

2014009267  
SEQUENCE LISTING

<110> CureVac GmbH

<120> Rabies Vaccine

<130> CU01P150W01

<160> 27

<170> PatentIn version 3.5

<210> 1

<211> 524

<212> PRT

<213> Rabies virus

<400> 1

Met Val Pro Gln Ala Leu Leu Phe Val Pro Leu Leu Val Phe Pro Leu  
1 5 10 15

Cys Phe Gly Lys Phe Pro Ile Tyr Thr Ile Pro Asp Lys Leu Gly Pro  
20 25 30

Trp Ser Pro Ile Asp Ile His His Leu Ser Cys Pro Asn Asn Leu Val  
35 40 45

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

Leu Lys Val Gly Tyr Ile Ser Ala Ile Lys Met Asn Gly Phe Thr Cys  
65 70 75 80

Thr Gly Val Val Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr  
85 90 95

Val Thr Thr Thr Phe Lys Arg Lys His Phe Arg Pro Thr Pro Asp Ala  
100 105 110

Cys Arg Ala Ala Tyr Asn Trp Lys Met Ala Gly Asp Pro Arg Tyr Glu  
115 120 125

Glu Ser Leu His Asn Pro Tyr Pro Asp Tyr His Trp Leu Arg Thr Val

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

Leu Asp Pro Tyr Asp Arg Ser Leu His Ser Arg Val Phe Pro Gly Gly  
165 170 175

Asn Cys Ser Gly Val Ala Val Ser Ser Thr Tyr Cys Ser Thr Asn His  
180 185 190

Asp Tyr Thr Ile Trp Met Pro Glu Asn Pro Arg Leu Gly Met Ser Cys  
195 200 205

Asp Ile Phe Thr Asn Ser Arg Gly Lys Arg Ala Ser Lys Gly Ser Glu  
210 215 220

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

Ala Cys Lys Leu Lys Leu Cys Gly Val Leu Gly Leu Arg Leu Met Asp  
245 250 255

Gly Thr Trp Val Ala Met Gln Thr Ser Asn Glu Thr Lys Trp Cys Pro  
260 265 270

Pro Gly Gln Leu Val Asn Leu His Asp Phe Arg Ser Asp Glu Ile Glu  
275 280 285

His Leu Val Val Glu Glu Leu Val Lys Lys Arg Glu Glu Cys Leu Asp  
290 295 300

Ala Leu Glu Ser Ile Met Thr Thr Lys Ser Val Ser Phe Arg Arg Leu  
305 310 315 320

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

Phe Asn Lys Thr Leu Met Glu Ala Asp Ala His Tyr Lys Ser Val Arg

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345

350

Thr Trp Asn Glu Ile Ile Pro Ser Lys Gly Cys Leu Arg Val Gly Gly  
355 360 365

Arg Cys His Pro His Val Asn Gly Val Phe Phe Asn Gly Ile Ile Leu  
370 375 380

Gly Pro Asp Gly Asn Val Leu Ile Pro Glu Met Gln Ser Ser Leu Leu  
385 390 395 400

Gln Gln His Met Glu Leu Leu Val Ser Ser Val Ile Pro Leu Met His  
405 410 415

Pro Leu Ala Asp Pro Ser Thr Val Phe Lys Asn Gly Asp Glu Ala Glu  
420 425 430

Asp Phe Val Glu Val His Leu Pro Asp Val His Glu Arg Ile Ser Gly  
435 440 445

Val Asp Leu Gly Leu Pro Asn Trp Gly Lys Tyr Val Leu Leu Ser Ala  
450 455 460

Gly Ala Leu Thr Ala Leu Met Leu Ile Ile Phe Leu Met Thr Cys Trp  
465 470 475 480

Arg Arg Val Asn Arg Ser Glu Pro Thr Gln His Asn Leu Arg Gly Thr  
485 490 495

Gly Arg Glu Val Ser Val Thr Pro Gln Ser Gly Lys Ile Ile Ser Ser  
500 505 510

Trp Glu Ser Tyr Lys Ser Gly Gly Glu Thr Gly Leu  
515 520

<210> 2  
<211> 450  
<212> PRT  
<213> Rabies virus

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<400> 2

Met Asp Ala Asp Lys Ile Val Phe Lys Val Asn Asn Gln Val Val Ser  
1 5 10 15

Leu Lys Pro Glu Ile Ile Val Asp Gln Tyr Glu Tyr Lys Tyr Pro Ala  
20 25 30

Ile Lys Asp Leu Lys Lys Pro Cys Ile Thr Leu Gly Lys Ala Pro Asp  
35 40 45

Leu Asn Lys Ala Tyr Lys Ser Val Leu Ser Cys Met Ser Ala Ala Lys  
50 55 60

Leu Asp Pro Asp Asp Val Cys Ser Tyr Leu Ala Ala Ala Met Gln Phe  
65 70 75 80

Phe Glu Gly Thr Cys Pro Glu Asp Trp Thr Ser Tyr Gly Ile Val Ile  
85 90 95

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

Arg Thr Asp Val Glu Gly Asn Trp Ala Leu Thr Gly Gly Met Glu Leu  
115 120 125

Thr Arg Asp Pro Thr Val Pro Glu His Ala Ser Leu Val Gly Leu Leu  
130 135 140

Leu Ser Leu Tyr Arg Leu Ser Lys Ile Ser Gly Gln Ser Thr Gly Asn  
145 150 155 160

Tyr Lys Thr Asn Ile Ala Asp Arg Ile Glu Gln Ile Phe Glu Thr Ala  
165 170 175

Pro Phe Val Lys Ile Val Glu His His Thr Leu Met Thr Thr His Lys  
180 185 190

Met Cys Ala Asn Trp Ser Thr Ile Pro Asn Phe Arg Phe Leu Ala Gly  
195 200 205

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Thr Tyr Asp Met Phe Phe Ser Arg Ile Glu His Leu Tyr Ser Ala Ile  
210 215 220

Arg Val Gly Thr Val Val Thr Ala Tyr Glu Asp Cys Ser Gly Leu Val  
225 230 235 240

Ser Phe Thr Gly Phe Ile Lys Gln Ile Asn Leu Thr Ala Arg Glu Ala  
245 250 255

Ile Leu Tyr Phe Phe His Lys Asn Phe Glu Glu Glu Ile Arg Arg Met  
260 265 270

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

Phe Arg Ser Leu Gly Leu Ser Gly Lys Ser Pro Tyr Ser Ser Asn Ala  
290 295 300

Val Gly His Val Phe Asn Leu Ile His Phe Val Gly Cys Tyr Met Gly  
305 310 315 320

Gln Val Arg Ser Leu Asn Ala Thr Val Ile Ala Ala Cys Ala Pro His  
325 330 335

Glu Met Ser Val Leu Gly Gly Tyr Leu Gly Glu Glu Phe Phe Gly Lys  
340 345 350

Gly Thr Phe Glu Arg Arg Phe Phe Arg Asp Glu Lys Glu Leu Gln Glu  
355 360 365

Tyr Glu Ala Ala Glu Leu Thr Lys Thr Asp Val Ala Leu Ala Asp Asp  
370 375 380

Gly Thr Val Asn Ser Asp Asp Glu Asp Tyr Phe Ser Gly Glu Thr Arg  
385 390 395 400

Ser Pro Glu Ala Val Tyr Thr Arg Ile Ile Met Asn Gly Gly Arg Leu  
405 410 415

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Lys Arg Ser His Ile Arg Arg Tyr Val Ser Val Ser Ser Asn His Gln  
420 425 430

Ala Arg Pro Asn Ser Phe Ala Glu Phe Leu Asn Lys Thr Tyr Ser Ser  
435 440 445

Asp Ser  
450

<210> 3  
<211> 297  
<212> PRT  
<213> Rabies virus

<400> 3

Met Ser Lys Ile Phe Val Asn Pro Ser Ala Ile Arg Ala Gly Leu Ala  
1 5 10 15

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

Glu Asp Asn Gln Ala His Leu Gln Gly Glu Pro Ile Glu Val Asp Asn  
35 40 45

Leu Pro Glu Asp Met Gly Arg Leu His Leu Asp Asp Gly Lys Ser Pro  
50 55 60

Asn Pro Gly Glu Met Ala Lys Val Gly Glu Gly Lys Tyr Arg Glu Asp  
65 70 75 80

Phe Gln Met Asp Glu Gly Glu Asp Pro Ser Leu Leu Phe Gln Ser Tyr  
85 90 95

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

Arg Phe Leu Lys Ile Trp Ser Gln Thr Val Glu Glu Ile Ile Ser Tyr  
115 120 125

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Val Ala Val Asn Phe Pro Asn Pro Pro Gly Lys Ser Ser Glu Asp Lys  
130 135 140

