

SEQUENCE LISTING

<110> Pieris Pharmaceuticals GmbH

<120> Lipocalin muteins with binding affinity for LAG-3

<130> PIE15921PCT

<150> EP17151945.7

<151> 2017-01-18

<160> 106

<170> PatentIn version 3.5

<210> 1

<211> 158

<212> PRT

<213> Homo sapiens

<400> 1

His	His	Leu	Leu	Ala	Ser	Asp	Glu	Glu	Ile	Gln	Asp	Val	Ser	Gly	Thr
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Trp	Tyr	Leu	Lys	Ala	Met	Thr	Val	Asp	Arg	Glu	Phe	Pro	Glu	Met	Asn
		20						25					30		

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

Leu	Glu	Ala	Lys	Val	Thr	Met	Leu	Ile	Ser	Gly	Arg	Cys	Gln	Glu	Val
		50				55					60				

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

Gly	Gly	Lys	His	Val	Ala	Tyr	Ile	Ile	Arg	Ser	His	Val	Lys	Asp	His
			85						90					95	

Tyr	Ile	Phe	Tyr	Cys	Glu	Gly	Glu	Leu	His	Gly	Lys	Pro	Val	Arg	Gly
			100					105					110		

Val	Lys	Leu	Val	Gly	Arg	Asp	Pro	Lys	Asn	Asn	Leu	Glu	Ala	Leu	Glu
		115					120					125			

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

Leu Ile Pro Arg Gln Ser Glu Thr Cys Ser Pro Gly Ser Asp
145 150 155

<210> 2
<211> 659
<212> PRT
<213> Artificial Sequence

<220>
<223> LAG-3 Fc fusion protein

<400> 2

Val Pro Val Val Trp Ala Gln Glu Gly Ala Pro Ala Gln Leu Pro Cys
1 5 10 15

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

Val Thr Trp Gln His Gln Pro Asp Ser Gly Pro Pro Ala Ala Ala Pro
35 40 45

Gly His Pro Leu Ala Pro Gly Pro His Pro Ala Ala Pro Ser Ser Trp
50 55 60

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

Leu Arg Ser Gly Arg Leu Pro Leu Gln Pro Arg Val Gln Leu Asp Glu
85 90 95

Arg Gly Arg Gln Arg Gly Asp Phe Ser Leu Trp Leu Arg Pro Ala Arg
100 105 110

Arg Ala Asp Ala Gly Glu Tyr Arg Ala Ala Val His Leu Arg Asp Arg
115 120 125

Ala Leu Ser Cys Arg Leu Arg Leu Arg Leu Gly Gln Ala Ser Met Thr
130 135 140

Ala Ser Pro Pro Gly Ser Leu Arg Ala Ser Asp Trp Val Ile Leu Asn
145 150 155 160

Cys Ser Phe Ser Arg Pro Asp Arg Pro Ala Ser Val His Trp Phe Arg
165 170 175

Asn Arg Gly Gln Gly Arg Val Pro Val Arg Glu Ser Pro His His His
180 185 190

Leu Ala Glu Ser Phe Leu Phe Leu Pro Gln Val Ser Pro Met Asp Ser
195 200 205

Gly Pro Trp Gly Cys Ile Leu Thr Tyr Arg Asp Gly Phe Asn Val Ser
210 215 220

Ile Met Tyr Asn Leu Thr Val Leu Gly Leu Glu Pro Pro Thr Pro Leu
225 230 235 240

Thr Val Tyr Ala Gly Ala Gly Ser Arg Val Gly Leu Pro Cys Arg Leu
245 250 255

Pro Ala Gly Val Gly Thr Arg Ser Phe Leu Thr Ala Lys Trp Thr Pro
260 265 270

Pro Gly Gly Gly Pro Asp Leu Leu Val Thr Gly Asp Asn Gly Asp Phe
275 280 285

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

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

Ala Ile Ile Thr Val Thr Pro Lys Ser Phe Gly Ser Pro Gly Ser Leu
325 330 335

Gly Lys Leu Leu Cys Glu Val Thr Pro Val Ser Gly Gln Glu Arg Phe
340 345 350

Val Trp Ser Ser Leu Asp Thr Pro Ser Gln Arg Ser Phe Ser Gly Pro
355 360 365

Trp Leu Glu Ala Gln Glu Ala Gln Leu Leu Ser Gln Pro Trp Gln Cys
370 375 380

Gln Leu Tyr Gln Gly Glu Arg Leu Leu Gly Ala Ala Val Tyr Phe Thr
385 390 395 400

Glu Leu Ser Ser Pro Gly Ala Gln Arg Ser Gly Arg Ala Pro Gly Ala
405 410 415

Leu Pro Ala Gly His Leu Ile Glu Gly Arg Met Asp Pro Lys Ser Cys
420 425 430

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Glu Gly
435 440 445

Ala Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
450 455 460

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
465 470 475 480

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
485 490 495

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
500 505 510

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
515 520 525

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
530 535 540

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
545 550 555 560

Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
565 570 575

Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
580 585 590

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Ala Thr Pro Pro
595 600 605

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
610 615 620

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
625 630 635 640

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
645 650 655

Pro Gly Lys

<210> 3
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 3

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Arg Glu Cys Pro Glu Met Asn Leu Glu Ser Val
20 25 30

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

Val Thr Met Leu Ile Ser Gly Arg Ser Gln Glu Val Lys Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys His Gly Lys Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 4
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 4

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Arg Glu Phe Pro Glu Met Asn Leu Glu Ser Val
20 25 30

