leu Tyr His His Lys Glu Asp Lys
275 280 285

Arg Lys Trp Glu Met Pro Thr Gly Ser Asn Glu Ser Glu Ala Lys Ser
290 295 300

Trp Lys Ala Ile Arg Val Asp Leu Val Val Cys Pro Tyr Asp Arg Tyr
305 310 315 320

Ala Phe Ala Leu Leu Gly Trp Ser Gly Ser Arg Gln Phe Glu Arg Asp
325 330 335

Leu Arg Arg Tyr Ala Thr His Glu Lys Lys Met Met Leu Asp Asn His
340 345 350

Ala Leu Tyr Asp Lys Thr Lys Lys Ile Phe Leu Lys Ala Lys Ser Glu
355 360 365

Glu Glu Ile Phe Ala His Leu Gly Leu Glu Tyr Ile Gln Pro Ser Glu
370 375 380

Arg Asn Ala
385

<210> 8
<211> 381
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> New truncated shrew

<400> 8

Asp Cys Pro Ala Ser His Asp Ser Ser Pro Gln Lys Thr Glu Ser Ala
1 5 10 15

Ala Val Gln Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu
20 25 30

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

Asn Cys Glu Phe Arg Glu Asn Glu Gly Ser Tyr Val Thr Tyr Met Arg
50 55 60

Ala Ala Ser Val Leu Lys Ser Leu Pro Phe Ser Ile Ile Ser Met Lys
65 70 75 80

Asp Thr Glu Gly Ile Pro Cys Leu Ala Asp Lys Val Lys Cys Val Ile
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Lys Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Leu Lys Thr Ala Glu Lys Trp Phe Arg Leu Gly Phe Arg Thr
130 135 140

Leu Ser Gly Ile Met Asn Asp Lys Thr Leu Lys Leu Thr His Met Gln
145 150 155 160

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

Ala Glu Ala Glu Ala Val Gly Val Leu Val Lys Glu Ala Val Trp Ala
180 185 190

Phe Leu Pro Asp Ala Ile Val Thr Met Thr Gly Gly Phe Arg Arg Gly
195 200 205

Lys Lys Val Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu Ala
210 215 220

Thr Glu Glu Gln Glu Gln Gln Leu Leu His Lys Val Ile Thr Phe Trp
225 230 235 240

Glu Lys Glu Gly Leu Leu Leu Tyr Cys Asp Leu Tyr Glu Ser Thr Phe
245 250 255

Glu Lys Leu Lys Met Pro Ser Arg Lys Val Asp Ala Leu Asp His Phe
260 265 270

Gln Lys Cys Phe Leu Ile Leu Lys Leu His Arg Glu Cys Val Asp Asp
275 280 285

Gly Thr Ser Ser Gln Leu Gln Gly Lys Thr Trp Lys Ala Ile Arg Val
290 295 300

Asp Leu Val Val Cys Pro Tyr Glu Cys Arg Ala Phe Ala Leu Leu Gly
305 310 315 320

Trp Thr Gly Ser Pro Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala Thr
325 330 335

His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys Thr
340 345 350

Lys Arg Lys Phe Leu Ser Ala Asp Ser Glu Glu Asp Ile Phe Ala His
355 360 365

Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 9
<211> 387
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> Python truncated

<400> 9

Glu Lys Tyr Gln Leu Pro Glu Asp Glu Asp Arg Ser Val Thr Ser Asp
1 5 10 15

Leu Asp Arg Asp Ser Ile Ser Glu Tyr Ala Cys Gln Arg Arg Thr Thr
20 25 30

Leu Lys Asn Tyr Asn Gln Lys Phe Thr Asp Ala Phe Glu Ile Leu Ala
35 40 45

Glu Asn Tyr Glu Phe Asn Glu Asn Lys Gly Phe Cys Thr Ala Phe Arg
50 55 60

Arg Ala Ala Ser Val Leu Lys Cys Leu Pro Phe Thr Ile Val Gln Val
65 70 75 80

His Asp Ile Glu Gly Val Pro Trp Met Gly Lys Gln Val Lys Gly Ile
85 90 95

Ile Glu Asp Ile Ile Glu Glu Gly Glu Ser Ser Lys Val Lys Ala Val
100 105 110

Leu Asp Asn Glu Asn Tyr Arg Ser Val Lys Leu Phe Thr Ser Val Phe
115 120 125

Gly Val Gly Leu Lys Thr Ser Asp Lys Trp Tyr Arg Met Gly Leu Arg
130 135 140

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

Gln Lys Ala Gly Phe Leu His Tyr Asp Asp Leu Thr Ser Cys Val Ser
165 170 175

Lys Ala Glu Ala Asp Ala Ala Ser Leu Ile Val Gln Asp Val Val Trp
180 185 190

Lys Ile Val Pro Asn Ala Ile Val Thr Ile Ala Gly Gly Phe Arg Arg
195 200 205

Gly Lys Gln Thr Gly His Asp Val Asp Phe Leu Ile Thr Val Pro Gly
210 215 220

Ser Lys Gln Glu Glu Glu Glu Leu Leu His Thr Val Ile Asp Ile Trp
225 230 235 240

Lys Lys Gln Glu Leu Leu Leu Tyr Tyr Asp Leu Ile Glu Ser Thr Phe
245 250 255

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

Gln Lys Cys Phe Ala Ile Leu Lys Val His Lys Glu Arg Glu Asp Lys
275 280 285

Gly Asn Ser Ile Arg Ser Lys Ala Phe Ser Glu Glu Glu Ile Lys Asp
290 295 300

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

Ala Phe Ala Leu Leu Gly Trp Thr Gly Ser Thr Gln Phe Glu Arg Asp
325 330 335

Leu Arg Arg Tyr Ala Thr His Glu Lys Lys Met Met Leu Asp Asn His
340 345 350

Ala Leu Tyr Asp Lys Thr Lys Lys Ile Phe Leu Asn Ala Ala Ser Glu
355 360 365

Glu Glu Ile Phe Ala His Leu Gly Leu Asp Tyr Leu Glu Pro Trp Glu
370 375 380

Arg Asn Ala
385

<210> 10
<211> 381
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> truncated dog

<400> 10

Asp Tyr Thr Ala Ser Pro Asn Pro Glu Leu Gln Lys Thr Leu Pro Val
1 5 10 15

Ala Val Lys Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu
20 25 30

Asn Asn Tyr Asn Asn Val Phe Thr Asp Ala Phe Glu Val Leu Ala Glu
35 40 45

Asn Tyr Glu Phe Arg Glu Asn Glu Val Phe Ser Leu Thr Phe Met Arg
50 55 60

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

Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Gln Val Lys Cys Ile Ile
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Gln Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Leu Lys Thr Ser Glu Lys Trp Phe Arg Met Gly Phe Arg Thr
130 135 140

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

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

Ala Glu Ala Glu Ala Val Gly Val Leu Val Lys Glu Ala Val Gly Ala
180 185 190

Phe Leu Pro Asp Ala Phe Val Thr Met Thr Gly Gly Phe Arg Arg Gly
195 200 205

Lys Lys Met Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Gly Ser
210 215 220