Ser Thr Gln Thr Thr Gly Arg Glu Leu Lys Lys Glu Thr Thr Pro Thr  
145 150 155 160

Pro Ser Gln Arg Glu Ser Gln Ser Ser Lys Ala Arg Met Ala Ala Gln  
165 170 175

Thr Ala Ser Gly Pro Pro Ala Leu Glu Trp Ser Ala Thr Asn Glu Glu  
180 185 190

Asp Asp Leu Ser Val Glu Ala Glu Ile Ala His Gln Ile Ala Glu Ser  
195 200 205

Phe Ser Lys Lys Tyr Lys Phe Pro Ser Arg Ser Ser Gly Ile Leu Leu  
210 215 220

Tyr Asn Phe Glu Gln Leu Lys Met Asn Leu Asp Asp Ile Val Lys Glu  
225 230 235 240

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

Leu Pro Leu Arg Cys Val Leu Gly Trp Val Ala Leu Ala Asn Ser Lys  
260 265 270

Lys Phe Gln Leu Leu Val Glu Ser Asn Lys Leu Ser Lys Ile Met Gln  
275 280 285

Asp Asp Leu Asn Arg Tyr Thr Ser Cys  
290 295

<210> 4  
<211> 202  
<212> PRT  
<213> Rabies virus

<400> 4

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Met Asn Phe Leu Arg Lys Ile Val Lys Asn Cys Arg Asp Glu Asp Thr  
1 5 10 15

Gln Lys Pro Ser Pro Val Ser Ala Pro Leu Asp Asp Asp Asp Leu Trp  
20 25 30

Leu Pro Pro Pro Glu Tyr Val Pro Leu Lys Glu Leu Thr Ser Lys Lys  
35 40 45

Asn Arg Arg Asn Phe Cys Ile Asn Gly Gly Val Lys Val Cys Ser Pro  
50 55 60

Asn Gly Tyr Ser Phe Gly Ile Leu Arg His Ile Leu Arg Ser Phe Asp  
65 70 75 80

Glu Ile Tyr Ser Gly Asn His Arg Met Val Gly Leu Val Lys Val Val  
85 90 95

Ile Gly Leu Ala Leu Ser Gly Ala Pro Val Pro Glu Gly Met Asn Trp  
100 105 110

Val Tyr Lys Leu Arg Arg Thr Leu Ile Phe Gln Trp Ala Asp Ser Arg  
115 120 125

Gly Pro Leu Glu Gly Glu Glu Leu Glu Tyr Ser Gln Glu Ile Thr Trp  
130 135 140

Asp Asp Asn Thr Glu Phe Val Gly Leu Gln Ile Arg Val Ser Ala Lys  
145 150 155 160

Gln Cys His Ile Arg Gly Arg Ile Trp Cys Ile Asn Met Asn Ser Arg  
165 170 175

Ala Gly Gln Leu Trp Ser Asp Met Ser Leu Gln Thr Gln Arg Ser Glu  
180 185 190

Glu Asp Lys Asp Ser Ser Leu Leu Leu Glu  
195 200

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<210> 5  
<211> 2142  
<212> PRT  
<213> Rabies virus

<400> 5

Met Leu Asp Pro Gly Glu Val Tyr Asp Asp Pro Ile Asp Pro Ile Glu  
1 5 10 15

Leu Glu Ala Glu Pro Arg Gly Thr Pro Thr Val Pro Asn Ile Leu Arg  
20 25 30

Asn Ser Asp Tyr Asn Leu Asn Ser Pro Leu Ile Glu Asp Pro Ala Arg  
35 40 45

Leu Met Leu Glu Trp Leu Lys Thr Gly Asn Arg Pro Tyr Arg Met Thr  
50 55 60

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

Lys Lys Val Asp Leu Gly Ser Leu Lys Val Gly Gly Met Ala Ala Gln  
85 90 95

Ser Met Ile Ser Leu Trp Leu Tyr Gly Ala His Ser Glu Ser Asn Arg  
100 105 110

Ser Arg Arg Cys Ile Thr Asp Leu Ala His Phe Tyr Ser Lys Ser Ser  
115 120 125

Pro Ile Glu Lys Leu Leu Asn Leu Thr Leu Gly Asn Arg Gly Leu Arg  
130 135 140

Ile Pro Pro Glu Gly Val Leu Ser Cys Leu Glu Arg Val Asp Tyr Asp  
145 150 155 160

Asn Ala Phe Gly Arg Tyr Leu Ala Asn Thr Tyr Ser Ser Tyr Leu Phe  
165 170 175

Phe His Val Ile Thr Leu Tyr Met Asn Ala Leu Asp Trp Asp Glu Glu

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185

190

Lys Thr Ile Leu Ala Leu Trp Lys Asp Leu Thr Ser Val Asp Ile Gly  
195 200 205

Lys Asp Leu Val Lys Phe Lys Asp Gln Ile Trp Gly Leu Leu Ile Val  
210 215 220

Thr Lys Asp Phe Val Tyr Ser Gln Ser Ser Asn Cys Leu Phe Asp Arg  
225 230 235 240

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

Leu Met Val Leu Leu Ser Pro Pro Glu Pro Arg Tyr Ser Asp Asp Leu  
260 265 270

Ile Ser Gln Leu Cys Gln Leu Tyr Ile Ala Gly Asp Gln Val Leu Ser  
275 280 285

Met Cys Gly Asn Ser Gly Tyr Glu Val Ile Lys Ile Leu Glu Pro Tyr  
290 295 300

Val Val Asn Ser Leu Val Gln Arg Ala Glu Lys Phe Arg Pro Leu Ile  
305 310 315 320

His Ser Leu Gly Asp Phe Pro Val Phe Ile Lys Asp Lys Val Ser Gln  
325 330 335

Leu Glu Glu Thr Phe Gly Ser Cys Ala Arg Arg Phe Phe Arg Ala Leu  
340 345 350

Asp Gln Phe Asp Asn Ile His Asp Leu Val Phe Val Tyr Gly Cys Tyr  
355 360 365

Arg His Trp Gly His Pro Tyr Ile Asp Tyr Arg Lys Gly Leu Ser Lys  
370 375 380

Leu Tyr Asp Gln Val His Ile Lys Lys Val Ile Asp Lys Ser Tyr Gln

385	390										395					400				
Glu	Cys	Leu	Ala	Ser 405	Asp	Leu	Ala	Arg	Arg 410	Ile	Leu	Arg	Trp	Gly 415	Phe					
Asp	Lys	Tyr	Ser 420	Lys	Trp	Tyr	Leu	Asp 425	Ser	Arg	Phe	Leu	Ala 430	Arg	Asp					
His	Pro	Leu	Thr 435	Pro	Tyr	Ile	Lys 440	Thr	Gln	Thr	Trp	Pro	Pro	Lys	His					
Ile	Val	Asp	Leu	Val	Gly	Asp 455	Thr	Trp	His	Lys	Leu 460	Pro	Ile	Thr	Gln					
Ile 465	Phe	Glu	Ile	Pro	Glu 470	Ser	Met	Asp	Pro	Ser 475	Glu	Ile	Leu	Asp	Asp 480					
Lys	Ser	His	Ser	Phe 485	Thr	Arg	Thr	Arg	Leu 490	Ala	Ser	Trp	Leu	Ser 495	Glu					
Asn	Arg	Gly	Gly 500	Pro	Val	Pro	Ser	Glu 505	Lys	Val	Ile	Ile	Thr	Ala	Leu					
Ser	Lys	Pro	Pro	Val	Asn	Pro	Arg 520	Glu	Phe	Leu	Lys	Ser 525	Ile	Asp	Leu					
Gly	Gly 530	Leu	Pro	Asp	Glu	Asp 535	Leu	Ile	Ile	Gly	Leu 540	Lys	Pro	Lys	Glu					
Arg 545	Glu	Leu	Lys	Ile	Glu 550	Gly	Arg	Phe	Phe	Ala 555	Leu	Met	Ser	Trp	Asn 560					
Leu	Arg	Leu	Tyr	Phe 565	Val	Ile	Thr	Glu	Lys 570	Leu	Leu	Ala	Asn	Tyr 575	Ile					
Leu	Pro	Leu	Phe 580	Asp	Ala	Leu	Thr	Met 585	Thr	Asp	Asn	Leu	Asn 590	Lys	Val					
Phe	Lys	Lys	Leu	Ile	Asp	Arg	Val	Thr	Gly	Gln	Gly	Leu	Leu	Asp	Tyr					