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

Val Thr Met Leu Ile Ser Gly Arg Cys Gln Glu Val Lys Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Leu His Gly Lys Pro Val Arg Gly Val Lys Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 5

<211> 447

<212> PRT

<213> Artificial Sequence

<220>

<223> Lag-3 antibody heavy chain

<400> 5

Gln Val Gln Leu Gln Gln Trp Gly Ala Gly Leu Leu Lys Pro Ser Glu
1 5 10 15

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

Tyr Trp Asn Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45

Gly Glu Ile Asn His Arg Gly Ser Thr Asn Ser Asn Pro Ser Leu Lys
50 55 60

Ser Arg Val Thr Leu Ser Leu Asp Thr Ser Lys Asn Gln Phe Ser Leu
65 70 75 80

Lys Leu Arg Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95

Phe Gly Tyr Ser Asp Tyr Glu Tyr Asn Trp Phe Asp Pro Trp Gly Gln
100 105 110

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

Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala
130 135 140

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

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val
165 170 175

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

Ser Ser Ser Leu Gly Thr Lys Thr Tyr Thr Cys Asn Val Asp His Lys
195 200 205

Pro Ser Asn Thr Lys Val Asp Lys Arg Val Glu Ser Lys Tyr Gly Pro
210 215 220

Pro Cys Pro Pro Cys Pro Ala Pro Glu Phe Leu Gly Gly Pro Ser Val
225 230 235 240

Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr
245 250 255

Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu
260 265 270

Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys
275 280 285

Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser
290 295 300

Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys
305 310 315 320

Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile
325 330 335

Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
340 345 350

Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu
355 360 365

Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
370 375 380

Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser
385 390 395 400

Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg
405 410 415

Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
420 425 430

His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys
435 440 445

<210> 6

<211> 214

<212> PRT

<213> Artificial Sequence

<220>

<223> Lag-3 antibody light chain

<400> 6

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

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

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile
35 40 45

Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
65 70 75 80

Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Arg Ser Asn Trp Pro Leu
85 90 95

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

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

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
130 135 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
165 170 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
180 185 190

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
195 200 205

Phe Asn Arg Gly Glu Cys
210

<210> 7
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 7

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Lys Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 8
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 8

Thr Ser Asp Gln Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Gly Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ala Pro Gly Pro
145 150

<210> 9
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 9

Thr Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Asp Gly Asn Leu Glu Ala Lys
35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Gly Glu Thr Ser Ser Pro Gly Pro
145 150

<210> 10
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 10

Ala Ser Gly Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Lys Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Asp Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Trp
130 135 140

Gln Ser Glu Pro Ser Ser Pro Gly Pro
145 150

<210> 11
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 11

Thr Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Ala Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Thr Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His His Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly Pro
145 150

<210> 12
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 12

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Asp Val Lys Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Asp Ala Tyr Ile Ile Ser Ser His Val Lys Asp Asn Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Gln Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly Pro
145 150

<210> 13
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 13

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Met Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr His Glu Gly Gly Asn Leu Glu Ala Lys
35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ser Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly Pro
145 150

<210> 14
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 14

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Asp Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Leu Ser Glu Thr Ser Ser Pro Gly Pro
145 150

<210> 15
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 15

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Arg Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly Pro
145 150

<210> 16
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 16

Thr Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Gly Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Asn Arg Ser His Val Lys Asp His Tyr Val Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly Pro
145 150

<210> 17
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 17

Ala Ser Asp Glu Glu Phe Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Ala Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Asn Arg Ser His Glu Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly Pro
145 150

<210> 18
<211> 153

<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 18

Thr Ser Asp Gln Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Gly Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ala Pro Gly Pro
145 150

<210> 19
<211> 152
<212> PRT
<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 19

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Ser Gly Glu Asp Pro Glu Met Met Leu Glu Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Gly Gly Asn Leu Glu Ala Arg
35 40 45

Val Thr Val Leu Ile Asp Gly Arg Cys Gln Glu Val Lys Asn Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Glu Asp Gly Gly Lys His
65 70 75 80

Val Asp Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Phe Glu Gly Glu Gly Gln Gly Thr Pro Gly Arg Met Val Ala Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 20

<211> 152

<212> PRT

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 20

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Ser Asp Glu Asp Pro Glu Met Thr Leu Glu Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Gly Gly Asn Leu Glu Ala Arg
35 40 45

Val Thr Val Leu Ile Asp Gly Arg Cys Gln Glu Val Lys Asn Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Glu Asp Gly Gly Lys Tyr
65 70 75 80

Val Asp Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Phe Glu Gly Glu Gly His Gly Thr Pro Gly Arg Met Val Ala Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 21
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 21

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Ser Glu Glu Asp Pro Glu Leu Thr Leu Glu Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Gly Gly Asn Leu Glu Ala Arg
35 40 45

Val Thr Val Leu Ile Asp Gly Arg Cys Gln Glu Val Lys Asn Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Glu Asp Gly Gly Lys Tyr
65 70 75 80

Val Asp Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Phe Glu Gly Glu Gly Gln Gly Thr Pro Gly Arg Met Val Ala Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 22
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 22

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Ser Glu Glu Asp Pro Glu Met Thr Leu Glu Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Gly Gly Asn Leu Glu Ala Arg
35 40 45

Val Thr Val Leu Ile Asp Gly Arg Cys Gln Glu Val Lys Asn Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Glu Asp Gly Gly Lys Tyr
65 70 75 80

Val Asp Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Phe Glu Gly Glu Gly Glu Gly Thr Pro Gly Arg Val Val Ala Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 23
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 23