Thr Asp Glu Asp Glu Glu Gln Leu Leu Pro Lys Val Ile Asn Leu Trp
225 230 235 240

Glu Arg Lys Gly Leu Leu Leu Tyr Cys Asp Leu Val Glu Ser Thr Phe
245 250 255

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

Gln Lys Cys Phe Leu Ile Leu Lys Leu His His Gln Arg Val Asp Gly
275 280 285

Gly Lys Cys Ser Gln Gln Glu Gly Lys Thr Trp Lys Ala Ile Arg Val
290 295 300

Asp Leu Val Met Cys Pro Tyr Glu Arg Arg Ala Phe Ala Leu Leu Gly
305 310 315 320

Trp Thr Gly Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala Ser
325 330 335

His Glu Arg Lys Met Ile Leu Asp Asn His Ala Leu Tyr Asp Lys Thr
340 345 350

Lys Lys Ile Phe Leu Lys Ala Glu Ser Glu Glu Glu Ile Phe Ala His
355 360 365

Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 11
<211> 382
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> TRUNC MOLE

<400> 11

Gly Asp Cys Pro Ala Ser His Asp Ser Ser Pro Gln Lys Thr Glu Ser
1 5 10 15

Ala Ala Val Gln Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr
20 25 30

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

Glu Asn Cys Glu Phe Arg Glu Asn Glu Gly Ser Tyr Val Thr Tyr Met
50 55 60

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

Lys Asp Thr Glu Gly Ile Pro Cys Leu Ala Asp Lys Val Lys Cys Val
85 90 95

Ile Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val
100 105 110

Leu Asn Asp Glu Arg Tyr Lys Ser Phe Lys Leu Phe Thr Ser Val Phe
115 120 125

Gly Val Gly Leu Lys Thr Ala Glu Lys Trp Phe Arg Leu Gly Phe Arg
130 135 140

Thr Leu Ser Gly Ile Met Asn Asp Lys Thr Leu Lys Leu Thr His Met
145 150 155 160

Gln Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Cys Val Thr
165 170 175

Arg Ala Glu Ala Glu Ala Val Gly Val Leu Val Lys Glu Ala Val Trp
180 185 190

Ala Phe Leu Pro Asp Ala Ile Val Thr Met Thr Gly Gly Phe Arg Arg
195 200 205

Gly Lys Lys Val Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu
210 215 220

Ala Thr Glu Glu Gln Glu Gln Gln Leu Leu His Lys Val Ile Thr Phe
225 230 235 240

Trp Glu Lys Glu Gly Leu Leu Leu Tyr Cys Asp Leu Tyr Glu Ser Thr
245 250 255

Phe Glu Lys Leu Lys Met Pro Ser Arg Lys Val Asp Ala Leu Asp His
260 265 270

Phe Gln Lys Cys Phe Leu Ile Leu Lys Leu His Arg Glu Cys Val Asp
275 280 285

Asp Gly Thr Ser Ser Gln Leu Gln Gly Lys Thr Trp Lys Ala Ile Arg
290 295 300

Val Asp Leu Val Val Cys Pro Tyr Glu Cys Arg Ala Phe Ala Leu Leu
305 310 315 320

Gly Trp Thr Gly Ser Pro Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala
325 330 335

Thr His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys
340 345 350

Thr Lys Arg Lys Phe Leu Ser Ala Asp Ser Glu Glu Asp Ile Phe Ala
355 360 365

His Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 12
<211> 379
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> Pika trunk

<400> 12

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

Tyr Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu Asn Asn
20 25 30

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

Glu Phe Lys Glu Asn Glu Gly Cys Tyr Val Thr Tyr Met Arg Ala Ala
50 55 60

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

Glu Gly Ile Pro Cys Leu Glu Asp Lys Val Lys Ser Ile Met Glu Glu
85 90 95

Ile Ile Glu Glu Gly Glu Ser Ser Glu Val Lys Ala Val Leu Ser Asp
100 105 110

Glu Arg Tyr Gln Cys Phe Lys Leu Phe Thr Ser Val Phe Gly Val Gly
115 120 125

Leu Lys Thr Ser Glu Lys Trp Phe Arg Met Gly Phe Arg Ser Leu Ser
130 135 140

Asn Ile Arg Leu Asp Lys Ser Leu Lys Phe Thr Gln Met Gln Lys Ala
145 150 155 160

Gly Phe Arg Tyr Tyr Glu Asp Ile Val Ser Cys Val Thr Arg Ala Glu
165 170 175

Ala Glu Ala Val Asp Val Leu Val Asn Glu Ala Val Arg Ala Phe Leu
180 185 190

Pro Asp Ala Phe Ile Thr Met Thr Gly Gly Phe Arg Arg Gly Lys Lys
195 200 205

Ile Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu Leu Thr Glu
210 215 220

Glu Asp Glu Gln Gln Leu Leu His Lys Val Met Asn Leu Trp Glu Lys
225 230 235 240

Lys Gly Leu Leu Leu Tyr His Asp Leu Val Glu Ser Thr Phe Glu Lys
245 250 255

Leu Lys Gln Pro Ser Arg Lys Val Asp Ala Leu Asp His Phe Gln Lys
260 265 270

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

Cys Arg Gln Pro Glu Gly Lys Asp Trp Lys Ala Ile Arg Val Asp Leu
290 295 300

Val Met Cys Pro Tyr Glu Cys His Ala Phe Ala Leu Leu Gly Trp Thr
305 310 315 320

Gly Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala Ser His Glu
325 330 335

Arg Lys Met Ile Leu Asp Asn His Ala Leu Tyr Asp Lys Thr Lys Arg
340 345 350

Val Phe Leu Gln Ala Glu Asn Glu Glu Glu Ile Phe Ala His Leu Gly
355 360 365

Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375

<210> 13
<211> 384
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> TRUNC HEDGEHOG

<400> 13

Asp Ala Ser Phe Gly Ser Asn Pro Gly Ser Gln Asn Thr Pro Pro Leu
1 5 10 15

Ala Ile Lys Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Ser Leu
20 25 30

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

Asn His Glu Phe Arg Glu Asn Glu Val Ser Cys Val Ala Phe Met Arg
50 55 60

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

Asp Thr Lys Gly Ile Pro Cys Leu Gly Asp Lys Ala Lys Cys Val Ile
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Ile Leu
100 105 110

Asn Asp Glu Arg Tyr Gln Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Leu Lys Thr Ser Glu Lys Trp Phe Arg Met Gly Phe Arg Thr
130 135 140