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595

600

605

Ser Arg Val Thr Tyr Ala Phe His Leu Asp Tyr Glu Lys Trp Asn Asn  
610 615 620

His Gln Arg Leu Glu Ser Thr Glu Asp Val Phe Ser Val Leu Asp Gln  
625 630 635 640

Val Phe Gly Leu Lys Arg Val Phe Ser Arg Thr His Glu Phe Phe Gln  
645 650 655

Lys Ser Trp Ile Tyr Tyr Ser Asp Arg Ser Asp Leu Ile Gly Leu Arg  
660 665 670

Glu Asp Gln Ile Tyr Cys Leu Asp Ala Ser Asn Gly Pro Thr Cys Trp  
675 680 685

Asn Gly Gln Asp Gly Gly Leu Glu Gly Leu Arg Gln Lys Gly Trp Ser  
690 695 700

Leu Val Ser Leu Leu Met Ile Asp Arg Glu Ser Gln Ile Arg Asn Thr  
705 710 715 720

Arg Thr Lys Val Leu Ala Gln Gly Asp Asn Gln Val Leu Cys Pro Thr  
725 730 735

Tyr Met Leu Ser Pro Gly Leu Ser Gln Glu Gly Leu Leu Tyr Glu Leu  
740 745 750

Glu Ser Ile Ser Arg Asn Ala Phe Ser Ile Tyr Arg Ala Val Glu Glu  
755 760 765

Gly Ala Ser Lys Leu Gly Leu Ile Ile Lys Lys Glu Glu Thr Met Cys  
770 775 780

Ser Tyr Asp Phe Leu Ile Tyr Gly Lys Thr Pro Leu Phe Arg Gly Asn  
785 790 795 800

Ile Leu Val Pro Glu Ser Lys Arg Trp Ala Arg Val Ser Cys Val Ser

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805

810

815

Asn Asp Gln Ile Val Asn Leu Ala Asn Ile Met Ser Thr Val Ser Thr  
820 825 830

Asn Ala Leu Thr Val Ala Gln His Ser Gln Ser Leu Ile Lys Pro Met  
835 840 845

Arg Asp Phe Leu Leu Met Ser Val Gln Ala Val Phe His Tyr Leu Leu  
850 855 860

Phe Ser Pro Ile Leu Lys Gly Arg Val Tyr Lys Ile Leu Ser Ala Glu  
865 870 875 880

Gly Glu Ser Phe Leu Leu Ala Met Ser Arg Ile Ile Tyr Leu Asp Pro  
885 890 895

Ser Leu Gly Gly Val Ser Gly Met Ser Leu Gly Arg Phe His Ile Arg  
900 905 910

Gln Phe Ser Asp Pro Val Ser Glu Gly Leu Ser Phe Trp Arg Glu Ile  
915 920 925

Trp Leu Ser Ser His Glu Ser Trp Ile His Ala Leu Cys Gln Glu Ala  
930 935 940

Gly Asn Pro Asp Leu Gly Glu Arg Thr Leu Glu Ser Phe Thr Arg Leu  
945 950 955 960

Leu Glu Asp Pro Thr Thr Leu Asn Ile Arg Gly Gly Ala Ser Pro Thr  
965 970 975

Ile Leu Leu Lys Asp Ala Ile Arg Lys Ala Leu Tyr Asp Glu Val Asp  
980 985 990

Lys Val Glu Asn Ser Glu Phe Arg Glu Ala Ile Leu Leu Ser Lys Thr  
995 1000 1005

His Arg Asp Asn Phe Ile Leu Phe Leu Thr Ser Val Glu Pro Leu

1010		1015		1020
Phe Pro Arg Phe Leu Ser Glu Leu Phe Ser Ser Ser Phe Leu Gly	1025	1030	1035	
Ile Pro Glu Ser Ile Ile Gly Leu Ile Gln Asn Ser Arg Thr Ile	1040	1045	1050	
Arg Arg Gln Phe Arg Lys Ser Leu Ser Lys Thr Leu Glu Glu Ser	1055	1060	1065	
Phe Tyr Asn Ser Glu Ile His Gly Ile Ser Arg Met Thr Gln Thr	1070	1075	1080	
Pro Gln Arg Val Gly Gly Val Trp Pro Cys Ser Ser Glu Arg Ala	1085	1090	1095	
Asp Leu Leu Arg Glu Ile Ser Trp Gly Arg Lys Val Val Gly Thr	1100	1105	1110	
Thr Val Pro His Pro Ser Glu Met Leu Gly Leu Leu Pro Lys Ser	1115	1120	1125	
Ser Ile Ser Cys Thr Cys Gly Ala Thr Gly Gly Gly Asn Pro Arg	1130	1135	1140	
Val Ser Val Ser Val Leu Pro Ser Phe Asp Gln Ser Phe Phe Cys	1145	1150	1155	
Thr Gly Pro Leu Lys Gly Tyr Leu Gly Ser Ser Thr Ser Met Ser	1160	1165	1170	
Thr Gln Leu Phe His Ala Trp Glu Lys Val Thr Asn Val His Val	1175	1180	1185	
Val Lys Arg Ala Leu Ser Leu Lys Glu Ser Ile Asn Trp Phe Ile	1190	1195	1200	
Thr Arg Asp Ser Asn Leu Ala Gln Thr Leu Ile Arg Asn Ile Val				