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Ser Asp Glu Asp Pro Glu Met Thr Leu Glu Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Gly Gly Asn Leu Glu Ala Arg
35 40 45

Val Thr Val Leu Ile Asp Gly Arg Cys Gln Glu Val Lys Asn Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Glu Asp Gly Gly Lys Tyr
65 70 75 80

Val Asp Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Phe Glu Gly Glu Gly Gln Gly Thr Pro Gly Arg Leu Val Ala Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 24
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 24

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Ser Ser Glu Asp Pro Glu Met Thr Leu Glu Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Gly Gly Asn Leu Glu Ala Arg
35 40 45

Val Thr Val Leu Ile Asp Gly Arg Cys Gln Glu Val Lys Asn Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Glu Asp Gly Gly Lys Tyr
65 70 75 80

Val Asp Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Phe Glu Gly Glu Gly Gln Gly Thr Pro Gly Arg Met Val Ala Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 25
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 25

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Ser Ala Glu Asp Pro Glu Met Thr Leu Glu Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Gly Gly Asn Leu Glu Ala Arg
35 40 45

Val Thr Val Leu Ile Asp Gly Arg Cys Gln Glu Val Lys Asn Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Glu Asp Gly Gly Lys Tyr
65 70 75 80

Val Asp Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Phe Glu Gly Glu Gly Lys Gly Thr Pro Gly Arg Met Val Ala Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 26
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 26

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Ser Arg Glu Asp Pro Glu Met Thr Leu Glu Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Gly Gly Asn Leu Glu Ala Arg
35 40 45

Val Thr Val Leu Ile Asp Gly Arg Cys Gln Glu Val Lys Asn Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Glu Asp Gly Gly Lys His
65 70 75 80

Val Asp Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Phe Glu Gly Glu Gly Gln Gly Thr Pro Asn Arg Met Ala Ala Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 27
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 27

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Ser Gly Glu Asp Pro Glu Leu Thr Leu Glu Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Gly Gly Asn Leu Glu Ala Arg
35 40 45

Val Thr Val Leu Ile Asp Gly Arg Cys Gln Glu Val Lys Asn Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Glu Asp Gly Gly Lys Tyr
65 70 75 80

Val Asp Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Phe Glu Gly Glu Gly Pro Gly Thr Pro Gly Arg Met Val Ala Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 28
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 28

Ala Ser Asp Glu Glu Ile Gln Asp Val Pro Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Ser Asp Glu Asp Pro Glu Met Thr Leu Glu Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Gly Gly Asn Leu Glu Ala Arg
35 40 45

Val Thr Val Leu Ile Asp Gly Arg Cys Gln Glu Val Lys Asn Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Glu Asp Gly Gly Lys Leu
65 70 75 80

Val Asp Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Phe Glu Gly Glu Gly Gln Gly Thr Pro Gly Arg Met Leu Ala Leu Val
100 105 110

Gly Arg Asp Pro Thr Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
 130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
 145 150

<210> 29
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 29
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 gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt 120
 gaaggcggca atctggaggc taaggtcacc atggatatatt ttggcttttg gcaggaagtg 180
 aaagcagtgt tagagaagac agatgaaccg ggtaaataata cggccgatgg cggcaaacat 240
 gttgcctata tcattcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa 300
 tgcgctggct atccggttcc aggggtgtgg ctctgtgggc gagaccccaa gaacaacctg 360
 gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
 ctcatcccca ggcagagcga aaccagctct ccaggg 456

<210> 30
 <211> 459
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 30
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 gaaggcggca atctggaggc taaggtcacc atggatatatt ttggcttttg gcaggaagtg 180
 gaagcagtgt tagggaagac agatgaaccg ggtaaataata cggccgatgg cggcaaacat 240
 gctgcctata tcattcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa 300
 tgcgctggct atccggttcc gggggtgtgg ctctgtgggc gagaccccaa gaacaacctg 360

gaagccttgg aggacttcga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aaccagcgct ccagggcca	459

<210> 31
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 31	
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gaagacggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg	180
gaagcagtgt tagagaagac agatgagccg ggtaaataata cggccgatgg cggcaaacaat	240
gctgcctata tcattcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagggcga aaccagctct ccagggcca	459

<210> 32
 <211> 459
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 32	
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg	180
aaagcagtgt tagagaagac agatgaaccg ggtaaataata cggccgatgg cggcaaacaat	240
gatgcctata tcattcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420

ctcatcccct ggcagagcga acccagctct ccagggcca 459

<210> 33
<211> 459
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 33
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt 120
gaaggcggca atctggaggc taaggccacc atggatattt ttggcttttg gcaggaagtg 180
gaagcagtgt tagagaagac agatgaaccg ggtaaataata cgaccgatgg cggcaaacat 240
gttgccata tcattcgcag ccatgtgaaa gatcatcaca tcttttatag cgagggcgaa 300
tgcgctggct atccggttcc ggggggtgtg ctcgtgggca gagaccccaa gaacaacctg 360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
ctcatcccca ggcagagcga aaccagctct ccagggcca 459

<210> 34
<211> 459
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 34
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt 120
gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggatgtg 180
aaagcagtgt tagagaagac agatgaaccg ggtaagtata cggccgatgg cggcaaacat 240
gatgcctata tcattagcag tcatgtgaaa gataattaca tcttttatag cgagggcgaa 300
tgcgctggct atccggttcc ggggggtgtg ctcgtgggca gagaccccaa gaacaaccag 360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
ctcatcccca ggcagagcga aaccagctct ccagggcca 459