Leu Asn Lys Ile Met Ser Asp Lys Thr Leu Lys Leu Thr Arg Met Gln
145 150 155 160

Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Cys Val Ala Lys
165 170 175

Ala Glu Ala Asp Ala Val Ser Val Leu Val Gln Glu Ala Val Trp Ala
180 185 190

Phe Leu Pro Asp Ala Met Val Thr Met Thr Gly Gly Phe Arg Arg Gly
195 200 205

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

Thr Glu Glu Glu Glu Gln Gln Leu Leu Pro Lys Val Ile Asn Phe Trp
225 230 235 240

Glu Arg Lys Gly Leu Leu Leu Tyr His Asp Leu Val Glu Ser Thr Phe
245 250 255

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

Gln Lys Cys Phe Leu Ile Leu Lys Leu His Leu Gln His Val Asn Gly
275 280 285

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

Ile Arg Val Asp Leu Val Met Cys Pro Tyr Glu Arg Arg Ala Phe Ala
305 310 315 320

Leu Leu Gly Trp Thr Gly Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg
325 330 335

Phe Ala Thr His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr
340 345 350

Asp Lys Thr Lys Arg Ile Phe Leu Lys Ala Glu Ser Glu Glu Glu Ile
355 360 365

Phe Ala His Leu Gly Leu Asp Tyr Ile Asp Pro Trp Glu Arg Asn Ala
370 375 380

<210> 14
<211> 381
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> truncated tree shrew

<400> 14

Asp His Ser Thr Ser Pro Ser Pro Gly Pro Gln Lys Thr Pro Ala Leu
1 5 10 15

Ala Val Gln Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu
20 25 30

Asn Asn Cys Asn Arg Val Phe Thr Asp Ala Phe Glu Thr Leu Ala Glu
35 40 45

Asn Tyr Glu Phe Arg Glu Asn Glu Asp Ser Ser Val Ile Phe Leu Arg
50 55 60

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

Asp Thr Glu Gly Leu Pro Cys Leu Gly Asp Lys Val Lys Cys Val Ile
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Asn Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Lys Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Leu Lys Thr Ser Glu Lys Trp Phe Arg Met Gly Phe Arg Thr
130 135 140

Leu Ser Arg Val Arg Ser Asp Lys Ser Leu His Leu Thr Arg Met Gln
145 150 155 160

Gln Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Ala Ser Cys Val Thr Arg
165 170 175

Ala Glu Ala Glu Ala Val Gly Val Leu Val Lys Glu Ala Val Gly Ala
180 185 190

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

Lys Lys Thr Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Gly Ser
210 215 220

Thr Glu Glu Lys Glu Glu Glu Leu Leu Gln Lys Val Leu Asn Leu Trp
225 230 235 240

Glu Lys Lys Gly Leu Leu Leu Tyr Tyr Asp Leu Val Glu Ser Thr Phe
245 250 255

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

Pro Lys Cys Phe Leu Ile Leu Lys Leu His His Gln Arg Val Asp Gly
275 280 285

Asp Lys Pro Ser Gln Gln Glu Gly Lys Ser Trp Lys Ala Ile Arg Val
290 295 300

Asp Leu Val Met Cys Pro Tyr Glu Arg His Ala Phe Ala Leu Leu Gly
305 310 315 320

Trp Thr Gly Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala Thr
325 330 335

His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys Thr
340 345 350

Lys Arg Val Phe Leu Lys Ala Glu Ser Glu Glu Asp Ile Phe Ala His
355 360 365

Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 15
<211> 394
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> TRUNCATED PLATYPUS

<400> 15

Leu Thr Asn Ser Ala Pro Ile Asn Cys Met Thr Glu Thr Pro Ser Leu
1 5 10 15

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

Asn Asn Cys Asn Gln Lys Phe Thr Asp Ala Phe Glu Ile Leu Ala Lys
35 40 45

Asp Phe Glu Phe Arg Glu Asn Glu Gly Ile Cys Leu Ala Phe Met Arg
50 55 60

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

Asp Ile Glu Gly Val Pro Trp Leu Gly Asp Gln Val Lys Ser Ile Ile
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Ser Val Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Arg Ser Phe Gln Leu Phe Asn Ser Val Phe Glu
115 120 125

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

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

Thr Leu Ser Thr Ser Leu Trp Asn Tyr Leu Pro Gly Phe Leu Tyr Tyr
165 170 175

Glu Asp Leu Val Ser Cys Val Ala Lys Glu Glu Ala Asp Ala Val Tyr
180 185 190

Leu Ile Val Lys Glu Ala Val Arg Ala Phe Leu Pro Glu Ala Leu Val
195 200 205

Thr Leu Thr Gly Gly Phe Arg Arg Gly Lys Lys Ile Gly His Asp Val
210 215 220

Asp Phe Leu Ile Ser Asp Pro Glu Ser Gly Gln Asp Glu Gln Leu Leu
225 230 235 240

Pro Asn Ile Ile Lys Leu Trp Glu Lys Gln Glu Leu Leu Leu Tyr Tyr
245 250 255

Asp Leu Val Glu Ser Thr Phe Glu Lys Thr Lys Ile Pro Ser Arg Lys
260 265 270

Val Asp Ala Met Asp His Phe Gln Lys Cys Phe Leu Ile Leu Lys Leu
275 280 285

His His Gln Lys Val Asp Ser Gly Arg Tyr Lys Pro Pro Pro Glu Ser
290 295 300

Lys Asn His Glu Ala Lys Asn Trp Lys Ala Ile Arg Val Asp Leu Val
305 310 315 320

Met Cys Pro Phe Glu Gln Tyr Ala Tyr Ala Leu Leu Gly Trp Thr Gly
325 330 335

Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala Thr His Glu Lys
340 345 350

Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys Thr Lys Lys Ile
355 360 365

Phe Leu Lys Ala Glu Ser Glu Glu Asp Ile Phe Thr His Leu Gly Leu
370 375 380

Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
385 390

<210> 16
<211> 384
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> TRUNCATED JERBOA

<400> 16

Ser Ser Glu Leu Glu Leu Leu Asp Val Ser Trp Leu Ile Glu Cys Met
1 5 10 15

Gly Ala Gly Lys Pro Val Glu Met Thr Gly Arg His Gln Leu Val Lys
20 25 30

Gln Thr Phe Cys Leu Pro Gly Phe Ile Leu Gln Asp Ala Phe Asp Ile
35 40 45

Leu Ala Glu Asn Cys Glu Phe Arg Glu Asn Glu Ala Ser Cys Val Glu
50 55 60

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

Ser Val Lys Asp Thr Glu Gly Ile Pro Trp Leu Gly Gly Lys Val Lys
85 90 95

Cys Val Ile Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys
100 105 110

Ala Leu Leu Asn Asp Glu Arg Tyr Lys Ser Phe Lys Leu Phe Thr Ser
115 120 125

Val Phe Gly Val Gly Leu Lys Thr Ala Glu Arg Trp Phe Arg Met Gly
130 135 140

Phe Arg Thr Leu Ser Thr Val Lys Leu Asp Lys Ser Leu Thr Phe Thr
145 150 155 160

Arg Met Gln Lys Ala Gly Phe Leu His Tyr Glu Asp Leu Val Ser Cys
165 170 175

Val Thr Arg Ala Glu Ala Glu Ala Val Ser Val Leu Val Gln Gln Ala
180 185 190

Val Val Ala Phe Leu Pro Asp Ala Leu Val Ser Met Thr Gly Gly Phe
195 200 205

Arg Arg Gly Lys Lys Ile Gly His Asp Val Asp Phe Leu Ile Thr Ser
210 215 220

Pro Glu Ala Thr Glu Glu Glu Glu Gln Gln Leu Leu His Lys Val Thr
225 230 235 240

Asn Phe Trp Glu Gln Lys Gly Leu Leu Leu Tyr Cys Asp His Val Glu
245 250 255

Ser Thr Phe Glu Lys Cys Lys Leu Pro Ser Arg Lys Val Asp Ala Leu
260 265 270

Asp His Phe Gln Lys Cys Phe Leu Ile Leu Lys Leu Tyr Arg Glu Arg
275 280 285

Val Asp Ser Val Lys Ser Ser Gln Gln Glu Gly Lys Gly Trp Lys Ala
290 295 300

Ile Arg Val Asp Leu Val Met Cys Pro Tyr Glu Cys Arg Ala Phe Ala
305 310 315 320

Leu Leu Gly Trp Thr Gly Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg
325 330 335