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1205

1210

1215

Ser Leu Thr Gly Pro Asp Phe Pro Leu Glu Glu Ala Pro Val Phe  
1220 1225 1230

Lys Arg Thr Gly Ser Ala Leu His Arg Phe Lys Ser Ala Arg Tyr  
1235 1240 1245

Ser Glu Gly Gly Tyr Ser Ser Val Cys Pro Asn Leu Leu Ser His  
1250 1255 1260

Ile Ser Val Ser Thr Asp Thr Met Ser Asp Leu Thr Gln Asp Gly  
1265 1270 1275

Lys Asn Tyr Asp Phe Met Phe Gln Pro Leu Met Leu Tyr Ala Gln  
1280 1285 1290

Thr Trp Thr Ser Glu Leu Val Gln Arg Asp Thr Arg Leu Arg Asp  
1295 1300 1305

Ser Thr Phe His Trp His Leu Gln Cys Asn Arg Cys Val Arg Pro  
1310 1315 1320

Ile Asp Asp Val Thr Leu Glu Thr Ser Gln Ile Phe Glu Phe Pro  
1325 1330 1335

Asp Val Ser Lys Arg Ile Ser Arg Met Val Ser Gly Ala Val Pro  
1340 1345 1350

His Phe Gln Arg Leu Pro Asp Ile Arg Leu Arg Pro Gly Asp Phe  
1355 1360 1365

Glu Ser Leu Ser Gly Arg Glu Lys Ser His His Ile Gly Ser Ala  
1370 1375 1380

Gln Gly Leu Leu Tyr Ser Ile Leu Val Ala Ile His Asp Ser Gly  
1385 1390 1395

Tyr Asn Asp Gly Thr Ile Phe Pro Val Asn Ile Tyr Gly Lys Val

1400

1405

1410

Ser Pro Arg Asp Tyr Leu Arg Gly Leu Ala Arg Gly Val Leu Ile  
 1415 1420 1425

Gly Ser Ser Ile Cys Phe Leu Thr Arg Met Thr Asn Ile Asn Ile  
 1430 1435 1440

Asn Arg Pro Leu Glu Leu Ile Ser Gly Val Ile Ser Tyr Ile Leu  
 1445 1450 1455

Leu Arg Leu Asp Asn His Pro Ser Leu Tyr Ile Met Leu Arg Glu  
 1460 1465 1470

Pro Ser Phe Arg Glu Glu Ile Phe Ser Ile Pro Gln Lys Ile Pro  
 1475 1480 1485

Ala Ala Tyr Pro Thr Thr Met Lys Glu Gly Asn Arg Ser Ile Leu  
 1490 1495 1500

Cys Tyr Leu Gln His Val Leu Arg Tyr Glu Arg Glu Val Ile Thr  
 1505 1510 1515

Ala Ser Pro Glu Asn Asp Trp Leu Trp Ile Phe Ser Asp Phe Arg  
 1520 1525 1530

Ser Ala Lys Met Thr Tyr Leu Thr Leu Ile Thr Tyr Gln Ser His  
 1535 1540 1545

Leu Leu Leu Gln Arg Val Glu Arg Asn Leu Ser Lys Ser Met Arg  
 1550 1555 1560

Asp Asn Leu Arg Gln Leu Ser Ser Leu Met Arg Gln Val Leu Gly  
 1565 1570 1575

Gly His Gly Glu Asp Thr Leu Glu Ser Asp Asp Asn Ile Gln Arg  
 1580 1585 1590

Leu Leu Lys Asp Ser Leu Arg Arg Thr Arg Trp Val Asp Gln Glu

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1595

1600

1605

Val Arg His Ala Ala Arg Thr Met Thr Gly Asp Tyr Ser Pro Asn  
1610 1615 1620

Lys Lys Val Ser Arg Lys Val Gly Cys Ser Glu Trp Val Cys Ser  
1625 1630 1635

Ala Gln Gln Val Ala Val Ser Thr Ser Ala Asn Pro Ala Pro Val  
1640 1645 1650

Ser Glu Leu Asp Ile Arg Ala Leu Ser Lys Arg Phe Gln Asn Pro  
1655 1660 1665

Leu Ile Ser Gly Leu Arg Val Val Gln Trp Ala Thr Gly Ala His  
1670 1675 1680

Tyr Lys Leu Lys Pro Ile Leu Asp Asp Leu Asn Val Phe Pro Ser  
1685 1690 1695

Leu Cys Leu Val Val Gly Asp Gly Ser Gly Gly Ile Ser Arg Ala  
1700 1705 1710

Val Leu Asn Met Phe Pro Asp Ala Lys Leu Val Phe Asn Ser Leu  
1715 1720 1725

Leu Glu Val Asn Asp Leu Met Ala Ser Gly Thr His Pro Leu Pro  
1730 1735 1740

Pro Ser Ala Ile Met Arg Gly Gly Asn Asp Ile Val Ser Arg Val  
1745 1750 1755

Ile Asp Phe Asp Ser Ile Trp Glu Lys Pro Ser Asp Leu Arg Asn  
1760 1765 1770

Leu Ala Thr Trp Lys Tyr Phe Gln Ser Val Gln Lys Gln Val Asn  
1775 1780 1785

Met Ser Tyr Asp Leu Ile Ile Cys Asp Ala Glu Val Thr Asp Ile

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1790

1795

1800

Ala Ser Ile Asn Arg Ile Thr Leu Leu Met Ser Asp Phe Ala Leu  
1805 1810 1815

Ser Ile Asp Gly Pro Leu Tyr Leu Val Phe Lys Thr Tyr Gly Thr  
1820 1825 1830

Met Leu Val Asn Pro Asn Tyr Lys Ala Ile Gln His Leu Ser Arg  
1835 1840 1845

Ala Phe Pro Ser Val Thr Gly Phe Ile Thr Gln Val Thr Ser Ser  
1850 1855 1860

Phe Ser Ser Glu Leu Tyr Leu Arg Phe Ser Lys Arg Gly Lys Phe  
1865 1870 1875

Phe Arg Asp Ala Glu Tyr Leu Thr Ser Ser Thr Leu Arg Glu Met  
1880 1885 1890

Ser Leu Val Leu Phe Asn Cys Ser Ser Pro Lys Ser Glu Met Gln  
1895 1900 1905

Arg Ala Arg Ser Leu Asn Tyr Gln Asp Leu Val Arg Gly Phe Pro  
1910 1915 1920

Glu Glu Ile Ile Ser Asn Pro Tyr Asn Glu Met Ile Ile Thr Leu  
1925 1930 1935

Ile Asp Ser Asp Val Glu Ser Phe Leu Val His Lys Met Val Asp  
1940 1945 1950

Asp Leu Glu Leu Gln Arg Gly Thr Leu Ser Lys Val Ala Ile Ile  
1955 1960 1965

Ile Ala Ile Met Ile Val Phe Ser Asn Arg Val Phe Asn Val Ser  
1970 1975 1980

Lys Pro Leu Thr Asp Pro Leu Phe Tyr Pro Pro Ser Asp Pro Lys

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1985

1990

1995

Ile Leu Arg His Phe Asn Ile Cys Cys Ser Thr Met Met Tyr Leu  
2000 2005 2010

Ser Thr Ala Leu Gly Asp Val Pro Ser Phe Ala Arg Leu His Asp  
2015 2020 2025

Leu Tyr Asn Arg Pro Ile Thr Tyr Tyr Phe Arg Lys Gln Val Ile  
2030 2035 2040

Leu Gly Asn Val Tyr Leu Ser Trp Ser Trp Ser Asn Asp Thr Ser  
2045 2050 2055

Val Phe Lys Arg Val Ala Cys Asn Ser Ser Leu Ser Leu Ser Ser  
2060 2065 2070

His Trp Ile Arg Leu Ile Tyr Lys Ile Val Lys Thr Thr Arg Leu  
2075 2080 2085

Val Gly Ser Ile Lys Asp Leu Ser Gly Glu Val Glu Arg His Leu  
2090 2095 2100

His Arg Tyr Asn Arg Trp Ile Thr Leu Glu Asn Ile Arg Ser Arg  
2105 2110 2115

Ser Ser Leu Leu Asp Tyr Ser Cys Leu Cys Ile Gly Tyr Ser Trp  
2120 2125 2130

Lys Pro Ala His Ala Lys Thr Leu Val  
2135 2140

<210> 6  
<211> 524  
<212> PRT  
<213> Rabies virus

<400> 6

Met Val Pro Gln Val Leu Leu Phe Val Pro Leu Leu Gly Phe Ser Leu  
1 5 10 15

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Cys Phe Gly Lys Phe Pro Ile Tyr Thr Ile Pro Asp Lys Leu Gly Pro  
20 25 30

Trp Ser Pro Ile Asp Ile His His Leu Ser Cys Pro Asn Asn Leu Val  
35 40 45

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

Leu Lys Val Gly Tyr Ile Ser Ala Ile Lys Val Asn Gly Phe Thr Cys  
65 70 75 80

Thr Gly Val Val Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr  
85 90 95

Val Thr Thr Thr Phe Lys Arg Lys His Phe Arg Pro Thr Pro Asp Ala  
100 105 110

Cys Arg Ala Ala Tyr Asn Trp Lys Met Ala Gly Asp Pro Arg Tyr Glu  
115 120 125

Glu Ser Leu His Asn Pro Tyr Pro Asp Tyr His Trp Leu Arg Thr Val  
130 135 140

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

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

Asn Cys Ser Gly Ile Thr Val Ser Ser Thr Tyr Cys Ser Thr Asn His  
180 185 190

Asp Tyr Thr Ile Trp Met Pro Glu Asn Leu Arg Leu Gly Thr Ser Cys  
195 200 205

Asp Ile Phe Thr Asn Ser Arg Gly Lys Arg Ala Ser Lys Gly Gly Lys  
210 215 220

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

Ala Cys Lys Leu Lys Leu Cys Gly Val Leu Gly Leu Arg Leu Met Asp  
245 250 255

Gly Thr Trp Val Ala Met Gln Thr Ser Asp Glu Thr Lys Trp Cys Pro  
260 265 270

Pro Gly Gln Leu Val Asn Leu His Asp Phe Arg Ser Asp Glu Ile Glu  
275 280 285

His Leu Val Val Glu Glu Leu Val Lys Lys Arg Glu Glu Cys Leu Asp  
290 295 300

Ala Leu Glu Ser Ile Met Thr Thr Lys Ser Val Ser Phe Arg Arg Leu  
305 310 315 320