<210> 35
<211> 459
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 35
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactacccat 120
gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg 180
gaagcagtgt tagagaagac agatgaaccg ggtaaataata cggccgatgg cggcaaacaat 240
gtggcctata tcagtcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa 300
tgcgctggct atccggttcc ggggggtgtgg ctctgtggga gagaccccaa gaacaacctg 360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
ctcatcccca ggcagagcga aaccagctct ccagggccca 459

<210> 36
<211> 459
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 36
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt 120
gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggatgtg 180
gaagcagtgt tagagaagac agatgaaccg ggtaaataata ccgccgatgg cggcaaacaat 240
gttgccctata tcattcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa 300
tgcgctggct atccggttcc ggggggtgtgg ctctgtggga gagaccccaa gaacaacctg 360
gaagccttgg aggactttga gaaagctgca ggagcccgcg gactcagtac ggagagcatc 420
ctcatcccca ggctgagcga aaccagctct ccagggccca 459

<210> 37
<211> 459
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 37
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt 120
gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg 180
gaagcagtgt tagagaggac agatgaaccg ggtaaataata cggccgatgg cggcaaacat 240
gttgccata tcatcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa 300
tgcgctggct atccggttcc ggggggtgtg ctcgtgggca gagaccccaa gaacaacctg 360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
ctcatcccca ggcagagcga aaccagctct ccagggccca 459

<210> 38
<211> 459
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 38
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt 120
gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg 180
gaagcagtgt tagaaaagac agatgaaccg ggtaaataata cggccggttg cggcaaacat 240
gttgccata tcaatcgcag ccatgtgaaa gatcattacg tcttttatag cgagggcgaa 300
tgcgctggct atccggttcc ggggggtgtg ctcgtgggca gagaccccaa gaacaacctg 360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagtatc 420
ctcatcccca ggcagagcga aaccagctct ccagggccca 459

<210> 39
<211> 459

<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 39
gcctcagacg aggagtttca ggatgtgtca gggacgtggt atctgaaggc gatgacggtg 60
gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt 120
gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg 180
gaagcagtgt tagagaagac agatgcaccg ggtaaataata cagccgatgg aggcaaacat 240
gttgccctata tcaatcgcag ccatgagaaa gatcattaca tcttttatag cgagggcgaa 300
tgcgctggct atccggtacc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg 360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
ctcatcccca ggcagagcga aaccagctct ccagggccca 459

<210> 40
<211> 459
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 40
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gattccgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt 120
gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg 180
gaagcagtgt tagggaagac agatgaaccg ggtaaataata cggccgatgg cggcaaacat 240
gctgcctata tcattcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa 300
tgcgctggct atccggttcc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg 360
gaagccttgg aggacttcga gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
ctcatcccca ggcagagcga aaccagcgct ccagggccca 459

<210> 41
<211> 456
<212> DNA
<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 41

gcctcagacg aggagattca ggatgtgccca gggacgtggt atctgaaagc gatgacggtt	60
tcgggggaag atcctgagat gatgctggaa tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc tcgtgtgacc gttctgattg atggccgctg ccaggaagtg	180
aaaaatgtgc tcgagaagac agatgaaccg ggtaaataca cggaggatgg cggcaaacat	240
gtggattata tcattagatc tcatgtgaaa gatcattaca tcttctactt tgaaggcgaa	300
gggcagggca cgccgggtcg catggtggct ctggtgggca gagacccac caataatctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aacctgctct ccaggg	456

<210> 42

<211> 456

<212> DNA

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 42

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agcgatgaag atccggaaat gaccctggaa tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc tagggtgacc gttctgattg atggccgctg ccaggaagtg	180
aaaaacgtgc tcgagaagac agatgaaccg ggtaaataca cggaagatgg cggcaaatat	240
gtggattata tcattagatc tcatgtgaaa gatcattaca tcttctactt tgaaggcgaa	300
ggccatggca ccccggggag gatggtggcc ctggtgggca gagacccac caataatctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aacctgctct ccaggg	456

<210> 43

<211> 456

<212> DNA

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 43

gcctcagacg aggagattca ggatgtgccca gggacgtggt atctgaaagc gatgacggtt	60
agcgaggaag atccggaatt gaccctggaa tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc tagggtgacc gttctgattg atggccgctg ccaggaagtg	180
aaaaacgtgc tcgagaagac agatgaaccg ggtaaataca cggaagatgg cggcaaatat	240
gtggattata tcattagatc tcatgtgaaa gatcattaca tcttctactt tgaaggcgaa	300
ggccagggca ccccgggtag gatggtggcc ctggtgggca gagacccac caataatctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aacctgctct ccaggg	456

<210> 44

<211> 456

<212> DNA

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 44

gcctcagacg aggagattca ggatgtgccca gggacgtggt atctgaaagc gatgacggtt	60
agcgaggaag atccggaaat gaccctggaa tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc tagggtgacc gttctgattg atggccgctg ccaggaagtg	180
aaaaacgtgc tcgagaagac agatgaaccg ggtaaataca cggaagatgg cggcaaatat	240
gtggattata tcattagatc tcatgtgaaa gatcattaca tcttctactt tgaaggcgaa	300
ggcgagggca ccccggggag ggtggtggcc ctggtgggca gagacccac caataatctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aacctgctct ccaggg	456