Tyr Ala Thr His Glu Arg Lys Met Arg Leu Asp Asn His Ala Leu Tyr
340 345 350

Asp Lys Thr Lys Arg Val Phe Leu Lys Ala Glu Ser Glu Glu Glu Ile
355 360 365

Phe Ala His Leu Gly Leu Glu Tyr Ile Glu Pro Leu Glu Arg Asn Ala
370 375 380

<210> 17
<211> 381
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> Mouse TdT mutant

<400> 17

Ser Gly Ser Pro Ser Pro Val Pro Gly Ser Gln Asn Val Pro Ala Pro
1 5 10 15

Val Val Lys Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu
20 25 30

Asn Asn Tyr Asn Gln Leu Phe Thr Asp Ala Leu Asp Ile Leu Ala Glu
35 40 45

Asn Asp Glu Phe Arg Glu Asn Glu Glu Ser Cys Leu Ala Phe Arg Arg
50 55 60

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

Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys Val Lys Ser Ile Ile
85 90 95

Glu Gly Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Lys Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Leu Lys Thr Ala Glu Lys Trp Phe Arg Met Gly Phe Arg Thr
130 135 140

Leu Ser Lys Ile Gln Ser Asp Lys Ser Leu Arg Phe Thr Gln Met Gln
145 150 155 160

Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Gly Val Asn Arg
165 170 175

Pro Glu Ala Glu Ala Val Ser Met Leu Val Lys Glu Ala Val Val Thr
180 185 190

Phe Leu Pro Asp Ala Leu Val Thr Met Thr Gly Gly Phe Arg Leu Gly
195 200 205

Lys Met Thr Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu Ala
210 215 220

Thr Glu Asp Glu Glu Gln Gln Leu Leu His Lys Val Thr Asp Phe Trp
225 230 235 240

Lys Gln Gln Gly Leu Leu Leu Tyr Cys Asp Ile Leu Glu Ser Thr Phe
245 250 255

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

Gln Lys Cys Phe Leu Ile Leu Lys Leu Asp His Pro Arg Val His Ser
275 280 285

Val Lys Ser Gly Gln Gln Glu Gly Lys Gly Trp Lys Ala Ile Arg Val
290 295 300

Asp Leu Val Met Cys Pro Tyr Asp Arg Arg Ala Phe Ala Leu Leu Gly
305 310 315 320

Trp Thr Gly Ser Pro Gln Phe Asn Arg Asp Leu Arg Arg Tyr Ala Thr
325 330 335

His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys Thr
340 345 350

Lys Arg Val Phe Leu Glu Ala Glu Ser Glu Glu Glu Ile Phe Ala His
355 360 365

Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 18
<211> 381
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> Mouse TdT mutant

<400> 18

Ser Gly Ser Pro Ser Pro Val Pro Gly Ser Gln Asn Val Pro Ala Pro
1 5 10 15

Val Val Lys Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu
20 25 30

Asn Asn Tyr Asn Glu Leu Phe Thr Arg Ala Leu Asp Ile Leu Ala Glu
35 40 45

Asn Asp Glu Phe Arg Glu Asn Glu Glu Ser Arg Asp Ala Phe Arg Arg
50 55 60

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

Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys Val Lys Arg Ile Ile
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Gln Ala Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Arg Lys Thr Ala Glu Lys Trp Phe Arg Met Gly Phe Arg Thr
130 135 140

Leu Glu Lys Ile Arg Ser Asp Lys Ser Leu Arg Phe Thr Gln Met Gln
145 150 155 160

Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Gly Val Asn Arg
165 170 175

Pro Glu Ala Glu Ala Val Ser Met Leu Val Lys Glu Ala Val Val Thr
180 185 190

Phe Leu Pro Asp Ala Leu Val Thr Met Thr Gly Gly Phe Arg Leu Gly
195 200 205

Lys Met Thr Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu Ala
210 215 220

Thr Glu Asp Glu Glu Gln Gln Leu Leu His Lys Val Thr Asp Phe Trp
225 230 235 240

Lys Gln Gln Gly Leu Leu Leu Tyr Cys Asp Ile Leu Glu Ser Thr Phe
245 250 255

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

Gln Lys Cys Phe Leu Ile Leu Lys Leu Asp His Pro Arg Val His Ser
275 280 285

Val Lys Ser Gly Gln Gln Glu Gly Lys Gly Trp Lys Ala Ile Arg Val
290 295 300

Asp Leu Val Met Cys Pro Tyr Asp Arg Arg Ala Phe Ala Leu Leu Gly
305 310 315 320

Trp Thr Gly Ser Ala Phe Phe Asn Arg Asp Leu Arg Arg Tyr Ala Thr
325 330 335

His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys Thr
340 345 350

Lys Arg Val Phe Leu Glu Ala Glu Ser Glu Glu Glu Ile Phe Ala His
355 360 365

Leu Gly Leu Asp Tyr Ile Glu Pro Arg Glu Arg Asn Ala
370 375 380

<210> 19
<211> 381
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> Mouse TdT mutant

<400> 19

Ser Gly Ser Pro Ser Pro Val Pro Gly Ser Gln Asn Val Pro Ala Pro
1 5 10 15

Val Val Lys Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu
20 25 30

Asn Asn Tyr Asn Glu Leu Phe Thr Arg Ala Leu Asp Ile Leu Ala Glu
35 40 45

Asn Asp Glu Phe Arg Glu Asn Glu Glu Ser Arg Asp Ala Phe Arg Arg
50 55 60

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

Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys Val Lys Arg Ile Ile
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Lys Ala Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Arg Lys Thr Ala Glu Lys Trp Phe Arg Met Gly Phe Arg Thr
130 135 140

Leu Glu Lys Ile Arg Ser Asp Lys Ser Leu Arg Phe Thr Gln Met Gln
145 150 155 160

Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Gly Val Asn Arg
165 170 175

Pro Glu Ala Glu Ala Val Ser Met Leu Val Lys Glu Ala Val Val Thr
180 185 190

Phe Leu Pro Asp Ala Leu Val Thr Met Thr Gly Gly Phe Arg Leu Gly
195 200 205

Lys Met Thr Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu Ala
210 215 220