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

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

Thr Trp Asn Glu Ile Ile Pro Ser Lys Gly Cys Leu Arg Val Gly Gly  
355 360 365

Arg Cys His Pro His Val Asn Gly Val Phe Phe Asn Gly Ile Ile Leu  
370 375 380

Gly Ser Asp Gly His Val Leu Ile Pro Glu Met Gln Ser Ser Leu Leu  
385 390 395 400

Gln Gln His Met Glu Leu Leu Glu Ser Ser Val Ile Pro Leu Met His  
405 410 415

Pro Leu Ala Asp Pro Ser Thr Val Phe Lys Asp Gly Asp Glu Val Glu  
420 425 430

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Asp Phe Val Glu Val His Leu Pro Asp Val His Glu Gln Val Ser Gly  
435 440 445

Val Glu Leu Gly Leu Pro Asn Trp Gly Lys Tyr Val Leu Met Ile Ala  
450 455 460

Gly Ala Leu Ile Ala Leu Met Leu Ile Ile Phe Leu Met Thr Cys Cys  
465 470 475 480

Arg Arg Val Asn Arg Pro Glu Ser Thr Gln Ser Ser Leu Gly Glu Thr  
485 490 495

Gly Arg Asn Val Ser Val Thr Ser Gln Ser Gly Lys Val Ile Ser Ser  
500 505 510

Trp Glu Ser Tyr Lys Ser Gly Gly Glu Thr Arg Leu  
515 520

<210> 7  
<211> 450  
<212> PRT  
<213> Rabies virus

<400> 7

Met Asp Ala Asp Lys Ile Val Phe Lys Val Asn Asn Gln Val Val Ser  
1 5 10 15

Leu Lys Pro Glu Ile Ile Val Asp Gln Tyr Glu Tyr Lys Tyr Pro Ala  
20 25 30

Ile Lys Asp Leu Lys Lys Pro Cys Ile Thr Leu Gly Lys Ala Pro Asp  
35 40 45

Leu Asn Lys Ala Tyr Lys Ser Val Leu Ser Gly Met Asn Ala Ala Lys  
50 55 60

Leu Asp Pro Asp Asp Val Cys Ser Tyr Leu Ala Ala Ala Met Gln Phe  
65 70 75 80

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Phe Glu Gly Thr Cys Pro Glu Asp Trp Thr Ser Tyr Gly Ile Leu Ile  
85 90 95

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

Arg Thr Asp Val Glu Gly Asn Trp Ala Leu Thr Gly Gly Met Glu Leu  
115 120 125

Thr Arg Asp Pro Thr Val Ser Glu His Ala Ser Leu Val Gly Leu Leu  
130 135 140

Leu Ser Leu Tyr Arg Leu Ser Lys Ile Ser Gly Gln Asn Thr Gly Asn  
145 150 155 160

Tyr Lys Thr Asn Ile Ala Asp Arg Ile Glu Gln Ile Phe Glu Thr Ala  
165 170 175

Pro Phe Val Lys Ile Val Glu His His Thr Leu Met Thr Thr His Lys  
180 185 190

Met Cys Ala Asn Trp Ser Thr Ile Pro Asn Phe Arg Phe Leu Ala Gly  
195 200 205

Thr Tyr Asp Met Phe Phe Ser Arg Ile Glu His Leu Tyr Ser Ala Ile  
210 215 220

Arg Val Gly Thr Val Val Thr Ala Tyr Glu Asp Cys Ser Gly Leu Val  
225 230 235 240

Ser Phe Thr Gly Phe Ile Lys Gln Ile Asn Leu Thr Ala Arg Glu Ala  
245 250 255

Ile Leu Tyr Phe Phe His Lys Asn Phe Glu Glu Glu Ile Arg Arg Met  
260 265 270

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

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Phe Arg Ser Leu Gly Leu Ser Gly Lys Ser Pro Tyr Ser Ser Asn Ala  
290 295 300

Val Gly His Val Phe Asn Leu Ile His Phe Val Gly Cys Tyr Met Gly  
305 310 315 320

Gln Val Arg Ser Leu Asn Ala Thr Val Ile Ala Ala Cys Ala Pro His  
325 330 335

Glu Met Ser Val Leu Gly Gly Tyr Leu Gly Glu Glu Phe Phe Gly Lys  
340 345 350

Gly Thr Phe Glu Arg Arg Phe Phe Arg Asp Glu Lys Glu Leu Gln Glu  
355 360 365

Tyr Glu Ala Ala Glu Leu Thr Lys Thr Asp Val Ala Leu Ala Asp Asp  
370 375 380

Gly Thr Val Asn Ser Asp Asp Glu Asp Tyr Phe Ser Gly Glu Thr Arg  
385 390 395 400

Ser Pro Glu Ala Val Tyr Thr Arg Ile Met Met Asn Gly Gly Arg Leu  
405 410 415

Lys Arg Ser His Ile Arg Arg Tyr Val Ser Val Ser Ser Asn His Gln  
420 425 430

Ala Arg Pro Asn Ser Phe Ala Glu Phe Leu Asn Lys Thr Tyr Ser Ser  
435 440 445

Asp Ser  
450

<210> 8  
<211> 297  
<212> PRT  
<213> Rabies virus

<400> 8

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Met Ser Lys Ile Phe Val Asn Pro Ser Ala Ile Arg Ala Gly Leu Ala  
1 5 10 15

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

Glu Asp Asn Gln Ala His Leu Gln Gly Glu Pro Ile Glu Val Asp Asn  
35 40 45

Leu Pro Glu Asp Met Arg Gln Phe His Leu Gly Asp Glu Lys Leu Ser  
50 55 60

Asn Leu Gly Glu Met Val Arg Val Gly Glu Gly Lys Tyr Arg Glu Asp  
65 70 75 80

Phe Gln Met Asp Glu Gly Glu Asp Pro Asn Leu Leu Phe Gln Ser Tyr  
85 90 95

Leu Asp Asn Val Gly Val Gln Ile Val Arg Gln Met Arg Ser Gly Glu  
100 105 110

Arg Phe Leu Lys Ile Trp Ser Gln Thr Val Glu Glu Ile Ile Ser Tyr  
115 120 125

Val Thr Val Asn Phe Pro Asn Pro Pro Gly Arg Ser Ser Glu Asp Lys  
130 135 140

Ser Thr Gln Thr Thr Gly Arg Glu Leu Lys Lys Glu Thr Thr Ser Thr  
145 150 155 160

Leu Ser Gln Arg Glu Ser Gln Pro Ser Lys Ala Gly Met Val Ala Gln  
165 170 175

Val Ala Ser Gly Pro Pro Ser Leu Glu Trp Ser Ala Thr Asn Glu Glu  
180 185 190

Asp Asp Leu Ser Val Glu Ala Glu Ile Ala His Gln Ile Ala Glu Ser  
195 200 205

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Phe Ser Lys Lys Tyr Lys Phe Pro Ser Arg Ser Ser Gly Ile Phe Leu  
210 215 220

Tyr Asn Phe Glu Gln Leu Glu Met Asn Leu Asp Asp Ile Val Lys Glu  
225 230 235 240