<210> 45

<211> 456

<212> DNA

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 45
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 gaaggcggca atctggaggc tagggtgacc gttctgattg atggccgctg ccaggaagtg 180
 aaaaacgtgc tcgagaagac agatgaaccg ggtaaataca cggaagatgg cggcaaatat 240
 gtggattata tcattagatc tcatgtgaaa gatcattaca tcttctactt tgaaggcgaa 300
 ggccagggca ccccggggag gttggtggcc ctggtgggca gagacccac caataatctg 360
 gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
 ctcatcccca ggcagagcga aacctgctct ccaggg 456

<210> 46
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 46
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 agcagtgaag atccggaaat gaccctggaa tcagttacgc caatgactct gactaccctt 120
 gaaggcggca atctggaggc tagggtgacc gtgctgattg atggccgctg ccaggaagtg 180
 aaaaacgtgc tcgagaagac agatgaaccg ggtaaataca cggaagatgg cggcaaatat 240
 gtggattata tcattagatc tcatgtgaaa gatcattaca tcttctactt tgaaggcgaa 300
 ggccagggca ccccgggtag gatggttgcc ctggtgggca gagacccac caataatctg 360
 gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
 ctcatcccca ggcagagcga aacctgctct ccaggg 456

<210> 47
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 47
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agcgctgaag atccggaaat gaccctggaa tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc tagggtgacc gttctgattg atggccgctg ccaggaagtg	180
aaaaacgtgc tcgagaagac agatgaaccg ggtaaataca cggaagatgg cggcaaatat	240
gtggattata tcattagatc tcatgtgaaa gatcattaca tcttctactt tgaaggcgaa	300
ggcaagggca ccccgaggag gatggtggcc ctggtgggca gagacccac caataatctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aacctgctct ccaggg	456

<210> 48
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 48	
gcctcagacg aggagattca ggatgtgcca gggacgtggt atctgaaagc gatgacggtt	60
agccgtgaag atccggaaat gaccctggaa tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc tagggtgacc gttctgattg atggccgctg ccaggaagtg	180
aaaaacgtgc tcgagaagac agatgaaccg ggtaaataca cggaagatgg cggcaaacat	240
gtggattata tcattagatc tcatgtgaaa gatcattaca tcttctactt tgaaggcgaa	300
ggccagggca ccccgaatag gatggcggcc ctggtgggca gagacccac caataatctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aacctgctct ccaggg	456

<210> 49
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 49	
gcctcagacg aggagattca ggatgtgcca gggacgtggt atctgaaagc gatgacggtt	60
agcggggaag atccggaatt gaccctggaa tcagttacgc caatgactct gactaccctt	120

gaaggcggca atctggaggc tagggtgacc gtgctgattg atggccgctg ccaggaagtg	180
aaaaacgtgc tcgagaagac agatgaaccg ggtaaataca cggaagatgg cggcaaatat	240
gtggattata tcattagatc tcatgtgaaa gatcattaca tcttctactt tgaaggcgaa	300
ggccctggca ccccggttag gatggtggcc ctggtgggca gagacccac caataatctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aacctgctct ccaggg	456

<210> 50
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 50	
gcctcagacg aggagattca ggatgtgcca gggacgtggt atctgaaagc gatgacggtt	60
agcgatgaag atccggaaat gaccctggaa tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc tagggtgacc gtgctgattg atggccgctg ccaggaagtg	180
aaaaacgtgc tcgagaagac agatgaaccg ggtaaataca cggaagatgg cggcaaactt	240
gtggattata tcattagatc tcatgtgaaa gatcattaca tcttctactt tgaaggcgaa	300
ggccagggca ccccggttag gatgctggcc ctggtgggca gagacccac caataatctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aacctgctct ccaggg	456

<210> 51
 <211> 4
 <212> PRT
 <213> Homo sapiens

<400> 51

His His Leu Leu
 1

<210> 52
 <211> 4
 <212> PRT

<213> Artificial Sequence

<220>

<223> Factor Xa cleavage site

<400> 52

Ile Glu Gly Arg

1

<210> 53

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> SA linker and strep-tag II fusion peptide