Thr Glu Asp Glu Glu Gln Gln Leu Leu His Lys Val Thr Asp Phe Trp
225 230 235 240

Lys Gln Gln Gly Leu Leu Leu Tyr Cys Asp Ile Leu Glu Ser Thr Phe
245 250 255

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

Gln Lys Cys Phe Leu Ile Leu Lys Leu Asp His Pro Arg Val His Ser
275 280 285

Val Lys Ser Gly Gln Gln Glu Gly Lys Gly Trp Lys Ala Ile Arg Val
290 295 300

Asp Leu Val Met Cys Pro Tyr Asp Arg Arg Ala Phe Ala Leu Leu Gly
305 310 315 320

Trp Thr Gly Ser Ala Phe Phe Asn Arg Asp Leu Arg Arg Tyr Ala Thr
325 330 335

His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys Thr
340 345 350

Lys Arg Val Phe Leu Glu Ala Glu Ser Glu Glu Glu Ile Phe Ala His
355 360 365

Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 20
<211> 381
<212> PRT

<213> ARTIFICIAL SEQUENCE

<220>
<223> Mouse TdT mutant

<400> 20

Ser Gly Ser Pro Ser Pro Val Pro Gly Ser Gln Asn Val Pro Ala Pro
1 5 10 15

Val Val Lys Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu
20 25 30

Asn Asn Tyr Asn Glu Leu Phe Thr Arg Ala Leu Asp Ile Leu Ala Glu
35 40 45

Asn Asp Glu Phe Arg Glu Asn Glu Glu Ser Cys Leu Ala Phe Arg Arg
50 55 60

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

Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys Val Lys Arg Ile Ile
85 90 95

Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Lys Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Leu Lys Thr Ala Glu Lys Trp Phe Arg Met Gly Phe Arg Thr
130 135 140

Leu Glu Lys Ile Arg Ser Asp Lys Ser Leu Arg Phe Thr Gln Met Gln
145 150 155 160

Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Gly Val Asn Arg
165 170 175

Pro Glu Ala Glu Ala Val Ser Thr Leu Val Lys Glu Ala Val Val Thr
180 185 190

Phe Leu Pro Asp Ala Leu Val Thr Met Thr Gly Gly Phe Arg Leu Gly
195 200 205

His Met Thr Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu Ala
210 215 220

Thr Glu Asp Glu Glu Gln Gln Leu Leu His Lys Val Thr Asp Phe Trp
225 230 235 240

Lys Gln Gln Gly Leu Leu Leu Tyr Cys Asp Ile Leu Glu Ser Thr Phe
245 250 255

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

Gln Lys Cys Phe Leu Ile Leu Lys Leu Asp His Leu Arg Val His Ser
275 280 285

Ala Lys Ser Gly Gln Gln Glu Gly Lys Gly Trp Lys Ala Ile Arg Val
290 295 300

Asp Leu Val Met Cys Pro Tyr Asp Arg Arg Ala Phe Ala Leu Leu Gly
305 310 315 320

Trp Thr Gly Ser Val Gln Phe Lys Arg Asp Leu Arg Arg Tyr Ala Thr
325 330 335

His Glu Arg Lys Met Met Leu Asp Glu His Ala Leu Tyr Asp Lys Thr
340 345 350

Lys Arg Val Phe Leu Glu Ala Glu Ser Glu Glu Glu Ile Phe Ala His
355 360 365

Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 21
<211> 12
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> Test Polynucleotide p875

<400> 21
cagttaaaaa ct 12

<210> 22
<211> 11
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> Test Polynucleotide p876

<400> 22
gagttaaaac t 11

<210> 23
<211> 10
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> Test Polynucleotide p877

<400> 23
cagcaaggct 10

<210> 24
<211> 364
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> TdT(Puma wildtype)

<400> 24

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

Asn Asn Phe Asn His Ile Phe Thr Asp Ala Phe Glu Val Leu Ala Glu
20 25 30

Asn Tyr Glu Phe Lys Glu Asn Glu Ile Ser Ser Ala Thr Phe Met Arg
35 40 45

Ala Ala Ser Val Leu Lys Leu Pro Phe Thr Ile Ile Ser Met Lys Asp
50 55 60

Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys Val Lys Cys Val Ile Glu
65 70 75 80

Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu Asn
85 90 95

Asp Glu Arg Tyr Gln Ser Phe Lys Leu Phe Thr Ser Val Phe Gly Val
100 105 110

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

Ser Lys Ile Lys Ser Asp Lys Thr Leu Lys Phe Thr Gln Met Gln Lys
130 135 140

Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Cys Val Thr Arg Ala
145 150 155 160

Glu Ala Glu Ala Val Gly Val Leu Val Lys Glu Ala Val Trp Ala Phe
165 170 175

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

Lys Ile Gly His Asp Val Asp Phe Leu Ile Thr Ile Pro Gly Ser Thr
195 200 205

Asp Glu Glu Glu Glu Gln Leu Leu Pro Lys Val Ile Asn Leu Trp Gln
210 215 220

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

Lys Leu Lys Leu Pro Ser Arg Lys Val Asp Ala Leu Asp His Phe Gln
245 250 255

Lys Cys Phe Leu Ile Leu Lys Leu His His Gln Arg Val Asp Ser Gly
260 265 270

Lys Cys Ser Gln Gln Glu Gly Lys Thr Trp Lys Ala Ile Arg Val Asp
275 280 285

Leu Val Met Cys Pro Tyr Glu Arg Arg Ala Phe Ala Leu Leu Gly Trp
290 295 300

Thr Gly Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala Thr His
305 310 315 320

Glu Arg Lys Met Ile Leu Asp Asn His Ala Leu Tyr Asp Lys Thr Lys
325 330 335

Lys Ile Phe Leu Lys Ala Glu Ser Glu Glu Glu Ile Phe Ala His Leu
340 345 350

Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
355 360

<210> 25
<211> 362
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> wild type N139 reptilian