Ala Lys Asn Val Pro Gly Val Thr Arg Leu Ala His Asp Gly Ser Lys  
245 250 255

Ile Pro Leu Arg Cys Val Leu Gly Trp Val Ala Leu Ala Asn Ser Lys  
260 265 270

Lys Phe Gln Leu Ile Val Glu Ala Asp Lys Leu Ser Lys Ile Met Gln  
275 280 285

Asp Asp Leu Asp Arg Tyr Thr Ser Cys  
290 295

<210> 9  
<211> 202  
<212> PRT  
<213> Rabies virus

<400> 9

Met Asn Phe Leu Cys Lys Ile Val Lys Asn Cys Arg Asp Glu Asp Thr  
1 5 10 15

Gln Lys Pro Ser Pro Val Ser Ala Pro Pro Asp Gly Asp Asp Leu Trp  
20 25 30

Leu Pro Pro Pro Glu Tyr Val Pro Leu Lys Glu Leu Thr Ser Lys Lys  
35 40 45

Asn Met Arg Asn Phe Cys Ile Asn Gly Glu Val Lys Val Cys Ser Pro  
50 55 60

Asn Gly Tyr Ser Phe Arg Ile Leu Arg His Ile Leu Arg Ser Phe Asp  
65 70 75 80

Glu Ile Tyr Ser Gly Asn His Arg Met Ile Gly Leu Val Lys Val Val

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85

90

95

Ile Gly Leu Ala Leu Ser Gly Ala Pro Val Pro Glu Gly Met Asn Trp  
100 105 110

Val Tyr Lys Leu Arg Arg Thr Leu Ile Phe Gln Trp Ala Asp Ser Arg  
115 120 125

Gly Pro Leu Glu Gly Glu Glu Leu Glu His Ser Gln Glu Ile Thr Trp  
130 135 140

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

Gln Cys His Ile Gln Gly Arg Ile Trp Cys Ile Asn Met Asn Ser Arg  
165 170 175

Ala Cys Gln Leu Trp Ser Asp Met Ser Leu Gln Thr Gln Arg Ser Glu  
180 185 190

Glu Asp Lys Asp Ser Ser Leu Leu Leu Glu  
195 200

<210> 10  
<211> 2127  
<212> PRT  
<213> Rabies virus

<400> 10

Met Leu Asp Pro Gly Glu Val Tyr Asp Asp Pro Ile Asp Pro Ile Glu  
1 5 10 15

Ser Glu Ala Glu Pro Arg Gly Thr Pro Thr Val Pro Asn Ile Leu Arg  
20 25 30

Asn Ser Asp Tyr Asn Leu Asn Ser Pro Leu Ile Glu Asp Ser Ala Lys  
35 40 45

Leu Met Leu Glu Trp Leu Lys Thr Gly Asn Arg Pro Tyr Arg Met Thr  
50 55 60

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

Lys Lys Val Asp Leu Gly Ser Leu Lys Val Gly Gly Thr Ala Ala Gln  
85 90 95

Ser Met Ile Ser Leu Trp Leu Tyr Gly Ala His Ser Glu Ser Asn Arg  
100 105 110

Ser Arg Arg Cys Ile Thr Asp Leu Ala His Phe Tyr Ser Lys Ser Ser  
115 120 125

Pro Ile Glu Lys Leu Leu Asn Cys Thr Leu Gly Asn Arg Gly Leu Arg  
130 135 140

Ile Pro Pro Glu Gly Val Leu Ser Cys Leu Glu Arg Val Asp Tyr Asp  
145 150 155 160

Lys Ala Phe Gly Arg Tyr Leu Ala Asn Thr Tyr Ser Ser Tyr Leu Phe  
165 170 175

Phe His Val Ile Thr Leu Tyr Met Asn Ala Leu Asp Trp Glu Glu Glu  
180 185 190

Lys Thr Ile Leu Ala Leu Trp Lys Asp Leu Thr Ser Val Asp Thr Gly  
195 200 205

Lys Asp Leu Val Lys Phe Lys Asp Gln Ile Trp Gly Leu Leu Val Val  
210 215 220

Thr Lys Asp Phe Val Tyr Ser Gln Ser Ser Asn Cys Leu Phe Asp Arg  
225 230 235 240

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

Leu Met Ile Leu Leu Ser Pro Pro Glu Pro Arg Tyr Ser Asp Asp Leu  
260 265 270

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Ile Ser Gln Leu Cys Gln Leu Tyr Ile Ala Gly Asp Gln Val Leu Ser  
275 280 285

Leu Cys Gly Asn Ser Gly Tyr Glu Val Ile Lys Ile Leu Glu Pro Tyr  
290 295 300

Val Val Asn Ser Leu Val Gln Arg Ala Glu Lys Phe Arg Pro Leu Ile  
305 310 315 320

His Ser Leu Gly Asp Phe Pro Met Phe Ile Lys Asp Lys Val Asn Gln  
325 330 335

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

Asp Gln Phe Asp Asn Ile His Asp Leu Val Phe Val Tyr Gly Cys Tyr  
355 360 365

Arg His Trp Gly His Pro Tyr Ile Asp Tyr Arg Lys Gly Leu Ser Lys  
370 375 380

Leu Tyr Asp Gln Val His Ile Lys Lys Val Ile Asp Lys Ser Tyr Gln  
385 390 395 400

Glu Cys Leu Ala Ser Asp Leu Ala Arg Arg Ile Leu Arg Trp Gly Phe  
405 410 415

Asp Lys Tyr Ser Lys Trp Tyr Leu Asp Ser Arg Phe Leu Ala Leu Asp  
420 425 430

His Pro Leu Ala Pro Tyr Ile Lys Thr Gln Thr Trp Pro Pro Lys His  
435 440 445

Ile Val Asp Leu Val Gly Asp Thr Trp His Lys Leu Pro Ile Thr Gln  
450 455 460

Ile Phe Glu Ile Pro Glu Ser Met Asp Pro Ser Glu Ile Leu Asp Asp  
465 470 475 480

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Lys Ser His Ser Phe Thr Arg Thr Arg Leu Ala Ser Trp Leu Ser Glu  
485 490 495

Asn Arg Gly Gly Pro Val Pro Ser Glu Lys Val Ile Ile Thr Ala Leu  
500 505 510

Ser Lys Pro Pro Val Asn Pro Arg Glu Phe Leu Lys Ser Ile Asp Leu  
515 520 525

Gly Gly Leu Pro Asp Asp Asp Leu Ile Ile Gly Leu Arg Pro Lys Glu  
530 535 540

Arg Glu Leu Lys Ile Glu Gly Arg Phe Phe Ala Leu Met Ser Trp Asn  
545 550 555 560

Leu Arg Leu Tyr Phe Val Ile Thr Glu Lys Leu Leu Ala Asn Tyr Ile  
565 570 575

Leu Pro Leu Phe Asp Ala Leu Thr Met Thr Asp Asn Leu Asn Lys Val  
580 585 590

Phe Lys Lys Leu Ile Asp Arg Val Thr Gly Gln Gly Leu Leu Asp Tyr  
595 600 605

Ser Arg Val Thr Tyr Ala Phe His Leu Asp Tyr Glu Lys Trp Asn Asn  
610 615 620

His Gln Arg Leu Glu Ser Thr Glu Asp Val Phe Ser Val Leu Asp Gln  
625 630 635 640

Val Phe Gly Leu Lys Arg Val Phe Ser Arg Thr His Glu Phe Phe Gln  
645 650 655

Lys Ser Trp Ile Tyr Tyr Ser Asp Arg Ser Asp Leu Ile Gly Leu Arg  
660 665 670

Glu Asp Gln Ile Tyr Cys Leu Asp Met Ser Asn Gly Pro Thr Cys Trp  
675 680 685

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Asn Gly Gln Asp Gly Gly Leu Glu Gly Leu Arg Gln Lys Gly Trp Ser  
690 695 700

Leu Val Ser Leu Leu Met Ile Asp Arg Glu Ser Gln Thr Arg Asn Thr  
705 710 715 720

Arg Thr Lys Ile Leu Ala Gln Gly Asp Asn Gln Val Leu Cys Pro Thr  
725 730 735

Tyr Met Leu Ser Pro Gly Leu Ser Gln Glu Gly Leu Leu Tyr Glu Leu  
740 745 750

Glu Ser Ile Ser Arg Asn Ala Leu Ser Ile Tyr Arg Ala Ile Glu Glu  
755 760 765

Gly Ala Ser Lys Leu Gly Leu Ile Ile Lys Lys Glu Glu Thr Met Cys  
770 775 780

Ser Tyr Asp Phe Leu Ile Tyr Gly Lys Thr Pro Leu Phe Arg Gly Asn  
785 790 795 800