<400> 53

Ser Ala Trp Ser His Pro Gln Phe Glu Lys

1

5

10

<210> 54

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Strep-tag II peptide

<400> 54

Trp Ser His Pro Gln Phe Glu Lys

1

5

<210> 55

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> (G4S)₃ Linker

<400> 55

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser

1

5

10

15

<210> 56

<211> 676
<212> PRT
<213> Artificial Sequence

<220>
<223> cynoLAG-3 Fc fusion protein

<400> 56

Pro Gln Pro Gly Ala Glu Ile Ser Val Val Trp Ala Gln Glu Gly Ala
1 5 10 15

Pro Ala Gln Leu Pro Cys Ser Pro Thr Ile Pro Leu Gln Asp Leu Ser
20 25 30

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

Pro Pro Ala Pro Ala Pro Gly His Pro Pro Val Pro Gly His Arg Pro
50 55 60

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

Ser Val Gly Pro Gly Gly Leu Arg Ser Gly Arg Leu Pro Leu Gln Pro
85 90 95

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

Trp Leu Arg Pro Ala Arg Arg Ala Asp Ala Gly Glu Tyr Arg Ala Thr
115 120 125

Val His Leu Arg Asp Arg Ala Leu Ser Cys Arg Leu Arg Leu Arg Val
130 135 140

Gly Gln Ala Ser Met Thr Ala Ser Pro Pro Gly Ser Leu Arg Thr Ser
145 150 155 160

Asp Trp Val Ile Leu Asn Cys Ser Phe Ser Arg Pro Asp Arg Pro Ala
165 170 175

Ser Val His Trp Phe Arg Ser Arg Gly Gln Gly Arg Val Pro Val Gln

180

185

190

Gly Ser Pro His His His Leu Ala Glu Ser Phe Leu Phe Leu Pro His
 195 200 205

Val Gly Pro Met Asp Ser Gly Leu Trp Gly Cys Ile Leu Thr Tyr Arg
 210 215 220

Asp Gly Phe Asn Val Ser Ile Met Tyr Asn Leu Thr Val Leu Gly Leu
 225 230 235 240

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

Glu Leu Pro Cys Arg Leu Pro Pro Ala Val Gly Thr Gln Ser Phe Leu
 260 265 270

Thr Ala Lys Trp Ala Pro Pro Gly Gly Gly Pro Asp Leu Leu Val Ala
 275 280 285

Gly Asp Asn Gly Asp Phe Thr Leu Arg Leu Glu Asp Val Ser Gln Ala
 290 295 300

Gln Ala Gly Thr Tyr Ile Cys His Ile Arg Leu Gln Gly Gln Gln Leu
 305 310 315 320

Asn Ala Thr Val Thr Leu Ala Ile Ile Thr Val Thr Pro Lys Ser Phe
 325 330 335

Gly Ser Pro Gly Ser Leu Gly Lys Leu Leu Cys Glu Val Thr Pro Ala
 340 345 350

Ser Gly Gln Glu His Phe Val Trp Ser Pro Leu Asn Thr Pro Ser Gln
 355 360 365

Arg Ser Phe Ser Gly Pro Trp Leu Glu Ala Gln Glu Ala Gln Leu Leu
 370 375 380

Ser Gln Pro Trp Gln Cys Gln Leu His Gln Gly Glu Arg Leu Leu Gly
 385 390 395 400

Ala Ala Val Tyr Phe Thr Glu Leu Ser Ser Pro Gly Ala Gln Arg Ser
405 410 415

Gly Arg Ala Pro Gly Ala Leu Arg Ala Gly His Leu Ile Glu Gly Arg
420 425 430

Met Asp Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly
435 440 445

Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu
450 455 460

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
465 470 475 480

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
485 490 495

His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu
500 505 510

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr
515 520 525

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
530 535 540

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro
545 550 555 560

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
565 570 575

Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val
580 585 590

Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val
595 600 605

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro

610

615

620

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr
 625 630 635 640

Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
 645 650 655

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
 660 665 670

Ser Pro Gly Lys
 675

<210> 57

<211> 152

<212> PRT

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 57

Thr Ser Asp Gln Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
 1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
 20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Arg Gly Gly Asn Leu Glu Ala Lys
 35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
 50 55 60

Gly Lys Thr Asp Arg Pro Gly Lys Tyr Thr Ala Gly Gly Gly Lys His
 65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
 85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val

100

105

110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
 115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
 130 135 140

Gln Ser Glu Thr Ser Ala Pro Gly
 145 150

<210> 58

<211> 152

<212> PRT

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 58

Thr Ser Asn Gln Gln Ile Gln Asn Val Ser Gly Thr Trp Tyr Leu Lys
 1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
 20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Arg Gly Gly Asn Leu Glu Ala Lys
 35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
 50 55 60

Gly Lys Thr Asn Arg Pro Gly Lys Tyr Thr Ala Gly Gly Gly Lys His
 65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Asn His Tyr Ile Phe Tyr
 85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
 100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys

115

120

125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
 130 135 140

Gln Ser Glu Thr Ser Ala Pro Gly
 145 150

<210> 59

<211> 152

<212> PRT

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 59

Thr Ser Arg Gln Arg Ile Gln Arg Val Ser Gly Thr Trp Tyr Leu Lys
 1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
 20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Arg Gly Gly Asn Leu Glu Ala Lys
 35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
 50 55 60

Gly Lys Thr Arg Arg Pro Gly Lys Tyr Thr Ala Gly Gly Gly Lys His
 65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Arg His Tyr Ile Phe Tyr
 85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
 100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
 115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg

130

135

140

Gln Ser Glu Thr Ser Ala Pro Gly
145 150

<210> 60

<211> 152

<212> PRT

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 60

Thr Ser Lys Gln Lys Ile Gln Lys Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Arg Gly Gly Asn Leu Glu Ala Lys
35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Gly Lys Thr Lys Arg Pro Gly Lys Tyr Thr Ala Gly Gly Gly Lys His
65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Lys His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ala Pro Gly

145

150

<210> 61
 <211> 152
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 61

Thr Ser Asn Gln Gln Ile Gln Asn Val Ser Gly Thr Trp Tyr Leu Lys
 1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
 20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Arg Gly Gly Asn Leu Glu Ala Lys
 35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
 50 55 60

Gly Lys Thr Asp Arg Pro Gly Lys Tyr Thr Ala Gly Gly Gly Lys His
 65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
 85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
 100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
 115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
 130 135 140

Gln Ser Glu Thr Ser Ala Pro Gly
 145 150

<210> 62

<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 62

Thr Ser Asn Gln Gln Ile Gln Asn Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Arg Gly Gly Asn Leu Glu Ala Lys
35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Gly Lys Thr Asn Arg Pro Gly Lys Tyr Thr Ala Gly Gly Gly Lys His
65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ala Pro Gly
145 150

<210> 63
<211> 152
<212> PRT
<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 63

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Arg Gly Gly Asn Leu Glu Ala Lys
35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Arg Thr Asp Arg Pro Gly Lys Tyr Thr Ala Gly Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 64

<211> 152

<212> PRT

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 64

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Cys Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Arg Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 65