<400> 25

Tyr Ala Cys Gln Arg Arg Thr Thr Leu Asn Asn Tyr Asn Lys Lys Tyr
1 5 10 15

Thr Asp Ala Phe Glu Ile Leu Ala Glu Asn Tyr Glu Met Arg Glu Asn
20 25 30

Ala Gly Ala Cys Leu Ala Phe Arg Arg Ala Ala Ser Val Leu Lys Phe
35 40 45

Leu Pro Phe Ala Ile Val Arg Ser Asn Asp Ile Glu Gly Leu Pro Trp
50 55 60

Met Gly Glu Gln Val Lys Gly Ile Ile Glu Asp Ile Leu Glu Glu Gly
65 70 75 80

Gln Ser Pro Lys Val Glu Ala Val Leu Asn Asn Glu Lys Tyr Arg Ser
85 90 95

Phe Lys Leu Phe Thr Ser Val Phe Gly Val Ala Leu Lys Thr Ser Glu
100 105 110

Lys Trp Phe Met Met Gly Leu Arg Asn Leu Glu Asp Val Lys Leu Asn
115 120 125

Gln Asn Leu Gln Leu Thr Arg Met Gln Lys Ala Gly Leu Gln His Tyr
130 135 140

Glu Asp Leu Ile Ser Tyr Val Ser Lys Ala Glu Ala Asp Ser Thr Ser
145 150 155 160

Leu Met Val Lys Asp Thr Val Trp Lys Phe Ser Pro Ser Ala Leu Val
165 170 175

Thr Leu Thr Gly Gly Phe Arg Arg Gly Lys Lys Met Gly His Asp Val
180 185 190

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

His Leu Val Ile Asp Cys Trp Lys Lys Gln Gly Leu Leu Leu Tyr Tyr
210 215 220

Asp Leu Ile Glu Ser Thr Phe Glu Lys Ser Lys Leu Pro Ser Gln Arg
225 230 235 240

Val Asp Ala Leu Asp His Phe Gln Lys Cys Phe Ala Ile Leu Lys Leu
245 250 255

His Lys Glu Arg Val Asn Gln Gly Thr Ser Leu Pro Pro Val Ala Ser
260 265 270

Thr Val Glu Glu Ile Lys Asp Trp Lys Ala Ile Arg Val Asp Leu Val
275 280 285

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

Ser Arg Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala Thr His Glu Lys
305 310 315 320

Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys Thr Lys Lys Ile
325 330 335

Phe Leu Ser Ala Ser Ser Glu Glu Glu Ile Phe Ala His Leu Gly Leu
340 345 350

Asp Tyr Leu Glu Pro Trp Glu Arg Asn Ala
355 360

<210> 26
<211> 364
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> truncated shrew

<400> 26

Val Gln Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu Asn
1 5 10 15

Asn His Asn His Ile Phe Thr Asp Ala Phe Glu Ile Leu Ala Glu Asn
20 25 30

Cys Glu Phe Arg Glu Asn Glu Gly Ser Tyr Val Thr Tyr Met Arg Ala
35 40 45

Ala Ser Val Leu Lys Ser Leu Pro Phe Ser Ile Ile Ser Met Lys Asp
50 55 60

Thr Glu Gly Ile Pro Cys Leu Ala Asp Lys Val Lys Cys Val Ile Glu
65 70 75 80

Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu Asn
85 90 95

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

Gly Leu Lys Thr Ala Glu Lys Trp Phe Arg Leu Gly Phe Arg Thr Leu
115 120 125

Ser Gly Ile Met Asn Asp Lys Thr Leu Lys Leu Thr His Met Gln Lys
130 135 140

Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Cys Val Thr Arg Ala
145 150 155 160

Glu Ala Glu Ala Val Gly Val Leu Val Lys Glu Ala Val Trp Ala Phe
165 170 175

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

Lys Val Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu Ala Thr
195 200 205

Glu Glu Gln Glu Gln Gln Leu Leu His Lys Val Ile Thr Phe Trp Glu
210 215 220

Lys Glu Gly Leu Leu Leu Tyr Cys Asp Leu Tyr Glu Ser Thr Phe Glu
225 230 235 240

Lys Leu Lys Met Pro Ser Arg Lys Val Asp Ala Leu Asp His Phe Gln
245 250 255

Lys Cys Phe Leu Ile Leu Lys Leu His Arg Glu Cys Val Asp Asp Gly
260 265 270

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

Leu Val Val Cys Pro Tyr Glu Cys Arg Ala Phe Ala Leu Leu Gly Trp
290 295 300

Thr Gly Ser Pro Gln Phe Glu Arg Asp Leu Arg Arg Tyr Ala Thr His
305 310 315 320

Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys Thr Lys
325 330 335

Arg Lys Phe Leu Ser Ala Asp Ser Glu Glu Asp Ile Phe Ala His Leu
340 345 350

Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
355 360

<210> 27
<211> 369
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> BOVINE

<400> 27

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

Arg Lys Thr Thr Leu Asn Asn Tyr Asn Glu Ile Phe Thr Arg Ala Phe
20 25 30

Glu Ile Leu Ala Glu Asn Ser Glu Phe Lys Glu Asn Glu Glu Ser Tyr
35 40 45

Val Thr Phe Arg Arg Ala Ala Ser Val Leu Lys Ser Leu Pro Phe Thr
50 55 60

Ile Ile Ser Met Lys Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys
65 70 75 80

Val Lys Arg Ile Ile Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu
85 90 95

Val Lys Ala Val Leu Asn Asp Glu Arg Tyr Gln Ala Phe Lys Leu Phe
100 105 110

Thr Ser Val Phe Gly Val Gly Arg Lys Thr Ser Glu Lys Trp Phe Arg
115 120 125

Met Gly Phe Arg Ser Leu Glu Lys Ile Arg Ser Asp Lys Thr Leu Lys
130 135 140

Phe Thr Lys Met Gln Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val
145 150 155 160

Ser Gly Val Thr Arg Ala Glu Ala Glu Ala Val Gly Val Leu Val Lys
165 170 175

Glu Ala Val Trp Ala Phe Leu Pro Asp Ala Phe Val Thr Met Thr Gly
180 185 190

Gly Phe Arg Leu Gly Lys Lys Ile Gly His Asp Val Asp Phe Leu Ile
195 200 205

Thr Ser Pro Gly Ser Ala Glu Asp Glu Glu Gln Leu Leu Pro Lys Val
210 215 220

Ile Asn Leu Trp Glu Lys Lys Gly Leu Leu Leu Tyr Tyr Asp Leu Val
225 230 235 240

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

Leu Asp His Phe Gln Lys Cys Phe Leu Ile Leu Lys Leu His His Gln
260 265 270

Arg Val Asp Ser Ser Lys Ser Asn Gln Gln Glu Gly Lys Thr Trp Lys
275 280 285

Ala Ile Arg Val Asp Leu Val Met Cys Pro Tyr Glu Asn Arg Ala Phe
290 295 300

Ala Leu Leu Gly Trp Thr Gly Ser Ala Phe Phe Asn Arg Asp Ile Arg
305 310 315 320

Arg Tyr Ala Thr His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu
325 330 335

Tyr Asp Lys Thr Lys Arg Val Phe Leu Lys Ala Glu Ser Glu Glu Glu
340 345 350

Ile Phe Ala His Leu Gly Leu Asp Tyr Ile Glu Pro Arg Glu Arg Asn
355 360 365

Ala

<210> 28
<211> 374
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> LATMERIA

<400> 28

Asn Val Pro Ala Pro Ser Val Val Ala Ile Ser Gln Tyr Ala Cys Gln
1 5 10 15

Arg Arg Thr Thr Leu Asn Asn His Asn Lys Ile Phe Thr Asp Ala Phe
20 25 30

Glu Ile Leu Ala Glu Asn Tyr Glu Phe Asn Glu Asn Glu Gly Pro Cys
35 40 45

Leu Ala Phe Arg Arg Ala Ala Ser Leu Leu Lys Ser Leu Pro Tyr Ala
50 55 60

Ile Ser Ser Met Lys Asp Leu Glu Gly Leu Pro Cys Leu Gly Asp Gln
65 70 75 80

Thr Lys Ala Val Ile Glu Glu Ile Leu Glu Glu Gly Gln Ser Ser Lys
85 90 95

Val Gln Asp Val Leu Ser Asp Glu Arg Tyr Lys Ser Ile Lys Leu Phe
100 105 110

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

Lys Gly Phe Arg Thr Leu Glu Glu Val Gln Ala Asp Lys Glu Ile Lys
130 135 140

Leu Thr Lys Met Gln Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Ile Ser
145 150 155 160