Ile Leu Val Pro Glu Ser Lys Arg Trp Ala Arg Val Ser Cys Ile Ser  
805 810 815

Asn Asp Gln Ile Val Asn Leu Ala Asn Ile Met Ser Thr Val Ser Thr  
820 825 830

Asn Ala Leu Thr Val Ala Gln His Ser Gln Ser Leu Ile Lys Pro Met  
835 840 845

Arg Asp Phe Leu Leu Met Ser Val Gln Ala Val Phe His Tyr Leu Leu  
850 855 860

Phe Ser Pro Ile Leu Lys Gly Arg Val Tyr Lys Ile Leu Ser Ala Glu  
865 870 875 880

Gly Glu Ser Phe Leu Leu Ala Met Ser Arg Ile Ile Tyr Leu Asp Pro  
885 890 895

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Ser Leu Gly Gly Val Ser Gly Met Ser Leu Gly Arg Phe His Ile Arg  
900 905 910

Gln Phe Ser Asp Pro Val Ser Glu Gly Leu Ser Phe Trp Arg Glu Ile  
915 920 925

Trp Leu Ser Ser His Glu Ser Trp Ile His Ala Leu Cys Gln Glu Ala  
930 935 940

Gly Asn Pro Asp Leu Gly Glu Arg Thr Leu Glu Ser Phe Thr Arg Leu  
945 950 955 960

Leu Glu Asp Pro Thr Thr Leu Asn Ile Lys Gly Gly Ala Ser Pro Thr  
965 970 975

Ile Leu Leu Lys Asp Ala Ile Arg Lys Ala Leu Tyr Asp Glu Val Asp  
980 985 990

Lys Val Glu Asn Ser Glu Phe Arg Glu Ala Ile Leu Leu Ser Lys Thr  
995 1000 1005

His Arg Asp Asn Phe Ile Leu Phe Leu Lys Ser Val Glu Pro Leu  
1010 1015 1020

Phe Pro Arg Phe Leu Ser Glu Leu Phe Ser Ser Ser Phe Leu Gly  
1025 1030 1035

Ile Pro Glu Ser Ile Ile Gly Leu Ile Gln Asn Ser Arg Thr Ile  
1040 1045 1050

Arg Arg Gln Phe Arg Lys Ser Leu Ser Arg Thr Leu Glu Glu Ser  
1055 1060 1065

Phe Tyr Asn Ser Glu Ile His Gly Ile Asn Arg Met Thr Gln Thr  
1070 1075 1080

Pro Gln Arg Val Gly Arg Val Trp Pro Cys Ser Ser Glu Arg Ala  
1085 1090 1095

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Asp Leu Leu Arg Glu Ile Ser Trp Gly Arg Lys Val Val Gly Thr  
1100 1105 1110

Thr Val Pro His Pro Ser Glu Met Leu Gly Leu Leu Pro Lys Ser  
1115 1120 1125

Ser Ile Ser Cys Thr Cys Gly Ala Thr Gly Gly Gly Asn Pro Arg  
1130 1135 1140

Val Ser Val Ser Val Leu Pro Ser Phe Asp Gln Ser Phe Phe Ser  
1145 1150 1155

Arg Gly Pro Leu Lys Gly Tyr Leu Gly Ser Ser Thr Ser Met Ser  
1160 1165 1170

Thr Gln Leu Phe His Ala Trp Glu Lys Val Thr Asn Val His Val  
1175 1180 1185

Val Lys Arg Ala Ile Ser Leu Lys Glu Ser Ile Asn Trp Phe Ile  
1190 1195 1200

Asn Arg Asn Ser Asn Leu Ala Gln Thr Leu Ile Arg Asn Ile Met  
1205 1210 1215

Ser Leu Thr Gly Pro Asp Phe Pro Leu Glu Glu Ala Pro Val Phe  
1220 1225 1230

Lys Arg Thr Gly Ser Ala Leu His Arg Phe Lys Ser Ala Arg Tyr  
1235 1240 1245

Ser Glu Gly Gly Tyr Ser Ser Val Cys Pro Asn Leu Leu Ser His  
1250 1255 1260

Ile Ser Val Ser Thr Asp Thr Met Ser Asp Leu Thr Gln Asp Gly  
1265 1270 1275

Lys Asn Tyr Asp Phe Met Phe Gln Pro Leu Met Leu Tyr Ala Gln  
1280 1285 1290

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Thr	Trp	Thr	Ser	Glu	Leu	Val	Gln	Arg	Asp	Thr	Arg	Leu	Arg	Asp
1295						1300					1305			
Ser	Thr	Phe	His	Trp	His	Leu	Arg	Cys	Asn	Arg	Cys	Val	Arg	Pro
1310						1315					1320			
Ile	Glu	Asp	Ile	Thr	Leu	Glu	Thr	Ser	Gln	Ile	Phe	Glu	Phe	Pro
1325						1330					1335			
Asp	Val	Ser	Lys	Arg	Ile	Ser	Arg	Met	Val	Ser	Gly	Ala	Val	Pro
1340						1345					1350			
His	Phe	Gln	Lys	Leu	Pro	Asp	Ile	Arg	Leu	Arg	Pro	Gly	Asp	Phe
1355						1360					1365			
Glu	Ser	Leu	Ser	Gly	Arg	Glu	Lys	Ser	Arg	His	Ile	Gly	Ser	Ala
1370						1375					1380			
Gln	Gly	Leu	Leu	Tyr	Ser	Ile	Leu	Val	Ala	Ile	His	Asp	Ser	Gly
1385						1390					1395			
Tyr	Asn	Asp	Gly	Thr	Ile	Phe	Pro	Val	Asn	Ile	Tyr	Gly	Lys	Val
1400						1405					1410			
Ser	Pro	Arg	Asp	Tyr	Leu	Arg	Gly	Leu	Ala	Arg	Gly	Ile	Leu	Ile
1415						1420					1425			
Gly	Ser	Ser	Ile	Cys	Phe	Leu	Thr	Arg	Met	Thr	Asn	Ile	Asn	Ile
1430						1435					1440			
Lys	Arg	Pro	Leu	Glu	Leu	Ile	Ser	Gly	Val	Ile	Ser	Tyr	Ile	Leu
1445						1450					1455			
Leu	Arg	Leu	Asp	Asn	His	Pro	Ser	Leu	Tyr	Ile	Met	Leu	Arg	Glu
1460						1465					1470			
Pro	Ser	Leu	Arg	Gly	Glu	Ile	Phe	Ser	Ile	Pro	Gln	Lys	Ile	Pro
1475						1480					1485			

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Ala Ala Tyr Pro Thr Thr Met Lys Glu Gly Asn Arg Ser Ile Leu  
1490 1495 1500

Cys Tyr Leu Gln His Val Leu Arg Tyr Glu Arg Glu Val Ile Thr  
1505 1510 1515

Ala Ser Pro Glu Asn Asp Trp Leu Trp Ile Phe Ser Asp Phe Arg  
1520 1525 1530

Ser Ala Lys Met Thr Tyr Leu Thr Leu Ile Thr Tyr Gln Ser His  
1535 1540 1545

Leu Leu Leu Gln Arg Val Glu Arg Asn Leu Ser Lys Ser Met Arg  
1550 1555 1560

Ala Thr Leu Arg Gln Met Gly Ser Leu Met Arg Gln Val Leu Gly  
1565 1570 1575

Gly His Gly Glu Asp Thr Leu Glu Ser Asp Asp Asp Ile Gln Arg  
1580 1585 1590

Leu Leu Lys Asp Ser Leu Arg Arg Thr Arg Trp Val Asp Gln Glu  
1595 1600 1605

Val Arg His Ala Ala Arg Thr Met Ser Gly Asp Tyr Ser Pro Asn  
1610 1615 1620

Lys Arg Val Ser Arg Lys Ala Gly Cys Ser Glu Trp Val Cys Ser  
1625 1630 1635

Ala Gln Gln Val Ala Val Ser Thr Ser Ala Asn Pro Ala Pro Val  
1640 1645 1650

Ser Glu Leu Asp Ile Arg Ala Leu Ser Lys Arg Phe Gln Asn Pro  
1655 1660 1665

Leu Ile Ser Gly Leu Arg Val Val Gln Trp Ala Thr Gly Ala His  
1670 1675 1680

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Tyr Lys Leu Lys Pro Ile Leu Asp Asp Leu Asn Val Phe Pro Ser  
1685 1690 1695