<211> 152

<212> PRT

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 65

Thr Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Arg Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 66
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 66

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Arg Gly Gly Asn Leu Glu Ala Lys
35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Asp Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Arg Pro Gly Lys Tyr Thr Ala Gly Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Leu Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 67
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 67

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Cys Gln Asp Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Leu Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 68
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 68

Thr Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Asp Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Leu Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 69
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 69

Ala Ser Asp Glu Glu Ile Gln Asn Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Asp Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Leu Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 70
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 70

Ala Ser Asp Glu Glu Ile Gln Asn Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Cys Gln Asp Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Leu Ser Glu Thr Cys Ser Pro Gly
145 150

<210> 71
<211> 456
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 71
acctcagacc aggagattca ggatgtgtca gggacgtggt atctgaaggc gatgacggtg 60
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cgcgggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg 180
gaagcagtgt tagggaagac agatcgcccg ggtaaataata cggccggcgg cggcaaacad 240
gctgcctata tcattcgag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa 300
tgcgctggct atccggttcc gggggtgtgg ctctgtggga gagaccccaa gaacaacctg 360
gaagccttgg aggacttcga gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
ctcatcccca ggcagagcga aaccagcgct ccaggg 456

<210> 72
<211> 456
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 72
acctcaaacc agcagattca gaacgtgtca gggacgtggt atctgaaggc gatgacggtg 60

gattccgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt	120
cgcgggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg	180
gaagcagtgt tagggaagac aaaccgcccg ggtaaataata cggccggcgg cggcaaacaat	240
gctgcctata tcattcgcag ccatgtgaaa aaccattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggacttcga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aaccagcgct ccaggg	456

<210> 73
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 73	
acctcacgtc agcgtattca gcgtgtgtca gggacgtggt atctgaaggc gatgacggtg	60
gattccgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt	120
cgcgggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg	180
gaagcagtgt tagggaagac acgtcgcccg ggtaaataata cggccggcgg cggcaaacaat	240
gctgcctata tcattcgcag ccatgtgaaa aaccattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggacttcga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aaccagcgct ccaggg	456

<210> 74
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 74	
acctcaaaac agaaaattca gaaagtgtca gggacgtggt atctgaaggc gatgacggtg	60
gattccgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt	120

cgcgggcgga atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg	180
gaagcagtgt tagggaagac aaaacgcccg ggtaaataata cggccggcgg cggcaaacat	240
gctgcctata tcattcgag ccatgtgaaa aaacattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtggga gagaccccaa gaacaacctg	360
gaagccttgg aggacttcga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
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<210> 75
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 75	
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gaaggcgga atctggaggc taaggtcacc atggatattt ttggcttttg ccaggaagtg	180
gaagcagtgt tagggaagac agatgaaccg ggtaaataata cggccgatgg cggcaaacat	240
gctgcctata tcattcgag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtggga gagaccccaa gaacaacctg	360
gaagccttgg aggacttcga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aacctgcgct ccaggg	456

<210> 76
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 76	
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gattccgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt	120
gaaggcgga atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg	180

gaagcagtgt tagggaagac agatgaaccg ggtaaataata cggccgatgg cggcaaacaat	240
gctgcctata tcattcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggacttcga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aaccagcgct ccaggg	456

<210> 77
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 77	
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cgcggcggca atctggaggc taaggtcacc atggatatatt ttggcttttg gcaggaagtg	180
gaagcagtgt tagagaggac agatcgcccc ggtaaataata cggccggcgg cggcaaacaat	240
gttgcctata tcattcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aaccagctct ccaggg	456

<210> 78
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 78	
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gaaggcggca atctggaggc taaggtcacc atggatatatt ttggcttttg ccaggaagtg	180
gaagcagtgt tagagaggac agatgaaccg ggtaaataata cggccgatgg cggcaaacaat	240

gttgctata tcattcgag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtggga gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aacctgctct ccaggg	456

<210> 79
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 79	
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gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg	180
gaagcagtgt tagagaggac agatgaaccg ggtaaataata cggccgatgg cggcaaacad	240
gttgctata tcattcgag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtggga gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aaccagctct ccaggg	456

<210> 80
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 80	
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cgcggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggatgtg	180
gaagcagtgt tagagaagac agatcgcccc ggtaaataata ccgccggcgg cggcaaacad	240
gttgctata tcattcgag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300

tgcgctggct atccggttcc ggggggtgtgg ctcgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagctgca ggagcccgcg gactcagtac ggagagcatc	420
ctcatcccca ggctgagcga aaccagctct ccaggg	456

<210> 81
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 81	
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gaaggcggca atctggaggc taaggtcacc atggatatatt ttggcttttg ccaggatgtg	180
gaagcagtgt tagagaagac agatgaaccg ggtaaataata ccgccgatgg cggcaaacat	240
gttgccata tcattcgag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctcgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagctgca ggagcccgcg gactcagtac ggagagcatc	420
ctcatcccca ggctgagcga aacctgctct ccaggg	456

<210> 82
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 82	
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc taaggtcacc atggatatatt ttggcttttg gcaggatgtg	180
gaagcagtgt tagagaagac agatgaaccg ggtaaataata ccgccgatgg cggcaaacat	240
gttgccata tcattcgag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctcgtgggca gagaccccaa gaacaacctg	360

gaagccttgg aggactttga gaaagctgca ggagcccgcg gactcagtac ggagagcatc	420
ctcatcccca ggctgagcga aaccagctct ccaggg	456