Ser Ala Val Thr Lys Ala Glu Ala Glu Ala Ile Gly Gln Ile Ile Glu
165 170 175

Asp Thr Val Arg Leu Phe Ala Pro Asp Ala Ile Val Thr Leu Thr Gly
180 185 190

Gly Phe Arg Leu Gly Lys Lys Ile Gly His Asp Val Asp Phe Leu Ile
195 200 205

Thr Thr Pro Glu Thr Gly Asn Glu Asn Gly Leu Leu His Lys Val Ile
210 215 220

Asn Val Leu Gln Asn Gln Gly Ile Leu Leu Tyr Tyr Asp Ile Val Glu
225 230 235 240

Ser Thr Phe Asp Lys Thr Arg Leu Pro Ser Arg Lys Val Asp Ala Leu
245 250 255

Asp His Phe Gln Lys Cys Phe Ala Ile Leu Lys Leu His Lys Gln Lys
260 265 270

Val Asn Thr Ser Asn Ser Glu Glu Ala Glu Glu Pro Ser Asn Thr Glu
275 280 285

Thr Lys Asp Trp Lys Ala Ile Arg Val Asp Leu Val Ile Thr Pro Phe
290 295 300

Asp Gln Tyr Ala Phe Ala Leu Leu Gly Trp Thr Gly Ser Ala Phe Phe
305 310 315 320

Asn Arg Asp Leu Arg Arg Phe Ala Thr His Glu Arg Lys Met Met Leu
325 330 335

Asp Asn His Ala Leu Tyr Asp Lys Thr Lys Lys Ile Phe Leu Pro Ala
340 345 350

Lys Thr Glu Glu Asp Ile Phe Ala His Leu Gly Leu Asp Tyr Ile Glu
355 360 365

Pro Trp Glu Arg Asn Ala
370

<210> 29
<211> 370
<212> PRT

<213> ARTIFICIAL SEQUENCE

<220>
<223> PUMA

<400> 29

Lys Thr Glu Ser Ala Val Val Lys Lys Ile Pro Leu Tyr Ala Cys Gln
1 5 10 15

Arg Arg Thr Thr Leu Asn Asn Phe Asn Glu Ile Phe Thr Arg Ala Phe
20 25 30

Glu Val Leu Ala Glu Asn Tyr Glu Phe Lys Glu Asn Glu Ile Ser Ser
35 40 45

Ala Thr Phe Arg Arg Ala Ala Ser Val Leu Lys Ser Leu Pro Phe Thr
50 55 60

Ile Ile Ser Met Lys Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys
65 70 75 80

Val Lys Arg Val Ile Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu
85 90 95

Val Lys Ala Val Leu Asn Asp Glu Arg Tyr Gln Ala Phe Lys Leu Phe
100 105 110

Thr Ser Val Phe Gly Val Gly Leu Lys Thr Ser Glu Lys Trp Phe Arg
115 120 125

Met Gly Phe Arg Thr Leu Glu Lys Ile Lys Ser Asp Lys Thr Leu Lys
130 135 140

Phe Thr Gln Met Gln Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val
145 150 155 160

Ser Gly Val Thr Arg Ala Glu Ala Glu Ala Val Gly Val Leu Val Lys
165 170 175

Glu Ala Val Trp Ala Phe Leu Pro Asp Ala Phe Val Thr Met Thr Gly
180 185 190

Gly Phe Arg Leu Gly Lys Lys Ile Gly His Asp Val Asp Phe Leu Ile
195 200 205

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

Val Ile Asn Leu Trp Gln Arg Lys Glu Leu Leu Leu Tyr Tyr Asp Leu
225 230 235 240

Val Glu Ser Thr Phe Glu Lys Leu Lys Leu Pro Ser Arg Lys Val Asp
245 250 255

Ala Leu Asp His Phe Gln Lys Cys Phe Leu Ile Leu Lys Leu His His
260 265 270

Gln Arg Val Asp Ser Gly Lys Cys Ser Gln Gln Glu Gly Lys Thr Trp
275 280 285

Lys Ala Ile Arg Val Asp Leu Val Met Cys Pro Tyr Glu Arg Arg Ala
290 295 300

Phe Ala Leu Leu Gly Trp Thr Gly Ser Ala Phe Phe Asn Arg Asp Leu
305 310 315 320

Arg Arg Tyr Ala Thr His Glu Arg Lys Met Ile Leu Asp Asn His Ala
325 330 335

Leu Tyr Asp Lys Thr Lys Lys Ile Phe Leu Lys Ala Glu Ser Glu Glu
340 345 350

Glu Ile Phe Ala His Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg
355 360 365

Asn Ala
370

<210> 30
<211> 370
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> N139

<400> 30

Lys Thr Glu Ser Ala Val Val Lys Lys Ile Pro Leu Tyr Ala Cys Gln
1 5 10 15

Arg Arg Thr Thr Leu Asn Asn Phe Asn Glu Ile Phe Thr Arg Ala Phe
20 25 30

Glu Val Leu Ala Glu Asn Tyr Glu Phe Lys Glu Asn Glu Ile Ser Ser
35 40 45

Ala Thr Phe Arg Arg Ala Ala Ser Val Leu Lys Ser Leu Pro Phe Thr
50 55 60

Ile Ile Ser Met Lys Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys
65 70 75 80

Val Lys Arg Val Ile Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu
85 90 95

Val Lys Ala Val Leu Asn Asp Glu Arg Tyr Gln Ala Phe Lys Leu Phe
100 105 110

Thr Ser Val Phe Gly Val Gly Leu Lys Thr Ser Glu Lys Trp Phe Arg
115 120 125

Met Gly Phe Arg Thr Leu Glu Lys Ile Lys Ser Asp Lys Thr Leu Lys
130 135 140

Phe Thr Gln Met Gln Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val
145 150 155 160