Leu Cys Leu Val Val Gly Asp Gly Ser Gly Gly Ile Ser Arg Ala  
1700 1705 1710

Val Leu Asn Met Phe Pro Asp Ser Lys Leu Val Phe Asn Ser Leu  
1715 1720 1725

Leu Glu Val Asn Asp Leu Met Ala Ser Gly Thr His Pro Leu Pro  
1730 1735 1740

Pro Ser Ala Ile Met Ser Gly Gly Asp Asp Ile Ile Ser Arg Val  
1745 1750 1755

Ile Asp Phe Asp Ser Ile Trp Glu Lys Pro Ser Asp Leu Arg Asn  
1760 1765 1770

Leu Ala Thr Trp Arg Tyr Phe Gln Ser Val Gln Lys Gln Val Asn  
1775 1780 1785

Met Ser Tyr Asp Leu Ile Val Cys Asp Ala Glu Val Thr Asp Ile  
1790 1795 1800

Ala Ser Ile Asn Arg Ile Thr Leu Leu Met Ser Asp Phe Ala Leu  
1805 1810 1815

Ser Ile Asp Gly Pro Leu Tyr Leu Val Phe Lys Thr Tyr Gly Thr  
1820 1825 1830

Met Leu Val Asn Pro Asp Tyr Lys Ala Ile Gln His Leu Ser Arg  
1835 1840 1845

Ala Phe Pro Ser Val Thr Gly Phe Ile Thr Gln Val Thr Ser Ser  
1850 1855 1860

Phe Ser Ser Glu Leu Tyr Leu Arg Phe Ser Lys Arg Gly Lys Phe  
1865 1870 1875

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Phe	Arg	Asp	Ala	Glu	Tyr	Leu	Thr	Ser	Ser	Thr	Leu	Arg	Glu	Met
1880						1885					1890			
Ser	Leu	Val	Leu	Phe	Asn	Cys	Ser	Ser	Pro	Lys	Ser	Glu	Met	Gln
1895						1900					1905			
Arg	Ala	Arg	Ser	Leu	Asn	Tyr	Gln	Asp	Leu	Val	Arg	Gly	Phe	Pro
1910						1915					1920			
Glu	Glu	Ile	Ile	Ser	Asn	Pro	Tyr	Asn	Glu	Met	Ile	Ile	Thr	Leu
1925						1930					1935			
Ile	Asp	Ser	Asp	Val	Glu	Ser	Phe	Leu	Val	His	Lys	Met	Val	Asp
1940						1945					1950			
Asp	Leu	Glu	Leu	Gln	Arg	Gly	Thr	Leu	Ser	Lys	Val	Ala	Ile	Ile
1955						1960					1965			
Ile	Ser	Ile	Met	Ile	Val	Phe	Ser	Asn	Arg	Val	Phe	Asn	Ile	Ser
1970						1975					1980			
Lys	Pro	Leu	Thr	Asp	Pro	Leu	Phe	Tyr	Pro	Pro	Ser	Asp	Pro	Lys
1985						1990					1995			
Ile	Leu	Arg	His	Phe	Asn	Ile	Cys	Cys	Ser	Thr	Met	Met	Tyr	Leu
2000						2005					2010			
Ser	Thr	Ala	Leu	Gly	Asp	Val	Pro	Ser	Phe	Ala	Arg	Leu	His	Asp
2015						2020					2025			
Leu	Tyr	Asn	Arg	Pro	Ile	Thr	Tyr	Tyr	Phe	Arg	Lys	Gln	Val	Ile
2030						2035					2040			
Arg	Gly	Asn	Ile	Tyr	Leu	Ser	Trp	Ser	Trp	Ser	Asp	Asp	Thr	Pro
2045						2050					2055			
Val	Phe	Lys	Arg	Val	Ala	Cys	Asn	Ser	Ser	Leu	Ser	Leu	Ser	Ser
2060						2065					2070			

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His Trp Ile Arg Leu Ile Tyr Lys Ile Val Lys Thr Thr Arg Leu  
2075 2080 2085

Val Gly Ser Ile Glu Asp Leu Ser Gly Glu Val Glu Arg His Leu  
2090 2095 2100

His Gly Tyr Asn Arg Trp Ile Thr Leu Glu Asp Ile Arg Ser Arg  
2105 2110 2115

Ser Ser Leu Leu Asp Tyr Ser Cys Leu  
2120 2125

<210> 11  
<211> 1575  
<212> RNA  
<213> Rabies virus

<400> 11  
augguuccuc aggcucuccu guuuguaccc cuucugguuu uuccauugug uuuugggaaa 60  
uucccuauuu acacgauacc agacaagcuu ggucccugga gcccgauuga cauacaucac 120  
cucagcugcc caaacaauuu gguaguggag gacgaaggau gcaccaaccu gucagggguuc 180  
uccuacaugg aacuuaaagu uggauacauc ucagccauaa aaaugaacgg guucacuugc 240  
acaggcguug ugacggaggc ugaaaccuac acuaacuucg uugguuauugu cacaaccacg 300  
uucaaaagaa agcauuuccg cccaacacca gaugcaugua gagccgcgua caacuggaag 360  
auggccggug accccagaua ugaagagucu cuacacaau cguaccuuga cuaccacugg 420  
cuucgaacug uaaaaaccac caaggagucu cucguuauca uaucuccaag uguggcagau 480  
uuggaccuau augacagau ccuucacucg agggucuucc cuggcgggaa uugcucagga 540  
guagcggugu cuucuaccua cugcuccacu aaccacgauu acaccauuug gaugcccgag 600  
aauccgagac uagggauguc uugugacauu uuuaccaaua guagagggaa gagagcaucc 660  
aaaggagug agacuugcgg cuuuguagau gaaagaggcc uauauaaguc uuuaaaagga 720  
gcaugcaaac ucaaguauug uggaguucua ggacuauagac uuauggaugg acauggguc 780  
gcgaugcaaa caucaauuga aaccaaauug ugcccucccg gucaguuggu gaauuugcac 840

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gacuuucgcu cagacgaaau ugagcaccuu guuguagagg aguuggucaa gaagagagag	900
gagugucugg augcacuaga guccaucaug accaccaagu cagugaguuu cagacgucuc	960
agucuuuuuaa gaaaacuugu cccuggguuu ggaaaagcau auaccauauu caacaagacc	1020
uugauggaag ccgaugcuca cuacaaguca gucagaacuu ggaugagau caucccuuca	1080
aaaggguguu uaagaguugg ggggaggugu cauccuauu uaaacggggu auuuuucaau	1140
gguauauau uaggaccuga cggcaauguc uuaaucccag agaugcaauc aucccuccuc	1200
cagcaacaua uggaguuguu gguauccucg guuaucccc uuaugcacc ccuggcagac	1260
ccgucuaccg uuuucaagaa cggugacgag gcugaggauu uuguugaagu ucaccuuccc	1320
gaugugcacg aacggaucuc aggaguugac uugggucucc cgaacugggg gaaguaugua	1380
uuacugagug caggggccc uacugccuug auguugauaa uuuuccugau gacaugcugg	1440
agaagaguca aucgaucgga accuacacaa cacaucuca gagggacagg gagggaggug	1500
ucagucacuc cccaaagcgg gaagaucau ucuucauggg aaucuuacaa gagcgggggu	1560
gagaccggac uguga	1575

<210> 12  
 <211> 1353  
 <212> RNA  
 <213> Rabies virus

<400> 12	
auggaugccg acaagauugu auucaaaguc aauaauaggc uggucucuuu gaagccugag	60
auuauugugg aucaauauga guacaaguac ccugccauca aagauuugaa aaagcccugu	120
auaacucuag gaaaggcucc cgauuuuuuu aaagcauaca agucaguuuu aucaugcaug	180
agcgccgcca aacuugaucg ugacgaugua uguuccuauu uggcggcggc aaugcaguuu	240
uuugagggga cauguccgga agacuggacc agcuauaggaa ucgugauugc acgaaaagga	300
gauaagauca ccccagguuc ucugguggag auaaaacgua cugauguaga agggauuugg	360
gcucugacag gaggcaugga acugacaaga gacccacug ucccugagca ugcguccuua	420
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<210> 22  
<211> 44  
<212> DNA  
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alpha-globin gene (muag)

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<210> 23  
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<210> 24  
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<220>  
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