<210> 83
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 83	
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggatgtg	180
gaagcagtgt tagagaagac agatgaaccg ggtaaata ccccgatgg cggcaaacat	240
gttgcttata tcattcgag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc gggggtgtgg ctctgtggca gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagctgca ggagcccgcg gactcagtac ggagagcatc	420
ctcatcccca ggctgagcga aaccagctct ccaggg	456

<210> 84
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 84	
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg ccaggatgtg	180
gaagcagtgt tagagaagac agatgaaccg ggtaaata ccccgatgg cggcaaacat	240
gttgcttata tcattcgag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc gggggtgtgg ctctgtggca gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagctgca ggagcccgcg gactcagtac ggagagcatc	420

ctcatcccca ggctgagcga aacctgctct ccaggg

456

<210> 85

<211> 152

<212> PRT

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 85

Thr Ser Asp Gln Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Gly Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ala Pro Gly
145 150

<210> 86

<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 86

Thr Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr Leu Glu Asp Gly Asn Leu Glu Ala Lys
35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Gly Glu Thr Ser Ser Pro Gly
145 150

<210> 87
<211> 152
<212> PRT
<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 87

Ala Ser Gly Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Lys Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Asp Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Trp
130 135 140

Gln Ser Glu Pro Ser Ser Pro Gly
145 150

<210> 88

<211> 152

<212> PRT

<213> Artificial Sequence

<220>

<223> lipocalin mutein

<400> 88

Thr Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Ala Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Thr Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His His Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 89
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 89

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Asp Val Lys Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Asp Ala Tyr Ile Ile Ser Ser His Val Lys Asp Asn Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Gln Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 90
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 90

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Met Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

Thr Pro Met Thr Leu Thr Thr His Glu Gly Gly Asn Leu Glu Ala Lys
35 40 45

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ser Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 91
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 91

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Asp Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Leu Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 92
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 92

Ala Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Arg Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 93
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 93

Thr Ser Asp Glu Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Gly Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Asn Arg Ser His Val Lys Asp His Tyr Val Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 94
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 94

Ala Ser Asp Glu Glu Phe Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Glu Lys Thr Asp Ala Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Val Ala Tyr Ile Asn Arg Ser His Glu Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ser Pro Gly
145 150

<210> 95
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 95

Thr Ser Asp Gln Glu Ile Gln Asp Val Ser Gly Thr Trp Tyr Leu Lys
1 5 10 15

Ala Met Thr Val Asp Ser Asp Cys Phe Trp Ile Asp Asp Val Ser Val
20 25 30

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

Val Thr Met Asp Ile Phe Gly Phe Trp Gln Glu Val Glu Ala Val Leu
50 55 60

Gly Lys Thr Asp Glu Pro Gly Lys Tyr Thr Ala Asp Gly Gly Lys His
65 70 75 80

Ala Ala Tyr Ile Ile Arg Ser His Val Lys Asp His Tyr Ile Phe Tyr
85 90 95

Ser Glu Gly Glu Cys Ala Gly Tyr Pro Val Pro Gly Val Trp Leu Val
100 105 110

Gly Arg Asp Pro Lys Asn Asn Leu Glu Ala Leu Glu Asp Phe Glu Lys
115 120 125

Ala Ala Gly Ala Arg Gly Leu Ser Thr Glu Ser Ile Leu Ile Pro Arg
130 135 140

Gln Ser Glu Thr Ser Ala Pro Gly
145 150

<210> 96
<211> 456
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 96
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gaaggcggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg 180
gaagcagtgt tagggaagac agatgaaccg ggtaaataata cggccgatgg cggcaaacat 240
gctgcctata tcattcgag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa 300
tgcgctggct atccggttcc ggggggtgtg ctcgtgggca gagaccccaa gaacaacctg 360
gaagccttgg aggacttca gaaagccgca ggagcccgcg gactcagcac ggagagcatc 420
ctcatcccca ggcagagcga aaccagcgct ccaggg 456

<210> 97
<211> 456
<212> DNA
<213> Artificial Sequence

<220>
<223> lipocalin mutein

<400> 97
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gaagacggca atctggaggc taaggtcacc atggatattt ttggcttttg gcaggaagtg 180

gaagcagtgt tagagaagac agatgagccg ggtaaataata cggccgatgg cggcaaacaat	240
gctgcctata tcattcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagggcga aaccagctct ccaggg	456

<210> 98
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 98	
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gaaggcggca atctggaggc taaggtcacc atggatatatt ttggcttttg gcaggaagtg	180
aaagcagtgt tagagaagac agatgaaccg ggtaaataata cggccgatgg cggcaaacaat	240
gatgcctata tcattcgcag ccatgtgaaa gatcattaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccct ggcagagcga acccagctct ccaggg	456

<210> 99
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

<400> 99	
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gattctgatt gcttttggat tgatgatgtg tcagttacgc caatgactct gactaccctt	120
gaaggcggca atctggaggc taaggccacc atggatatatt ttggcttttg gcaggaagtg	180
gaagcagtgt tagagaagac agatgaaccg ggtaaataata cgaccgatgg cggcaaacaat	240

gttgccata tcattcgag ccatgtgaaa gatcatcaca tcttttatag cgagggcgaa	300
tgcgctggct atccggttcc ggggggtgtgg ctctgtgggca gagaccccaa gaacaacctg	360
gaagccttgg aggactttga gaaagccgca ggagcccgcg gactcagcac ggagagcatc	420
ctcatcccca ggcagagcga aaccagctct ccaggg	456

<210> 100
 <211> 456
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> lipocalin mutein

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