Ser Gly Val Thr Arg Ala Glu Ala Glu Ala Val Gly Val Leu Val Lys
165 170 175

Glu Ala Val Trp Ala Phe Leu Pro Asp Ala Phe Val Thr Met Thr Gly
180 185 190

Gly Phe Arg Leu Gly Lys Lys Ile Gly His Asp Val Asp Phe Leu Ile
195 200 205

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

Val Ile Asn Leu Trp Gln Arg Lys Glu Leu Leu Leu Tyr Tyr Asp Leu
225 230 235 240

Val Glu Ser Thr Phe Glu Lys Leu Lys Leu Pro Ser Arg Lys Val Asp
245 250 255

Ala Leu Asp His Phe Gln Lys Cys Phe Leu Ile Leu Lys Leu His His
260 265 270

Gln Arg Val Asp Ser Gly Lys Cys Ser Gln Gln Glu Gly Lys Thr Trp
275 280 285

Lys Ala Ile Arg Val Asp Leu Val Met Cys Pro Tyr Glu Arg Arg Ala
290 295 300

Phe Ala Leu Leu Gly Trp Thr Gly Ser Ala Phe Phe Asn Arg Asp Leu
305 310 315 320

Arg Arg Tyr Ala Thr His Glu Arg Lys Met Ile Leu Asp Asn His Ala
325 330 335

Leu Tyr Asp Lys Thr Lys Lys Ile Phe Leu Lys Ala Glu Ser Glu Glu
340 345 350

Glu Ile Phe Ala His Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg
355 360 365

Asn Ala
370

<210> 31
<211> 370
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> SHREW

<400> 31

Asn Val Pro Ala Pro Val Val Gln Lys Ile Ser Gln Tyr Ala Cys Gln

1 5 10 15

Arg Arg Thr Thr Leu Asn Asn His Asn His Ile Phe Thr Asp Ala Phe
20 25 30

Glu Ile Leu Ala Glu Asn Asp Glu Phe Arg Glu Asn Glu Glu Ser Arg
35 40 45

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

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

Val Lys Arg Val Ile Glu Glu Ile Ile Glu Asp Gly Glu Ser Ser Glu
85 90 95

Val Lys Ala Val Leu Asn Asp Glu Arg Tyr Lys Ala Phe Lys Leu Phe
100 105 110

Thr Ser Val Phe Gly Val Gly Arg Lys Thr Ala Glu Lys Trp Phe Arg
115 120 125

Leu Gly Phe Arg Thr Leu Glu Gly Ile Arg Asn Asp Lys Thr Leu Lys
130 135 140

Leu Thr His Met Gln Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val
145 150 155 160

Ser Gly Val Thr Arg Ala Glu Ala Glu Ala Val Gly Val Leu Val Lys
165 170 175

Glu Ala Val Trp Ala Phe Leu Pro Asp Ala Ile Val Thr Met Thr Gly
180 185 190

Gly Phe Arg Leu Gly Lys Lys Val Gly His Asp Val Asp Phe Leu Ile
195 200 205

Thr Ser Pro Glu Ala Thr Glu Glu Gln Glu Gln Gln Leu Leu His Lys
210 215 220

Val Ile Thr Phe Trp Glu Lys Glu Gly Leu Leu Leu Tyr Cys Asp Leu
225 230 235 240

Tyr Glu Ser Thr Phe Glu Lys Leu Lys Met Pro Ser Arg Thr Val Asp
245 250 255

Ala Leu Asp His Phe Gln Lys Cys Phe Leu Ile Leu Lys Leu His Arg
260 265 270

Glu Ser Val Asp Asp Gly Thr Ser Ser Gln Leu Gln Gly Lys Thr Trp
275 280 285

Lys Ala Ile Arg Val Asp Leu Val Val Cys Pro Tyr Glu Cys Arg Ala
290 295 300

Phe Ala Leu Leu Gly Trp Thr Gly Ser Pro Phe Phe Asn Arg Asp Leu
305 310 315 320

Arg Arg Tyr Ala Thr His Glu Arg Lys Met Met Leu Asp Asn His Ala
325 330 335

Leu Tyr Asp Lys Thr Lys Arg Lys Phe Leu Ser Ala Asp Ser Glu Glu
340 345 350

Asp Ile Phe Ala His Leu Gly Leu Asp Tyr Ile Glu Pro Arg Glu Arg
355 360 365

Asn Ala
370

<210> 32
<211> 381
<212> PRT
<213> ARTIFICIAL SEQUENCE

<220>
<223> M27

<400> 32

Asn Ser Ser Pro Ser Pro Val Pro Gly Ser Gln Asn Val Pro Ala Pro
1 5 10 15

Val Val Lys Lys Ile Ser Gln Tyr Ala Cys Gln Arg Arg Thr Thr Leu

20 25 30

Asn Asn Tyr Asn Gln Leu Phe Thr Asp Ala Leu Asp Ile Leu Ala Glu
35 40 45

Asn Asp Glu Phe Arg Glu Asn Glu Glu Ser Cys Leu Ala Phe Arg Arg
50 55 60

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

Asp Thr Glu Gly Ile Pro Cys Leu Gly Asp Lys Val Lys Ser Ile Ile
85 90 95

Glu Gly Ile Ile Glu Asp Gly Glu Ser Ser Glu Val Lys Ala Val Leu
100 105 110

Asn Asp Glu Arg Tyr Lys Ser Phe Lys Leu Phe Thr Ser Val Phe Gly
115 120 125

Val Gly Leu Lys Thr Ala Glu Lys Trp Phe Arg Met Gly Phe Arg Thr
130 135 140

Leu Ser Lys Ile Gln Ser Asp Lys Ser Leu Arg Phe Thr Gln Met Gln
145 150 155 160

Lys Ala Gly Phe Leu Tyr Tyr Glu Asp Leu Val Ser Gly Val Asn Arg
165 170 175

Pro Glu Ala Glu Ala Val Ser Met Leu Val Lys Glu Ala Val Val Thr
180 185 190

Phe Leu Pro Asp Ala Leu Val Thr Met Thr Gly Gly Phe Arg Leu Gly
195 200 205

Lys Met Thr Gly His Asp Val Asp Phe Leu Ile Thr Ser Pro Glu Ala
210 215 220

Thr Glu Asp Glu Glu Gln Gln Leu Leu His Lys Val Thr Asp Phe Trp
225 230 235 240

Lys Gln Gln Gly Leu Leu Leu Tyr Cys Asp Ile Leu Glu Ser Thr Phe
245 250 255

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

Gln Lys Cys Phe Leu Ile Leu Lys Leu Asp His Pro Arg Val His Ser
275 280 285

Val Lys Ser Gly Gln Gln Glu Gly Lys Gly Trp Lys Ala Ile Arg Val
290 295 300

Asp Leu Val Met Cys Pro Tyr Asp Arg Arg Ala Phe Ala Leu Leu Gly
305 310 315 320

Trp Thr Gly Ser Pro Gln Phe Asn Arg Asp Leu Arg Arg Tyr Ala Thr
325 330 335

His Glu Arg Lys Met Met Leu Asp Asn His Ala Leu Tyr Asp Lys Thr
340 345 350

Lys Arg Val Phe Leu Glu Ala Glu Ser Glu Glu Glu Ile Phe Ala His
355 360 365

Leu Gly Leu Asp Tyr Ile Glu Pro Trp Glu Arg Asn Ala
370 375 380

<210> 33
<211> 20
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> PRIMER

<400> 33
taatacgact cactataggg 20

<210> 34
<211> 19
<212> DNA
<213> ARTIFICIAL SEQUENCE

<220>
<223> PRIMER

<400> 34
gctagttatt gctcagcgg 19